STRUCTURAL PEST CONTROL BOARD

SUNSET REVIEW REPORT 2022

PRESENTED TO THE SENATE COMMITTEE ON BUSINESS, PROFESSIONS AND ECONOMIC DEVELOPMENT, AND THE ASSEMBLY COMMITTEE ON BUSINESS AND PROFESSIONS

SPCB
STRUCTURAL PEST CONTROL BOARD

STATE OF CALIFORNIA
dca
DEPARTMENT OF CONSUMER AFFAIRS

The Structural Pest Control Board
Sunset Review Report
2022

KYLE FINLEY
President

YESSENIA ANDERSON
Vice President

ANKUR BINDAL, MD
Member

DEREK DEVERMONT
Member

MARK PAXSON
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JOHN TENGAN
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BACKGROUND INFORMATION AND OVERVIEW OF THE CURRENT REGULATORY PROGRAM
As of November 21, 2022

Section 1 –
Background and Description of the Board and Regulated Profession

Provide a short explanation of the history and function of the board. Describe the occupations/profession that are licensed and/or regulated by the board (Practice Acts vs. Title Acts).

History and Function of the Board

As early as the 1930s, the structural pest control profession was largely unregulated. Consequently, consumers faced challenges securing the services of professionals capable of performing all the tools of the trade. Not all practitioners possessed the skill-sets necessary to competently render services such as, but not limited to, knowledge of building laws, building construction, air and water quality, use of poisonous and lethal gases, even non-harmful removal or exclusion of animals or certain species of insects. Local building divisions and law enforcement lacked the technical skills and specialized knowledge necessary to effectively and efficiently resolve disputes. Unskilled laborers rendering services unwittingly put themselves in harms' way, including the clients that they served. These limiting factors compounded the difficulties experienced by consumers seeking administrative or judicial relief, leaving many to potentially suffer financial harm, or perhaps being victims of substandard building repairs and/or adverse health and safety exposure to toxic levels of pesticides. The nature of the profession reinforced a need for a dedicated regulatory referee who could assemble the missing pieces of the puzzle, providing the groundwork for positive changes.

In 1935, in response to consumer and industry demand, the California Legislature passed the first Structural Pest Control Act (Assembly Bill 2382, Chapter 823, Statutes of 1935). Added to the California codes, this Chapter was made effective January 1, 1936, and was to be administered by the California Pest Control Association. The new statute set standards for the pest control occupation by mandating, among other provisions, that practitioners meet stringent experience and continuing education requirements, thus providing the foundation for one of the most comprehensive consumer protection laws to date. Chapter 14 of the Structural Pest Control Act was added to Statutes of 1941, repealing Statutes of 1939, which codified the Business and Professions Code (BPC), commencing with Section 8500 and forming the Structural Pest Control Board (SPCB) as it exists today.

The SPCB's highest priority (BPC §8520.1) is to protect and benefit the public by regulating the pest control industry. The sphere of the SPCB's mission and vision is under the leadership of a 7-member appointed Board and the executive officer who serves at the Board's leisure. The SPCB's mission is to protect the general welfare of Californians and the environment by promoting outreach, education and regulation of the structural pest management professions. The SPCB's vision is to strive to be the national regulatory leader of pest management. In achieving these priorities, the SPCB actively follows its core values: 1) consumer protection, 2) efficiencies, 3) integrity, and 4) professionalism.

Structural pest control includes, not by way of limitation, the eradication and/or prevention of structural pests such as cockroaches, ants and rodents or wood-destroying pests such as termites, wood boring beetles and carpenter ants. Structural pest control licensees may use fumigation with poisonous or lethal gases, or they may use mechanical means such as freezing, heating and trapping technologies when servicing a property. The profession also includes the performance of structural repairs to real property (such as buildings) and other structures, including railroad cars, ships, docks, trucks, airplanes, or the contents thereof. Licensees routinely exercise professional judgment when determining the best method to correct structural pest issues, but they also must adhere to strict standards to ensure public safety (especially the use and handling of poisonous or lethal gases). They prepare written reports to consumers, and they fully explain their recommendations, including product efficacy and pesticide safety disclosures, permitting consumers to make educated, informed decisions.

The Structural Pest Control Act requires that licensees fulfill continuing education requirements by completing industry-relevant courses to stay fluent with technology and accepted professional practices. The SPCB also approves scientific research into new pest control/abatement technologies to address new or escalating social or environmental issues, such as professional standards to provide integrated pest management.

The SPCB has successfully served the interests of consumers for more than eighty years, giving consumers options in lieu of the high costs of civil actions. These services include SPCB mediation and conciliation services, investigations, and administrative orders of correction or restitution. Most importantly, consumers are significantly protected against the health hazards associated with the misuse of pesticides and lethal gases. Both the consumer and industry benefit from well-versed licensees who must demonstrate levels of competency and continuing education that are considered unparalleled to their national counterparts. The SPCB remains at the forefront of the industry and continues to set the standard for the practice of structural pest management in the nation and abroad.

Description of the Occupation and Licensing Structure

LICENSING AND EXAMINATION

The SPCB safeguards consumers by ensuring that individuals obtaining a license as an Applicator, Field Representative or Operator in the areas of structural fumigation, general pest control, and wood- destroying pests and organisms (termite) possess professional levels of competency, which includes education and experience, and proficiencies necessary to pass a SPCB administered occupational exam. The occupational examinations are updated in conformance with federal and state guidelines, meaning that test questions are validated and cross-validated by staff to assure examination quality, relevance and framework. Occupational analyses are conducted in accordance with state administrative requirements so that the examinations reflect the most current practices of the occupation.

The licensing program also ensures that all company registrations, branch office locations and licensees comply with state requirements for maintaining surety bonds, general liability insurance, and workers' compensation insurance in good standing. The SPCB educates the public about the licensing program by interpreting applicable laws and regulations for the issuance and maintenance of licenses as well as enabling the public access to public records, including opportunity to comment regarding rulemaking for the development of SPCB licensing regulations. The SPCB also receives comment and feedback from the public in legislative matters. Consumer satisfaction surveys help to ensure that the licensing program remains optimally responsive to consumer needs.

ENFORCEMENT

The enforcement program educates consumers about the SPCB's enforcement laws and regulations and, in addition, assists consumers by mediating and investigating complaints for possible violations of the Structural Pest Control Act. The California Attorney General files administrative actions on behalf of the SPCB to deny, grant, suspend or revoke licenses, while civil and criminal matters are referred by the SPCB to city and district attorneys for violations committed by licensees and unlicensed practitioners. The enforcement program also reviews and audits the records of licensees and companies for compliance with the Act. The program also monitors probationers to ensure that they follow all terms and conditions of probation relevant to administrative, civil or criminal sanctions. Consistent with performance measurements used in the licensing program, the enforcement program also uses consumer satisfaction surveys, allowing the program to be optimally responsive to its clients and stakeholders.

CONTINUING EDUCATION

Continued competency is achieved through mandatory continuing education (CE). Licensees must demonstrate knowledge of current laws, regulations and professional practices to properly maintain their licenses. The SPCB approves course content and provides a statewide list of course providers on its website. Continuing education includes, but is not limited to, health and safety rules, pesticide use, environmental safety, integrated pest management and SPCB rules and regulations. CE requirements vary depending on the type and class of license(s) and number of categories held by the individual licensee. The number of required hours varies from 12 to 24 hours of continuing education courses in a three-year license renewal cycle. The SPCB conducts random audits throughout the year to ensure compliance with license renewal and continuing education requirements. Failure of a licensee to meet the required continuing education requirement may result in the cancellation of the license. Violations of continuing education requirements, such as submitting false continuing education certificates, may result in a disciplinary action to suspend or revoke a license.

EDUCATION AND OUTREACH

Information regarding every structure inspected for wood-destroying pests and organisms in California within the last two years is found on the SPCB's website: www.pestboard.ca.gov. Consumers can request a copy of the actual report as well as a notice that describes any conditions corrected on any structure.

The site provides examination and licensing information, as well as disciplinary information. Forms that a consumer or licensee may request are found on the website. Educational brochures are provided to consumers and real estate agents that explain fumigations, general pests, and termites. These brochures are comprised of the most commonly asked questions by consumers, with answers provided. All SPCB meeting agendas and minutes are posted on the website as well as complete information about the SPCB's laws and regulations

RESEARCH

Research serves as a vital component of the pest control profession, particularly as it relates to continuing education and professional field practices. Research is defined in pertinent part as a "studious inquiry or examination; especially investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws." (Merriam-Webster.com, August 2017). Research is a vehicle that allows the public and industry to better educate themselves concerning

industry practices, both old and new. Requests for research are conducted in accordance with the Bagley-Keene Act, by a Board-appointed Research Advisory Panel, giving the industry and members of the public an opportunity to comment and recommend research goals and objectives. This information is then forwarded to Board members for consideration and implementation. Board member approved topics are then vetted through a request for proposals and are advertised statewide. Following award of the contract(s), information regarding the progress of research is published on the SPCB's website which may stimulate future SPCB agendas for updates, discussion, and action.

TITLE AND PRACTICE ACT

Composed with the passage of the Structural Pest Control Act in 1935, the legislature organized a system of laws divided into chapters and articles designed to define the practice of structural pest control.

The Title Act differentiates statutory provisions in the Business and Professions Code, organized under chapters, which outlines each of the Practice Act professions, such as dentists versus nurses, or contractors versus pest control operators. It also preserves within each chapter the authority of the licensee to use the title of structural pest control operator versus an engineer or architect. The Title Act prohibits other professions or vocations (as well as unlicensed persons/entities) from using titles (or names) without proper credentials or demonstrated aptitudes. The Title Act ensures public safety whereby only appropriately licensed persons in professions and vocations maintain the requisites to practice in the selected field of practice.

The Practice Act sets, among other areas, rules of conduct, court procedure and accepted industry trade practices with particular emphasis on licensee qualifications, license maintenance, and public safety in mind.

1. Describe the make-up and functions of each of the board's committees (cf., Section 12, Attachment B).

Standing Committees

Research Advisory Panel — This committee is defined by the California Code of Regulations (Section 1919) and authorized by 8674(t), the panel is assigned by the Board on an as-needed basis to approve and to fund structural pest control research programs.

Disciplinary Review Committee — This committee is defined by BPC §8660 was established for the purpose of reviewing appeals of orders issued by agricultural commissioners acting under authority of BPC §8617. The committee, as a county adjudicatory body, does not have the authority to suspend or revoke a license issued by the SPCB, that authority rests solely with the SPCB.

Technical Advisory Committee — Considers any matter referred by the SPCB that requires SPCB action but is of such a technical nature that it requires substantial research, input and consideration by persons qualified in that specific topic to make recommendations to the SPCB.

SPCB STRUCTURAL PEST CONTROL BOARD	Appointing Authority G-Governor, S- Senate, A- Assembly	7/26/2018 - Claremont	10/16-17/2018 - Sacramento	1/15-16/2019 - Claremont	7/1/2019 - Sacramento	10/23-24/2019 - Sacramento	3/12/2020 - Sacramento	10/20 -21/2020 WebEx	1/11/2021 - Teleconference	3/10/2021 - WebEx	7/21/2021 - WebEx	10/20/2021 - WebEx	3/23/2022 - WebEx	4/28/2022 - Teleconference	7/19-20/2022 - Claremont	9/13/2022 - Sacramento	10/19-19/2022 - Sacramento
Board Members		**FY 2018 19**			**FY 2019 20**			**FY 2020 21**			**FY 2021 22**				**FY 2022 23**		
Kyle Finley	G																
Derek Devermont	S																
Yessenia Anderson	G																
Mark Paxson	G																
Janet Thrasher	G																
John Tengan	G																
Dr. Ankur Bindal	A																
Past Board Members		**FY 2018 19**			**FY 2019 20**			**FY 2020 21**			**FY 2021 22**				**FY 2022 23**		
Curtis Good	G																
Dave Tamayo	A																
Ronna Brand	G																
Darren Van Steenwyk	G																
Mike Duran	G																
Servando Ornelas	S																
Nahida Kapadia	G																
Magali Flores Nunez	G																
TABLE LEGEND		**PRESENT**			**ABSENT**			**NOT APPLICABLE**									

Table 1b. Board/Committee Member Roster

Member Name	Date First Appointed	Date Reappointed	Date Term Expires	Appointing Authority	Type (Public or Professional)
Kyle Finley	5/13/2020		6/1/2023	Governor	Professional
Derek Devermont	8/19/2020		6/1/2024	Senate Rules Committee	Public
Yessenia Anderson	6/23/2022		6/1/2025	Governor	Public
John Tengan	8/12/2022		6/2/2025	Governor	Professional
Mark Paxson	6/13/2022		6/1/2025	Governor	Public
Janet Thrasher	8/11/2020		6/1/2023	Governor	Professional
Dr. Ankur Bindal	11/15/2022		6/1/2024	Speaker of the Assembly	Public

2. **In the past four years, was the board unable to hold any meetings due to lack of quorum? If so, please describe. Why? When? How did it impact operations?**

The SPCB has maintained a full quorum at all meetings over the past four years.

3. **Describe any major changes to the board since the last Sunset Review, including, but not limited to:**

- **Internal changes (i.e., reorganization, relocation, change in leadership, strategic planning)**

  The SPCB's Executive Officer since August 2012, retired in April 2022. The Board appointed a new Executive Officer in August 2022. The SPCB's Assistant Executive Officer since 2014 also retired in August 2022 and the position is currently vacant.

  Since the last Sunset Review, the Board gained the appointments of four public members and three industry members.

  The Board began strategic planning sessions in March 2022 and finalized and approved the 2023-2028 Strategic Plan in October 2022.

- **All legislation sponsored by the board and affecting the board since the last sunset review.**

The following legislative actions were submitted and/or enacted since the last Sunset Review:

Bill Number: AB 2452 (Chen), Chapter 235, Statutes of 2022
Subject Matter: Structural Fumigation Enforcement Program
Effective Date: January 1, 2023
Summary: This legislative action extends the sunset on the Structural Fumigation Enforcement Program (SFEP), from January 1, 2023, to January 1, 2024. It also removes San Diego County from the SFEP.

Bill Number: SB 1064 (Newman), Chapter 190, Statutes of 2022
Subject Matter: Structural pest control: workers' compensation insurance coverage
Effective Date: January 1, 2023
Summary: This legislative action prohibits the Structural Pest Control Board from issuing, reinstating, or continuing to maintain any structural pest control company registration unless, the applicant or existing company has filed a current and valid Certificate of Workers' Compensation Insurance, or a statement certifying that they have no employees and are not required to obtain or maintain workers' compensation insurance. The law also requires the insurer, including the State Compensation Insurance Fund, to report to the registrar of the Structural Pest Control Board the company name, registration number, policy number, dates that coverage is scheduled to commence and lapse, and cancellation date.

Bill Number: SB 189 (Skinner), Chapter 48, Statutes of 2022
Subject Matter: State Government
Effective Date: January 1, 2023
Summary: This bill makes necessary statutory changes to implement the general government provisions of the Budget Act of 2022. Specifically, this bill specifies that proceedings at a hearing may be recorded electronically if a stenographic reporter is unavailable and upon finding of good cause by

an Administrative Law Judge. This bill repeals the requirement for state agencies to deliver six hard copies of regulations to the Office of Administrative Law at the time of transmittal for filing a regulation or order of repeal. In addition, this bill authorizes state entities to hold public meetings, subject to specified notice and accessibility requirements, through teleconferencing and making public meetings accessible telephonically or otherwise electronically to the public, as specified. The bill also sunsets these provisions on July 1, 2023.

Bill Number: SB 1237 (Newman), Chapter 386, Statutes of 2022
Subject Matter: Licenses: military service
Effective Date: January 1, 2023
Summary: This legislative action requires boards and bureaus to waive license renewal fees for active-duty military members stationed outside of California.

Bill Number: AB 107 (Salas), Chapter 693, Statutes of 2021
Subject Matter: Licensure: Veterans and Military Spouses
Effective Date: January 1, 2022
Summary: This law requires most boards and bureaus within the Department of Consumer Affairs to issue temporary licenses to military spouses meeting specified criteria. Temporary licenses are required to be issued within 30 days of receiving an application if the results of a criminal background check do not show grounds for denial. This law exempts a board that has a process in place by which an out-of-state licensee applicant in good standing who is married to, or in a domestic partnership or other legal union with, an active duty member of the Armed Forces of the United States is able to receive expedited, temporary authorization to practice while meeting state-specific requirements for a period of at least one year; or is able to receive an expedited license by endorsement with no additional requirements superseding those for a temporary license.

Bill Number: AB 361 (Robert Rivas), Chapter 165, Statutes of 2021
Subject Matter: Open Meetings: State and Local Agencies: Teleconferences
Effective Date: September 16, 2021
Summary: This law allows, until January 1, 2024, local agencies to use teleconferencing without complying with specified Ralph. M Brown Act restrictions in certain state emergencies, and provides similar authorizations, until January 31, 2022, for state agencies subject to the Bagley-Keene Open Meetings Act and legislative bodies subject to the Gloria Romero Open Meetings Act of 2000.

Bill Number: SB 607 (Min), Chapter 367, Statutes of 2021
Subject Matter: Business and Professions
Effective Date: January 1, 2022
Summary: This law is a Senate Business, Professions and Economic Development Committee Omnibus bill and makes statutory updates, technical corrections, and noncontroversial changes to various provisions of law relating to Boards and Bureaus under the Department of Consumer Affairs.

Bill Number: SB 1474 (Low), Chapter 312, Statues of 2020
Subject Matter: Business and Professions
Effective Date: January 1, 2021
Summary: This law requires the SPCB to disclose certain information on its licensees, including applicators, field representatives, and operators in the areas of fumigation, general pest and wood destroying pests and organisms, and wood roof cleaning and treatment.

Bill Number: AB 2113 (Low), Chapter 186, Statutes of 2020
Subject Matter: Refugees, Asylees, and Special Immigrant Visa Holders: Professional Licensing: initial Licensure Process

Effective Date: January 1, 2021
Summary: This law requires boards and bureaus within DCA to expedite the initial licensure process for an applicant who supplies satisfactory evidence that they are a refugee, have been granted asylum, or have a special immigrant visa, as specified. This law also allows boards and bureaus to assist these applicants during the initial licensure process. This law Page 9 of 88 further specifies that persons applying for expedited licensure will still be required to meet all applicable statutory and regulatory licensure requirements.

Bill Number: SB 878 (Jones), Chapter 131, Statues of 2020
Subject Matter: Department of Consumer Affairs: License: Application: Processing Timeframes
Effective Date: July 1, 2021
Summary: Beginning July 1, 2021, this law requires each board and bureau within the DCA that issues licenses to prominently display on their websites each quarter either the current average time frame for processing initial and renewal license applications, or the combined current average time frame for processing both initial and renewal license applications. This law will also require each board or bureau to quarterly post on their websites either the current average processing time frame for each licensing type administered by the program or the combined current average time frame for processing all licensing types administered by the program.

Bill Number: SB 1481 (Hill), Chapter 572, Statues of 2018
Subject Matter: Structural pest control: certification: fumigation: penalties.
Effective Date: January 1, 2019
Summary: This bill makes various changes to the Structural Pest Control Act (Act) intended to improve oversight of entities regulated by the Structural Pest Control Board (SPCB) and subjects the SPCB to review by the appropriate policy committees of the Legislature in four years.

Bill Number: AB 2138 (Chiu), Chapter 995, Statues of 2018
Subject Matter: Licensing boards: denial of application: revocation or suspension of licensure: criminal conviction.
Effective Date: July 1, 2020
Summary: Beginning July 1, 2020, this law restricts the discretion of programs within the Department of Consumer Affairs in using prior criminal history as grounds for licensing determinations and establishes new prohibitions relating to the denial, suspension, and revocation of licensure. Under this law, programs may not use acts involving dishonesty, fraud, or deceit that did not result in a conviction as a basis for the denial of a license. Other revisions include the adoption of a seven-year limitation on convictions eligible for licensure denial, subject to specified exemptions, and a ban on requiring applicants to self-disclose prior convictions unless the application is made for a listed license type that does not require a fingerprint background check. Finally, this law requires Department programs, as specified, to track data relating to licensure denials, to publish that data on its website, and submit an annual report to the Legislature, among other provisions.

Bill Number: AB 2958 (Quirk), Chapter 881, Statutes of 2018
Subject Matter: State Bodies: Meetings: Teleconference
Effective Date: January 1, 2019
Summary: This law provides an alternative, optional method for state bodies that are advisory boards, advisory commissions, advisory committees, advisory subcommittees, and similar multimember advisory bodies when conducting teleconference meetings. The alternative method would require: (1) listing members participating remotely in the minutes and require 24- hour notice prior to the meeting of any members participating remotely; (2) designating a primary physical location and having a quorum of the members of the board in attendance at the primary physical meeting location; (3) providing 24-hour notice on how the public can access the teleconference meeting; (4) if remote access fails during the meeting, the state bodies must adjourn the meeting and provide notice of the

adjournment; and (5) providing public notice if the meeting resumes the same day, specifically when the meeting will reconvene and how the public may observe the meeting.

- **All regulation changes approved by the board since the last sunset review. Include the status of each regulatory change approved by the board.**

The following is a breakdown of the SPCB's Rulemaking actions. The SPCB's regulations are promulgated pursuant to Title 16 of the CCR, Division 19.

SECTION(S)	SUBJECT	STATUS
1914	**Company Name Approval:** Prevents the SPCB from issuing a company registration in the same name as a company whose registration was previously surrendered, unless a period of at least one year has elapsed from the effective date of the surrender. This action also provides that the unauthorized use of a name or telephone number of a company whose registration was previously surrendered is grounds for disciplinary action.	Approved by Office of Administrative Law on October 2, 2017.
1993.2, 1993.3, and 1993.4	**Termite Bait Stations:** Defines above and below ground termite bait stations as devices containing pesticide bait. Specifies that use of termite bait stations is a control service agreement.	Approved by Office of Administrative Law on October 6, 2017
1937.11	**Disciplinary Guidelines Revisions:** Revisions regarding when suspension time must be served, length of probation, tolling of probation, etc.	Approved by Office of Administrative Law on January 3, 2018
1936, 1936.1, 1936.2, 1937.1 and 1937.2	**AB 2138 Compliance:** Operator and Field Representative Forms Being Amended to Remove Questions About Criminal History	Approved by Office of Administrative Law on December 23, 2020
1997	**WDO Inspection and Completion Activity Fee:** Increased the WDO Inspection Reporting Fee from $3.00 per property address reported, to $4.00 per property address reported.	Emergency Rulemaking approved by Office of Administrative Law on August 22, 2019. A Readoption was approved February 4, 2020. The final Certificate of Compliance was approved September 14, 2020.

4. Describe any major studies conducted by the board (cf. Section 12, Attachment C).

Since the last Sunset review, the SPCB awarded and executed five (5) research contracts totaling $1,024,000. As of August 31, 2022, four (4) of the research contracts were completed and the final reports are posted on the SPCB's website. The remaining research project had significant delays due to COVID-19 and an unforeseen fire at a research laboratory. This research project is expected to be completed in June 2023. The SPCB expects to award additional research contracts in FY 2023-24.

5. List the status of all national associations to which the board belongs.

The SPCB does not belong to any national associations but does collaborate and receive input in connection with rules, regulations, legislation, and pesticide use issues from the following state and national associations:

- The Association of Structural Pest Control Regulatory Officials (ASPCRO): A professional association comprised of the structural pest control regulatory officials of any of the fifty states. ASPCRO's purpose, among other areas, is to promote better understanding and efficiency in the administration of laws and regulatory authority between states concerning the control and eradication of pests.

- Pest Control Operators of California: A non-profit trade association that serves the business and educational needs of pest control operators for over 80 years.

- National Pest Management Association: A non-profit organization with more than 7,000 members to support the pest management industry's commitment to protection of the public.

- California Agricultural Commissioners & Sealers Association (CACASA): A voluntary organization comprised of County Agricultural Commissioners and County Sealers of Weights and Measures from 58 counties in the State of California providing a collaborative forum to resolve many public welfare issues.

- **Does the board's membership include voting privileges?**
  No current memberships include voting privileges.
- **List committees, workshops, working groups, task forces, etc., on which the board participates.**
  None
- **How many meetings did board representative(s) attend? When and where?**
  None
- **If the board is using a national exam, how is the board involved in its development, scoring, analysis, and administration?**
  The SPCB does not utilize a national examination.

Section 2 – Performance Measures and Customer Satisfaction Surveys

6. Provide each quarterly and annual performance measure report for the board as published on the DCA website.

See attachments E and F.

7. Provide results for each question in the board's customer satisfaction survey broken down by fiscal year. Discuss the results of the customer satisfaction surveys.

Complainant Satisfaction Survey

The SPCB collects consumer satisfaction surveys at the conclusion of consumer complaint cases against licensees. The consumer is encouraged to provide feedback regarding the SPCB's complaint process as well as their opinion regarding the handling of their case. The survey card is mailed to the complainant and includes a link to take the survey online. The survey results provide data to evaluate areas of for possible improvement.

The SPCB closed 1,590 consumer complaints from FY 2018/19 through FY 2021/22 and received 107

survey responses for a 7% response rate. Survey results for the enforcement unit for last four fiscal years are below.

Complainant Satisfaction Survey				
	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22
How well did we explain the complaint process to you?				
Very Good	31	36	16	13
Good	3	2	3	0
Poor	2	0	1	0
Very Poor	0	1	0	0
How clearly was the outcome of your complaint explained to you?				
Very Good	30	37	18	13
Good	5	2	1	0
Poor	1	0	0	0
Very Poor	0	1	1	0
How well did we meet the timeframe provided to you?				
Very Good	33	38	16	13
Good	2	1	3	0
Poor	0	0	1	0
Very Poor	0	1	0	0
How courteous and helpful was staff?				
Very Good	33	40	19	13
Good	3	0	0	0
Poor	0	0	1	0
Very Poor	0	1	0	0
Overall, how well did we handle your complaint?				
Very Good	33	38	17	13
Good	2	1	1	0
Poor	0	0	0	0
Very Poor	0	1	1	0
If we were unable to assist you, were alternatives provided to you?				
Yes	6	6	2	1
No	2	0	1	0
Not Applicable	0	0	0	0
Did you verify the provider's license prior to service?				
Yes	19	22	12	7
No	9	9	2	2
Not Applicable	5	7	6	1

<u>License Applicant Process Survey</u>

The SPCB sends out response cards to licensees, registered companies, and applicants receiving the following services: Licensure, Renewal of License, Upgrade/Downgrade License, Change of Qualifying Manager, Bond/Insurance, Company Registration, Transfer of Employment, Change of Address, and Examination.

During FY 2018/19 through FY 2021/22, the SPCB sent out 1,927 surveys to new licensees and received 112 responses for a 6% response rate. Survey results for the licensing unit for last four fiscal years are below.

License Applicant Process Survey				
	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22
Was staff courteous?				
Yes	50	21	20	11

No	2	0	0	0
N/A	5	0	0	0
Did staff understand your question?				
Yes	49	21	20	11
No	2	0	0	0
N/A	6	0	0	0
Did staff clearly answer your question?				
Yes	54	19	18	11
No	2	2	1	0
N/A	1	0	1	0
Did staff promptly return your telephone call?				
Yes	40	16	18	9
No	11	3	2	2
N/A	6	2	0	0
Did staff efficiently and promptly handle your transaction?				
Yes	49	18	19	9
No	6	2	1	0
N/A	2	1	0	2

Section 3 – Fiscal and Staff

Fiscal Issues

8. Is the board's fund continuously appropriated? If yes, please cite the statute outlining this continuous appropriation.

The SPCB administers three funds: 1) Structural Pest Control Fund (Fund Number 0775), 2) Structural Pest Control Education and Enforcement Fund (Fund Number 0399), and 3) Structural Pest Control Research Fund (Fund Number 0168). The Board's Structural Pest Control Fund and Education and Enforcement fund are appropriated annually and are subject to legislative approval. The Research Fund is continuously appropriated pursuant to BPC §8674(t)(1).

9. Describe the board's current reserve level, spending, and if a statutory reserve level exists.

The SPCB has no statutory reserve level requirement and currently has a reserve level of 6 months (FY 2021/22). BPC §128.5 limits to a fund balance reserve of 24 months or less.

10. Describe if/when a deficit is projected to occur and if/when a fee increase or reduction is anticipated. Describe the fee changes (increases or decreases) anticipated by the board.

In FY 2017-18, it was discovered that a fee increase to the Wood Destroying Organism Filing fee was needed in order to avoid the risk of insolvency. The SPCB tried to address the revenue shortfall with a regulatory increase to the WDO fee, because this fee provides immediate revenue to the SPCB and is the least impactful to applicants and licensees. Thus, in July 2019, the SPCB increased the WDO fee to $3.00, the maximum allowed in statute. However, the SPCB's budget projections indicated the SPCB was still on the verge of insolvency. At that time, budget projections did not account for the sharp rise in legal fees of the Attorney General's (AG) Office. The AG's Office increased their fees in September 2019. Fortunately, the Legislature increased the statutory maximum of the WDO fee to $5.00, providing the SPCB an avenue to address the revenue shortfall via regulation. Effective

August 22, 2019, the WDO fee increased to $4.00.

Following the above-mentioned fee increase in FY 2019-20, the SPCB's Support Fund increased to more stable levels ending FY 2021-22 with a 6-month reserve. Over the last four fiscal years, the SPCB has maintained balanced revenues and expenditures.

Table 2. Fund Condition

(Dollars in Thousands)	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23 (Projected)	FY 2023/24 (Projected)	FY 2024/25 (Projected)
Beginning Balance	$ 1,420	$ 1,096	$ 1,610	$ 2,814	$ 3,258	$ 3,330	$ 3,242
Revenues and Transfers	$ 229	$ (125)	$ (133)	$ -	$ -	$ -	$ -
Total Revenue	$ 4,504	$ 5,932	$ 6,550	$ 6,127	$ 6,537	$ 6,568	$ 6,564
Budget Authority	$ 5,143	$ 5,475	$ 5,340	$ 6,939	$ 7,245		
Expenditures	$ 5,057	$ 5,293	$ 5,213	$ 5,683	$ 6,465	$ 6,656	$ 6,853
Loans to General Fund	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Fund Balance	$ 1,096	$ 1,610	$ 2,814	$ 3,258	$ 3,330	$ 3,242	$ 2,954
Months in Reserve	2.5	3.7	5.9	6.0	6.0	5.7	5.2

11. Describe the history of general fund loans. When were the loans made? When have payments been made to the board? Has interest been paid? What is the remaining balance?

The SPCB has not issued any general fund loans in the preceding four fiscal years.

12. Describe the amounts and percentages of expenditures by program component. Use *Table 3. Expenditures by Program Component* to provide a breakdown of the expenditures by the board in each program area. Expenditures by each component (except for pro rata) should be broken out by personnel expenditures and other expenditures.

The SPCB's program expenditures are comprised of the expenditure amounts and percentages, by program components: (1) Enforcement; (2) Licensing; and (3) Administration.

In FY 2018-19, the SPCB spent $2,435,242 in Personnel Services, and $2,326,607 in Operating Expenses & Equipment (OE&E), for a total of $4,761,849 in program expenditures, or 93% of its $5,143,000 authorized budget. Of these total expenses, the Enforcement program spent $1,800,893, or 35%, the Licensing Program spent $874,725, or 17%, and the Administration Program spent $980,868, or 19% of the SPCB's total expenditures.

In FY 2019-20, the SPCB spent $2,693,235 in Personnel Services and $2,260,588 in (OE&E), for a total of $4,953,823 in program expenditures, or 91% of its $5,475,000 authorized budget. Of these total expenses, the Enforcement Program spent $1,994,195, or 36%, the Licensing Program spent $925,302, or 17%, and the Administration Program spent $1,036,182, or 19% of the SPCB's total expenditures.

In FY 2020-21, the SPCB spent $2,566,903 in Personnel Services and $2,356,532 in (OE&E) for a total

of $4,923,435 in program expenditures, or 92% of its $5,340,000 authorized budget. Of these total expenses, the Enforcement Program spent $1,981,541, or 37%, the Licensing Program spent $977,847, or 18%, and the Administration Program spent $1,081,926 or 20% of the SPCB's total expenditures.

In FY 2021-22, the SPCB spent $2,948,864 in Personnel Services and $2,337,774 in (OE&E), for a total of $5,286,637 in program expenditures, or 76% of its $6,939,000 authorized budget. The Enforcement Program spent $1,774,995, or 26%, the Licensing Program spent $978,114, or 14%, and the Administration Program spent $1,331,128 or 19% of the SPCB's total expenditures.

The increase to personnel services in FY 2021-22 was due to the SPCB moving one AGPA position from the Education and Enforcement fund to the Support fund. This position was a liaison between the SPCB and the Department of Pesticide Regulations, and the duties were related to enforcement. Over the years and with the development of technology, the duties no longer aligned with the Education and Enforcement fund, but rather belonged in the Support fund.

For the past four fiscal years, the SPCB's total program expenditures have increased by $525,000 or 11%. Personnel Services expenditures increased by $514,000 (21%) and OE&E expenditures increased by $11,167 (0.05%).

Table 3. Expenditures by Program Component (list dollars in thousands)

	FY 2018/19		FY 2019/20		FY 2020/21		FY 2021/22	
	Personnel Services	OE&E	Personnel Services	OE&E	Personnel Services	OE&E	Personnel Services	OE&E
Enforcement	$ 987	$ 814	$ 1,094	$ 900	$ 1,044	$ 938	$ 1,162	$ 613
Examination	$ -	$ 10	$ -	$ 8	$ -	$ 2	$ -	$ 4
Licensing	$ 671	$ 204	$ 744	$ 181	$ 710	$ 268	$ 790	$ 188
Administration*	$ 777	$ 204	$ 855	$ 181	$ 814	$ 268	$ 996	$ 335
DCA Pro Rata	$ -	$ 1,095	$ -	$ 990	$ -	$ 880	$ -	$ 1,199
Diversion (if applicable)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTALS	**$ 2,435**	**$ 2,327**	**$ 2,693**	**$ 2,260**	**$ 2,568**	**$ 2,356**	**$ 2,948**	**$ 2,339**

*Administration includes costs for executive staff, board, administrative support, and fiscal services.

13. Describe the amount the board has contributed to the BreEZe program. What are the anticipated BreEZe costs the board has received from DCA?

The BreEZe program was approved in 2009 and was intended to address deficiencies in DCA legacy systems. The SPCB was originally scheduled for Release 3 of the BreEZe system and contributed approximately $292,000 to the development of the system, through FY 2017/18. After technical delays and issues with the BreEZe project, SPCB and the other Release 3 boards and bureaus were eliminated from the project.

Costs Contributed to BreEZe Program (By Fiscal Year)

2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	TOTAL
$3,893	$17,037	$17,759	$71,397	$51,070	$28,809	$28,457	$47,354	$26,207	$291,983

14. Describe license renewal cycles and history of fee changes in the last 10 years. Give the fee authority (Business and Professions Code and California Code of Regulations citation) for each fee charged by the board.

The Applicator, Field Representative and Operator license renewal fees are due triennially based on the day of issuance. The assessment of fees is authorized under BPC §8674. Implementation of those fees is outlined in CCR Section 1948.

Effective 1/1/15: Field Representative exam fee raised to $50
Field Representative Continuing Education Challenge exam fee raised to $50
Applicator exam fee raised to $55
Applicator Continuing Education Challenge exam fee raised to $55
Operator exam fee raised to $65
Operator Continuing Education Challenge exam fee raised to $65

Effective 7/1/19: WDO Filing Fee raised to $3.00

Effective 8/23/19: WDO Filling Fee raised to $4.00

Table 4. Fee Schedule and Revenue

Fee	Current Fee Amount	Statutory Limit	FY 2018/19 Revenue	FY 2019/20 Revenue	FY 2020/21 Revenue	FY 2021/22 Revenue	Average %
WDO	$2.50	$3.00	$3,412,899	0	0	0	81.74%
	$3.00	$3.00	0	$739,914	0	0	
	$4.00	$5.00	0	$4,220,568	$5,509,120	$4,987,670	
Examination - Operator	$65.00	$100.00	$37,375	$33,705	$34,255	$44,525	0.67%
Examination - Field Representative	$50.00	$75.00	$320,265	$276,700	$287,595	$313,800	5.36%
Examination- Applicator	$55.00	$60.00	$198,935	$150,540	$191,230	$203,505	3.32%
Original License - Operator	$120.00	$150.00	$21,120	$19,170	$30,840	$25,440	0.42%
Original License - Field Representative	$30.00	$45.00	$61,230	$49,435	$61,480	$58,650	1.03%
Original License - Applicator	$10.00	$50.00	$14,000	$12,320	$15,030	$17,240	0.26%
Renewal - Operator	$120.00	$150.00	$150,180	$136,320	$139,220	$156,433	2.60%
Renewal - Field Representative	$30.00	$45.00	$88,260	$90,245	$82,830	$100,640	1.61%
Renewal - Applicator	$10.00	$50.00	$9,820	$8,650	$8,080	$9,150	0.16%
Delinquent Renewal - Operator	$60.00	$60.00	$2,940	$2,160	$3,360	$3,240	0.05%
Delinquent Renewal - Field Representative	$15.00	$15.00	$2,445	$2,250	$2,160	$2,700	0.04%
Delinquent renewal - Applicator	$5.00	$5.00	$590	$275	$455	$350	0.01%
Duplicate License	$2.00	$2.00	$1,810	$1,620	$1,940	$1,726	0.03%
Company Office Registration	$120.00	$120.00	$33,600	$25,800	$31,440	$33,480	0.56%

Branch Office Registration	$60.00	$60.00	$3,240	$2,760	$2,735	$2,880	0.05%
Change - Company Name	$25.00	$25.00	$500	$375	$175	$275	0.01%
Change - Company Officers	$25.00	$25.00	$1,125	$875	$1,100	$900	0.02%
Change - Company Office Address	$25.00	$25.00	$6,450	$6,300	$5,775	$6,150	0.11%
Change - Branch Office Address	$25.00	$25.00	$650	$800	$575	$875	0.01%
Change - Qualifying Manager	$25.00	$25.00	$2,875	$2,775	$3,425	$3,150	0.05%
Change - Bond or Insurance	$25.00	$25.00	$2,825	$1,325	$5,600	$5,375	0.06%
Continuing Education - Provider Approval	$50.00	$50.00	$450	$450	$500	$600	0.01%
Continuing Education - Course Approval	$25.00	$25.00	$10,475	$10,000	$9,675	$12,450	0.19%
Cite and Fine	VARIOUS	VARIOUS	$66,883	$93,942	$94,834	$101,232	1.55%
Document Sales	VARIOUS	VARIOUS	$325	$260	$235	$17,370	0.07%
*WDO Fee was increased from $2.50 to $3.00 effective 7/1/2019, which at the time was the statutory maximum. Even with the increase, the SPCB projected budget showed the Board on the verge of insolvency due to a sharp rise in legal fees at the Attorney General's Office. The statutory maximum was increased to $5.00 and effective 8/22/2019 the WDO fee was increased to $4.00 to mitigate the revenue shortfall.							
**The percentage amounts reflect the percentage of the total amount of revenue collected for FY 2021-22.							

15. Describe Budget Change Proposals (BCPs) submitted by the board in the past four fiscal years.

In FY 2021/22, the SPCB requested a budget augmentation for 1 limited term Associate Governmental Program Analyst (AGPA) to assist with implementation of AB 2138, the licensure with criminal background.

Table 5. Budget Change Proposals (BCPs)

BCP ID #	Fiscal Year	Description of Purpose of BCP	Personnel Services				OE&E	
			# Staff Requested (include classification)	# Staff Approved (include classification)	$ Requested	$ Approved	$ Requested	**$ Approved**
1111-057-2021-GB-BCP	21-22	Licensure with Criminal Background (Structural Pest Control Board)	1 L/T AGPA	1 L/T AGPA	$118,000	$118,000	$70,000	**$70,000**

Staffing Issues

16. Describe any board staffing issues/challenges, i.e., vacancy rates, efforts to reclassify positions, staff turnover, recruitment and retention efforts, succession planning.

In April 2022, the SPCB's Executive Officer retired, followed by the Assistant Executive Officer retiring in August. Recruitment commenced quickly for the Executive Officer position which was then permanently filled.

Vacancy rates remain stable as staff turnover is rare. For future recruitment purposes, there have been efforts to reclassify the SPCB's Specialist (field investigator) positions to an Investigator classification. This would allow for a broader selection of candidates when filling vacant positions.

The SPCB updated the Specialist examination in September 2022.

17. Describe the board's staff development efforts and total spent annually on staff development (cf., Section 12, Attachment D).

The SPCB sets aside $50,000 annually for training of County Agriculture Commissioner (CAC) employees and $5,000 annually for SPCB staff training and development. For at least two decades, the SPCB has provided Structural Regulatory Training to CAC and SPCB employees. This training (which typically lasts three days) is hands-on, providing mock demonstrations of field practices that are typically encountered by CAC Inspectors, such as requirements for the fumigation of buildings, inspection of pest control vehicles and inspection of Branch 2 and 3 structural pesticide applications. The SPCB has intentions to explore new avenues to enhance staff's training and development in support of its efforts to achieve the best business practices to better serve its applicants, licensees, and consumers.

Structural Regulatory Training is provided by members of the pest control industry, Department of Pesticide Regulation and SPCB staff. The training is designed to educate county program staff to effectively carry out their enforcement goals and objectives. The Education and Enforcement fund provides the necessary funds for this training effort, B&P Section 8505.17.

Integral to its staff development, the SPCB also harnesses DCA's Strategic Organization, Leadership and Individual Development (SOLID). SOLID provides a very comprehensive and wide array of programs for workforce development and leadership improvement, providing SPCB staff pathways to gaining exceptional knowledge and aptitude. SOLID offers traditional training by classroom instruction and workshops, and training through its e-learning portal. Webinars/webcasts of live training sessions and archived sessions are readily available to SPCB employees at all hours of the day, year-round. Course content includes, but is not limited to, Time Management Essentials, Procurement, Business Writing, Resume Preparation, Stress in the Workplace, How to Write Procedures, Conflict Resolution, Negotiation Skills, and Telephone Customer Service Techniques.

SOLID Planning Solutions also provides training in the following areas:

1. Strategic Planning
2. Meeting and Event Facilitation
3. Process Improvement
4. Leadership Competencies
5. Upward Mobility
6. Board Member Orientation Training

Section 4 – Licensing Program

Table 6. Licensee Population					
		FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22
Applicator	Active[3]	6,238	6,170	6,394	6,639
	Delinquent/Expired	1139	1087	1274	1345
	Inactive	840	818	849	835
	Other[4]	196	203	214	219
Field Representative	Active	12,850	13,115	13,698	14,109
	Delinquent/Expired	1137	1077	1400	1501
	Inactive	771	783	827	853
	Other	550	584	595	600
Operator	Active	3,881	3,877	3,996	4,065
	Delinquent/Expired	97	91	107	141
	Inactive	308	312	335	343
	Other	285	290	295	303
Principle Registration	Active	3,042	3,054	3,106	3,174
	Delinquent/Expired	n/a	n/a	n/a	n/a
	Inactive	n/a	n/a	n/a	n/a
	Other	215	218	222	226
Branch Office Registration	Active	433	442	460	482
	Delinquent/Expired	n/a	n/a	n/a	n/a
	Inactive	n/a	n/a	n/a	n/a
	Other	29	29	30	30

Note: 'Out of State' and 'Out of Country' are two mutually exclusive categories. A licensee should not be counted in both. * Not tracked by Board n/a = not applicable

[3] Active status is defined as able to practice. This includes licensees that are renewed, current, and active.
[4] Other is defined as a status type that does not allow practice in California, other than retired or inactive.

18. What are the board's performance targets/expectations for its licensing[2] program? Is the board meeting those expectations? If not, what is the board doing to improve performance?

The SPCB's initial examination application performance measure targets for complete applications are as follows:

Examination Application Performance Measures Targets	
Operator	14 days
Field Representative	14 days
Applicator	14 days

The SPCB's initial license application performance measure targets for complete applications are as follows:

License Application Performance Measures Targets	
Operator	45 days
Field Representative	21 days
Applicator	14 days
Principle Registration	45 days
Branch Office	45 days

The table below provides the SPCB's actual examination and licensing application processing times for complete applications. Examination applications are measured from receipt to eligibility approval for examination. License applications are measured from receipt to license issuance. Applications that are deficient are not counted towards the current processing times as the time it takes for an applicant to respond to a deficiency can fluctuate drastically. The SPCB continuously meets its performance measure targets for both examinations and licensure.

Table 7a. Licensing Data by Type

	Application Type	Revd.	Approved/ Issued	Closed	Pending Applications			Cycle Times		
					Total (Close of FY)	Complete (within Board control)*	Incomplete (outside Board control)*	Complete Apps	Incomplete Apps	Combined, IF unable to separate out
FY 2019/20	RA (Exam)	*	2,754	1,273	*	*	*	2	27	n/a
	RA (License)	*	1,217	n/a	*	*	*	4	47	n/a
	RA (Renewal)	*	856	n/a	*	*	*	*	*	*
	FR (Exam)	*	5,589	2,132	*	*	*	14	65	n/a
	FR (License)	*	1,574	n/a	*	*	*	13	51	n/a
	FR (Renewal)	*	2,918	n/a	*	*	*	*	*	*
	OPR (Exam)	*	514	220	*	*	*	9	109	n/a
	OPR (License)	*	143	n/a	*	*	*	20	84	n/a
	OPR (Renewal)	*	1,160	n/a	*	*	*	*	*	*
FY 2020/21	RA (Exam)	*	3,388	1,555	*	*	*	7	28	n/a
	RA (License)	*	1,414	n/a	*	*	*	7	28	n/a
	RA (Renewal)	*	1,224	n/a	*	*	*	*	*	*
	FR (Exam)	*	5,610	2,500	*	*	*	12	86	n/a
	FR (License)	*	1,850	n/a	*	*	*	13	44	n/a
	FR (Renewal)	*	3,878	n/a	*	*	*	*	*	*
	OPR (Exam)	*	479	327	*	*	*	13	95	n/a
	OPR (License)	*	258	n/a	*	*	*	19	50	n/a
	OPR (Renewal)	*	1,512	n/a	*	*	*	*	*	*
FY 2021/22	RA (Exam)	*	3,709	1,807	*	*	*	NYA	NYA	n/a
	RA (License)	*	1,693	n/a	*	*	*	NYA	NYA	n/a
	RA (Renewal)	*	949	n/a	*	*	*	*	*	*
	FR (Exam)	*	6,101	2,472	*	*	*	NYA	NYA	n/a
	FR (License)	*	1,963	n/a	*	*	*	NYA	NYA	n/a
	FR (Renewal)	*	3,280	n/a	*	*	*	*	*	*
	OPR (Exam)	*	648	281	*	*	*	NYA	NYA	n/a

	OPR (License)	*	199	n/a	*	*	*	NYA	NYA	n/a
	OPR (Renewal)	*	1,174	n/a	*	*	*	*	*	*
	*** Not tracked by Board NYA = Not yet available n/a = not applicable**									

19. Describe any increase or decrease in the board's average time to process applications, administer exams and/or issue licenses. Have pending applications grown at a rate that exceeds completed applications? If so, what has been done by the board to address them? What are the performance barriers and what improvement plans are in place? What has the board done and what is the board going to do to address any performance issues, i.e., process efficiencies, regulations, BCP, legislation?

Pending applications do not exceed completed applications. Processing times can vary based on the volume of applications at any given time, however, they remain within the SPCB's target cycle times. Processing delays are rare; however, if they occur, they are usually a result of factors beyond the SPCB's or applicant's control (i.e. response to fingerprinting submissions by the Department of Justice). Applicants are encouraged to begin the fingerprint background check as the first step in the examination/licensure process to minimize any delays. Because the SPCB's actual processing times have historically been very low, Board members have not directed the SPCB to adopt regulations for the establishment of application processing times. DCA does, however, require all programs to establish target dates for the processing of applications and collects quarterly statistics on processing times.

20. How many licenses or registrations has the board denied over the past four years based on criminal history that is determined to be substantially related to the qualifications, functions, or duties of the profession, pursuant to BPC §480? Please provide a breakdown of each instance of denial and the acts the board determined were substantially related.

In the last four fiscal years, the SPCB has denied 47 license applications based on criminal history. The denials were determined based on substantially related qualifications, functions, or duties of the profession, pursuant to BPC §480.

FY 2018/19

- **Applicant for Field Representative's and Applicator's License** – Two Counts of Indecent Exposure, Indecent Exposure with Prior
- **Applicant for Field Representative's License** – Driver of Vehicle Discharging Firearm from Vehicle, Battery, Exposing Imitation Firearm in Public, Grand Theft, Three Counts of Felon Possessing a Firearm
- **Applicant for Field Representative's License** - Theft of Personal Property, Attempted Murder
- **Applicant for Applicator's License** – Falsifying Crime Report, Possessing Obscene Matter (Child Under 14)
- **Applicant for Applicator's License** – Gross Vehicular Manslaughter with Vessel While Intoxicated
- **Applicant for Field Representative's and Applicator's License** – Petty Theft, Evading Police with Disregard for Safety, Reckless Driving, Driving with Suspended License, Embezzlement
- **Applicant for Applicator's License** – Possessing Specific Controlled Substance Device, Entering Non-Commercial Dwelling, Second-Degree Burglary, Attempted Grand Theft, Carrying Switchblade on Person, Two Counts of Possessing Controlled Substance, Two Counts of

Possessing Unlawful Paraphernalia, Six Counts of Possessing Controlled Substance Paraphernalia, Possessing Drill with Intent to Vandalize, Three Counts of Vandalism, Two Counts of Dangerous Drugs/Narcotics, Possessing Drill with Intent to Vandalize, Battery, Petty Theft

- **Applicant for Field Representative's License** – Petty Theft, Inflicting Corporal Injury on Spouse, Obstructing Public Officer, Two Counts of Burglary, Nineteen Counts of Insufficient Funds, Eight Counts of Grand Theft, Possessing Narcotic Controlled Substance, Four Counts of Possessing Controlled Substance Paraphernalia, Two Counts of Receiving Known Stolen Property, Thirteen Counts of Second-Degree Burglary, Two Counts of Providing False Information to Pawnbroker, Two Counts of Battery Spouse, Under Influence of Controlled Substance, Two Counts of Possessing Controlled Substance, Three Counts of Forging Access Card to Defraud, Nine Counts of Passing Fictitious Check, Possessing Unlawful Paraphernalia , Six Counts of False Checks
- **Applicant for Field Representative's License** – Two Counts of Possessing Chemicals Used to Manufacture Methamphetamine, Violating Supervised Release, Three Counts of Possessing Controlled Substance, Possessing Controlled Substance for Sale, Possessing Controlled Substance Paraphernalia, Prohibited from Owning/Possessing Ammunition, Carrying Concealed Dirk or Dagger, Battery of Peace Officer or Emergency Personnel, Obstructing Public Officer, Being Under the Influence of a Controlled Substance, Possessing Specific Controlled Substance and Loaded Firearm, Two Counts of Receiving Known Stolen Property, Two Counts of Possessing Burglary Tools, Attempting to Receive Known Stolen Property (with Street Gang Enhancement)
- **Applicant for Field Representative's License** – Raping an Adult by Force, Willfully Engaging in Sexual Encounter
- **Applicant for Applicator's License** – Being Under the Influence of a Controlled Substance, Two Counts of Possessing Controlled Substance, Purchasing for Sale Narcotic Controlled Substance
- **Applicant for Applicator's License** – Inflicting Corporal Injury on Spouse, Two Counts of Driving Under the Influence, Reckless Driving, Assaulting Person with Firearm, Possessing Controlled Substance, Possessing Stolen Vehicle, Grand Theft
- **Applicant for Field Representative's License** – Battery, Possessing Controlled Substance without Prescription, Possessing Narcotic Controlled Substance, Receiving Known Stolen Property, Vandalism, Two Counts of Petty Theft, Obstructing Public Officer, Failing to Obey Lawful Order of Inspection, Two Counts of Being Under the Influence of a Controlled Substance
- **Applicant for Field Representative's and Applicator's License** – Attempted Murder, Prisoner Possessing Weapon
- **Application for Field Representative's License** – Six Counts of Sending/Selling Obscene Matter with Minors, Exceeding Speed on Highway
- **Applicant for Applicator's License** – Driving Under the Influence Causing Bodily Injury, Vehicular Manslaughter with Gross Negligence, Driving Under the Influence
- **Applicant for Applicator's License** – Bringing Controlled Substance into California Youth Authority, Second-Degree Robbery
- **Applicant for Field Representative's License** – Grand Theft
- **Applicant for Applicator's License** – Possessing Controlled Substance, Seven Counts Possessing Unlawful Paraphernalia, Carrying Switchblade Knife on Person, Two Counts of Possessing Burglary Tools, Tampering with Vehicle, Receiving Known Stolen Property,

Possessing Narcotic Controlled Substance, Providing False Identification to Specific Peace Officer

- **Applicant for Field Representative's License** – Sexual Assault, Abusive Sexual Contact
- **Applicant for Field Representative's License** – Possessing or Purchasing for Sale Narcotic Controlled Substance, Possessing Marijuana for Sale, Having Sex with Minor Three or More Years Younger, Possessing Controlled Substance, Transporting Controlled Substance, Second-Degree Burglary, Two Counts of Taking Vehicle without Owner's Consent/Vehicle Theft, Inflicting Corporal Injury on Spouse
- **Applicant for Applicator's License** – Two Counts of Third-Degree Theft
- **Applicant for Field Representative's License** – Petit Larceny
- **Applicant for Applicator's License** – Having Sex with Minor Three or More Years Younger
- **Applicant for Applicator's License** – Driving without Lights at Dark, Providing False Information to Peace Officer, Two Counts of Battery Spouse, Abandoning Child Under 14, Two Counts of Battery on Non-Cohabitating Former Spouse, Driving While License is Suspended, Two Counts of Threatening Crime with Intent to Terrorize, Annoying Phone Calls (Obscene/Threating), Violating Court Order to Prevent Domestic Violence, Possessing Burglary Tools, Possessing Controlled Substance Paraphernalia, Defrauding an Innkeeper, Trespassing/Occupying Property without Consent, Receiving Known Stolen Property, Six Counts of Second-Degree Burglary, Possessing Controlled Substance, Two Counts of Being Under the Influence of a Controlled Substance, Driving While License is Suspended with Prior, Two Counts of Obstructing Public Officer
- **Applicant for Field Representative's License** – Vandalism, Four Counts of Possessing Controlled Substance, Burglary, Possessing Unlawful Paraphernalia, Second-Degree Burglary, Carrying Concealed Dirk or Dagger, Possessing Personal Identification with Intent to Defraud, Tampering with Vehicle
- **Applicant for Field Representative's License** – Three Counts of Shoplifting, Two Counts of Second-Degree Burglary, Conspiring to Commit Crime, Receiving Known Stolen Property

FY 2019/20

- **Applicant for Applicator's License** – Hit and Run with Injury or Death
- **Applicant for Field Representative's License** – Driving without a Valid License, Child Cruelty with Possible Death or Injury with Great Bodily Injury
- **Applicant for Field Representative's License** – Obstructing Public Officer with Prior Prison, Receiving Known Stolen Property, Transporting/Selling Narcotic Controlled Substance, Possessing/Purchasing Cocaine Base for Sale, Driving with Suspended License, Vandalism, First-Degree Burglary, Two Counts of Second-Degree Burglary, Three Counts of Burglary, Receiving/Possessing/Withholding Stolen Goods
- **Applicant for Applicator's License** – First-Degree Burglary, Robbery
- **Applicant for Applicator's License** – Driving Under the Influence, Being Under the Influence of a Controlled Substance, Two Counts of Getting Credit Using Another's Identification, Four Counts of Possessing Controlled Substance, Getting Credit Using Another's Identification While on Bail, Possessing Bad Check, Falsifying Checks, Theft by Forged or Invalid Access Card, Second-Degree Burglary, Burglary, Shoplifting, Loitering on Private Property, Grand Theft, Using Identification with Intent to Defraud with Prior Conviction, Fighting, Resisting Arrest

- **Applicant for Field Representative's License** – Wasting/Spoiling/Destructing Property Other Than Military Property, Resisting Apprehension, Simple Assault
- **Applicant for Applicator's License** – Two Counts of Possessing Controlled Substance Paraphernalia, Taking Vehicle without Owner's Consent/Vehicle Theft, Possessing Stolen Vehicle, Two Counts of Providing False Identification to Specific Peace Officer, Two Counts of Obstructing Public Officer, Reckless Driving, Six Counts of Possessing Controlled Substance, Driving with Suspended License, Possessing Controlled Substance for Sale, Transporting Controlled Substance, Two Counts of Possessing Narcotic Controlled Substance, Five Counts of Possessing Unlawful Paraphernalia, Destroying or Concealing Evidence, Attempting to Enter Noncommercial Dwelling, Child Cruelty with Possible Injury or Death, Vandalism, Two Counts of Malicious Mischief, Seven Counts of Being Under the Influence of a Controlled Substance
- **Applicant for Field Representative's License** – Loud/unreasonable Noise, Two Counts of Being Under the Influence of a Controlled Substance, Driving Under the Influence, Burglary, First-Degree Burglary, Robbery Using a Firearm
- **Applicant for Applicator's License** – Two Counts of Driving With Suspended License, Three Counts of Possessing Narcotic Controlled Substance, Three Counts of Possessing Controlled Substance for Sale, Possessing Controlled Substance, Possessing Marijuana for Sale, Felon in Possession of a Firearm, Possessing Controlled Substance for Sale with Prior Controlled Substance Conviction, Transporting Controlled Substance
- **Applicant for Field Representative's and Applicator's Licenses** – Two Counts of Driving Under the Influence, Two Counts of Theft
- **Applicant for Applicator's License** – Providing False Identification to Specific Peace Officers, Hit and Run with Property Damage, Two Counts of Driving Under the Influence, Three Counts of Possessing Controlled Substance, First-Degree Burglary, Possessing Controlled Substance without Prescription, Possessing Narcotic Controlled Substance, Three Counts of Theft, Three Counts of Possessing Unlawful Paraphernalia, Bringing Drugs into Prison
- **Applicant for Applicator's License** – Burglary, Felon Possessing a Firearm
- **Applicant for Field Representative's License** – Second-Degree Murder
- **Applicant for Applicator's License** – Possessing Narcotic Controlled Substance, Possessing Controlled Substance in Prison, Two Counts of Burglary, Attempted Burglary, Possessing Burglary Tools, Vandalism
- **Applicant for Applicator's License** – Two Counts of Raping a Drugged Victim, Sexual Battery, Oral Copulation While Victim Unconscious of Nature of Act, Failing to Provide Annual Update or Sex Offender Registry, Disorderly Conduct (Prostitution)
- **Applicant for Field Representative's License** – Four Counts of Second-Degree Robbery
- **Applicant for Applicator's License** – Attempted Pandering/Procuring for Prostitution
- **Applicant for Applicator's License** – Theft
- **Applicant for Applicator's License** – Driving Under the Influence, Second-Degree Robbery, Selling Liquor to Minor, Attempted Burglary, Possessing Narcotic Controlled Substance, Transporting Controlled Substance,
- **Applicant for Applicator's License** – Second-Degree Burglary, Receiving Stolen Property, Domestic Assault, Possessing Controlled Substance for Sale
- **Applicant for Operator's License** – Driving Under the Influence Causing Bodily Injury
- **Applicant for Applicator's License** – Second-Degree Burglary

- **Applicant for Applicator's License** – First-Degree Statutory Sodomy, Convicted Registered Sex Offender – No Arrest Prints Received
- **Applicant for Registration of Company** – Possessing Child Pornography, Convicted Registered Sex Offender – No Arrest Prints Received, Filing Fake Workman's Composition Claim
- **Applicant for Field Representative's License** – Lewd or Lascivious Acts with Child Under 14
- **Applicant for Field Representative's License** – Conspiring to Distribute More Than 500 Grams of Methamphetamine, Possessing a Firearm During Drug Crime
- **Applicant for Applicator's License** - Assault with Deadly Weapon with Possible Great Bodily Injury, Threatening Crime with Intent to Terrorize, Robbery with Great Bodily Injury

FY 2020/21

- **Applicant for Applicator's License** – Second-Degree Robbery
- **Applicant for Applicator's License** – Grand Theft, Carrying Concealed Dirk or Dagger, Possessing Controlled Substance
- **Applicant for Field Representative's License** – Possessing Controlled Substance Paraphernalia, Being Under the Influence of a Controlled Substance, Carrying a Concealed Weapon While Active in a Criminal Street Gang, Driving While License is Suspended, Possessing/Selling Switchblade, Attempting First-Degree Murder with Great Bodily Injury with Use of a Firearm
- **Applicant for Field Representative's License** – First-Degree Burglary, Two Counts of Inflicting Corporal Injury on Spouse, Violating a Court Order to Prevent Domestic Violence, Violating a Local Ordinance, Violating Court Order to Prevent Domestic Violence with Prior, Possessing Controlled Substance for Sale, Possessing Personal Identification with Intent to Defraud, Driving While License is Suspended, Three Counts of Violating Post Community Release Supervision, Two Counts of Possessing Controlled Substance, Possessing Controlled Substance Paraphernalia
- **Applicant for Field Representative's and Applicator's Licenses** – Murder, Kidnapping to Commit Robbery, First-Degree Robbery of an Inhabited Dwelling, Force/Assault with a Deadly Weapon with Great Bodily Injury Likely, Force/Assault with a Deadly Weapon Not Firearm with Great Bodily Injury Likely with Prior Felony Conviction
- **Applicant for Applicator's License** – Driving without License, Driving While License is Suspended, First-Degree Burglary, Theft
- **Applicant for Applicator's License** – Possessing Controlled Substance, Possessing Narcotic Controlled Substance, Possessing/Purchasing for Sale Narcotic Controlled Substance
- **Applicant for Field Representative's License** – Failing to Appear After Bail, Theft, Contempt of Municipal Court, Burglary, Obtaining Money/Property/Labor Under False Pretenses, Petit Larceny, Unlawful Distributing of Alcohol by Brewer, Two Counts of Driving with Suspended License
- **Applicant for Field Representative's and Applicator's License** – Two Counts of Battery Spouse, Failing to Appear After Written Promise, Second-Degree Robbery, Assault with a Deadly Weapon with Possible Great Bodily Injury
- **Applicant for Field Representative's License** – Second-Degree Murder
- **Applicant for Applicator's License** – Theft/Petty Theft, Three Counts of Petty Theft with Prior

Theft Conviction, Two Counts of Petty Theft with Prior Jail for Specific Offenses, Conspiring to Commit Crime, Theft, Second-Degree Burglary, Theft of Personal Property, Possessing Controlled Substance

- **Applicant for Applicator's License** – Battery Spouse, Three Counts of Threatening Crime with Intent to Terrorize, Obstructing/Resisting Public Officer,
- **Applicant for Applicator's License** – Driving Under the Influence, Failing to Appear on Felony Charge, Force/Assault with a Deadly Weapon not Firearm with Great Bodily Injury Likely
- **Applicant for Applicator's License** – Two Counts of Inflicting Corporal Injury on Spouse, Felon/Addict Possessing a Firearm
- **Applicant for Registration of Company** – Assaulting Person with Firearm, Shooting at an Inhabited Dwelling or Vehicle, Uttering/Forging Vehicle Registration
- **Applicant for Applicator's License** – Mail Theft
- **Applicant for Applicator's License** – Second-Degree Robbery
- **Applicant for Field Representative's License** – Driving While License is Suspended for Driving Under the Influence, Two Counts of First-Degree Burglary
- **Applicant for Applicator's License** – Abducting and Kidnapping, Murder
- **Applicant for Applicator's License** – Assaulting with a Deadly Weapon with Possible Great Bodily Injury, Carrying Loaded Concealed Weapon on Person
- **Applicant for Applicator's License** – False Imprisonment, Possessing Controlled Substance for Sale, Possessing Controlled Substance, Obstructing Public Officer, Three Counts of Felon/Addict Possessing a Firearm, Violating Post Community Release Supervision, Assaulting a Person with a Firearm, Second-Degree Burglary
- **Applicant for Applicator's License** – Attempting a Class 2 Felony, Unlawfully Possessing a Schedule I or II Narcotic Drug Over Specified Weight
- **Applicant for Field Representative's License** – Statutory Rape, Six Additional Convictions for Violating Probation
- **Applicant for Applicator's License** – Vandalizing/Defacing Property, Receiving Known Stolen Property, Failing to Appear on a Misdemeanor Charge
- **Applicant for Applicator's License** – Exhibiting a Firearm in the Presence of a Peace Officer, Obstructing/Resisting Executive Officer, Two Counts of Possessing Controlled Substance, Discharging Firearm in School Zone, Felon Possessing a Firearm, Assaulting a Person with a Firearm (Enhancements: Great Bodily Injury, Street Gang Act, Used Firearm),
- **Applicant for Applicator's License** – Possessing/Manufacturing/Selling Dangerous Weapon, Providing False Identification to Peace Officer, Carrying Concealed Dirk or Dagger, Second-Degree Murder
- **Applicant for Applicator's License** – Robbery
- **Applicant for Applicator's License** – Six Counts of Possessing Controlled Substance, Contempt of Court (Disorderly Behavior), Failing to Prove Financial Responsibility, Possessing Controlled Substance Paraphernalia, Two Counts of Driving without License, Four Counts Driving While License is Suspended, Possessing Unlawful Paraphernalia, Two Counts of Burglary
- **Applicant for Applicator's License** – Possessing Controlled Substance, Criminal Mischief
- **Applicant for Applicator's License** – Attempted Murder, Prisoner Possessing Weapon

- **Applicant for Applicator's License** – Driving Under the Influence, Second-Degree Robbery, Selling Liquor to Minor, Attempted Burglary, Possessing Narcotic Controlled Substance, Transporting Controlled Substance
- **Applicant for Field Representative's License** – Loud/Unreasonable Noise, Vandalism, Battery, Being Under the Influence of a Controlled Substance, Trespassing/Occupying Property without Consent
- **Applicant for Field Representative's License** – Possessing Drill with Intent to Vandalize, Possessing/Selling Switchblade, Occupant of Motor Vehicle Exhibiting/Drawing Firearm, Second-Degree Burglary, Second-Degree Robbery, Threatening Crime with Intent to Terrorize
- **Applicant for Applicator's License** – Vandalism (Used Weapon), Attempted Voluntary Manslaughter (Enhancements: Used Firearm in Commission of a Felony and Great Bodily Injury in the Commission of a Felony)

FY 2021/22

- **Applicant for Field Representative's License** – Denied due to multiple convictions including theft, false checks/records, perjury, offering forged instrument to be filed.
- **Applicant for Applicator's License –** Denied due to lewd or lascivious acts with child under 14 and battery.
- **Applicant for Applicator's License –**Denied due to First-Degree Murder
- **Applicant for Field Representative's License** – Denied due to multiple convictions including multiple counts of driving on a suspended license, providing false information to a Peace Officer, providing officer with false registration, failing to provide, two counts of driving without a license, driving under the influence, oral copulation with person under 16, sodomy with person under 16.
- **Applicant for Applicator's License –**Denied due to two counts of cruelty to animals, contacting minor with intent for sex.
- **Applicant for Field Representative's License** – Denied due to minor driving with a blood alcohol content of .05%, driving on a suspended license for driving under the influence, two counts of driving with a suspended license, failing to stop at vehicle line or crosswalk, driving without a license, spousal battery, appropriating lost property, five counts of possessing unlawful paraphernalia, four counts of possessing narcotic controlled substance, failing to provide identification or insurance during accident, no vehicle registration, possessing controlled substance, theft/petty theft.
- **Applicant for Field Representative's License** – Denied due to conspiring to defraud the United States, conspiring to manufacture/possess/pass counterfeit currency and possessing electronic images for counterfeiting, possessing counterfeit currency, manufacturing counterfeit currency, passing and uttering counterfeit obligations and securities, two counts of violating supervised release, obstructing or resisting public officer, altering/forging/falsifying driver's license/identification, driving under the influence, possessing driver's license/identification to commit forgery, receiving known stolen property.
- **Applicant for Applicator's License –**Denied due to driving under the influence, attempted robbery, theft, four counts of possessing controlled substance, two counts of being under the influence of a controlled substance, three counts of theft, vandalism, possessing narcotic controlled substance, burglary.
- **Applicant for Field Representative's License** – Denied due to two counts of burglary, falsifying check/record/certificate, shoplifting, taking vehicle without owner's consent.

- **Applicant for Applicator's License –**Denied due to possessing controlled substance paraphernalia, transporting controlled substance, burglary, possessing unlawful paraphernalia, two counts of obstructing public officer, providing false information to peace officer, evading peace officer causing serious bodily injury or death, felon/addict possessing a firearm, vandalism with prior felony conviction, inflicting corporal injury on spouse, preventing or dissuading victim from reporting, two counts of violating post community release supervision, two counts of contempt/violating protective order, evading peace officer with disregard for safety, two counts of taking vehicle without owner's consent/vehicle theft, taking vehicle without owner's consent/vehicle theft with prior felony conviction, contempt/disobeying court order.
- **Applicant for Applicator's License –**Denied due to possessing marijuana, theft of personal property/shoplifting, petty theft with prior jail for specific offenses, theft/petty theft, three counts of burglary, three counts of theft, four counts of possessing controlled substance, carrying concealed dirk or dagger.
- **Applicant for Applicator's License –**Denied due to felon/addict possessing a firearm, reckless driving, petty theft, disorderly conduct, violating controlled substance/drug and cosmetic act, accessing device fraud, intending to possess controlled substance by person not registered.
- **Applicant for Field Representative's License** – Denied due to four felony counts of child cruelty with possible injury or death.

Table 7b. License Denial

	FY 2019/20	FY 2020/21	FY 2021/22
License Applications Denied (no hearing requested)	16	22	9
SOIs Filed	17	12	4
Average Days to File SOI (from request for hearing to SOI filed)	156	118	134
SOIs Declined	0	0	0
SOIs Withdrawn	4	1	1
SOIs Dismissed (license granted)	0	0	1
License Issued with Probation / Probationary License Issued	26	16	21
Average Days to Complete (from SOI filing to outcome)	352	374	362

21. How does the board verify information provided by the applicant?

The SPCB uses multiple processes to secure information and confirm eligibility for licensure. Staff carefully review submitted documents for accuracy and authenticity. Certificates of Pre-Operator course completion must accompany the application for an operator's examination. If a certificates authenticity is questioned by staff, course rosters and/or direct communication with the course provider is used to confirm course completion. Applications for licensure as a field representative and operator must be accompanied by a Certificate of Training and Experience, completed and signed under penalty of perjury, by the qualifying manager (licensed operator) of the company under which the applicant gained the required training and experience. Any discrepancies noted by staff during the application review process, as it relates to possible authenticity of the signature or experience qualifications, are

researched further by contacting qualifying managers to confirm accuracy of the information. Out of state experience requires the submission of a certified license history, as well as a copy of the State's Rules and Regulations, to verify equivalency and time period of experience. Current and previous license files are reviewed to confirm periods of employment, current/previous license status, enforcement/disciplinary actions, and business associations.

a. What process does the board use to check prior criminal history information, prior disciplinary actions, or other unlawful acts of the applicant? Has the board denied any licenses over the last four years based on the applicant's failure to disclose information on the application, including failure to self-disclose criminal history? If so, how many times and for what types of crimes (please be specific)?

Applicants were previously required to disclose under penalty of perjury, whether they have ever been convicted of, or plead guilty or nolo contendere to any offense (citation, infractions, misdemeanor and/or felony, including traffic violations) in the United States or a foreign country; however, this question was removed from the license application (effective July 1, 2020) in accordance with Chapter 995, Statutes of 2018 (AB 2138, Chiu). The SPCB now relies solely on Criminal Offender Record Information reports from the Federal Bureau of Investigation and the Department of Justice fingerprinting, as authorized by BPC § 144 (2018). Additional records may be requested from other local jurisdictions, to complete a full review of any pending convictions.

All license applicants are required to declare under penalty of perjury: whether they have had a professional or vocational license refused, denied, suspended or revoked by SPCB or any other State agency; have any pending disciplinary actions against them in regards to any professional or vocational licenses; have been associated with any person, partnership or corporation, whose professional or vocational license was refused, denied, suspended or revoked by SPCB or any other State agency; have been found guilty of any violation or any provision of the Structural Pest Control Board Act. Applicants that mark yes to any of the above questions are required to include a signed detailed statement with their license application. To confirm legitimacy of information provided, staff reviews CAS records or other states licensing databases, for pending complaints, citations, and accusations. If additional information is needed, a certified license history and/or written documentation from other State agencies and/or Agricultural Commissioners may be requested.

Over the last four years, the SPCB has not denied a license based solely on the applicant's failure to disclose information on the application, including failure to self-disclose criminal history. Applications that appear to contain falsified or misrepresented information have been reviewed and denial based on findings ultimately unrelated to failure of disclosure. Effective July 1, 2020, pursuant to Chapter 995, Statutes of 2018 (AB 2138, Chiu), self-disclosure of criminal history is no longer required. Requests for disclosure of any additional information regarding an applicant's criminal history and mitigating information is voluntary. A license is not denied based on lack of response to mitigation efforts, but on the nature of the crime itself.

b. Does the board fingerprint all applicants?

Pursuant to BPC §144, all license applicants are required to be fingerprinted for a criminal history background check through the Criminal Offender Record Information program (CORI). Issuance of a license does not occur until CORI information is received, reviewed and it has been determined that the crime is not substantially related to the qualifications, duties, or functions of the license. Applicants denied based on criminal history are sent information regarding the basis of denial and

rights for appeal. Upon issuance, the SPCB continues to receive subsequent CORI notifications, until a licensee no longer holds a license and/or Company Registration with the SPCB, at which point a No Longer Interest (NLI) request is submitted to DOJ, through the Applicant Agency Justice Connection (AAJC) portal.

c. Have all current licensees been fingerprinted? If not, explain.

Pursuant to BPC §144, all current license holders have been fingerprinted. Effective February 29, 2016, the SPCB updated its policy by promulgating regulations (CCR 1960) concerning Criminal Offender Record Information by requiring all licensees, whose licenses were issued on or before December 31, 2003, to submit to fingerprinting as soon as administratively feasible but no later than the date of licensure renewal beginning June 30, 2016, through June 30, 2018, therefore capturing any licensee not previously fingerprinted.

d. Is there a national databank relating to disciplinary actions? Does the board check the national databank prior to issuing a license? Renewing a license?

The SPCB does not use a national databank for disciplinary actions in connection with license issuance or renewals. However, the SPCB requires applicants to disclose prior disciplinary actions (including misdemeanors and felonies) from all states and regulatory bodies. The SPCB may randomly review these applications to verify the information contained therein. The SPCB may take appropriate disciplinary action if it confirms any form of misrepresentation in the application or renewal of a license.

e. Does the board require primary source documentation?

The SPCB requires primary source documentation to be submitted in the process of examination, licensing, renewal, and company registration. Primary source documents are required for criminal history (CORI) reviews, Pre-Operator course certificates for examination, Certificate of Training and Experience certified by the Qualified Manager of a registered company, Continuing Education certificates for renewal of a license, confirmation of legal, contractual, and financial obligation, verification of identity, license verification from other jurisdictions, military or refugees status, and professional verification of disability for reasonable accommodation requests. Additionally, source documents are required to be presented in person at all PSI Exams sites to verify identity, prior to admittance of examination.

22. Describe the board's legal requirement and process for out-of-state and out-of-country applicants to obtain licensure.

The SPCB does not permit out-of-state license reciprocity. All applicants must meet the minimum training and experience requirements for the license type for which they apply. An applicant listing out-of-state experience to meet all or part of this requirement is required to provide a certified license history and a copy of the Rules and Regulations for that state or jurisdiction. All out-of-state experience documents are reviewed, and experience evaluated, as to the equivalency of experience under a structural pest control company registered to do business in the State of California.

Pursuant to the Structural Pest Control Board Act, all applicants are statutorily required to:

- Be 18 years of age or older

- Possess a valid Social Security Number (SSN) or Individual Tax Identification Number (ITIN)
- Submit to DOJ/FBI fingerprinting for the review of CORI
- Complete Pre-Operator courses and submit certificate of course completion (Operator license only)
- Submit the applicable SPCB examination and license application
- Pay applicable examination and licensing fees
- Submit primary source documentation reflecting the minimum required training and experience (Field Representative/Operator license only)

23. Describe the board's process, if any, for considering military education, training, and experience for purposes of licensing or credentialing requirements, including college credit equivalency.

All applicants must meet the minimum training and experience requirements for the license type for which they apply. An applicant listing military experience for all or a portion of the training and experience requirement is required to provide official documentation (DD form 214) reflecting the duration of active duty, duty assignment and rank, military job specialty, and military education. All documents are reviewed, and experience evaluated, as to the equivalency of experience under a structural pest control company registered to do business in the State of California.

a. Does the board identify or track applicants who are veterans? If not, when does the board expect to be compliant with BPC 114.5?

All license applications and license renewal inserts request self-certification regarding United States Military status. If an individual applying for licensure or renewal self-certifies military status, the SPCB's tracking systems are updated to reflect the status. Due to limitations in the legacy programs currently in use by the SPCB, military data is tracked in a separate manner, to ensure compliance with BPC §114.5.

b. How many applicants offered military education, training or experience towards meeting licensing or credentialing requirements, and how many applicants had such education, training or experience accepted by the board?

The SPCB rarely receives applications that offer military education or experience towards the minimum licensing requirements. On occasion, staff will receive calls from individuals inquiring on the use of military education and experience to meet the minimum requirements for an Operator license, concluding based on specific duties, that their military experience is not the equivalency of experience under a structural pest control company registered to do business in the State of California. In accordance with Section 8562, Operators can use equivalent military training and experience to satisfy a portion of the minimum requirements, however, pursuant to Section 8562 (g), an Operator's license shall not be issued unless the individual has been licensed as a field representative in the branch(es) in which the individual has applied, for the minimum period required. The SPCB received and accepted military experience deemed equivalent in FY 2021/2022 for one operator license applicant.

c. What regulatory changes has the board made to bring it into conformance with BPC 35?

The Office of Administrative Law approved, and made effective January 1, 2017, the revisions for all the

SPCB's license applications, in compliance with BPC §35. The SPCB now inquires on each of its license applications and license renewal inserts as to the military or veteran status of both the applicant and the applicant's spouse. For each of the SPCB's license types that have a training and experience component, the SPCB accepts training or experience deemed equivalent, acquired during an applicant's times in the armed forces.

d. How many licensees has the board waived fees or requirements for pursuant to BPC 114.3, and what has the impact been on board revenues?

The SPCB rarely receives notification that a license renewal applicant is unable to renew due to active military duties. The SPCB received the required substantiation for one request for military waiver due to active military status in FY 2020/2021, for which the waiver was granted. The SPCB received the required substantiation for one request for waiver due to active military status in FY 2021/2022, for which the licensee opted to retake the exam and restart the licensing process, to refresh his knowledge on industry standards. The waiver of renewal fees in accordance with BPC §114.3 does not have an impact on the SPCB's revenues. Due to the rarity of a requested waiver and the minimality of the SPCB's renewal fees, the impact on the SPCB's revenue is insignificant.

e. How many applications has the board expedited pursuant to BPC 115.5?

The SPCB has not received license applications meeting the requirements for expedited processing, in accordance with BPC §115.5, for spouses and domestic partners of active-duty military personnel.

24. Does the board send No Longer Interested notifications to DOJ on a regular and ongoing basis? Is this done electronically? Is there a backlog? If so, describe the extent and efforts to address the backlog.

Licenses that cancel due to revocation or surrender, the SPCB sends No Longer Interested (NLI) requests to DOJ, through the Applicant Agency Justice Connection (AAJC) portal. NLI's are also processed through AAJC on a regular basis for applicants that we receive subsequent arrest notifications for and have determined to no longer be licensed or associated to a company registration as an owner.

Due to the SPCB's use of an antiquated legacy system, there is a backlog of data that is potentially no longer needed. There is not a streamlined process for automatic submission of NLI's. In 2018, per OIS requirements for a mass NLI submission, the SPCB submitted a Change Control Board (CCB) proposal to DCA to issue ATS numbers to the backlog of applicants pending in the system, in order to initiate a mass NLI run for licenses that are cancelled. During the planning sessions for this proposal, it was determined there would still be a very inefficient manual process that would be required, to determine if each applicant was eligible for the NLI. The CCB proposal did not move forward, at which point business modernization efforts proceeded.

In Fiscal Year 2018-2019, during BrEZe implementation, the SPCB was working with developers on an automated NLI process, however, due to development issues and delays in the start of the project, the SPCB opted to transition to BizMod with InLumon (Connect). The SPCB's Connect product owners are now actively working with project managers and developers on a potential plan for an automated process for NLI submissions through Connect.

Examinations

25. Describe the examinations required for licensure. Is a national examination used? Is a California specific examination required? Are examinations offered in a language other than English?

The SPCB's examination requirements are guided by California statute, commencing with B&P sections 8562 and 8564 and California Code of Regulations, Section 1937. In addition to measuring proficiencies in traditional pest control methods, each licensing exam requires knowledge of pest control methods specific to each license type and branch.

The SPCB does not maintain reciprocal agreements with other states; therefore, the SPCB does not administer a national examination. Due to the nature of a structural pest control license, it is imperative that one is able to read and understand the label instructions when applying pesticides, therefore, the SPCB does not offer exams in languages other than English.

The SPCB licenses and regulates applicators, field representatives and operators in the areas of Branch 1 – Fumigation, Branch 2 – General Pest, and Branch 3 – Wood Destroying Pests and Organisms (WDO).

Applicator's License

Branch 2 & 3

Education – No educational requirements exist for the Applicator license.

Experience – No experience requirements exist, as this is the entry level of SPCB licensing.

Examination – Applicator applicants must successfully pass the written examination with a score of 70% or better. The examination will ascertain that an applicant has sufficient knowledge in pesticide equipment, pesticide mixing and formulation, pesticide application procedures, integrated pest management and pesticide label directions.

Field Representative's License

Branch 1

Education – No educational requirements exist for the branch 1 Field Representative license.

Experience – Field Representative applicants are required to provide documentation that substantiates verifiable experience meeting the minimum requirements of six months' training and experience in the practice of fumigating with poisonous or lethal gases under the immediate supervision of an individual licensed to practice fumigating. Of this six months' experience, a minimum of 100 hours of training and experience must be in the area of preparation, fumigation, ventilation, and certification.

Examination – Field Representative branch 1 applicants must successfully pass the written examination with a score of 70% or better. The examination will ascertain that an applicant is qualified in the use and understanding of the safety laws of the state, provisions of the Structural Pest Control Act, poisonous and other dangerous chemicals used in pest control, the theory and practice of pest control, and other

state laws, safety or health measures, or practices as are reasonable within the scope of structural pest control.

Branch 2

Education – No educational requirements exist for the branch 2 Field Representative license.

Experience – Field Representative branch 2 applicants are required to provide documentation that substantiates verifiable experience meeting the minimum requirements of 40 hours of training and experience in the practice of pesticide application, Branch 2 pest identification and biology, pesticide application equipment, and pesticide hazards and safety practices, of which 20 hours are actual field work.

Examination – Field Representative branch 2 applicants must successfully pass the written examination with a score of 70% or better. The examination will ascertain that an applicant is qualified in the use and understanding of the safety laws of the state, provisions of the Structural Pest Control Act, poisonous and other dangerous chemicals used in pest control, the theory and practice of pest control, and other state laws, safety or health measures, or practices as are reasonable within the scope of structural pest control.

Branch 3

Education – No educational requirements exist for the branch 3 Field Representative license.

Experience – Field Representative branch 3 applicants are required to provide documentation that substantiates verifiable experience meeting the minimum requirements of 100 hours of training and experience in the practice of pesticide application, Branch 3 pest identification and biology, pesticide application equipment, pesticide hazards and safety practices, structural repairs, and structural inspection procedures and report writing, of which 80 hours are actual field work.

Examination – Field Representative branch 3 applicants must successfully pass the written examination with a score of 70% or better. The examination will ascertain that an applicant is qualified in the use and understanding of the safety laws of the state, provisions of the Structural Pest Control Act, poisonous and other dangerous chemicals used in pest control, the theory and practice of pest control, and other state laws, safety or health measures, or practices as are reasonable within the scope of structural pest control.

Operator's License

Branch 1

Education – Operator branch 1 applicants must successfully complete and submit verification of board-approved pre-operator courses in the areas of pesticides, pest identification and biology, contract law, rules and regulations, business practices, and fumigation safety.

Experience – Operator branch 1 applicants are required to provide documentation that substantiates verifiable experience meeting the minimum requirements of two years' actual experience in the practice relating to the control of household and wood-destroying pests or organisms by fumigation with poisonous or lethal gases. One-year of experience must have been as a licensed

field representative in Branch 1 (B&P Section 8562).

Examination – Operator branch 1 applicants must successfully pass the written examination with a score of 70% or better. The examination will ascertain that the applicant is qualified in the use and understanding of the English language, including reading, writing, and spelling, the building and safety laws of the state and any of its political subdivisions, the labor laws of the state, the provisions of the Structural Pest Control Act, poisonous and other dangerous chemicals used in pest control, the theory and practice relating to the control of household and wood destroying pests or organisms by fumigation with poisonous or lethal gases, and other state laws, safety or health measures, or practices that are reasonably within the scope of structural pest control, including an applicant's knowledge of the requirements regarding health effects and restrictions.

Branch 2

Education – Operator branch 2 applicants must successfully complete and submit verification of board-approved pre-operator courses in the areas of pesticides, pest identification and biology, contract law, rules and regulations, and business practices.

Experience – Operator branch 2 applicants are required to provide documentation that substantiates verifiable experience meeting the minimum requirements of two years' actual experience in the practice relating to the control of household pests, excluding fumigation with poisonous or lethal gases. One-year of the required two years' experience must have been as a field representative in Branch 2 (B&P Section 8562).

Examination – Operator branch 2 applicants must successfully pass the written examination with a score of 70% or better. The examination will ascertain that the applicant is qualified in the use and understanding of the English language, including reading, writing, and spelling, the building and safety laws of the state and any of its political subdivisions, the labor laws of the state, the provisions of the Structural Pest Control Act, poisonous and other dangerous chemicals used in pest control, the theory and practice relating to the control of household pests, and other state laws, safety or health measures, or practices that are reasonably within the scope of structural pest control, including an applicant's knowledge of the requirements regarding health effects and restrictions.

Branch 3

Education – Operator branch 3 applicants must successfully complete and submit verification of board-approved courses in the areas of pesticides, pest identification and biology, contract law, rules and regulations, business practices, and construction repair and preservation techniques.

Experience – Operator branch 3 applicants are required to provide documentation that substantiates verifiable experience meeting the minimum requirements of four years' actual experience in the practice relating to the control of wood destroying pests or organisms by the use of insecticides, or structural repairs and corrections, excluding fumigation with poisonous or lethal gases. Two years of the required four years' experience must have been as a field representative in Branch 3 (B&P Section 8562).

Examination – Operator branch 3 applicants must successfully pass the written examination with a score of 70% or better. The examination will ascertain that the applicant is qualified in the use and understanding of the English language, including reading, writing, and spelling, the building and safety

laws of the state and any of its political subdivisions, the labor laws of the state, the provisions of the Structural Pest Control Act, poisonous and other dangerous chemicals used in pest control, the theory and practice relating to the control of wood destroying pests or organisms by the use of insecticides, or structural repairs and corrections, and other state laws, safety or health measures, or practices that are reasonably within the scope of structural pest control, including an applicant's knowledge of the requirements regarding health effects and restrictions.

26. What are pass rates for first time vs. retakes in the past 4 fiscal years? *(Refer to Table 8: Examination Data)* Are pass rates collected for examinations offered in a language other than English?

During the past four fiscal years, applicants passed the SPCB's licensing examinations during their first attempt at an average rate of 31.17%, compared to an average pass rate on re-examination of 17.62%.

Due to the nature of a structural pest control license, it is imperative that one is able to read and understand the label and label instructions when applying pesticides, therefore, the SPCB does not offer exams in languages other than English.

Table 8. Examination Data[5]

California Examination (include multiple language) if any:					
	License Type	Applicator	Field Representative	Field Representative	Field Representative
	Exam Title	Applicator Written Examination Branch 2 & 3	Field Representative Written Examination Branch 1	Field Representative Written Examination Branch 2	Field Representative Written Examination Branch 3
FY 2018/19	Number of Candidates	2940	88	3,722	1,160
	Overall Pass %	50%	50%	49%	44%
	Overall Fail %	50%	50%	51%	56%
FY 2019/20	Number of Candidates	1932	55	2,714	911
	Overall Pass %	65%	55%	57%	56%
	Overall Fail %	35%	45%	43%	44%
FY 2020/21	Number of Candidates	2565	71	2,886	1,075
	Overall Pass %	60%	76%	67%	44%
	Overall Fail %	40%	24%	33%	56%
FY 2021/22	Number of Candidates	2739	64	3,207	1,182
	Overall Pass %	65%	67%	58%	45%
	Overall Fail %	35%	33%	42%	55%
	Date of Last OA	2014	2019	2015	2017
	Name of OA Developer	DCA, OPES	DCA, OPES	DCA, OPES	DCA, OPES
	Target OA Date	Currently In Progress	2024	2020	2022

Table 8. Examination Data[5] (Continued)					
California Examination (include multiple language) if any: Only offered in English					
	License Type	**Operator**	**Operator**	**Operator**	
	Exam Title	Operator Written Examination Branch 1	Operator Written Examination Branch 2	Operator Written Examination Branch 3	
FY 2018/19	Number of Candidates	36	284	173	
	Overall Pass %	31%	49%	46%	
	Overall Fail %	69%	51%	54%	
FY 2019/20	Number of Candidates	27	288	99	
	Overall Pass %	33%	43%	83%	
	Overall Fail %	67%	57%	17%	
FY 2020/21	Number of Candidates	20	302	130	
	Overall Pass %	50%	77%	65%	
	Overall Fail %	50%	23%	35%	
FY 2021/22	Number of Candidates	35	374	174	
	Overall Pass %	37%	44%	60%	
	Overall Fail %	63%	56%	40%	
	Date of Last OA	2019	2017	2017	
	Name of OA Developer	DCA, OPES	DCA, OPES	DCA, OPES ES	
	Target OA Date	2024	2022	2022	

[5] This table includes all exams for all license types as well as the pass/fail rate. Include as many examination types as necessary to cover all exams for all license types.

27. Is the board using computer-based testing? If so, for which tests? Describe how it works. Where is it available? How often are tests administered?

The SPCB began computer-based testing (CBT) in March 2014. The SPCB contracts with a DCA approved vendor (PSI Exams). This vendor also serves a majority of, if not all, other boards and bureaus under the Department's umbrella.

CBT is available for all SPCB examinations and is administered daily throughout California and in other states, currently 20 examination sites in California and 22 locations in the continental United States. Examinees schedule their examinations through the coordinated efforts of the licensing staff and may select a testing site most conveniently located from their work/home. The tests are proctored by the vendor who oversees the licensee consistent with accepted testing/security measures.

To prepare for the examination, examinees are provided study guide material and a Candidate Handbook, which thoroughly describes the content specifications, vendor testing process, and includes site locations in California and nationwide. CBT is being used for all SPCB examinations with the exception of continuing education challenge examinations. Once the examination application is received in the office, staff reviews the application and electronically sends application eligibility to the CBT vendor. The CBT vender either mails or emails a candidate's handbook that contains information

on the examination and how to schedule the exam. Applicants can schedule either online or by telephone for any date, time, and location that is available. There are over 20 examination locations that are open Monday through Saturday and exam start times range from 9:00 am to 6:00 pm. Some locations are occasionally open on Sundays.

28. Are there existing statutes that hinder the efficient and effective processing of applications and/or examinations? If so, please describe.

The SPCB has not identified any statutes that hinder the efficient and effective processing of applications and/or examinations. The SPCB continues to update applications and instructions to improve guidance for applicants and to comply with changes in legal requirements.

School approvals

29. Describe legal requirements regarding school approval. Who approves your schools? What role does BPPE have in approving schools? How does the board work with BPPE in the school approval process?

The SPCB does not have delegated authority to approve and license a school. However, the SPCB does approve course content submitted by upstart and existing course providers. There is no statutory or regulatory provision in the Structural Pest Control Act that the CE course content is to be administered under the direction and/or control of BPPE.

30. How many schools are approved by the board? How often are approved schools reviewed? Can the board remove its approval of a school?

The SPCB currently has 125 CE approved providers listed on its website. SPCB staff evaluates and approves each course offering, including the course syllabus and curriculum vitae. SPCB investigators and in-house staff periodically audit CE course providers to ensure compliance with SPCB requirements. If a provider fails to comply with the standards adopted by the SPCB pursuant to CCR 1950 and 1953, the SPCB has the authority to withdraw or cancel the course offering.

31. What are the board's legal requirements regarding approval of international schools?

The SPCB does not have delegated authority to approve/license international schools.

Continuing Education/Competency Requirements

32. Describe the board's continuing education/competency requirements, if any. Describe any changes made by the board since the last review.

Pursuant to section 1950 et seq. of Title 16 of the California Code of Regulations (CCR), every licensee is required, as a condition to renewal of a license, to certify that they have completed the continuing education requirements. Continuing education requirements vary depending on the type of license and number of categories held by the individual licensee. The number of required hours varies from 12 to 24 hours during a renewal period. The SPCB requires licensees to complete continuing education specific to the technical branches they are licensed in. Applicators are required to complete 12 hours of continuing education of which 6 hours must cover pesticide application and use, 4 hours must cover the Structural Pest Control Act and its rules and regulations, and 2 hours must cover integrated pest management. Field Representatives and Operators must complete 8 hours covering the Structural Pest

Control Act and its rules and regulations, 4 hours specific to each technical branch they are licensed in, and 2 hours covering integrated pest management and 2 hours in any other related category.

a. How does the board verify CE or other competency requirements? Has the Board worked with the Department to receive primary source verification of CE completion through the Department's cloud?

As a condition of license renewal, every licensee must certify under penalty of perjury that they have complied with the SPCB's continuing education requirements. A licensee who cannot verify completion of continuing education by producing certificates of activity completion, whenever requested to do so by the SPCB, may be subject to disciplinary action. Each year the SPCB conducts continuing education audits that require a percentage of licensees to produce their certificates of activity completion.

The SPCB does not use DCA's cloud for licensee continuing education record submission. The SPCB has found email to be an efficient and effective method of obtaining records from licensees.

b. Does the board conduct CE audits of licensees? Describe the board's policy on CE audits.

Yes, the SPCB conducts random continuing education audits. The SPCB's policy is to conduct audits following renewals to ensure licensees are accurately reporting their continuing education.

The audits are conducted by taking a list of every licensee who renewed that year and randomly selecting a percentage of them who will be required to provide proof of their CE completion. Percentages vary from year-to-year based on staff workload. Percentages by year are provided in the table 8a below.

c. What are consequences for failing a CE audit?

If a licensee fails a continuing education audit, the licensee may be referred for enforcement action. Enforcement actions may range from citation to formal discipline. The level of consequence is determined by the degree of the violation. Most failed audits result in the issuance of a citation. The citation includes an order of abatement that requires the licensee to fulfill their continuing competency requirements within a reasonable amount of time. Failure to comply with this order may result in further discipline.

d. How many CE audits were conducted in the past four fiscal years? How many fails? What is the percentage of CE failure?

In FY 2018/19, 2019/20, 2020/21, and 2021/22, the SPCB conducted a total of 3,659 audits. Although the final numbers for 2021/2022 are not yet finalized, for 2018/19 through 2020/21, 335 licensees failed the audit with a failure rate of 13%.

Table 8a. Continuing Education

Type	Frequency of Renewal	Number of CE Hours Required	Percentage of Licensees Audited
Applicator	3 years	12	2%
Field Representative	3 years	16-24*	3%
Operator	3 years	16-24*	9%

*Varies depending on the technical branches for which they are currently licensed.

Continuing Education Audits				
Fiscal Year	**License Type**	**Number Audited**	**Number Failed**	**Failure Rate**
2018/19	Applicator	115	23	20%
	Field Representative	499	72	15%
	Operator	327	28	9%
	TOTAL	**941**	**123**	**13%**
2019/20*	Applicator	83	15	18%
	Field Representative	297	53	18%
	Operator	308	28	9%
	TOTAL	**688**	**96**	**14%**
2020/21	Applicator	162	21	13%
	Field Representative	442	66	15%
	Operator	382	29	8%
	TOTAL	**986**	**116**	**12%**
2021/22	Applicator	134	Pending	Pending
	Field Representative	500	Pending	Pending
	Operator	410	Pending	Pending
	TOTAL	**1,044**		

*During FY2019/20, there was a vacancy at the CE Audit desk. As a result, the number of audits conducted decreased in FY 2019/20.

e. What is the board's CE course approval policy?

The SPCB's course approval policy is set under CCR § 1953. This section states in relevant part that all providers of activities for continuing education activities must be submitted to the SPCB for approval. Each activity approved for technical, or rules and regulations must include a written examination to be administered at the end of the course.

Examinations administered at the end of the course must consist of ten questions per one hour of instruction, with 40 questions minimum for any activity of instruction of four hours or more. Licensees must obtain a passing score of 70% or better to obtain a certificate of course completion. If the examination is failed, the licensee shall be allowed to be reexamined by taking a different examination within sixty days.

The following is an outline of course requirements:

- Accredited college courses – 10 hours for each 2 semester-unit course; 16 hours for each 3 semester-unit course.
- Adult education courses – 6 hours
- Professional seminars or meetings – up to a maximum of 6 hours per seminar or meeting. Additional hours may be approved depending on the complexity of the activity and its relevance to new developments in the field of pest control.

- Technical seminars or meetings – up to a maximum of 6 hours per seminar or meeting. Additional hours may be approved depending on the complexity of the activity and its relevance to new developments in the field of pest control.

- Operators' courses approved by the SPCB pursuant to section 8565.5 of the code – 1 hour per hour of instruction.

- Correspondence courses developed by the SPCB pursuant to section 8565.5 of the code – full credit per branch.

- Correspondence courses approved by the SPCB – hours will be assigned depending on the complexity of the course and its relevance to new developments in the field of pest control.

- Association meetings – 1 hour for every hour of instruction up to a maximum of 4 hours per meeting.

- Structural Pest Control Board meetings – 1 general hour and 1 rule and regulation hour per meeting, up to a maximum of 4 hours per renewal period (excluding Board Members.) this activity is exempt from examination requirements pursuant to this section.

- Structural Pest Control Board Committee meetings – 1 hour per meeting, up to a maximum of 2 hours per renewal period (excluding Board Members).

- In-house training in technical subjects – 1 hour per hour of instruction.

- SPCB approved Rules and Regulations courses – 1 hour for every hour of instruction.

- Integrated Pest Management courses – 1 hour for every hour of instruction.

f. Who approves CE providers? Who approves CE courses? If the board approves them, what is the board application review process?

The SPCB reviews and approves CE courses. The SPCB applies the provisions of Section 1950 and 1953 of the CCR. Section 1953 states in part:

A. Providers of activities of continuing education in pest control shall request approval as a provider and of activities on forms provided by the SPCB. The form is reviewed for completion by the Education Program Coordinator. An approval letter is sent to the provider, outlining the criteria and approval process for submitting instructor and CE course applications. Requests for approval of activities must be submitted to the SPCB no later than 60 days prior to presentation of the activity unless exception is granted by the Registrar.

B. All providers must notify the SPCB 30 days prior to the presentation of any SPCB approved activity unless exception is granted by the Registrar.

C. All providers must submit a course attendance roster to the SPCB within five working days after every course instructed.

D. After giving the provider a written notice and an opportunity to respond, the SPCB may withdraw approval of any activity.

E. Unless otherwise indicated, approval of each activity shall remain in effect for 3 years.

F. To be approved, activities must be:

1. Directly related to the field of structural pest control.
2. Provided by an institution, association, university, or other entity assuming full responsibility over the course program.
3. Composed of a formal program of learning which requires:
   a. Attendance and participation.
   b. At least one hour of instruction.
   c. A syllabus (detailed outline of the main points of the curriculum).
   d. A certificate of completion.
4. Conducted by an instructor who has qualified by meeting two of the following experience requirements:
   a. Completion of training in the subject of the activity.
   b. Six months' experience working in the area covered by the activity within the preceding three years.
   c. Experience teaching an activity of similar content within the preceding five years.
   d. Completion of any post-secondary studies related to the subject matter of the activity.
   e. Author of the activity being reviewed, or a credentialed instructor.

g. How many applications for CE providers and CE courses were received? How many were approved?

In the last 4 fiscal years the SPCB received 41 applications for CE providers and approved 40 of them. In the last 4 fiscal years, the SPCB received 1,704 CE course applications and approved 1,617 of them. Of the 1,617 approved courses, 1,209 were initial course applications and 408 were course renewal applications.

h. Does the board audit CE providers? If so, describe the board's policy and process.

The SPCB's investigators and internal staff audit CE providers as issues are raised, as well as periodically audit CE providers (up to 12 times per year) to ensure compliance with the SPCB's laws, rules and regulations. SPCB investigators, who also hold pest control licenses (inactive status by state policy), are also required per SPCB policy to maintain CE requirements.

The CE audit process may either be: 1) Educational or informational, or 2) Investigative. Educational or informational is a process by which SPCB's administrative or investigative staff responds to frequently asked questions or provides general guidance to the CE provider to ensure compliance with statutory or regulatory requirements.

The Investigative process is initiated either proactively whereby CE providers are investigated randomly or, as issues are raised to the SPCB by formal or informal complaints, reactively to consider the imposition of course decertification or criminal prosecution. SPCB investigators use recognized investigative techniques and sources of information (i.e., law enforcement or the judicial system) to assist in gathering all facts associated with a given investigation to assess whether violations of law should be pursued.

i. Describe the board's effort, if any, to review its CE policy for purpose of moving toward performance-based assessments of the licensee's continuing competence.

The SPCB's current CE policy supports written performance-based assessments that place great emphasis in the principles of pest control practice and theory. The industry of pest control is considered "closely regulated" due to the number of statutory and regulatory requirements imposed by local, state and federal jurisdictions. Pest control companies, from a business operational perspective, must ensure that their employees are sufficiently trained to carry out the tasks expected of them, performing at a level necessary for job success and to ensure public safety in the application of pesticides.

The SPCB views that these checks and balances provide the greatest assurances that the current CE policy meets or exceeds its intended purpose.

Section 5 – Enforcement Program

33. What are the board's performance targets/expectations for its enforcement program? Is the board meeting those expectations? If not, what is the board doing to improve performance?

Performance Measures 1: Complaints Received

This is the total number of complaints received, which do not have target and performance standards.

Complaints Received by Fiscal Year	
FY 2019/20	348
FY 2020/21	336
FY 2021/22	334

Performance Measures 2: Intake

PM 2 measures the time from complaint receipt until the complaint is assigned to an analyst to complete the intake process and begin the investigation.

Intake Process Target Performance			
FY 2019/20	**Average Days**	**Target # of Days**	**Target Met**
1st Quarter	2	10	Yes
2nd Quarter	3	10	Yes
3rd Quarter	2	10	Yes
4th Quarter	3	10	Yes
FY 2020/21	**Average Days**	**Target # of Days**	**Target Met**
1st Quarter	3	10	Yes
2nd Quarter	3	10	Yes
3rd Quarter	2	10	Yes

4th Quarter	3	10	Yes
1st Quarter	2	10	Yes
3rd Quarter	2	10	Yes

Performance Measures 3: Intake and Investigation

PM 3 measures the average time from complaint receipt to closure of the investigation process. The investigative process includes desk and field investigations conducted by the SPCB Specialists, and formal investigations conducted by the DCA, Division of Investigation (DOI). Cases resulting in formal discipline forwarded to the Attorney General (AG) are not included in this measure.

Intake and Investigation Target Performance			
FY 2019/20	**Average Days**	**Target # of Days**	**Target Met**
1st Quarter	96	180	Yes
2nd Quarter	104	180	Yes
3rd Quarter	181	180	No
4th Quarter	141	180	Yes
FY 2020/21	**Average Days**	**Target # of Days**	**Target Met**
1st Quarter	87	180	Yes
2nd Quarter	89	180	Yes
3rd Quarter	89	180	Yes
4th Quarter	123	180	Yes
FY 2021/22	**Average Days**	**Target # of Days**	**Target Met**
1st Quarter	124	180	Yes
2nd Quarter	159	180	Yes
3rd Quarter	101	180	Yes
4th Quarter	107	180	Yes

Performance Measures 4: Formal Discipline

PM 4 identifies the average number of days to complete the entire enforcement process for cases resulting in formal discipline. This includes intake, investigation by the SPCB Specialists and DOI, and prosecution by the AG.

Formal Discipline Target Performance			
FY 2019/20			**Target Met**
1st Quarter	417	540	Yes
2nd Quarter	377	540	Yes
3rd Quarter	381	540	Yes

4th Quarter	435	540	Yes
FY 2020/21	**Average Days**	**Target # of Days**	**Target Met**
1st Quarter	413	540	Yes
2nd Quarter	318	540	Yes
3rd Quarter	327	540	Yes
4th Quarter	357	540	Yes
FY 2021/22	**Average Days**	**Target # of Days**	**Target Met**
1st Quarter	354	540	Yes
2nd Quarter	339	540	Yes
3rd Quarter	96	540	Yes
4th Quarter	295	540	Yes

34. Explain trends in enforcement data and the board's efforts to address any increase in volume, timeframes, ratio of closure to pending cases, or other challenges. What are the performance barriers? What improvement plans are in place? What has the board done and what is the board going to do to address these issues, i.e., process efficiencies, regulations, BCP, legislation?

Intake of complaints remain steady for the SPCB, averaging approximately 337 per year since FY 2019/20. The most significant challenges facing the enforcement division have been identified in the SPCB's strategic plan and are listed here:

2.1 Increase positive proactive education and enforcement to improve the integrity and relationship with the industry.

2.2 Increase working relationships with county agricultural commissioners and the Department of Pesticide Regulations/Environmental Protection Agency (EPA) to reduce incidents of unlawful pest control services.

2.3 Seek authority to suspend and/or (with cause) revoke a license for non-compliance of a citation (unpaid citation or fine) to accelerate compliance and reduce outstanding fines.

Foremost, the SPCB seeks to add or amend statute and regulations whereby it has greater authority to levy sanctions against licensees and companies for failure to comply with the SPCB's laws and regulations in the following categories: license maintenance (i.e. secretary of state filings, bonds and insurance), timely filing of WDO inspection reports, production of records/retention, mandatory supervision, terms and conditions of probation and eligibility for licensure reinstatement.

In addition, certain provisions of law and regulations require updating to correct challenges concerning their interpretation and enforcement, particularly in the areas of license cancellations, registration of companies, Title 24 regulations, citation and fine sanctions and disciplinary proceeding under Article 7 of the Structural Pest Control Act. Therefore, the SPCB listed in its 2022-2028 Strategic Plan an objective to "Review, and revise as necessary, wording in the Practice Act or regulations to improve clarity."

Table 9a. Enforcement Statistics			
			FY 2021/22
COMPLAINTS			
Intake			
Received	348	336	327
Closed without Referral for Investigation	0	0	0
Referred to INV	348	336	328
Pending (close of FY)	0	2	1
Conviction / Arrest			
CONV Received			697
CONV Closed Without Referral for Inv	1326	853	576
CONV Referred to INV	19	7	7
CONV Pending (close of FY)	99	110	114
Source of Complaint[6]			
Public	284	282	259
Licensee/Professional Groups	24	13	12
Governmental Agencies	1	1	1
Internal	23	31	39
Other	3	4	7
Anonymous	13	5	9
Average Time to Refer for Investigation (from receipt of complaint / conviction to referral for investigation)	3	5	4
Average Time to Closure (from receipt of complaint / conviction to closure at intake)	0	0	4
Average Time at Intake (from receipt of complaint / conviction to closure or referral for investigation)	3	5	4
INVESTIGATION			
Desk Investigations			
Opened			335
Closed	291	258	244
Average days to close (from assignment to investigation closure)	50	45	50
Pending (close of FY)	48	32	24
Non-Sworn Investigation			
Opened	92	99	99
Closed	115	88	72
Average days to close (from assignment to investigation closure)	326	238	350
Pending (close of FY)	54	65	92
Sworn Investigation			
Opened			0
Closed	0	0	0
Average days to close (from assignment to investigation closure)	0	0	0
Pending (close of FY)	0	0	0
All investigations[7]			
Opened	367	341	335
Closed	406	346	316
Average days for all investigation outcomes (from start investigation to investigation closure or referral for prosecution)	128	94	118
Average days for investigation closures (from start investigation to investigation closure)	130	91	118

Average days for investigation when referring for prosecution (from start investigation to referral for prosecution)	100	101	103
Average days from receipt of complaint to investigation closure	131	93	122
Pending (close of FY)	103	98	117
CITATION AND FINE			
Citations Issued	187	143	188
Average Days to Complete (from complaint receipt / inspection conducted to citation issued)	NA	NA	68
Amount of Fines Assessed	$144,978	$83,234	$161,205
Amount of Fines Reduced, Withdrawn, Dismissed	$5,905	$3,550	$13,400
Amount Collected	$92,478	$94,834	$97,906
CRIMINAL ACTION			
Referred for Criminal Prosecution	2	0	1
ACCUSATION			
Accusations Filed	51	19	18
Accusations Declined	0	0	0
Accusations Withdrawn	4	1	0
Accusations Dismissed	1	0	0
Average Days from Referral to Accusations Filed (from AG referral to Accusation filed)	62	88	93
INTERIM ACTION			
ISO & TRO Issued	0	0	0
PC 23 Orders Issued	0	0	0
Other Suspension/Restriction Orders Issued	0	0	0
Referred for Diversion	0	0	0
Petition to Compel Examination Ordered	0	0	0
DISCIPLINE			
AG Cases Initiated (cases referred to the AG in that year)	60	34	19
AG Cases Pending Pre-Accusation (close of FY)	3	4	1
AG Cases Pending Post-Accusation (close of FY)	39	26	13
DISCIPLINARY OUTCOMES			
Revocation	45	23	18
Surrender	6	8	3
Suspension only	0	0	0
Probation with Suspension	3	2	0
Probation only	16	19	11
Public Reprimand / Public Reproval / Public Letter of Reprimand	0	0	0
Other	0	0	0

[7] The summation of desk, non-sworn, and sworn investigations should match the total of all investigations.

DISCIPLINARY ACTIONS			
Proposed Decision	13	3	4
Default Decision	37	22	15
Stipulations	20	27	13
Average Days to Complete After Accusation (from Accusation filed to imposing formal discipline)	233	257	257
Average Days from Closure of Investigation to Imposing Formal Discipline	297	333	380
Average Days to Impose Discipline (from complaint receipt to imposing formal discipline)	466	464	448
PROBATION			

Probations Completed	25	36	31
Probationers Pending (close of FY)	143	138	125
Probationers Tolled	4	7	11
Petitions to Revoke Probation / Accusation and Petition to Revoke Probation Filed	4	5	2
SUBSEQUENT DISCIPLINE[8]			
Probations Revoked	5	5	8
Probationers License Surrendered	1	0	1
Additional Probation Only	1	1	0
Suspension Only Added	0	0	0
Other Conditions Added Only	0	0	0
Other Probation Outcome	0	0	0
SUBSTANCE ABUSING LICENSEES			
Probationers Subject to Drug Testing	10	9	4
Drug Tests Ordered	0	0	0
Positive Drug Tests	0	0	0
PETITIONS			
Petition for Termination or Modification Granted	0	0	1
Petition for Termination or Modification Denied	2	2	0
Petition for Reinstatement Granted	4	0	2
Petition for Reinstatement Denied	1	2	1
DIVERSION			
New Participants	0	0	0
Successful Completions	0	0	0
Participants (close of FY)	0	0	0
Terminations	0	0	0
Terminations for Public Threat	0	0	0
Drug Tests Ordered	0	0	0
Positive Drug Tests	0	0	0

[8] Do not include these numbers in the Disciplinary Outcomes section above.

Table 10. Enforcement Aging

	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	Cases Closed	Average %
Investigations (Average %)						
Closed Within:						
90 Days	318	266	256	213	**1053**	**66%**
91 - 180 Days	64	56	39	51	**210**	**13%**
181 - 1 Year	86	44	28	23	**181**	**11%**
1 - 2 Years	50	33	22	16	**121**	**8%**
2 - 3 Years	0	7	1	12	**20**	**1%**
Over 3 Years	0	0	0	0	**0**	
Total Investigation Cases Closed	**518**	**406**	**346**	**315**	**1585**	
Attorney General Cases (Average %)						
Closed Within:						
0 - 1 Year	41	53	29	21	**144**	**66%**
1 - 2 Years	25	18	12	13	**68**	**31%**
2 - 3 Years	0	1	2	0	**3**	**2%**
3 - 4 Years	1	1	0	0	**2**	**1%**

Over 4 Years	0	0	0	0	**0**	**0**
Total Attorney General Cases Closed	**67**	**73**	**43**	**34**	**217**	

35. What do overall statistics show as to increases or decreases in disciplinary action since last review?

The overall statistics show a decrease in disciplinary actions since the last sunset review. In 2019, the SPCB stopped pursuing discipline in cases regarding Field Representative Licenses that were short 75% or more of their hours. Rather, the SPCB issues the maximum citation and fine instead of filing an accusation. This change resulted in approximately 15 to 20 less accusations being filed.

In addition, the number of complaints from FY 2018/2019 to FY 2022/2023 (or prior sunset review) have decreased due to a decrease in single-family home sales, thus fewer escrow transactions which often trigger complaints. A decrease in available housing supply, increasing interest rates, inflation, and the impact of COVID-19 had considerable impact on the number of complaints received, as well as limitations on investigating properties due to COVID-19 precautions.

36. How are cases prioritized? What is the board's compliant prioritization policy? Is it different from DCA's *Complaint Prioritization Guidelines for Health Care Agencies* (August 31, 2009)? If so, explain why.

The SPCB's case prioritization policy is consistent with the DCA's guidelines appropriate for the license population it is charged to oversee. Cases are applied a level of priority based on three categories: urgent, high priority and routine. Urgent priority cases include fumigation deaths, arrests or convictions, and cases that are reporting elder abuse or significant financial damages. High priority cases include probation violations, unlicensed activity with moderate financial damages, or fraud. Routine cases include advertising violations, improper inspections and any case that shows minor to no financial damages.

37. Are there mandatory reporting requirements? For example, requiring local officials or organizations, or other professionals to report violations, or for civil courts to report to the board actions taken against a licensee. Are there problems with the board receiving the required reports? If so, what could be done to correct the problems?

- BPC §8516(b) requires licensees to disclose their findings and recommendations for all wood destroying pests or organisms' inspections, including work completed and/or not completed.

- BPC §8690 requires surety bond companies and insurance providers to notify the SPCB within 10 days of any change or cancellation of insurance or a bond.

- County Agricultural Commissioners are governed by their ordinances and/or policies which dictate when it is appropriate to report pesticide use violations to the SPCB. The SPCB's laws do not prescribe any mandate or duty reporting requirements for cities or counties for pesticide use violations.

- Penal Code section 11105 establishes a protocol whereby the AG reports to the SPCB whenever applicants, registrants or licensees are arrested or convicted of crimes. In such instances, the Department of Justice (DOJ) notifies the SPCB of the identity of the arrested or convicted applicant, registrant or licensee in addition to specific information concerning the arrest or conviction.

- Upon renewal, BPC §2644 requires licensees to self-report criminal convictions and disciplinary actions taken since their last renewal or issuance of license.

- CCR, Title 16, Division 13.2, section 1399.24 requires licensees to self-report within 30 days: an indictment or information charging a felony; arrest of the licensee; conviction of a licensee; disciplinary action taken by another licensing entity or authority of this state or another state or an agency of the federal government or the Unites States military; and any report required pursuant to BPC §802.

Although there are several mandatory reporting requirements that are designed to inform the SPCB of possible violations, there are no means to verify it receives 100% of the reports. The SPCB receives subsequent arrest reports and subsequent conviction reports from DOJ. Obtaining the documents regarding arrest and court continues to be difficult. The difficulties include no response from the agencies, required fees (up front) to obtain documents, and incomplete or non-certified documents received to name a few. These documents are important to determine if action is necessary for consumer protection.

a. **What is the dollar threshold for settlement reports received by the board?**
   N/A
b. **What is the average dollar amount of settlements reported to the board?**
   N/A

38. Describe settlements the board, and Office of the Attorney General on behalf of the board, enter into with licensees.

As an alternative to an administrative hearing, licensees may request to settle his or her disciplinary case through a stipulated settlement that provides for disciplinary terms and conditions which may include probation, license revocation or voluntary surrender of the license. Although settlement negotiations are initiated by the Office of the Attorney General (AG), prior to settlement terms being offer to the licensee, the Registrar has approved and works closely with the AG's office the terms and conditions of discipline as set forth in the SPCB's disciplinary guidelines.

a. **What is the number of cases, pre-accusation, that the board settled for the past four years, compared to the number that resulted in a hearing?**

The SPCB does not settle pre-accusation. Cases may be settled, but only after an accusation is filed.

b. **What is the number of cases, post-accusation, that the board settled for the past four years, compared to the number that resulted in a hearing?**

The SPCB settles a majority of its cases once an accusation is filed.

Total accusations filed in the last 4 years – 154
Total accusations settled - 132

- FY 18/19 – 66 accusations filed, 13 went to hearing, 53 settled.
- FY 19/20 – 51 accusations filed, 4 went to hearing, 47 settled
- FY 20/21 – 19 accusations filed, 0 went to hearing, 19 settled
- FY 21/22 – 18 accusations filed, 0 have gone to hearing, 1 pending, 13 have been settled.

c. What is the overall percentage of cases for the past four years that have been settled rather than resulted in a hearing?

86% of the cases brought for accusations have been settled rather than resulting in a hearing.

39. Does the board operate with a statute of limitations? If so, please describe and provide citation. If so, how many cases have been lost due to statute of limitations? If not, what is the board's policy on statute of limitations?

Statute of limitations authority is defined in BPC §8621. All complaints against licensees or registered companies shall be filed with the SPCB within two years after the act or omission alleged as the ground for disciplinary action. "Act of Omission" is typically established from the date of inspection, signature date of a contract, or when treatment or repairs have been completed.

In matters alleging fraud, the SPCB has jurisdiction for a period of four years after commission of the fraudulent act or omission.

The SPCB shall file an accusation, a disciplinary action to suspend or revoke a license and/or registration, within eighteen months after the complaint has been filed with the SPCB, except that with respect to an accusation alleging a violation of BPC §8637, the accusation may be filed within two years after the discovery by the SPCB of the alleged facts constituting the fraud or misrepresentation. Under BPC §8568, the SPCB has jurisdiction to deny an application or renewal of a license or registration in accordance with the statute of limitations governing administrative actions pursuant to 11500 of the Government Code.

40. Describe the board's efforts to address unlicensed activity and the underground economy.

The SPCB routinely investigates unlicensed activity and underground issues; this includes licensees operating under suspended or inactive licenses (including revokes). In addition, the SPCB also pursues licensees who serve as ghost qualifiers. These are individuals who qualify principle registrations, but do not actively participate in oversight of the day to day operations of the business.

The Consumer Services Representatives (CSR) within the Enforcement Unit proactively search databases for advertisements pertaining to pest control services. When an entity is found to be practicing without being properly licensed by the SPCB, a complaint case is opened and pursued by the CSR.

These unlicensed activity cases have been solved at the CSR level by sending a cease-and-desist letter to inform unlicensed persons to remove advertising and cease all pest control work until licensing can be obtained; however, the SPCB may refer unlicensed activity cases to SPCB Specialists in the field for formal investigation. Investigations that confirm unlicensed activity may result in the SPCB issuing a citation and fine up to $5,000.00 to the unlicensed individual.

Cite and Fine

41. Discuss the extent to which the board has used its cite and fine authority. Discuss any changes from last review and describe the last time regulations were updated and any changes that were made. Has the board increased its maximum fines to the $5,000 statutory limit?

The Office of Administrative Law approved the SPCB's cite and fine authority on September 12, 1998, promulgating CCR §1920. In lieu of the SPCB filing formal disciplinary action for small or moderate violations, a citation without a fine or a citation with a fine is used alternatively. This process allows the SPCB to impose reasonable sanctions against licensees without the need to pursue formal discipline to suspend or revoke a license. This program also saves the state of California on the substantial costs associated with formal actions which are usually at least three times the costs of citation actions.

The citation and fine program provides an effective method to appropriately address violations that would not warrant more serious discipline in order to protect the public. The citation and fine program was used minimally the first year it was instituted, in 1999, but its use has increased dramatically during recent years.

It should be noted that a single case could result in multiple citations. It is common for a company to have multiple licensees inspecting a single property, so a single case could have a citation issued to each licensee, as well as to the company and the company's qualifying managers. CCR section 1920 was amended to allow the SPCB to issue citations greater than $2,500 up to $5,000, effective September 1, 2013.

42. How is cite and fine used? What types of violations are the basis for citation and fine?

A citation and fine is used to pursue small to moderate violations. They are also used if a licensee has little or no history of past violations.
Under CCR 1920, the SPCB considers the severity of the violation when basing its decision on the citation and/or fine when:

1. The citation involves a violation that has an immediate relationship to the health and safety of another person.
2. The cited person has a history of two or more prior citations of the same or similar violations.
3. The citation involves multiple violations of the law or regulations that demonstrate a willful disregard.
4. The citation involves a violation or violations perpetrated against a senior citizen or a person with a disability.
5. In determining whether a citation shall contain an order of abatement or a fine and if a fine is to be imposed, the SPCB shall consider the following factors:
    a. Gravity of the violation.
    b. History of previous violations of the same or similar nature.
    c. The good or bad faith exhibited by the cited person.
    d. Evidence that the violation was willful.
    e. The extent to which the cited person cooperated with the SPCB's investigation.
    f. The extent to which the cited person has mitigated or attempted to mitigate any damage caused by his or her violation.
    g. Such other factors as the Registrar or Deputy Registrar considers relevant.

43. How many informal office conferences, Disciplinary Review Committees reviews and/or Administrative Procedure Act appeals of a citation or fine in the last 4 fiscal years?

In the past four fiscal years, the SPCB has participated in seven (7) Disciplinary Review Committee (DRC) matters; the DRC is authorized by BPC §8660. The DRC hears appeals regarding notices of

proposed actions issued by local government pursuant to BPC §8617 and makes its decisions pursuant to CCR section 1922. The DRC is composed of one member representing the Department of Pesticide Regulation, one member representing the SPCB and one member who is licensed as a structural pest control operator actively involved in the pest control business. The DRC's final decisions are available at the California Department of Pesticide Regulation's (CDPR) website at: http://www.cdpr.ca.gov/docs/mill/actions/drc/drcmenu.htm

Apart from the DRC, the SPCB has held 10 informal conferences (IC) in the past 4 fiscal years pursuant to CCR section 1920. Unlike DRC, actions taken pursuant to CCR section 1920 are issued exclusively by the SPCB and are usually a result of a SPCB investigation or inspection. If a matter is appealed, the licensee's case may be heard by a SPCB panel as described in CCR section 1920 (e)(1), which states: "The informal conference shall include at least one, but no more than two, industry members…." A Board IC panel characteristically includes one member of the Board and one board industry member.

The SPCB received 1 request for administrative appeal in the past four fiscal years. These are matters to be heard by an administrative law judge in lieu of the Board's IC panel. Both appeals were subsequently withdrawn by the licensees and the citations have been resolved.

44. What are the five most common violations for which citations are issued?

1. BPC §8593, Continuing Education Violations
2. BPC §8638, Contract Violations
3. BPC §8516, Inspection Report Violations
4. BPC §8518, Completion Report Violations
5. BPC §8635, Disregard of Specifications

45. What is average fine pre- and post- appeal?

The final citation fine amount pre and post appeal averaged $500 over the last four fiscal years.

46. Describe the board's use of Franchise Tax Board intercepts to collect outstanding fines.

Upon failure to pay a citation fine, pesticide fine, or cost recovery within the time required and/or the license cancels due to failure to renew, the licensee's information is submitted to the Franchise Tax Board (FTB) for inclusion in the FTB Offset Program. Prior to submitting the licensee's information to the FTB for intercept, the SPCB is required to send a series of three notices of failure to pay in an attempt to collect the fine amount due.

Since July 1, 2018, the SPCB has collected $11,377.15 in outstanding fines and cost recovery through the FTB Offset Program, and currently has 66 cases on file with the FTB, totaling $165,098.09.

Cost Recovery and Restitution

47. Describe the board's efforts to obtain cost recovery. Discuss any changes from the last review.

The SPCB seeks cost recovery for each accusation case filed with the Attorney's General Office; however, the administrative law judge, based on court testimony and/or findings of fact, may or may not order cost recovery in the proposed decision. If the cost recovery order is contrary to the amount

sought by the SPCB, the SPCB has no discretion to set aside the judge's decision unless it elects to non-adopt the proposed decision in its entirety. The SPCB, historically, has not attempted to set aside and issue its own decision if the issue is only cost recovery; decisions that are set aside involve other matters of law. The SPCB, when considering settlement or stipulation terms, may waive or reduce cost recovery upon a respondent's showing of good cause. In general, good cause may exist if the cost recovery order is likely to inhibit the respondent's ability to comply with the order of restitution to the consumer. In addition, the SPCB may waive cost recovery if it results in the immediate surrender of a license (termination of the business) in the interest of justice. For immediate surrender of license, cost recovery would be due upon reinstatement of the surrendered license.

There have been no changes in the SPCB's policy from the last review.

48. How many and how much is ordered by the board for revocations, surrenders and probationers? How much do you believe is uncollectable? Explain.

In the last four fiscal years there were 99 cases where cost recovery was ordered: 63 probation cases, 23 surrenders and 13 revocations where cost recovery was ordered, for a total of $462,356.44. As of September 2022, a total of $244,675.40 was collected. For probation cases, a total of $252,400.44 was ordered and $241,260.40 was collected (approximately 96% of probation cost recovery has been paid).

Over the last four fiscal years, the SPCB’s average cost recovery order, whether issued by an administrative law judge or by SPCB stipulation, is approximately $4,670 per case. This figure represents a total of 99 disciplinary cases, excluding the costs of statement of issues cases which, pursuant to BPC §123, are not recoverable.

Of the 99 cost recovery orders issued in the last four fiscal years, SPCB records show a 94% disproportionate rate of collection. These numbers still represent a relatively successful collection process, and this is attributable to stipulated orders whereby the licensee’s revocation is stayed and placed on probation in the interest of justice. Stipulations result in higher-than-average compliance since the licensee is permitted to maintain licensure under specific term and conditions of probation; this also gives the licensee financial latitude to provide restitution to an aggrieved party.
Collection of all cost recovery on outright revocations and surrenders are relatively low. In the last 3 fiscal years there have been a total of 103 revocations and surrenders. In this same time period, there have been 10 licensees that petitioned for reinstatement. Of the 10, 6 were granted reinstatement. Given that reinstatement statistics show that only approximately 5.8% of disciplined licensees actually satisfy all conditions of reinstatement. As illustrated in Table 9a, since FY 2018/19, the SPCB has averaged 51 revocations (revocations that are stayed with or without conditions) and 17 new probationers each year.

The SPCB maintains an accounting of all cost data in the Consumer Affairs System (CAS), but does not have full reporting capability, a limitation in CAS, to cross-reference cases which have overlapping progress payments from one year to the next, also with different revocation or surrender effective dates. The number of probationers reported in each fiscal year cycle is not a 1:1 ratio of the number of stayed revocations or surrenders ordered, as probation tolling time varies from 1 year to 3 years and can be extended under specific conditions. The SPCB’s authority to recover costs is conditioned on the respondent’s desire to restore or reinstate his/her license.

SPCB statistics, Table 9a, outline that 89% of probationers have their licenses fully restored and approximately 5.8% of unconditionally revoked/surrendered licensees have their licenses reinstated. Restoration or reinstatement of licensure, in general, means that the respondent complied with any or

all of the following conditions:

1. cost recovery
2. restoration bond
3. restitution
4. taking and passing a licensing examination

49. Are there cases for which the board does not seek cost recovery? Why?

The SPCB seeks cost recovery on all accusation cases.

50. Describe the board's use of Franchise Tax Board intercepts to collect cost recovery.

See response to question 46. Since July 1, 2018, the SPCB has collected $11,377.15 in outstanding fines and cost recovery through the FTB Offset Program, and currently has 66 cases on file with the FTB, totaling $165,098.09.

In addition, pursuant to BPC §123(g)(1), the SPCB shall not renew or reinstate the license of any licentiate who has failed to pay all of the costs ordered under this section. For unpaid cost recovery, this can be attached to the renewal prior to sending to FTB for collections, if the licensee does not renew, can then forward to FTB.

51. Describe the board's efforts to obtain restitution for individual consumers, any formal or informal board restitution policy, and the types of restitution that the board attempts to collect, i.e., monetary, services, etc. Describe the situation in which the board may seek restitution from the licensee to a harmed consumer.

The SPCB seeks restitution upon verification of damages stemming from structural pest control inspections and investigations. This is achieved by the SPCB in several ways:

1. If ordered by an administrative law judge.
2. Accepting any unsatisfied court judgments in favor of the complainant.
3. Valid estimates of repairs or corrections from other companies.
4. Verification of bond payouts or insurance claim payouts.
5. When SPCB field investigators have determined a loss following their inspection of the property.
6. If the consumer has paid more than the actual value of services rendered, the difference being the restitution amount.
7. As a condition in any stipulated settlement.
8. As a condition of an order of abatement.
9. The SPCB may require restitution in negligence cases where a company fails to pay a consumer, supplier, employee or subcontractor.
10. If a court of competent jurisdiction ordered restitution on an administrative, criminal or civil case, the SPCB ensures that the outstanding obligations are fully settled (or valid progress payments being submitted timely) before an applicant or licensee is permitted to practice pest control.
11. If the applicant or licensee has a past or pending administrative action with the SPCB, he/she

must comply with the previously imposed restitution order(s). This includes licensees on probation.

12. As a condition following a disciplinary proceeding, or reinstatement of licensure proceeding, the issuance of a probationary license. Restitution orders are based on pest control services rendered, or lack thereof. They also include, not by way of limitation, monetary damages that may occur as a result of failures of a structural pest control company to properly repair or correct structural deficiencies to a building, omissions in an inspection report that results in additional costs, purchase agreements that may unlawfully prejudice the consumer financially, or mechanic's liens which are recorded against a consumer's property that do not have a lawful basis.

Table 12. Restitution for the last four fiscal years reflects FY 18/19 amount ordered $37,500, amount collected $20,000, FY 19/20 amount ordered $6,924, amount collected $24,424, FY 20/21 amount ordered $21,722.50 amount collected $3,200 and FY 21/22 amount ordered $0.00 and amount collected $1,200.

Table 11. Cost Recovery[9] (list dollars in thousands)

	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22
Total Enforcement Expenditures	$ 1,800,893	1,994,195	1,981,541	1,774,995
Potential Cases for Recovery *	66	51	19	18
Cases Recovery Ordered	28	23	10	9
Amount of Cost Recovery Ordered	$100,262.36	$97,974.57	$75,627.40	$35,265.15
Amount Collected	$69,415.52	$57,398.04	$87,549.54	$43,265.15

* "Potential Cases for Recovery" are those cases in which disciplinary action has been taken based on violation of the license practice act.

Table 12. Restitution (list dollars in thousands)

	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22
Amount Ordered	$37,500	$6,924	$21,722.50	$0
Amount Collected	$20,000	$24,424	$3,200	$1,200

[9] Cost recovery may include information from prior fiscal years.

Section 6 – Public Information Policies

52. How does the board use the internet to keep the public informed of board activities? Does the board post board-meeting materials online? When are they posted? How long do they remain on the board's website? When are draft meeting minutes posted online? When does the board post final meeting minutes? How long do meeting minutes remain available online?

The SPCB currently utilizes the following social media platforms: Facebook, Instagram, and Twitter. The SPCB also uses its website and an email blast service, Listserv. The SPCB posts all information on these platforms to keep the public informed of board activity.

The SPCB posts all meeting agendas on its website at least 10 days prior to the date of the meeting, and a Listserv is sent via email. Meeting materials are posted online prior to the date of the meeting.

Meeting Minutes are posted on the SPCB's website once they have been approved and adopted by the Board at the subsequent meeting. Once posted, they are kept on the website indefinitely. Meeting materials remain on the website for four (4) years and then are stored internally for 75 years as per the record retention schedule.

53. Does the board webcast its meetings? What is the board's plan to webcast future board and committee meetings? How long do webcast meetings remain available online?

Yes, all meetings are webcasted and then added to the SPCB's website and YouTube. The SPCB continues to utilize webcast for all meetings. Webcast meetings on YouTube are never removed by the SPCB. The SPCB also started using WebEx since the start of the pandemic. This allows anyone to access the meeting remotely using a computer, mobile device, phone, or video system and participate in public comment. WebEx links are found on the meeting agenda on the SPCB website.

54. Does the board establish an annual meeting calendar, and post it on the board's web site?

The SPCB posts an annual meeting calendar on its website:
http://www.pestboard.ca.gov/about/meetings.shtml

55. Is the board's complaint disclosure policy consistent with DCA's *Recommended Minimum Standards for Consumer Complaint Disclosure*? Does the board post accusations and disciplinary actions consistent with DCA's *Web Site Posting of Accusations and Disciplinary Actions* (May 21, 2010)?

Yes, the SPCB's complaint disclosure policy is consistent with DCA's Recommended Minimum Standards for Consumer Complaint Disclosure. Yes, the SPCB does post accusations and disciplinary actions consistent with DCA's Web Site Posting of Accusations and Disciplinary Actions.

56. What information does the board provide to the public regarding its licensees (i.e., education completed, awards, certificates, certification, specialty areas, disciplinary action, etc.)?

The SPCB provides the following information to the public regarding its licensees:

- Licensee's name
- License number, issue date, expiration date, and status
- Practice address (or other address of record designated by the licensee)
- Disciplinary actions
- Termite Inspection Information
- Research Projects

The SPCB does not require licensees to provide information pertaining to awards, certificates, certifications, or specialty areas.

57. What methods are used by the board to provide consumer outreach and education?

The SPCB considers consumer protection paramount and therefore has recently shifted its limited

resources to enhance its outreach efforts to meet the objectives in the SPCB 2023-2028 Strategic Plan. The SPCB recently began utilizing social media platforms, such as Facebook, Twitter, Instagram, and its website to provide outreach and education to the consumers of the structural pest control industry. The SPCB also utilizes an email blast software called ListServ to send out important emails to stakeholders. Anyone can join the ListServ list by registering on the SPCB website.

Executive staff of the SPCB also attends a variety of consumer and professional outreach events and speaking engagements. These events have included presentations at board meetings, committee meetings, agricultural commissioners' offices, professional associations, and consumer events.

County training as mandated by B&P Section 8698.5, the Structural Fumigation Enforcement Program, is also provided. Consumer satisfaction surveys, website news and newsletters, are also used.

Section 7 – Online Practice Issues

58. Discuss the prevalence of online practice and whether there are issues with unlicensed activity. How does the board regulate online practice? Does the board have any plans to regulate internet business practices or believe there is a need to do so?

The SPCB, routinely, investigates the actions of unlicensed enterprise. It is not uncommon that these complaints arise from internet business, but certainly can arise from other channels (i.e. anonymously). Complaint initiation is done pursuant to B&P 8620 whereby the SPCB "on its own motion" may initiate proactive investigations, which includes audits and inspections.

Even though these enforcement practices are crucial to harmonizing the industry and safeguarding consumers, the SPCB recognizes that its focus, firsthand, is to utilize its resources on reactive complaints and then all other matters. Reactive complaints which are filed by consumers are so sensitive such that statute of limitations can become an issue, unlike proactive complaints where statute of limitations commences upon discovery or knowledge. Pursuant to BCP 8520.1, consumer protection is paramount, therefore, the SPCB is statutorily obligated to treat consumer complaints as its highest priority.

Section 8 – Workforce Development and Job Creation

59. What actions has the board taken in terms of workforce development?

The SPCB continues to adopt procedures to ensure a more streamlined process, allowing the registration of new businesses and licensure of applicants so that they may enter the pest control workforce. The SPCB monitors all aspects of its licensing and enforcement operations, consistently addressing issues to ensure the most salient process contributing to workforce development, both internally (its employees) and externally (consumers, licensees and local government). Central to this focus, the SPCB has updated many of its forms and applications, participates in public outreach forums, and continues to monitor efficacy and make changes as they are needed.

The SPCB's resources give helpful information about how to obtain a license and provide information about the elements of the complaint handling process. Indirectly, the SPCB has been contacted by

consumers, complainants, and aspiring pest control professionals about how to start a pest control business.

For licensees and local government, the SPCB's resources foster pest control employer- based training as well as hands-on training which is available through SPCB-sponsored training. Volunteers from the pest control industry, employees of the SPCB and the Department of Pesticide Regulation work collaboratively in the provision of skills and needs based training for county inspectors.

60. Describe any assessment the board has conducted on the impact of licensing delays.

The SPCB has not conducted any assessment regarding the impact of licensing delays, due to a lack of operational necessity. SPCB renewals and original applications for licensure are processed within the SPCB's target of 10-30 days. Many renewals are processed on the same day. Because the SPCB's actual processing times are very low, board members have not directed the SPCB to adopt regulations for the establishment of processing baselines.

61. Describe the board's efforts to work with schools to inform potential licensees of the licensing requirements and licensing process.

With nearly 120 schools involved in some facet of pest control in California, it is the SPCB's policy to take a neutral position, particularly because the SPCB maintains general oversight of many of these programs and must maintain the integrity of license examination security. Therefore, the SPCB does not collaborate with schools directly or formally regarding licensing opportunities. Rather, communication is achieved informally by such methods as the SPCB's website information, forms and publications, or, situationally, in person or by telephone. The SPCB recognizes that schools, as a matter of practice, are very resourceful, capable of accessing all the necessary tools from the SPCB's resources as well as from pest control associations to inform potential licensees of the SPCB's processes.

62. Describe any barriers to licensure and/or employment the board believes exist.

The SPCB has not identified any barriers to licensure or employment.

63. Provide any workforce development data collected by the board, such as:

a. Workforce shortages

b. Successful training programs.

The SPCB continues to work with the industry on prevailing issues of workforce safety, illness and injury prevention programs, and the practices associated with the pest control profession. The SPCB keeps licensees informed of changes in law and regulations and provides vehicles whereby licensees have opportunities to engage and comment on any material or relevant issues through Board and committee meetings, rulemaking and legislation.

The SPCB also establishes cornerstone research into pest control practices which ostensibly serves as education and vital information to licensees on pest control trends and practices, particularly environmental safety on the use of pesticides. Consistent with public meetings or forums, licensees are availed opportunity to comment on research efforts and learn new and innovative methods in the practice of pest control, information that is subsequently relayed by pest control companies to their employees to promote job safety and growth.

Section 9 – Current Issues

64. What is the status of the board's implementation of the Uniform Standards for Substance Abusing Licensees?

SB 1441 (Chapter 548, Statutes of 2008) was authored by Senator Ridley-Thomas, former Chair of the Senate Business, Professions and Economic Development Committee. SB 1441 created the Substance Abuse Coordination Committee and required the committee, by January 1, 2010, to formulate uniform and specific standards in specified areas that each healing arts board shall use in dealing with substance-abusing licensees.

Although the SPCB was not part of that legislation, it still has the responsibility to develop its procedures to determine acceptable criteria for rehabilitation. SPCB staff, within the Criminal Offender Record Information Program, continues to analyze and update procedures and criteria surrounding whether a substance abuse crime or act is substantially related to the duties, functions or qualifications of a licensee. The SPCB does not collaborate with any vendor for the management of diversion programs aimed at assisting substance abusing licensees to recover from their addictions, but the SPCB is receptive to programs that are geared to provide professional clinical guidance or opinion to SPCB staff when evaluating the circumstances associated with substance abuse issues and also to assist the SPCB in assessing if/when these individuals should be fit for reinstatement of a license or granting of an application for licensure.

65. What is the status of the board's implementation of the Consumer Protection Enforcement Initiative (CPEI) regulations?

The SPCB implemented the DCA Consumer Protection Enforcement Initiative (CPEI) in February 2016, under Title 16, CCR 1960.

66. Describe how the board is participating in development of BreEZe and any other secondary IT issues affecting the board.

a. Is the board utilizing BreEZe? What Release was the board included in? What is the status of the board's change requests?

No, the SPCB is not currently utilizing BreEZe. The SPCB was in Release 3.

b. If the board is not utilizing BreEZe, what is the board's plan for future IT needs? What discussions has the board had with DCA about IT needs and options? What is the board's understanding of Release 3 boards? Is the board currently using a bridge or workaround system?

DCA has implemented a Business Modernization Initiative for Release 3 boards. The Business Modernization Initiative is program driven and is based on these three primary factors: program readiness, completed business activities, and program budget health. The SPCB has selected a new software solution and joined with four other programs to form Business Modernization Cohort 2 and began its project phase in May of 2022. The current targeted timeline for project completion is Winter 2023.

Section 10 – Board Actions and Responses to COVID-19.

67. In response to COVID-19, has the board implemented teleworking policies for employees and staff?

In response to Governor Newsom's Resilience Roadmap, all State departments were directed to comply with CDPH guidance in all state facilities rather than local/county health guidance. This was to ensure that there was one uniform set of guidelines for all state facilities to follow. On June 10, 2021, the DCA provided guidelines for all boards/bureaus to complete a Re-open Plan specific to meet their program needs. As a result, the SPCB created its "Re-open Plan", which coincided with DCA's Re-Open Plan.

The SPCB's Re-Open Plan provides additional guidelines to our SPCB Workplace Guidelines and Expectations for conducting business during this COVID-19 pandemic. The Re-Open Plan was specifically designed for the SPCB suite and common work areas of our building location and was intended to provide guidance and information related to how the SPCB will conduct business while supporting a safe environment for employees during the COVID-19 pandemic. The Plan covers employee preparedness, workplace safety protocols, general expectations, and employee training and resources. The Plan also provides employees with the information necessary to continue to meet the guidelines of the Governor's Resilience Roadmap, the Centers for Disease Control and Prevention (CDC), and the California Department of Public Health (CDPH) in preventing and slowing the spread of COVID-19 within the workplace.

a. How have those measures affected board operations? If so, how?

SPCB worked closely with DCA, OIS for access to shared drives and CAS/TEALE databases on laptops; the SPCB was able to successfully transition to teleworking and have the same capabilities as being at the office. Overall, the transition to teleworking has been successful.

68. In response to COVID-19, has the board utilized any existing state of emergency statutes?

a. If so, which ones, and why?

The SPCB has not utilized any existing state of emergency statutes.

69. Pursuant to the Governor's Executive Orders N-40-20 and N-75-20, has the board worked on any waiver requests with the Department?

The Board received waiver requests pursuant to the Governor's Executive Orders from 49 licensees up for renewal during the 2020 and 2021 renewal periods.

a. Of the above requests, how many were approved?

49 requests for a waiver were approved by the Board.

b. How many are pending?

The Board has no pending waivers.

c. How many were denied?

The Board did not deny any waiver requests; however, 31 renewal applicants did not meet the CE waiver requirements by the approved deadline and were subsequently cancelled.

d. What was the reason for the outcome of each request?

SPCB licenses are valid for three years, and expire on June 30 the year of their renewal. Executive Order N-40-20 provided licensees that expired between March 31, 2020, and May 29, 2020, a temporary waiver of renewal requirements. This waiver did not apply to SPCB licensees due to the license renewal dates.

On June 1, 2020, the Governor issued Executive Order N-66-20 that provided licensees that expire between May 30, 2020, and July 28, 2020, a 6-month waiver of renewal requirements. As a result of this Executive Order, eight (8) renewal applicants applied for the waiver.

On June 3, 2021, the Governor extended the waiver of renewal requirements to licenses that expire between March 31, 2020, and July 31, 2021. As a result, an additional 41 licensees applied for the waiver.

70. In response to COVID-19, has the board taken any other steps or implemented any other policies regarding licensees or consumers?

In response to COVID-19, the SPCB has taken steps to ensure access to and safety of license examination during the State of Emergency. The SPCB worked closely with the Office of Professional Examination Services and PSI Exams to provide up to date testing information on site closures and safety protocols in place to protect the SPCB's exam applicants. Following exam site closures and upon the U.S. Department of Homeland Security's "essential" classification of pest control services, the SPCB worked to expedite exam application processing to mitigate further delays of examination, as well as honoring any fees applied or providing refunds when necessary. The SPCB continues to provide leniency and work closely with exam applicants that are unable to attend an examination due to COVID-19 related illness.

71. Has the board recognized any necessary statutory revisions, updates or changes to address COVID-19 or any future State of Emergency Declarations?

To maintain compliance of the Bagley Keene Open Meetings Act, statutory revisions should be made to allow for virtual meetings, when in-person meetings are not possible due to State of Emergency Declarations.

Section 11 – Board Action and Response to Prior Sunset Issues

Include the following:

1. Background information concerning the issue as it pertains to the board.
2. Short discussion of recommendations made by the Committees during prior sunset review.
3. What action the board took in response to the recommendation or findings made under prior sunset review.

4. Any recommendations the board has for dealing with the issue, if appropriate.

Issue #1: (STRATEGIC PLAN) What is the status of the SPCB's plans to update its 2015-2018 Strategic Plan?

Background: The SPCB's most recent Strategic Plan was approved in July 2015. In preparation, the SPCB met with the DCA's Strategic Organization, Leadership and Individual Development Program (SOLID) to approve the development of an updated plan in January 2014 and the SPCB began strategic planning sessions with SOLID in October 2014.

As the SPCB's current Strategic Plan will be complete at the end of the 2018 calendar year, the SPCB should make establishing a new Strategic Plan a priority.

Staff Recommendation: The SPCB should report on the status of goals established in the 2015-2018 Strategic Plan. Did the SPCB meet is strategic goals? The SPCB should also report on the status of updating its 2015-2018 Strategic Plan.

SPCB Update:

Since the last Sunset Review, the SPCB accomplished the following goals/action items established in the 2015-2018 Strategic Plan:

2018-2019

- The SPCB awarded and executed 5 research contracts totaling $1,024,000. The research focused on new studies and treatment of integrated pest management (IPM) for the following pests: ants, bedbugs, cockroaches, dry wood termite, rodents, and yellowjackets.

- SPCB began the Business Modernization process to acquire and implement a new Information Technology system. This project will greatly benefit consumers and the pest control industry by offering online payment and document submission capability, as well as many other features modern technology allow for.

- SPCB worked with the Department of Consumer Affairs on amending its regulations to implement Assembly Bill 2138 and reduce barriers to licensure for certain individuals with criminal backgrounds.

2019-2020

- Through the flexibility of its staff and the implementation of a telework program the SPCB seamlessly continued to provide services to an essential industry and fulfill its primary mission of protecting the public despite the unprecedented challenges presented by the Covid-19 pandemic.

2020-2021

- The SPCB approved regulatory language recommended by the Pesticide Application Notice and Fumigation Notice Committees and directed staff to begin the formal rulemaking process. This language will clarify notice requirements related to the application of pesticides within, around, and to commercial, residential, and industrial structures benefitting both consumers and pest control professionals.

- The SPCB published a 2021 Act Book which includes all applicable statutes, regulations, and documents incorporated by reference.

- SPCB staff published a comprehensive Board Member Procedure Manual to assist and inform new Board members during the onboarding process.

2021-2022

- Legislatively, the SPCB, in cooperation with the Pest Control Operators of California (PCOC), developed language requiring registered companies to carry workers compensation insurance coverage. This language was incorporated into Senate Bill 1064 (Newman) and will strengthen protections for SPCB licensees and the consumers they serve.

The SPCB began strategic planning sessions in March 2022 and approved the 2023-2028 Strategic Plan in October 2022. SPCB has two action planning sessions scheduled with DCA's SOLID unit for December 2022.

ISSUE #2: (RESEARCH PROJECTS) What is the status of the Research Advisory Panel and research projects?

Background: Requests for research by the SPCB are conducted by the Research Advisory Panel and are then presented to the SPCB for consideration and implementation. SPCB approved topics are then vetted through a request for proposals (RFP) process and are advertised statewide. Following award of the contract(s), information regarding the progress of research is published on the SPCB's website.

The SPCB's research is paid for through the Research Fund, which is supported through a $2 fee on each pesticide use stamp purchased from the SPCB. Each year during the past three years, approximately 70,000 pesticide use stamps were purchased and approximately $140,000 was added into the Research Fund. Typically, the SPCB waits to build up its Research Fund before initiating a research project.

According to the SPCB website, the SPCB has not conducted any major studies since 2011. The SPCB convened in January 2017 and approved the Research Advisory Committee's recommendations to submit an RFP to DCA's Contracts Unit. The topic of research involves studies surrounding the ingestion of rodenticides by non-target pests and best practices in the performance of integrated pest management. As of February 2018, the RFP is still pending approval from DCA before it can be released to University of California researchers.

In the past, the SPCB has conducted research on issues important to consumers and licensees. Since the SPCB continues to collect fees in order to fund research, the SPCB should ensure that it is properly serving its consumers and licensees by producing relevant research in a timely manner. DCA should ensure that it is providing its boards, including the SPCB, with the appropriate support to do so.

Staff Recommendation: The SPCB should update the Committees on the status of any Requests for Proposals for research studies. The SPCB should also update the Committees on the total amount of funds in the Research Fund. The SPCB should further establish plans to ensure more frequent studies of relevant issues in the structural pest control industry are conducted.

SPCB Update: The balance of the Research Fund as of June 30, 2022, was $1,117,000. Since the last Sunset review, the SPCB awarded and executed five (5) research contracts totaling $1,024,000. As of August 31, 2022, four (4) of the research contracts have been completed and the final reports are posted on the SPCB's website. The remaining research project had significant delays due to Covid-19 and an unforeseen fire at a research laboratory being used for this specific research project. That research project is expected to be completed in June 2023. The SPCB expects to award additional research contracts in FY 2023-24.

Issue #3: (ONLINE MEETING MATERIALS) What steps does the SPCB take to increase public accessibility to board and committee meetings?

Background: Webcasting is a commonly used and helpful tool for licensees, consumers, and other stakeholders to monitor boards in real-time and better participate when unable to physically attend meetings. While SPCB meetings are split between northern and southern California, there are only a few meetings per year and travel to and from meetings can be difficult. As a result, webcasting provides greater access. It also improves transparency and provides a level of detail that cannot be captured in the board-approved minutes.

During the last sunset review, the Committee raised the issue of SPCB's webcasting of public meetings, which was and continues to be an issue for many of the entities within DCA. The SPCB reports that is started webcasting public meetings beginning with the October 2014 meeting but notes that webcasting abilities are subject to DCA resources. Since then, the SPCB held 14 public meetings: eight in Sacramento, four in Southern California, and two telephonic meetings, only five of which were webcast. The SPCB has stated that due to the cost of renting webcasting technology at the locations where board meetings outside of Sacramento take place, the SPCB's policy is only to webcast its Sacramento meetings.

Furthermore, while the SPCB does post the agenda, materials, and often times minutes for committee meetings, the SPCB currently does not webcast committee meetings. As committees are often where important decisions are made for the SPCB, it may be beneficial to consumers and SPCB stakeholders to be able to easily access those proceedings.

Webcasting is a commonly used and helpful tool for licensees, consumers, and other stakeholders to monitor boards in real-time and better participate when unable to physically attend meetings. While SPCB meetings are split between northern and southern California, there are only a few meetings per year and travel to and from meetings can be difficult. As a result, webcasting provides greater access. It also improves transparency and provides a level of detail that cannot be captured in the board-approved minutes.

Staff Recommendation: The SPCB should advise the Committees on discussions with DCA to provide greater public access to its proceedings through webcasting; discuss efforts to webcast meetings held in locations other than Sacramento, as well as other efforts to increase public access to meetings.

SPCB Update: With the assistance of DCA, SPCB now webcasts almost all public meetings, unless technical issues arise. Furthermore, the SPCB posts meeting agendas, materials on its website.

Issue #4: (BreEZe) The SPCB continues to use DCA's CAS and other standalone programs in lieu of BreEZe. What is the status of BreEZe implementation by the SPCB?

Background: DCA has been working since 2009 on replacing multiple antiquated standalone IT systems with one fully integrated system. In September 2011, DCA awarded Accenture LLC with a contract to develop and implement a commercial off-the- shelf customized IT system, which it calls BreEZe. BreEZe is intended to provide applicant tracking, licensing, renewals, enforcement, monitoring, cashiering, and data management capabilities. In addition, BreEZe is web-enabled and designed to allow licensees to complete and submit applications, renewals, and the necessary fees through the internet. The public also will be able to file complaints, access complaint status, and check licensee information if/when the program is fully operational.

The project plan called for BreEZe to be implemented in three releases. The first release was scheduled for July 2012. The SPCB was originally scheduled for inclusion in Release 3 of the project. Under Special Project Report 3.1, which outlined the changing scope and cost of the BreEZe project, Release 3 was removed from the project entirely in 2015.

DCA currently has no formal plan to expand BreEZe to the 19 boards originally included in Release 3. Instead, DCA first intends to conduct a cost-benefit analysis for Release 3 boards (after Release 2 is completed in 2016) and then make a decision about whether programs previously slated for Release 3 of the project will come onto BreEZe and, if so, how that will be implemented. It is not clear whether the system has been evaluated to meet the needs of Release 3 entities like the SPCB, many of which are facing significant operational challenges due to their lack of dynamic IT capacity. The SPCB has contributed $267,831 to the DCA in pro rata costs to support the BreEZe project from FY 2009/2010 to FY 2016/2017.

The SPCB continues to use outdated programs until a determination of future information technology efforts is made. According to SPCB, it is able to manage all day-to-day functions with its current system without setback or delay.

It would be helpful for the Committees to learn about SPCB's plans to upgrade IT systems. It would also be helpful to understand, particularly given the SPCB's fiscal issues as discussed later, what future costs are anticipated.

Staff Recommendation: The SPCB should advise the Committees on the status of SPCB's IT systems and upgrades, including any temporary workaround systems currently in place and the cost for these systems. The SPCB should update the Committees on if they expect to receive any refund from DCA for the pro rata the SPCB has paid for BreEZe.

SPCB Update: The SPCB contributed approximately $292,000 to support the BreEZe project from FY 2009/10 to 2017/18.

DCA has implemented a Business Modernization Initiative for Release 3 boards. The Business Modernization Initiative is program driven and is based on these three primary factors: program readiness, completed business activities, and program budget health. The SPCB has selected a new software solution and joined with four other programs to form Business Modernization Cohort 2 and began its project phase in May of 2022.

While the project is underway, The SPCB continues to use outdated programs and will follow a methodical iterative approach to release functionality to the public. The current targeted timeline for project completion is Winter 2023.

ISSUE #5: (SPCB FUND AND RESERVES) What is the status of the SPCB's long-term fund condition?

Background: At the end of FY 2015/2016, the SPCB reported that it had a reserve balance of 5.0 months but projects to have a fund reserve of 3.7 months at the end of FY 2017/2018 and 2.4 months at the end of FY 2018/2019. Both the SPCB's fund balance and months in reserve are projected to have decreased to less than half of what they were two FYs ago. At this time, the SPCB has not requested any fee increases. Typically, boards and bureaus under DCA maintain a reserve level of at least six months to cover unanticipated costs, such as litigation.

Staff Recommendation: The SPCB should update the Committees on its current fiscal situation and projected budget reserves. The SPCB should also identify appropriate solutions, including raising fees, controlling spending, or other steps that might be taken in order to ensure a stable reserve level.

SPCB Update: In July 2019, the SPCB increased the WDO fee to $3.00, the maximum allowed in statute. However, the SPCB's budget projections indicated the SPCB was still on the verge of insolvency. At that time, budget projections did not account for the sharp rise in legal fees that the Attorney General's (AG) Office. The AG's Office increased their fees in September 2019. Fortunately, the Legislature increased the statutory maximum of the WDO fee to $5.00, providing the SPCB an avenue to address the revenue shortfall via regulation. Effective August 22, 2019, the WDO fee increased to $4.00.

Following the above-mentioned fee increase in FY 2019-20, the SPCB's Support Fund increased to more stable levels ending FY 2021-22 with a 6-month reserve. Over the last four fiscal years, the SPCB has maintained balanced revenues and expenditures.

In recent months, SPCB staff have noticed a downturn WDO filings and as a result, a decrease in revenue. It is still too soon to tell if this decrease in WDO filings will remain consistent, but the SPCB will be monitoring this closely. In addition, per the 2023-2028 Strategic Plan, SPCB plans to re-examine the fee structure to ensure a consistent and balanced revenue stream.

Table 2. Fund Condition

(Dollars in Thousands)	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23 (Projected)	FY 2023/24 (Projected)	FY 2024/25 (Projected)
Beginning Balance	$ 1,420	$ 1,096	$ 1,610	$ 2,814	$ 3,258	$ 3,330	$ 3,242
Revenues and Transfers	$ 229	$ (125)	$ (133)	$ -	$ -	$ -	$ -
Total Revenue	$ 4,504	$ 5,932	$ 6,550	$ 6,127	$ 6,537	$ 6,568	$ 6,564
Budget Authority	$ 5,143	$ 5,475	$ 5,340	$ 6,939			
Expenditures	$ 5,057	$ 5,293	$ 5,213	$ 5,683	$ 6,465	$ 6,656	$ 6,853
Fund Balance	$ 1,096	$ 1,610	$ 2,814	$ 3,258	$ 3,330	$ 3,242	$ 2,954
Months in Reserve	**2.5**	**3.7**	**5.9**	**6.0**	**6.0**	**5.7**	**5.2**

ISSUE #6: (CONTINUING EDUCATION AUDITS) Are there more effective means by which the SPCB can verify that CE was completed other than conducting random audits for a small number of licensees at the time of renewal?

Background: Every three years, active Applicator licensees are required to complete 12 hours of CE while Field Representative and Operators are required to complete 16 hours of CE. In recent years, the SPCB has focused the attention of its CE audits on Operators and this shift in resources has led to a decrease in audits of its other two license types, including no audits of Field Representative licensees in FY 2015/2016.

Verifying that licensees actually complete required CE is something that many boards struggle to achieve. Most boards rely on licensees to self-report at the time of renewal that the individual completed CE courses and provide information about those courses, including the CE provider, course description, and other data points. To confirm that an individual actually completed what they reported, boards like the SPCB conduct random audits of licensees. Given the workload associated with SPCB staff verifying all of the information provided by licensees, the number of CE audits most boards conduct are extremely low, as compared to the number of licensees renewing licenses.

The new Executive Officer of the Board of Registered Nursing recently proposed an innovative solution to receipt of information from third-party sources, specifically uploading materials directly into a cloud that DCA manages. The SPCB may consider whether there are more efficient ways to ensure CE completion and to obtain primary source documentation from outside organizations, such as proof of completion provided directly to the SPCB through the DCA cloud.

Staff Recommendation: The SPCB should explore innovative methods to confirm CE completion and update the Committees on steps it is taking to streamline processes. Should the SPCB use other technologies the DCA might have to improve submission compliance and processing times for primary source documents?

SPCB Update: The SPCB has explored and identified methods to streamline the processing of CE Audits. The SPCB has utilized all available technology to allow for efficient movement through the CE auditing process. CE providers are permitted and encouraged to submit CE course rosters electronically, which in turn, has allowed for staff to more efficiently confirm course attendance. The SPCB is currently in the process of Business Modernization. During the early stages of mapping for the new platform, SPCB identified several ways to streamline the CE course submissions upon renewal, as well as any automation opportunities for auditing of course attendance via online submission by the CE provider. The SPCB continues to work closely with the Business Modernization team, to ensure all innovative methods are explored and developed, where system functionality permits.

In addition, the SPCB's 2022-2028 Strategic Plan provides these goals related to CE audits:

- *Implement the Connect system to improve efficiency, transparency, customer service, and effectiveness of the examination and licensing processes.*

- *Evaluate the auditing of licensees' continuing education.*

ISSUE #7: (CONTINUING EDUCATION PROVIDER AUDITS) Does the SPCB exercise enough oversight over CE providers?

Background: The SPCB does not have express authority to approve and license CE providers but does approve course content submitted by new and existing course providers. SPCB investigators and inhouse staff periodically audit CE course providers, up to 12 times per year, to ensure compliance with SPCB requirements. If a provider fails to comply with the standards adopted by the SPCB, the SPCB has the authority to withdraw or cancel the course offering and/or refer repeat violators to the oversight of the BPPE.

The CE provider audit process may either be: 1) education or informational or 2) investigative. Educational or informational is a process by which SPCB's administrative or investigative staff responds to frequently asked questions or provides general guidance to the CE provider to ensure compliance with statutory or regulatory requirements.

The investigative process is initiated either proactively whereby CE providers are investigated randomly or, as issues are raised to the SPCB by formal or informal complaints, reactively to consider the imposition of course decertification or criminal prosecution. SPCB investigators use recognized investigative techniques and sources of information (i.e. law enforcement or the judicial system) to assist in gathering all facts associated with a given investigation to assess whether violations of law should be pursued.

The SPCB currently has a list of 94 approved CE course providers posted on its website. In its *2018*

Sunset Review Report, the SPCB did not include data on audits of CE providers and any actions that have been taken against a CE provider found to be not adhering to SCBP rules and regulations.

Staff Recommendation: The SPCB should report to the Committees on the number of CE provider audits it has conducted and any disciplinary action brought against a CE provider. The SPCB should also consider ways to improve oversight over CE providers.

SPCB Update: The SPCB continues to review and approve/deny course content submitted by course providers and periodically conducts audits of CE providers. If a provider fails to comply with the SPCB standards, their course offering may be withdrawn or cancelled. Repeat violators are referred to the Bureau for Private Postsecondary Education. The following is a breakdown of CE course audits that have been conducted:

- FU 2018/19 - 5
- FY 2019/20 - 3
- FY 2020/21 - 14
- FY 2021/22 - 9

The SPCB understands the need to reevaluate the CE approval process of providers and improve oversight of providers; therefore, the SPCB 2023 – 2028 Strategic Plan includes a goal to address this issue: Goal 1.3, *"Evaluate and restructure the continuing education approval process of providers and course materials to ensure quality continuing education is provided to licensees."*

ISSUE #8: (ENFORCEMENT POWERS) SPCB reports that it is taking steps to increase authority for swift action against licensees. What is the status of those efforts? What are the current barriers to SPCB's enforcement efforts?

Background: In its *2018 Sunset Review Report*, the SPCB stated that in order to combat the most significant challenges facing its enforcement division, the SPCB plans to seek to add or amend statute and regulations to give itself greater authority to levy sanctions against licensees and companies for failure to comply with the SPCB's laws and regulations in the following categories: license maintenance (i.e. Secretary of State filings, bonds, and insurance), timely filing of WDO inspection reports, production of records/retention, mandatory supervision, terms and conditions of probation, and eligibility for licensure reinstatement.

Specifically, the SPCB has stated that it is seeking legislation to gain statutory authority to: 1) automatically suspend any license or, with cause, revoke any license or registration based on noncompliance of citation; 2) automatically suspend any license or registration based on an owner's or licensee's failure to satisfy court judgments, arbitration awards, tax liens, and other lawfully imposed sanctions related to pest control profession; 3) require any person listed on the principal registration or branch office registration to take CE or SPCB-approved courses as a condition of SPCB-issued citation; and 4) deny the renewal of a license based on an owner's or licensee's failure to comply with any provision of the Structural Pest Control Act. The SPCB also stated these enforcement goals in its *2015 - 2018 Strategic Plan*.

Staff Recommendation: The SPCB should further elaborate on what are the more significant challenges the SPCB is facing. The SPCB should also update the Committees on why it plans to seek the statutory authority mentioned above and what the status of this legislation is.

SPCB Update: During the SPCB last Sunset Review, SB 1481 was introduced that addressed some of these enforcement barriers. SB 1481 that was effective January 1, 2019, made various changes

to the Structural Pest Control Act (Act) intended to improve oversight of entities regulated by the SPCB. More specifically, this new legislation authorized a person whose license or registration has been revoked, suspended, or surrendered, or who has been placed on probation, to petition to the board, after specified minimum time periods, for reinstatement or modification of the penalty. The bill also authorized the SPCB to levy fines for serious or moderate violations and changed the minimum and maximum penalties applicable for a violation.

SB 1064, effective anuary 1, 2023, amended to require all California structural pest control companies to submit proof of workers' compensation insurance coverage, or file an exemption from workers' compensation insurance, as a condition of receiving or maintaining a Company Registration with the SPCB.

The SPCB recognizes the need to add or amend additional statutes and regulations to combat challenges facing the enforcement division. The SPCB fully intends to follow through with the commitments previously made to strengthen the Board's administrative and enforcement functions through new legislation and updated regulations. Since 2019, there have been extraordinary impacts to the business environment with COVID-19, and more recently, a complete turnover of the Board and the Executive Team. The SPCB believes it is prudent to conduct an in-depth review of the previously proposed changes, consider the current business environment, involve key stakeholders and present updated recommendations to the legislature in the near future.

ISSUE #9: (COMPLAINTS) SPCB's complaint intakes have increased since the prior review. What does SPCB attribute these increases to?

Background: In its *2014 Sunset Review Report*, the SPCB noted that "since the housing crisis in 2008, complaints dropped to an all-time low of 377 in FY 2008/2009 but have steadily increased from that point forward to a high of 518 in FY 2012/2013". According to the SPCB's *2018 Sunset Review Report*, complaints have continued to increase to a high of 594 in FY 2014/2015. At the time of the last sunset report, the SPCB believed that this increase in intake of complaints was due to California's economy, specifically, "As-Is sales" and the underground pest control economy.

The SPCB believed that the rising trend of "As-Is" sales were nullifying the need for WDO inspections. "As-Is" sales are when the buyer, seller, or lender waives pest control contractual contingencies so that there are fewer requirements in the sale or purchase of a home. These waivers preclude the SPCB from maintaining substantive jurisdiction, even in cases where there may have been a WDO inspection performed. However, the SPCB notes that the use of "As-Is" sales appear to be on the decline due to a resurgence in the real estate market in California.

The SPCB also believed that the underground pest control economy, including both licensed and unlicensed practitioners, appeared to be growing. The SPCB believed this rise to be largely due to rising unemployment, a decline in savings and retirement, and the reduction of various income assistance programs. However, in its *2018 Sunset Review Report*, the SPCB reported that the presence of underground activity has not been significant in the structural pest control industry and contributes this to the result of rising employment and housing over the preceding three or four years.

In *2014 Sunset Review Report*, the SPCB stated that in 2013 it began partnering with the Department of Industrial Relations, Division of Labor Standards Enforcement, and sibling agencies to counteract the negative effects of the underground economy. The SPCB also stated a number of plans to expand the scope of its enforcement operations. These ideas included researching private mediation, conciliation, and arbitration programs (or "alternative dispute resolutions programs") as an additional means to dispute resolution and to continue to maintain substantive jurisdiction on complaints, even for "As-Is" sales or when the purchase agreement contains waiver clauses. The SPCB also stated that in order to address underground economy efforts, the SPCB would seek position authority for at least two

additional field investigators for its current staff of eight field investigators in FY 2014/205 or FY 2015/2016.

While the number of complaints has slightly decreased since from FY 2013/2014 to FY 2016/2017, complaints are still up approximately 11% from FY 2012/2013 and approximately 15% from 2008. The SPCB also included "increase proactive enforcement to effectively reduce the frequency of unlawful pest control services" as a goal in its *2015-2018 Strategic Plan*. However, the SPCB decided to postpone increasing the number of field enforcement staff and the creation of an arbitration program for a later date.

The SPCB allocates its resources to focus first on reactive complaints, or complaints filed by consumers, before pursuing proactive complaints, or complaints generated by audits, inspections, and investigations of unlicensed/underground activities. If the SPCB's current staff is unable to handle reactive complaints and also take on active complaints, should the SPCB be continuing to look into ways to expand its enforcement abilities?

Staff Recommendation: The SPCB should update the Committees as why it believes there has been an increase in complaints since the prior sunset review. The SPCB should also update the Committees on its collaborate efforts with Department of Industrial Relations, Division of Labor Standards Enforcement, and sibling agencies to counteract the negative effects of the underground economy. Should the SPCB consider increasing its field enforcement staff or creating an arbitration program? What are the SPCB's plans to expand its enforcement staff's abilities to pursue proactive complaints?

SPCB Update: The number of complaints from FY 2018/2019 to FY 2022/2023 (or prior sunset review) have decreased due to a decrease in single-family home sales, thus fewer escrow transactions which often trigger complaints. A decrease in available housing supply, an increase in as-is sales, increasing interest rates, inflation, and the impact of COVID-19 had considerable impact on the number of complaints received, as well as limitations on investigating properties due to COVID-19 precautions.

The SPCB has not collaborated with the Department of Industrial Relations, Division of Labor Standards (DIR, DLS) Enforcement in some time due to high cost for service with little to no enforcement outcome, nor has the SPCB worked with DIR, DLS or sister agencies to address the negative effects of the underground economy, particularly due to COVID-19 restrictions.

At this time, 85% of the SPCB Specialists (enforcement staff) are eligible for retirement, thus retention and recruitment are a key focus for the next several years. A new SPCB Specialist job bulletin was released in early September 2022, on a "continuous" basis rather than with a set deadline, in order to increase the number of candidates.

Current wage scale for SPCB Specialists is low versus structural industry wage scale and pay enticements, thus impacting the number and quality of candidates. Past efforts to reclassify the SPCB Specialists to a broader classification with a higher wage scale were unsuccessful during the previous administration; however, the new Executive Officer of the SPCB plans to revisit reclassifying the SPCB Specialists to a broader classification.

The SPCB has had a complete turnover in SPCB Board members, Executive Officer, and Assistant Executive Officer during 2021-2022. Plans to expand SPCB enforcement staff's abilities to pursue proactive complaints have been set aside for the next fiscal year.

Issue #10: (EXEMPTION FROM LICENSURE) Should BPC §8555(g) be amended by the SPCB to bring statute into compliance with the Merrifield v. Lockyer ruling.

Background: During the prior sunset review, the Committees noted that the Act exempts from licensure and regulation by the SPCB those people and businesses engaged in the live capture and removal or exclusion or exclusion of vertebrate pests, bees, or wasps from a structure without the use of pesticides (BPC §8555 (g)). However, the law further excludes mice, rats, and pigeons from the definition of "vertebrate pests." This provision was added by AB 568 (Brown, Chapter 718, Statutes of 1995).

In 2008, BPC §8555(g) was held unconstitutional by the 9th circuit (Merrifield v. Lockyer, 547 F.3d 978, 900 (9th Cir. 2008). Alan Merrifield was an unlicensed operator of a pest control business and trade association. His business engaged in non-pesticide animal damage prevention and bird control. In 1997, he was sent a warning letter from the SPCB stating that his business activities required a license, because he advertised and conducted rodent proofing. Merrifield never applied for a license and claimed none was necessary for his business activity because he did not use pesticides.

In order to continue without a license, he filed a lawsuit against the SPCB and other state officials alleging a violation of Equal Protection, Due Process and privileges or Immunities Clauses of the Fourteenth Amendment. The 9th Circuit held that the application of the licensing exemption under BPC §8555(g) for individuals performing the live capture of vertebrae pests, bees, or wasps without the use of pesticides violated the equate protection clause of the 14th Amendment under the U.S. Constitution. The Court found that the inclusion of certain animals within the definition of vertebrae pests (bats, raccoons, skunks, and squirrels) but not others (mice, rats, or pigeons), lacked a rational basis.

During the previous Sunset Review, the SPCB noted that the distinction of vertebrate pests was used by the SPCB as a basis to differentiate those pests that invade structures and those that generally do not; the latter being more appropriate under the authority of Fish and Wildlife licensure requirement. The SPCB also stated that in light of the Merrifield decision, it should no longer provide this distinction in statute.

Following the previous Sunset Review, the SPCB's Act Review Committee proposed to remove the exemption for mice, rats, and pigeons from the definition of "vertebrate pests" therefore bringing the live capture of such animals under the licensing authority of the SPCB. The Act Review Committee brought its recommendation to SPCB members during the SPCB's April 2014 meeting and the SPCB decided to stop enforcing BPC §8555(g) and seek legislation to amend BPC §8555(g). However, the legislation never was actualized because the member office the SPCB was working with found that there was a lack of evidence of consumer harm. Considering the SPCB does not enforce BPC §8555(g) and the statute has been found to be unconstitutional, should the SPCB consider seeking amendments?

Staff Recommendation: The SPCB should advise the Committee on plans comply with the Merrifield decision.

SPCB Update: The Structural Act Review Committee was dissolved in 2016. The SPCB plans to revisit this issue and seek industry members to form a committee for possible solutions to comply with the Merrifield decision.

ISSUE #11: (TECHNICAL CHANGES MAY IMPROVE THE EFFECTIVENESS OF THE LAW AND SPCB OPERATIONS) Should the Structural Pest Control Law be amended to make technical, non-substantive, and conforming changes as proposed by the SPCB?

Background: There are instances in the law where technical clarifications may improve SPCB operations and application of the statutes governing the SPCB's work.

Separate from its *2018 Sunset Review Report*, the SPCB has submitted a legislative proposal to amend the existing laws governing the practice of structural pest control. The SPCB's proposal intends to make technical or non-substantive changes to certain provisions of the law, delete existing provisions from the law that are no longer applicable and delete or amend other provisions to support legislative intent.

SPCB should provide information to the Committees about the necessary technical changes to improve its operations. The Committees may wish to ensure that proposed changes brought forth by SPCB include input from stakeholders and interested parties to ensure there is agreement and that unintended impacts of the proposed changes are avoided.

Staff Recommendation*:* The Committees may wish to amend the various practice acts to include technical clarifications. SPCB should provide the Committees with necessary statutory updates to enhance its public protection efforts.

SPCB Update: A committee composed of industry representatives, Continuing Education providers, and SPCB staff/members updated the CE classifications, CE required hours/classification and other requirements to conform to updated portions of Title 40, Code of Federal Regulations 171.107. The CE requirements were approved by the SPCB but held in abeyance awaiting US EPA approval of the SPCB Implementation Plan, expected in fall of 2022. Federal updates include additional technical competencies for CE purposes.

Also, the SPCB's 2022-2028 Strategic Plan provides the goal to *"Review, and revise as necessary, wording in the Practice Act or regulations to improve clarity".* This will be one of the SPCB's focus this fiscal year, and for years to follow.

ISSUE #12: (CONTINUED REGULATION BY THE SPCB) Should the licensing and regulation of structural pest control be continued and should the profession continue to be regulated by the current SPCB membership?

Background: The health, safety, and welfare of consumers are protected by the presence of a strong licensing and regulatory SPCB with oversight over the structural pest control industry.

The SPCB has experienced significant transitions over the last five years, including moving back to DCA from DPR in 2013. However, it appears that the SPCB has successfully traversed the transition and is making progress as a regulatory agency.

The SPCB should be continued with a four-year extension of its sunset date so that the Legislature may once again review whether the issues and recommendations in this Background Paper have been addressed.

Staff Recommendation: Recommend that the licensing and regulation of structural pest control continue to be regulated by the current members of the Structural Pest Control Board in order to protect the interests of the public and be reviewed once again in four years.

SPCB Response: The SPCB appreciates the continued opportunity to present its work for the Senate Business, Professions and Economic Development Committee and the Assembly Business and Professions Committee's feedback.

Section 12 – New Issues

1. Issues raised under prior Sunset Review that have not been addressed.

2. New issues identified by the board in this report.

The Board has addressed all prior Sunset Review issues as identified in Section 11 and no new issues have been identified in this report.

Section 13–
Attachments

Please provide the following attachments:

A. Board's administrative manual.

B. Current organizational chart showing relationship of committees to the board and membership of each committee (cf., Section 1, Question 1).

C. Major studies, if any (cf., Section 1, Question 4).

D. Year-end organization charts for last four fiscal years. Each chart should include number of staff by classifications assigned to each major program area (licensing, enforcement, administration, etc.) (cf., Section 3, Question 15).

E. Licensing Performance Measures

F. Enforcement Performance Measures

Attachment A

SPCB Administrative Manual

SPCB

STRUCTURAL PEST CONTROL BOARD

BOARD ADMINISTRATIVE MANUAL

DECEMBER 2022

SPCB ADMINISTRATIVE MANUAL
TABLE OF CONTENTS

CHAPTER 1
INTRODUCTION

MISSION STATEMENT

To protect the general welfare of Californians and the environment by promoting outreach, education, and regulation of the structural pest management profession.

VISION STATEMENT

The Structural Pest Control Board sets the standard as the national regulatory and environmental leader of pest management for consumer protection.

OVERVIEW

As early as the 1930s, the structural pest control profession was largely unregulated. Consequently, consumers faced challenges securing the services of professionals capable of performing all the tools of the trade. Not all practitioners possessed the skill-sets necessary to competently render services such as, but not limited to, knowledge of building laws, building construction, air and water quality, use of poisonous and lethal gases, even non-harmful removal or exclusion of animals or certain species of insects. Local building divisions and law enforcement lacked the technical skills and specialized knowledge necessary to effectively and efficiently resolve disputes. Unskilled laborers rendering services unwittingly put themselves in harms' way, including the clients that they served. These limiting factors compounded the difficulties experienced by consumers seeking administrative or judicial relief, leaving many to potentially suffer financial harm, or perhaps being victims of substandard building repairs and/or adverse health and safety exposure to toxic levels of pesticides. The nature of the profession reinforced a need for a dedicated regulatory referee who could assemble the missing pieces of the puzzle, providing the groundwork for positive changes.

In 1935, in response to consumer and industry demand, by way of the Constitution of California, the California Legislature passed the first Structural Pest Control Act (Assembly Bill 2382, Chapter 823, Statutes of 1935). Added to the California codes, this Chapter was made effective January 1, 1936 and was to be administered by the California Pest Control Association. The new statute set standards for the pest control occupation by mandating, among other provisions, that practitioners meet stringent experience and continuing education requirements, thus providing the foundation for one of the most comprehensive consumer protection laws to date. Chapter 14 of the Structural Pest Control Act was added to Statutes of 1941, repealing Statutes of 1939, which codified the Business and Professions Code (BPC), commencing with Section 8500 and forming the Structural Pest Control Board (Board) as it exists today.

The Board's highest priority (BCP section 8520.1) is to protect and benefit the public by regulating the pest control industry. The sphere of the Board's mission and vision is under the leadership of a 7-member appointed board and the executive officer who serves at the Board's leisure. In achieving

its priorities, the Board actively follows its core values: 1) accountability, 2) consumer protection, 3) professionalism, 4) service, and 5) transparency.

Structural pest control includes, not by way of limitation, the eradication and/or prevention of structural pests such as cockroaches, ants and rodents or wood-destroying pests such as termites, wood boring beetles and carpenter ants. Structural pest control licensees may use fumigation with poisonous or lethal gases, or they may use mechanical means such as freezing, heating and trapping technologies when servicing a property. The profession also includes the performance of structural repairs to real property (such as buildings) and other structures, including railroad cars, ships, docks, trucks, airplanes, or the contents thereof. Licensees routinely exercise professional judgment when determining the best method to correct structural pest issues, but they also must adhere to strict standards to ensure public safety (especially the use and handling of poisonous or lethal gases). They prepare written reports to consumers, and they fully explain their recommendations, including product efficacy and pesticide safety disclosures, permitting consumers to make educated, informed decisions.

The Structural Pest Control Act requires that licensees fulfill continuing education requirements by completing industry-relevant courses to stay fluent with technology and accepted professional practices. The Board also approves scientific research into new pest control/abatement technologies to address new or escalating social or environmental issues, such as professional standards to provide integrated pest management.

The Structural Pest Control Board has successfully served the interests of consumers for more than eighty seven years, giving consumers options in lieu of the high costs of civil actions. These services include Board mediation and conciliation services, investigations, and administrative orders of correction or restitution. Most importantly, consumers are significantly protected against the health hazards associated with the misuse of pesticides and lethal gases. Both the consumer and industry benefit from well-versed licensees who must demonstrate levels of competency and continuing education that are considered unparalleled to their national counterparts. The Board remains at the forefront of the industry and continues to set the standard for the practice of structural pest management in the nation and abroad.

CHAPTER 2
GENERAL RULES OF CONDUCT

General Rules of Conduct

Whether you are attending a public board meeting or an event/activity unrelated to the Board, your role as a Board Member is continuous. The public perceives you as the "Board" and this perception will not end until your service on the Board is concluded. Therefore, it is important that your actions and conduct are a positive reflection upon the Board, and ultimately the Governor of California.

The following list is intended to assist Board Members in avoiding any situation that has the potential to reflect poorly on the Board.

- Board Members' actions shall uphold the Board's primary mission – consumer protection.
- Board Members shall not speak to interested parties (such as vendors, lobbyists, legislators, or other governmental entities) on behalf of the Board or act for the Board without proper authorization.
- Board Members shall maintain the confidentiality of confidential documents and information.
- Board Members shall commit time, actively participate in Board activities, participate in enforcement decision making and prepare for Board meetings, which includes reading Board packets, and all required legal documents.
- Board Members shall respect and recognize the equal role and responsibilities of all Board Members, whether public or licensee.
- Board Members shall act fairly and, in a nonpartisan, impartial, and unbiased manner.
- Board Members shall not use their positions on the Board for political, personal, familial, or financial gain.

CHAPTER 3
BOARD MEETING PROCEDURES

FREQUENCY AND LOCATION OF MEETINGS - BPC SECTIONS: 101.7 AND 8523

Business and Professions Code section 101.7 requires the Board to meet at least two times per calendar year; holding at least one meeting in Northern California and one meeting in Southern California. One of those meetings must take place in October. These meetings are held to make policy decisions and review committee recommendations. Other meetings may be called at any time by the Board President or by any four members of the Board, upon notice of such time and in such manner as the Board may provide.

The Board attempts to hold meetings in different geographic locations throughout the state when possible as a convenience to the public and licensees.

BOARD MEMBER ATTENDANCE AT BOARD MEETINGS

Board Members must attend each meeting of the Board. If a member is unable to attend, he/she is asked to contact the Board President or the Executive Officer and ask to be excused from the meeting for a specific reason. For purposes of petition hearings, Board Members may be required to be physically present at the Board meeting and are unable to participate via teleconference.

All meeting minutes will reflect Board Member attendance including when a member is excused or absent from a meeting.

BOARD MEMBER PARTICIPATION

The Board President may contact members who have missed three consecutive meetings to determine the reason they have been absent and whether or not the member is able to continue serving as an active member of the Board. In some cases, the President may suggest that the member consider resigning.

PUBLIC NOTICE/INFORMATION AT BOARD MEETINGS - GOVERNMENT (GOV.) CODE SECTION 11120 ET. SEQ.

Meetings are subject to all provisions of the Bagley-Keene Open Meeting Act (Act). This Act governs meetings of the State regulatory boards and meetings of committees of those boards where the committee consists of more than two members. It specifies meeting notice and agenda requirements and prohibits discussing or taking action on matters not included in the agenda. Any general discussion of exams or disciplinary procedures shall be held in public.

Communications between or among more than two Board Members may considered “meetings” if those communications occur in serial fashion through a series of telephone calls or other communications (such as electronic mail) by which more than two of the Board Members are

involved and board business is discussed (e.g., polling of Board Members). Such communications are prohibited.

The Board may meet in closed session to discuss examinations, deliberate on enforcement cases, review examination issues where a public discussion would compromise the integrity of the examination, a disciplinary case, or a personnel issue. If the agenda contains matters that, on advice of legal counsel, are appropriate for closed session, the agenda shall cite the particular statutory section and subdivision authorizing the closed session.

QUORUM - BPC SECTION 8524

Four members of the Board shall constitute a quorum for the transaction of business, for the performance of any duty, or the exercise of any power or authority of the Board.

A vacancy on the Board shall not impair the power of the remaining members to perform all duties and exercise all powers of the Board providing the members remaining constitute a quorum.

AGENDA ITEMS

Agenda items are generally discussed and agreed upon at a full Board meeting. Additional agenda items for a Board meeting from any source, including Board Members, must be submitted to the Executive Officer at least 21 days prior to the meeting. The Executive Officer may confer with the Board President prior to adding items to the meeting agenda.

NOTICE OF MEETINGS - GOV. CODE SECTION 11120 ET.SEQ.

According to the Act, meeting notices (including agendas for Board meetings) must be sent to persons on the Board's mailing list and posted on the Board's Web site at least ten (10) calendar days in advance. The notice must include a staff person's name, work address, and work telephone number to provide further information prior to the meeting.

MEETING MATERIALS

The Board staff prepares all materials for Board meetings. Board Members may opt to receive meeting materials via electronically; otherwise a hard copy will be mailed. Board Members will receive all related material in advance of each meeting. To engage in a meaningful discussion to determine a recommendation or position, Board and Committee Members should thoroughly review all meeting materials prior to each meeting.

RECORD OF MEETINGS

The minutes are a detailed summary of each Board, committee, or task force meeting, not a transcript. They shall be prepared by staff and submitted to members for review before the next meeting. Minutes shall be submitted for approval at the next scheduled meeting of the Board, committee, or task force. Once approved, the minutes serve as the official record of the meeting.

WEBCAST - GOV. CODE SECTION 11124.1 ET. SEQ.

Whenever feasible, the Board shall webcast its meetings. An archive of the meeting shall be available for review on the SPCB web site. If webcast is not feasible at a particular meeting site, the Board will post minutes of the meeting on its web site once the minutes are approved by the Board. Any audio or video recording of an open and public meeting made for whatever purpose by or at the direction of the Board shall be subject to inspection pursuant to the California Public Records Act (commencing with section 6250 of the Government Code).

MEETING REQUIREMENTS – GOV. CODE SECTION 11120 ET SEQ.

The Board will use Robert's Rules of Order to the extent that it does not conflict with State law (e.g., Bagley-Keene Open Meeting Act), as a guide when conducting meetings.

- **Bagley-Keene Open Meeting Act**
  The Bagley-Keene Open Meeting Act *(Government Code Section 11120 et seq.)* directs that the people's business must be conducted openly. Therefore, decisions and actions by a public agency must be conducted openly so that the public may be informed. The Board achieves this legislative mandate by complying with all the requirements specified in the Bagley-Keene Open Meeting Act.

- **Definition of a Meeting – Gov. Code Section 11122.5**
  A meeting is defined in the Bagley-Keene Open Meeting Act (the Act) as including "any congregation of a majority of the members of a state body at the same time and place to hear, discuss, or deliberate upon any item that is within the subject matter jurisdiction of the state body to which it pertains." In this definition, the term "state body" refers to the Board.

  The meeting definition also applies to all communication between Board Members (e.g., emails, telephone calls, texts, dining conversations) if the total number of Board Members involved in the communication is a majority of the Board or a Committee.

  If Board Members engage in any communication regarding Board business with more than one member, this communication is a violation of the Act. The violating members may be guilty of a misdemeanor (*Government Code Section 11130.7).*

  There are some exemptions to the meeting definition. Please refer to the Act for clarification. When in doubt, contact the Executive Officer or the Board's legal counsel.

- **Teleconference Meeting – Gov. Code Section 11123**
  The Board may opt to hold a meeting via teleconference. Meetings held via teleconference are also subject to the same notice requirements under the Act. The meeting notice must be published at least ten days in advance and must include the physical location of each Board Member attending the meeting remotely (unless this legal requirement is waived due to an Executive Order by the Governor).

The Board Member must be present at the physical location he or she provided for the meeting notice. The public is permitted to attend the meeting at any of the locations listed on the meeting notice during an open session of the meeting. Therefore, each Board Member must confirm that the physical location used for the teleconference meeting is ADA accessible. The public is not permitted to attend any part of the meeting that is designated as “closed session.”

LINK TO BAGLEY-KEENE OPEN MEETING ACT

CHAPTER 4
TRAVEL & SALARY POLICIES/PROCEDURES

TRAVEL APPROVAL – STATE ADMINISTRATIVE MANUAL SECTION 700 ET SEQ.

Travel related to Board and Committee meetings do not need approval. All other travel related to Board business must be approved by the DCA prior to the event. This includes any out-of-state travel. Under specific circumstances, a Board Member may travel to attend a national association meeting. Please contact the Executive Officer for further information.

LINK TO DCA TRAVEL GUIDE

LINK TO DCA POCKET TRAVEL GUIDE

TRAVEL ARRANGEMENTS

Board Members should always contact Board staff to make travel arrangements for Board and Committee meetings. Board staff will book flights, and hotel and rental car reservations. A hotel that honors the state government employee rate will be chosen for all Board Members needing a room. Rental cars will be reserved for Board Members when a car is needed. To encourage ride sharing, vans or large sedans are reserved. Board Members may also use taxi, ride sharing services such as Uber or Lyft, shuttle service, or a personal vehicle for transportation.

To facilitate easier travel planning, all Board Members should provide Board staff with their credit card information and Southwest Rapid Rewards number. This information will be kept in a secure location and will be kept on file for future travel arrangements.

All travel and transportation arrangements are made in compliance with state travel guidelines. Any expenses incurred by a Board Member, which were not previously approved or within the state travel guidelines, may require written justification. The written justification will be submitted with the travel claim and is subject to the appropriate approvals. The expense may or may not be approved.

OUT-OF-STATE TRAVEL – STATE ADMINISTRATIVE MANUAL SECTION 700 ET SEQ.

All out-of-state travel for all persons representing the State of California must be approved by the Board President and is ultimately controlled and approved by the Governor. Once approved for out-of-state travel, Board Members will be reimbursed actual lodging expenses, supported by vouchers, and will be reimbursed for meal and supplemental expenses. Travel prior to approval by the Governor is at the individual Board or Committee member's own risk and reimbursement may be denied.

EXCEPTIONS TO TRAVEL REIMBURSEMENT POLICIES

- **Lodging:** State guidelines generally prohibit reimbursement for hotel expenses within 50 miles of an individual's home address or an extra night stay following the conclusion of the Board activity. However, an exception to this guideline may be obtained if the circumstances necessitate an overnight stay.

- **Airport Parking Reimbursement:** State guidelines strongly encourage the use of the least expensive parking available. However, if the Board determines that additional parking costs above the lowest-cost option are in the best interest of the State, a written justification explaining the necessity for the additional cost must be submitted with the travel claim.

- **Travel Claims:** Rules governing reimbursement of travel and meeting expenses for Board Members are the same as for state management-level staff. All expenses must be claimed on the appropriate travel expense claim forms or through CalATERS (California Automated Travel Expense Reimbursement System). All travel claim forms must be submitted to Board staff for processing.

  Board Members are strongly encouraged to submit their travel expense forms immediately after returning from a trip and no later than the 2 weeks following the trip. For the expenses to be reimbursed, Board members shall follow the procedures contained in the *DCA Travel Guide*, which are periodically disseminated by Board staff.

PLEASE REFER TO APPENDIX FOR TRAVEL REIMBURSEMENT FORM

SALARY PER DIEM AND TRAVEL REIMBURSEMENT - BPC SECTIONS 103 AND BPC 8526

Each member of a board, commission, or committee created in the various chapters of Division 2 (commencing with Section 500) and Division 3 (commencing with Section 5000), and in Chapter 2 (commencing with Section 18600) and Chapter 3 (commencing with Section 19000) of Division 8, shall receive the moneys specified in this section when authorized by the respective provisions.

Each such member shall receive a per diem of one hundred dollars ($100) for each day actually spent in the discharge of official duties and shall be reimbursed for traveling and other expenses necessarily incurred in the performance of official duties.

The payments in each instance shall be made only from the fund from which the expenses of the agency are paid and shall be subject to the availability of money.

Notwithstanding any other provision of law, no public officer or employee shall receive per diem salary compensation for serving on those boards, commissions, or committees on any day when the officer or employee also received compensation for the officer or employee's regular public employment.

PLEASE REFER TO APPENDIX FOR PER DIEM FORM

CHAPTER 5
OTHER POLICIES/PROCEDURES

REMOVAL OF BOARD MEMBERS - BPC SECTION 106 AND 106.5

The Senate, Assembly, and Governor has the power to remove from office at any time any member of any board appointed by him/her for continued neglect of duties required by law or for incompetence or unprofessional or dishonorable conduct.

The Senate, Assembly, and Governor may also remove from office a Board Member who directly or indirectly discloses examination questions to an applicant for examination for licensure.

RESIGNATION OF BOARD MEMBERS - GOV. CODE SECTION 1750

In the event that it becomes necessary for a Board Member to resign, a letter shall be sent to the appropriate appointing authority (Governor, Senate Rules Committee, or Speaker of the Assembly) with the effective date of the resignation. Written notification is required by State law. A copy of this letter shall also be sent to the director of the Department, the Board President, and the Executive Officer.

RULES FOR CONTACT WITH THE PUBLIC, A LICENSEE, AN APPLICANT, OR THE MEDIA

Occasionally, in your role as a Board Member, you may be contacted by a licensee, colleague, applicant, member of the public, or the media regarding an issue or concern that pertains to Board business or proceedings. Any one of these contacts may compromise your position relating to future decisions about policy, disciplinary actions, or other Board business.

To avoid compromising your role as a Board Member, please refrain from assisting the individual with his/her issue. Instead, offer to refer the matter to the Executive Officer or give the individual the contact information for the Executive Officer. Refrain from engaging in discussion with the individual and make every effort to end the conversation quickly and politely. Report all such contacts to the Executive Officer as soon as possible.

CONFLICT OF INTEREST – GOV. CODE SECTION 87100

No Board Member may make, participate in making, or in any way attempt to use his/her official position to influence a governmental decision in which he/she knows or has reason to know he/she has financial interest. Any Board Member, who has a financial interest that may be affected by a governmental decision, shall disqualify himself/herself from making or attempting to use his/her official position to influence the decision. Any Board Member who feels he/she is entering a situation where there is potential for a conflict of interest, should immediately consult the Executive Officer or the Board's legal counsel.

ELECTION OF OFFICERS - BPC SECTION 8523 AND BOARD POLICY G-4

The Board shall elect from its members a President and a Vice President to hold office for one year. Officer elections shall be conducted at the October Board meeting. President and Vice President shall assume duties immediately following the annual October meeting. At least one of the offices must be held by a public member.

OFFICER VACANCIES

If the Office of the President becomes vacant, the Vice President assumes the office as the interim President and the Board holds an election for both positions at the next scheduled Board meeting.

ACCESS TO BOARD FILES AND RECORDS

No Board Member may access a licensee, applicant, or complaint file without the Executive Officer's knowledge and approval of the conditions of access. Records or copies of records must not be removed from the Board's office.

COMMUNICATION WITH OTHER ORGANIZATIONS/INDIVIDUALS

The Executive Officer, his or her designee, or the Board President serve as spokesperson to the media on Board actions, policies, or any communications that is deemed sensitive or controversial, to any individual or organization. Any Board Member who is contacted by any of the above should terminate the contact and inform the Executive Officer or the Board President.

LEGAL OPINIONS – REQUESTS FROM OUTSIDE PARTIES

The Board does not provide legal services for persons or entities outside the Board staff. Requests for legal opinions from outside entities are to be discussed with the Board President and Legal Counsel to determine whether it is an issue over which the Board has jurisdiction and the opinion, if prepared, could be posted on the Board's website and benefit the general public rather than one individual. Persons making such requests would be notified that the Board will not be responding directly to their request but will post the opinion on the Internet when it is final.

CONTACT WITH LICENSEES

Board Members must not intervene on behalf of a licensee for any reason. They should forward all contacts or inquiries to the Executive Officer.

CONTACT WITH COMPLAINANT/RESPONDENT - DCA REFERENCE MANUAL

Board Members should not directly participate in complaint handling and resolution or investigations. To do so would subject the Board Member to disqualification in any future disciplinary action against the licensee. If a Board Member is contacted by a complainant/Respondent or his/her attorney, they should refer the individual to the Executive Officer or Board staff.

CONFLICT OF INTEREST - GOV. CODE SECTION 87100

No Board Member may make, participate in making or in any way attempt to use his or her official position to influence a governmental decision in which he or she knows or has reason to know he or

she has a financial interest. Any Board Member who has a financial interest shall disqualify himself/herself from making or attempting to use his/her official position to influence the decision. Any Board Member who feels he or she is entering into a situation where there is a potential for a conflict of interest should immediately consult the Executive Officer or Board President.

CHAPTER 6
BOARD MEMBER REQUIRED TRAINING

Board Members are required to complete specific forms and training at various intervals during their appointment period. To ensure compliance and notification to the requisite agencies, all training certificates and required forms must be sent to Board staff.

Board staff will forward the required documentation to the appropriate agency and maintain a copy in the Board Member's personnel file. It is important that the Board have a copy of all required training and documents. This ensures that the Board has an accurate record that you have satisfied all requirements and are able to provide copies upon request.

STATEMENT OF ECONOMIC INTEREST - *(http://www.fppc.ca.gov/Form700.html)*

This form is commonly referred to as Form 700 and is to be completed upon assuming the position, annually, and upon leaving. Under DCA's Conflict of Interest Code, designated officials are required to complete a Statement of Economic Interests Form 700. Annually, DCA will send several reminders to complete this form with a link to the electronic filing system.

Failure to complete this form in a timely manner may result in a fine from the Fair Political Practice Commission. All fines are publicly noticed.

ETHICS ORIENTATION FOR STATE OFFICIALS – GOVERNMENT CODE SECTIONS 11146-11146.4

California law requires all appointees to take an ethics orientation within the first six months of their appointment and to repeat the ethics orientation every two years throughout their term.

The training includes important information on activities or actions that are inappropriate or illegal. For example, public officials cannot take part in decisions that directly affect their own economic interests. They are prohibited from misusing public funds, accepting free travel and accepting honoraria. There are limits on gifts.

An online, interactive version of the training is available on the Attorney General's website at https://oag.ca.gov/ethics/course.

Copies of completion certificates must be sent to Board staff to be maintained in the personnel file. Records concerning the attendance of this course must be kept on file for five years.

DCA BOARD MEMBER ORIENTATION TRAINING – BPC 453

California Business and Professions Code Section 453 require every newly appointed member to complete a training and orientation program offered by DCA within one year of assuming office.

DCA has been advised that this statute also applies to all reappointed Board Members. Therefore, if you attended the training during your first term and are reappointed, you must attend the training following your reappointment.

The training covers the functions, responsibilities and obligations that come with being a member of a DCA board. To receive credit for the training, Board Members must attend the entire training.

DCA schedules the Board Member Orientation Training (BMOT) sessions throughout the year. Specific locations are announced several months prior to the orientation. Board Members must register for the training through Board staff.

SEXUAL HARASSMENT PREVENTION TRAINING – GOVERNMENT CODE SECTION 12950.1; CALIFORNIA CODE OF REGULATIONS, TITLE 2, SECTION 11024

Section 12950.1 of the Government Code requires an employer having five or more employees to provide at least two hours of classroom or other interactive training and education regarding sexual harassment to all supervisory employees and at least one hour of classroom or other effective interactive training and education regarding sexual harassment to all nonsupervisory employees. The employer shall provide sexual harassment training and education to each employee once every two years. New nonsupervisory employees shall be provided training within six months of hire.

California Code of Regulations, Title 2, Section 11024 also specifies requirements of an employer to provide two hours of training mandated by Government Code 12950.1.

An online, two-hour Sexual Harassment Prevention Tutorial is provided by DCA. Board staff will provide information and instructions to access the online tutorial.

DEFENSIVE DRIVER TRAINING – STATE ADMINISTRATIVE MANUAL 0752

State Administrative Manual 0752 requires any State employees who frequently drive state vehicles, vehicles rented by the state or drive personal vehicles for state business should attend and successfully complete an approved defensive driver training course at least once every four years.

This two-and-a-half-hour training is designed for drivers to think in terms of minimizing their risks in order to survive in today's highway transportation system. After completion of each module, the student is required to participate in a short assessment in order to advance to the next module. Once completed, a final assessment will be required. Upon successful completion, the student receives a completion certificate valid for four years. Board staff will be able to provide information to access the training.

CHAPTER 7
EXECUTIVE OFFICER

APPOINTMENT - BPC SECTION 8528

The Board appoints an Executive Officer who is exempt from civil service and serves at the pleasure of the Board.

ROLE - CALIFORNIA CODE OF REGULATIONS (CCR) SECTION 2003

The Executive Officer implements the policies developed by the Board and carries out the tasks delegated by the Board.

RECRUITMENT

The Board may institute an open recruitment plan to obtain a pool of qualified Executive Officer candidates. It may also utilize proven equal employment opportunity and personnel recruitment procedures.

SELECTION - GOV. CODE SECTION 11125/BPC 8529

A qualified candidate for Executive Officer must demonstrate the ability to supervise employees, handle conflict resolution and complaint mediation, and conduct public speaking. The Executive Officer must also demonstrate effective written and verbal communication skills and knowledge and expertise in the areas of legislation, regulations, administration, examination, licensing, enforcement, legislation and budgets. The selection of a new Executive Officer is included as an item of business, which must be included in a written agenda and transacted at a public meeting.

CHAPTER 8
BOARD ADMINISTRATION AND BOARD STAFF

BOARD ADMINISTRATION

Board Members should be concerned primarily with formulating decisions on Board policies rather than making decisions concerning the implementation of such policy. It is inappropriate for Board Members to become involved in the details of program delivery or implementation. Strategies for the day-to-day management of Board programs and Board staff is the responsibility of the Executive Officer. Board Members should not interfere with day-to-day operations, which are under the authority of the Executive Officer.

EXECUTIVE OFFICER

The Executive Officer is appointed by and serves at the pleasure of the Board and is exempt from civil service. The Executive Officer shall exercise the powers and perform the duties delegated be the Board. The Executive Officer is responsible for the financial operations and integrity of the Board and is the official custodian of records. Annually, at the October Board meeting, the Board Members will conduct a review of the Executive Officer's performance. The Board President will meet with the Executive Officer to discuss the performance appraisal.

BOARD STAFF

Employees of the Board, with the exception of the Executive Officer, are civil service employees. Their employment, pay, benefits, discipline, termination, and conditions of employment are governed by a myriad of civil service laws and regulations and often by collective bargaining labor agreements. Because of this complexity, it is most appropriate that the Board delegate all authority and responsibility for management of the civil service staff to the Executive Officer.

RULES FOR CONTACTING BOARD STAFF

Board Members should only contact the following designated staff:

- Executive Officer, Sophia Cornejo at (916) 561-8712 regarding all Board business.
- Assistant Executive Officer, VACANT at (916) 561-8735 regarding all Board business.
- Administrative Analyst, Kristina Jackson-Duran at (916) 561-8710 regarding travel, salary, per diem, training and required personnel forms.
- Regulation and Legislative Program Specialist, VACANT at (916) 561-8722 regarding Regulations and Board and Committee meeting materials.
- Disciplinary Specialist, Melissa Sowers-Roberts at (916) 561-8716 regarding disciplinary mail votes.
- Legal Counsel, Michael Romero at (916) 574-8269 regarding disciplinary procedural questions or ethical questions.

PLEASE REFER TO APPENDIX FOR BOARD ORGANIZATIONAL CHART

STRATEGIC PLANNING

The Board will conduct periodic strategic planning sessions. Dates for these sessions will be announced well in advance.

BOARD MEMBER ADDRESSES – DCA POLICY

The Board Member addresses and telephone numbers are confidential and shall not be released to the public without expressed authority by the individual Board Member.

CHAPTER 9
BOARD COMMITTEES

BOARD COMMITTEES

The committee meetings are held as needed at the direction of the full Board and are fully within the scope of the Open Meeting Act. In light of the Board's limited resources, these meetings are a cost-efficient and legal means of gathering information for discussion by the full Board, which enhances the process of the Board's public meetings and addresses the needs of the profession and consumers in California.

RESEARCH ADVISORY PANEL – BPC SECTION 8674(T)(3)

The Board has a Research Fund, funded by the purchase of pesticide use stamps, to support research in the structural pest control field.

Upon determination of appropriate available funds, the Board President shall establish a five-member research advisory panel (RAP). The RAP must include one member of the Structural Pest Control Board, two representatives from the structural pest control industry, one representative from the Department of Pesticide Regulation, and one representative from the University of California.

The RAP, or other entity designated by the Board, shall solicit on behalf of the Board all requests for proposals and present to the panel all proposals that meet the criteria established by the panel. The panel shall review the proposals and recommend to the Board which proposals to accept. The recommendations shall be accepted upon a two-thirds vote of the Board. The Board shall direct the panel, or other entity designated by the Board, to prepare and issue the research contracts and authorize the transfer of funds from the Structural Pest Control Research Fund to the applicants whose proposals were accepted by the Board.

DISCIPLINARY REVIEW COMMITTEE – BPC 8660

When a structural pest control licensee or registered company is to be suspended or the licensee, registered company, or unlicensed individual is to be fined pursuant to BPC section 8617, and if the individual requested and appeared at a hearing before the commissioner in accordance with BPC section 8617, the party to be suspended or fined may appeal the decision to the Disciplinary Review Committee (DRC).

A DRC consists of three members for the purposes of reviewing appeals of orders issued pursuant to Section 8617. The committee shall be made up of one member representing the Department of Pesticide Regulation and one member representing the Board. The third member shall be a licensed pest control operator actively involved in the business of pest control and shall be selected by the Board Members.

COMMITTEE APPOINTMENTS

The Board President establishes committees, whether standing or special, as he or she deems necessary. The Board President determines committee composition and member appointments, including, but not limited to, liaison appointments. When necessary, committee members may make recommendations for new members.

No action can be taken unless a quorum of a committee is present. A majority of the members shall constitute quorum.

ATTENDANCE AT PUBLIC COMMITTEE MEETINGS - GOV. CODE SECTION 11122.5(C)(6)

Non-committee Board Members may sit in the audience and participate in meeting discussions, unless there is a quorum of Board Members in the room. If there is a quorum present of four members, non-committee Board Members may sit in the audience, but may not participate in the meeting discussions.

MEETING RULES - GOV. CODE SECTION 11122(C)

Committee meetings are conducted under Robert's Rules of Order to the extent that it does not conflict with the Bagley-Keene Open Meeting Act.

Committees with two members can meet as necessary without a public notice and can hold teleconference meetings with the designated staff person participating in the teleconference as necessary.

Committee meetings involving three or more members are subject the Open Meeting Act requirement and must be noticed as a public meeting.

COMMITTEE MEETING AGENDAS/PUBLIC NOTICE

Agendas should focus on the specific tasks assigned by the Board which include public comment and only those information items dealing with subjects assigned to the respective committee.

If more than two Board Members attend a Committee meeting, the agenda shall contain the statement: "Notice of a Board meeting indicates that three or more members of the Board are present. While the law requires the Board to notice this meeting as a Board meeting, it is not the intent to take action as a Board at this meeting."

RECORD OF COMMITTEE MEETINGS – BCP 8531.5

As with the Board meetings, the minutes are a summary, not a transcript, of each committee meeting. Committee minutes may be approved at the next scheduled committee meeting and serve as the official record of the meeting.

Approved minutes of the open session are available for distribution to the public and shall be posted on the Board's Web site.

CHAPTER 10
ASSOCIATIONS

PEST CONTROL OPERATORS OF CALIFORNIA – (https://pcoc.org/)

The Pest Control Operators of California (PCOC) is a non-profit trade association that has served the needs of the pest control industry for nearly 80 years. PCOC keeps its members up-to-date on new materials, procedures, laws and precautions – and also works closely with the Board and Department of Pesticide Regulation to help shape regulations.

NATIONAL PEST MANAGEMENT ASSOCIATION – (https://npmapestworld.org/)

The National Pest Management Association (NPMA), a non-profit organization with nearly 5,000 members from around the world, was established in 1933 to support the pest management industry's commitment to the protection of public health, food and property. This commitment is reflected both in the continuing education of pest management professionals and the dissemination of timely information to homeowners and businesses.

ASSOCIATION OF STRUCTURAL PEST CONTROL REGULATORY OFFICIALS – (https://aspcro.org/)

The Association of Structural Pest Control Regulatory Officials (ASPCRO) is a professional association comprised of the state regulatory officials, responsible for regulating services provided by the structural pest control industry in their respective states. The ASPCRO's primary goal is to protect public health in the management of household (structural) pests performed by professional pest control companies. ASPCRO accomplishes this goal through the ongoing working relationships it has with the structural pest control industry, federal partners such as the U.S. Environmental Protection Agency, the pesticide chemical industry and academia, all working toward improving the public health services provided to consumers nationwide.

CHAPTER 11
ENFORCEMENT AND INFORMATION

COMPLAINT DISCLOSURE – BOARD POLICY E-10, PUBLIC RECORDS ACT, BPC 27

The Board's complaint disclosure policy has been developed to provide the public with information regarding complaints and disciplinary action against pest control licensees, candidates for licensure, and unlicensed individuals.

The Board's complaint disclosure policy does not include non-actionable complaints. Non-actionable complaints are those, which after investigation, were determined to be unsubstantiated or complaints which have been determined not to be within the Board's jurisdiction. If a complaint was initially determined to indicate a probable violation of law and is later found, upon further investigation, not to constitute a violation, it shall not be disclosed.

In complying with a request for complaint information, the Board may provide such cautionary statements as may be considered appropriate regarding the usefulness of complaint information to individual consumers in their selection of a pest control licensee.

The California Public Records Act (PRA), Government Code section 6250 et seq., requires public records to be available upon request. The PRA provides for specific timelines and general process to respond to a request for public records. Further, Government Code section 6254 specifies which records are not subject to public disclosure. As a state regulatory board within DCA, the Board is subject to the requirements for all PRA requests. The Board's response is coordinated with its DCA legal counsel.

Business and Professions Code section 27 specifies what information, such as enforcement actions and a licensee's address of record, must be available through the Internet (i.e., Board website). Providing this information allows consumers to verify the pest control company's licensure status as well as determine if there is any disciplinary action.

POINTS TO CONSIDER DURING THE ENFORCEMENT PROCESS

- **Board's Priority**: "Protection of the public shall be the highest priority for the Structural Pest Control Board in exercising its licensing, regulatory, and disciplinary functions. Whenever the protection of the public is inconsistent with other interests sought to be promoted, the protection of the public shall be paramount." – BPC section 8520.1
- **Goal of Discipline is Consumer Protection, Not Punishment**: "The purpose of such a [disciplinary] proceeding is not to punish but to afford protection to the public upon the rationale that respect and confidence of the public is merited by eliminating from the ranks of practitioners those who are dishonest, immoral, disreputable, or incompetent." – Fahmy v. Medical Bd. Of California (1995) 38 Cal. App. 4th 810

- **Recusal from Case Decision**: If the Board Member knows the Respondent and/or is familiar with facts/circumstances regarding the action that lead to the disciplinary matter, the Board Member shall consult with legal counsel regarding the Board Member's ability to participate in the case decision.

OFFICE OF ADMINISTRATIVE HEARINGS

The Office of Administrative Hearings (OAH) is a central panel of experienced, highly qualified Administrative Law Judge (ALJ) who preside as neutral judicial officers at hearings and settlement conferences. The ALJs are fully independent of the agencies whose attorneys appear before them. The ALJs are required to have practiced law for at least five years before being appointed and typically have over ten years of experience.

The administrative hearing process is similar to any other court proceeding. The ALJ presides over the hearing; a DAG represents the Board and presents the case; and the Respondent or the Respondent's representative/attorney presents its case. Testimony and evidence is presented and there is a transcript of the proceedings.

Upon the conclusion of the administrative hearing, the ALJ will consider all the testimony and evidence and will prepare a Proposed Decision (PD). Once the hearing is finished, the ALJ has 30 days to prepare the PD and send it to the Board.

FORMAL DISCIPLINARY CASE OUTCOMES

The possible outcomes for these cases are denial of the application, revocation, surrender of the license, or probation. If an individual is placed on probation, the individual must comply with the specific terms of the probation during the probation period. Once the individual has successfully completed probation, the license is restored without restrictions. However, the discipline will remain part of the individual's record.

OVERVIEW OF THE DISCIPLINARY PROCESS

- **PD**: Written by an ALJ after an administrative hearing.
- **Stipulation**: The licensee/applicant and Board may decide to settle the case at any time during the administrative process. Settlements are negotiated and completed prior to the date of an administrative hearing. Settlements are considered in cases where the Respondent has presented mitigating information/evidence to demonstrate that he/she may be a good candidate for probation.
- Both must consider/use the Disciplinary Guidelines in determining discipline.

Once a case is filed, there are three typical outcomes:

1. The Executive Officer and licensee stipulate a settlement that the Board can accept or reject.
2. A DAG on behalf of the Executive Officer and licensee litigate the case before an ALJ and the Board either adopts or rejects the ALJ's PD.
3. Default Decision:

- If an accusation is returned by the post office as unclaimed, the service is not possible because the Board does not know the whereabouts of a Respondent. The Respondent is considered to be in default. A Respondent is also considered to be in default if the Respondent fails to file a Notice of Defense upon receipt of the Accusation or Statement of Issues or fails to appear personally or through counsel at the hearing.

  Default cases result in revocation of the license or denial of the application. In the event, the Respondent becomes aware of the decision prior to the effective date, he/she may submit a written request to reconsider the decision. This request is presented to the Board Members to determine if they wish to grant the request.

DISCIPLINARY ACTIONS – BOARD POLICY

The Board provides information regarding formal discipline/accusations only after the case has been transferred to the Office of the Attorney General (AG). Board staff makes the following disclosure statement: "An investigation has been conducted and the case has been forwarded to the Attorney General's Office for consideration of possible action. At this time, there has been no determination of wrong-doing."

Formal charges are referred to as pleadings. In each pleading, the Executive Officer is the complainant. The Deputy Attorney General (DAG) assigned to the matter represents the Executive Officer.

There are three types of pleading. The type of pleading is dependent upon whether the Respondent (subject of the case) is licensed with the Board, an applicant for licensure, or is already on probation.

- **Accusation**: A written statement of charges against the holder of a license or privilege, to revoke, suspend or limit the license, specifying the statutes and rules allegedly violated and the acts or omissions comprising the alleged violations. An "accusation" is the first public document in any case. The accusation is prepared and filed by the DAG. Once the accusation is filed, it is a public document and available on written request and published on the Boards website. If the accusation results in a final order/decision, once the decision is final, it is also available to the public upon written request.
- **Statement of Issues**: A written statement of the reasons for denial of an application for a license, specifying the statutes and rules allegedly violated and the acts or omissions comprising the alleged violations.
- **Petition to Revoke Probation**: A written statement to revoke a probationer's license alleging the probationer has violated the terms and conditions of his or her probation.

In all formal disciplinary actions, the Respondent is formally notified of the Board's proposed action, their rights under the law, and a due date to respond to the Board's notification. All final decisions by the Board following formal disciplinary proceedings of alleged violations of the SPCB Act shall be published on the Board's Web site after the effective date of the decision.

BOARD REVIEW OF STIPULATIONS AND PROPOSED DECISIONS

Board Members will consider cases either by mail vote or closed session during a Board Meeting

- **Mail Votes**: All disciplinary cases are sent to the Board Members via email for their consideration and vote.
  - Mail ballot packet materials are confidential.
  - Board Members may NOT communicate with each other.
  - It is critical that Board Members return their votes timely to Board staff.
  - All materials regarding the disciplinary case MUST be confidentially destroyed.

HOLDING OR REJECTING A STIPULATED SETTLEMENT OR PROPOSED DECISION – BOARD POLICY

As a general rule, most stipulated settlements and PD's are well reasoned, consistent with the Board's Disciplinary Guidelines, and may be adopted consistent with sound public policy. If they are not, consider rejecting (or "nonadopting") such decisions. If it is difficult to make that determination, however, stipulated settlements and PD's that are considered by mail vote, should be held for closed session discussion.

Consider rejecting a Stipulated Settlement or an ALJ's PD in these circumstances:

1. The stipulated settlement or PD does not provide sufficient public protection given the nature of the violations. For example, important terms of probation are missing, the probationary period is too short, probation is not appropriate, or other significant unexplained deviations from the Board's Disciplinary Guidelines.
2. The ALJ made an error in the PD in applying the relevant standard of practice for the issues in controversy at the hearing.
3. The ALJ made an error in interpreting law and/or regulations in the PD.
4. If the Board Members reject the proposed settlement, the case will be returned to the AG's office to resume the process for a formal administrative hearing before an ALJ. Following the hearing, the ALJ will issue a PD for the Board Members to consider.
5. If the Board Members reject the PD, Board staff will order the hearing transcripts and request written arguments from the Respondent. Board Members review the transcripts, evidence, and written arguments and meet in a closed session Board meeting with legal counsel to write their decision. The Board uses the Disciplinary Guidelines and applicable law when making such decisions. The Board's decision is then adopted and issued to the Respondent.

Consider holding a case for closed session discussion when:

1. You are unsure whether the stipulated settlement or PD protects the public and would like to discuss the merits with other Board Members.
2. You are unsure about the ALJ's reasoning and description. (PD).
3. If you believe a discussion of the practice issues with licensee members may make it easier for you to make a decision.
4. If you are unsure whether the ALJ's decision is consistent with the law (PD).
5. After discussion with the assigned board attorney, you still have questions about the case.

Typically, a vote to hold any PD or stipulated settlement for closed session discussion requires a hold vote by two (2) or more Board Members.

PETITION FOR RECONSIDERATION – GOV. CODE SECTION 11521

Eligibility to Petition for Reconsideration is limited to PD. A Petition for Reconsideration is the first step available to a party in contesting a final order. The Board may order Reconsideration of all or part of the case on its own motion or on Petition of any party.

The process, generally, is as follows:

- Petition for Reconsideration is submitted to the Board by Respondent.
  - If additional time is needed to evaluate the Petition filed prior to the expiration of the applicable periods provided under Government Code section 11521(a), the Executive Officer will issue a 10-day Stay of Decision.
- The Board Members review the petition to determine if it will issue an Order Granting Reconsideration or Order Denying Reconsideration.

Denial of a Petition for Reconsideration

- If the Board takes no action on the Petition, votes to DENY the Petition, or if there are insufficient votes to reach a quorum in favor of the petition, the Decision and Order will remain as issued and will become effective as originally ordered.

Grant of a Petition for Reconsideration

- If the Board votes to GRANT the Petition for Reconsideration, the Decision and Order will NOT become effective.
  - When granting the Petition, the Board determines whether to receive oral or written argument or additional evidence. The Board may reconsider the case or remand it to an ALJ.
  - The Order Granting Reconsideration will be sent to the parties, stay the effective date of the Decision indefinitely, and advise the parties whether written or oral argument or additional evidence may be submitted by the parties.
  - Board staff will order transcripts from the hearing.
  - Upon receipt of the transcripts, the Executive Officer will issue an Order Fixing Date for Submission of Written/Oral Argument.
  - Upon close of the Fixed Time for Submission of Written/Oral Argument and receipt of hearing transcripts, the Petition is sent to the Board Members for review.
    - Written/Oral Argument (Board may choose to accept either or both)
    - Argument/New Evidence (Board may choose to accept either or both)
  - The matter will be discussed in closed session at the next regularly scheduled Board meeting during which the Board can decide to:
    - Uphold the original decision
      - Order prepared by DCA Legal Counsel
    - Reduce the penalty

- Order prepared by DCA Legal Counsel
- Remand the matter back to the ALJ for taking and evaluation of further evidence
- Other options according to Government Code section 11517

PETITION FOR MODIFICATION OF PENALTY OR REINSTATEMENT – GOV. CODE SECTION 11522 & BPC SECTION 8623.5

In petitioning for Modification of Penalty, Early Termination of Probation, or Reinstatement under BPC section 8623.5 and under Government Code section 11522, the petitioner has the burden of demonstrating that he or she is fit to safely engage in the practice of structural pest control within the scope of current law and accepted standards of practice.

A Petition for Reinstatement may be filed three years or more from the effective date of the disciplinary decision. A Petition for Modification may be filed two or more years from the effective date of the disciplinary decision. A Petition for Early Termination of Probation may be filed one year or more from the effective date of the disciplinary decision (for probation terms less than three years) and at least two years from the effective date of the disciplinary decision (for probation terms of three or more years).

The process for filing a Petition for Modification of Penalty/Early Termination of Probation or Reinstatement is as follows:

- Petitioner files the Petition accompanied by all supporting documentation.
- The Petition is referred to the Board's liaison at the AG's office.
- The matter is set for hearing before the Board in open session at the next regularly scheduled Board meeting.
- The hearing takes place in open session before the Board and an ALJ.
- The Board considers and decides the matter in closed session.
- The Decision and Order is prepared by the ALJ.
- Board staff forwards the Decision and Order to the Board President for review and confirmation that the document accurately represents the Board's decision.
- The Decision and Order is served on Respondent via certified mail.

When the Board considers reinstating the license or registration or modifying a penalty, it may impose terms and conditions as it determines necessary, in accordance with the Disciplinary Guidelines. To reinstate a revoked license or registration or to otherwise reduce a penalty or modify probation shall require a majority vote of the Board Members.

CHAPTER 12
RESOURCES

STRUCTURAL PEST CONTROL BOARD WEBSITE
https://www.pestboard.ca.gov/

STRUCTURAL PEST CONTROL BOARD DISCIPLINARY GUIDELINES
https://www.pestboard.ca.gov/pestlaw/disciplinaryguidelines.pdf

DCA BOARD MEMBER RESOURCE CENTER
http://www.dcaboardmembers.ca.gov

CALIFORNIA ADMINISTRATIVE PROCEDURE ACT
The California Administrative Procedure Act is found in the California Government Code starting at section 11370 and continuing through section 11529 and title 1 of the California Code of Regulations starting at section 1000 through section 1050.
http://leginfo.legislature.ca.gov/faces/codes.xhtml
https://govt.westlaw.com/calregs

BAGLEY-KEENE OPEN MEETING ACT
https://oag.ca.gov/open-meetings

CALIFORNIA LEGISLATIVE INFORMATION
The California Legislative Information website provides legislative information such as California Law Codes and Bill search features, your legislature, and legislative publications.
http://leginfo.legislature.ca.gov/faces/home.xhtml

PROFESSIONAL ASSOCIATIONS
Pest Control Operators of California
https://pcoc.org/

National Pest Management Association
https://npmapestworld.org/

Association of Structural Pest Control Regulatory Officials
https://aspcro.org/

APPENDIX A

TRAVEL REIMBURSEMENT FORM

Name: _____

Address: _____

_____

City State ZIP

Departure from residence: _____ _____

Date Time

Return to residence: _____ _____

Date Time

Private Car: Between _____ and _____

Between _____ and _____

Total Miles (Round trip) _____

Lodging: $_____ **(Attach Receipts)**

Rental Car: **Attach Rental Car Agreement**

Airfare: **Attach Airline ticket itinerary**

Miscellaneous:

Parking $_____ (Parking at Airport and hotel, ect.)

Taxi $_____

Tolls $_____

Gas for rental car $_____

Other (Explain) _____

Purpose of travel: _____

Attach all receipts for parking, airline itinerary, hotel billing, taxi, rental car or gas receipts and any miscellaneous expenses. Payment will not be made without receipts.

_____

Signature

APPENDIX B

ATTENDANCE REPORT

Board Member: _____

Month: _____

Please report the **actual** time you spent attending meetings or performing board business.

Pre-Meeting Preparation (please list type of prep)	Date	# Hours	# Minutes

Board Meeting Attended (please put each day attended)	Hours in Meeting (do not include meal and/or travel times)			
	Start Time:	End Time:	# Hours	# Minutes

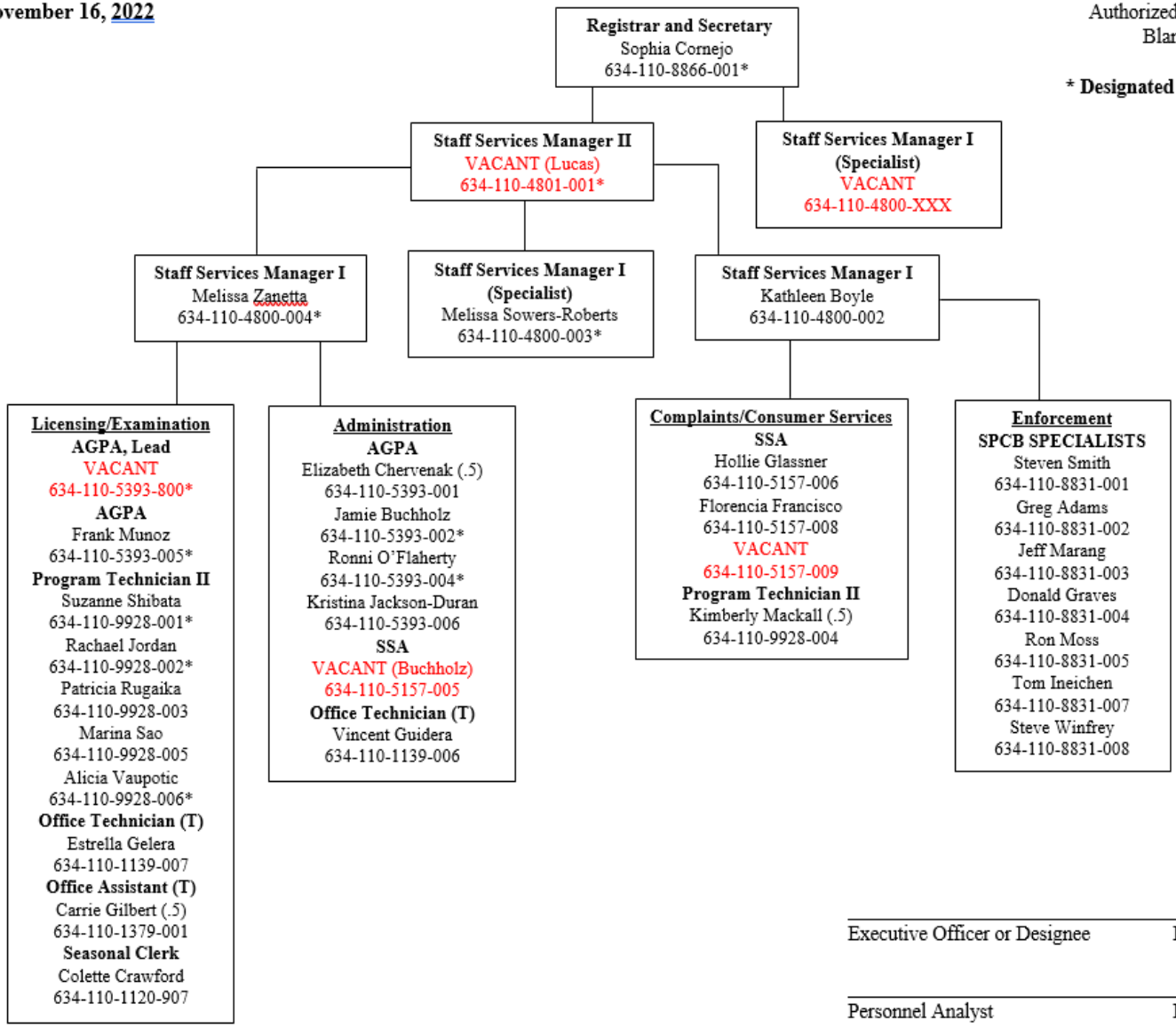
Mail Ballots/Transcripts and Documents Reviewed (please list mail ballot)	Date	# Hours	# Minutes

Total Hours: _____

APPENDIX C

Department of Consumer Affairs
Structural Pest Control Board
November 16, 2022

CURRENT/PROPOSED SPCB STAFFING
FY 2022-23
Authorized Positions: 30.5
Blanket Positions: 1
Total: 31.5
*** Designated CORI position**



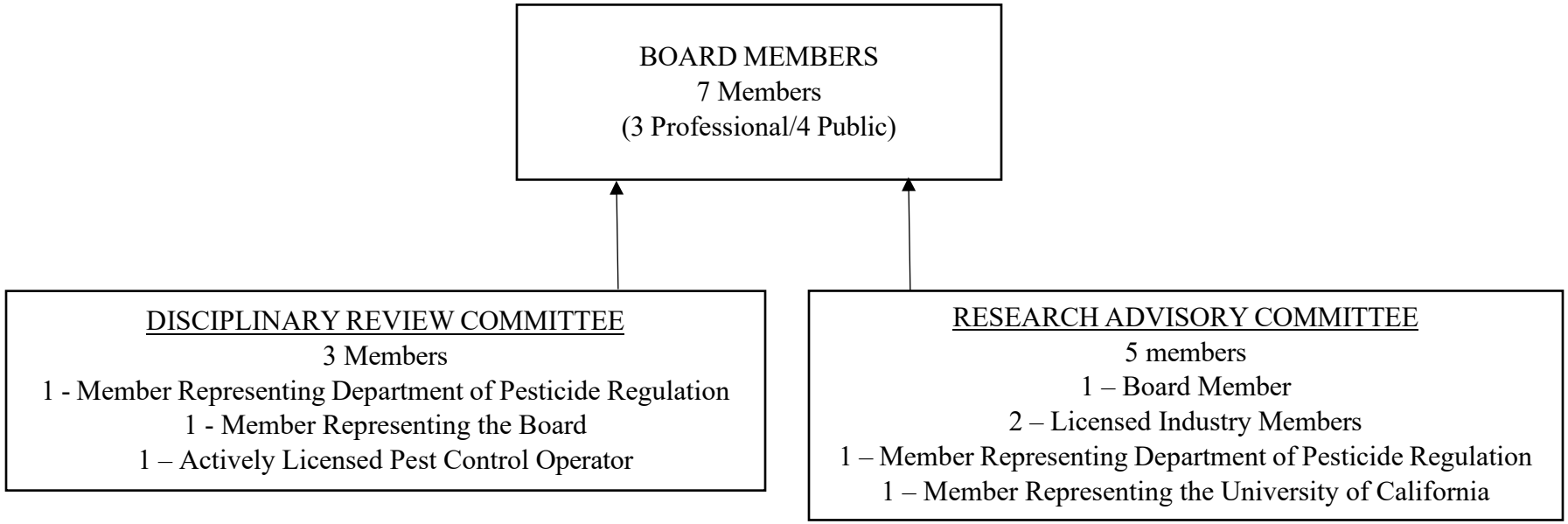
Executive Officer or Designee Date

Personnel Analyst Date

Attachment B

Committee Organizational Chart

Structural Pest Control Board
Committee Organizational Chart



Attachment C

Major Studies

Development and Evaluation of Bait Strategies for Control of Pest Yellowjackets in California
October 22, 2018 – December 31, 2021

This final report is divided into sections, covering research conducted in one of our study regions: the San Francisco Bay, the Lake Tahoe area, and southern California (five sites). Conditions varied at each location depending upon human use patterns (recreational park, RV park, wild animal park, etc.), weather, and local factors (elevation, bears, etc.). Consequently, modifications in the monitoring and baiting protocols were sometimes necessary to accommodate these differences.

This project was initiated in August 2018 (prior to the release of funding) so that some initial trapping and baiting studies could be conducted before the end of the 2018 yellowjacket season. Sites were selected in southern California, the San Francisco Bay Area, and the Lake Tahoe area based on historical yellowjacket pest problems. The COVID pandemic impacted the 2020 and 2021 testing protocols. Travel limitations and additional technical assistance at the various field sites resulted in a considerable savings of research funds. A no-cost extension to include the summer of 2021 was approved.

Two different monitoring threshold protocols have been proposed prior to baiting for yellowjackets. Grant et al. (1968) proposed that baiting should commence when 7 yellowjackets/trap/day (YJ/T/D) were attained. Rust et al. (2010) adopted a slightly higher threshold of 10 YJ/T/D. We have chosen to use the higher threshold. There were occasions when baiting trials were conducted when the trap counts were not above the threshold. Requests by local cooperators had to be considered.

Methods and Materials

Monitoring

Placer-Style Trap – The Placer-style yellowjacket trap is a durable, reusable design. A 969-ml plastic screw-top jar (32 oz., Carolina Biological Supply Company, Burlington, NC) with an opening of 120 mm diam. was modified by cutting a hole in the center of the lid and inserting the plastic funnel portion of a Rescue fly trap (Sterling International Inc., Spokane, WA) from which the plastic bag had been cut away. The funnel was secured to the jar lid with rivets. On the inside of the clear plastic jar were two vials (12 dram and 9 dram, Bioquip Products, Rancho Dominguez, CA), with the outer vial secured to the jar with hot-glue and acting as a sleeve to secure an inner vial containing attractant (heptyl butyrate or minced chicken). The volatile chemical lure heptyl butyrate is highly attractive to western yellowjacket workers and queens (Simmons 1991, Landolt et al. 2003). Placer-style traps were hung in trees to prevent bears and other animals from disturbing them (Fig. 1). These traps were utilized at the Lake Tahoe sites.

Fig. 1. A Placer-style yellowjacket monitoring trap in the field. These traps were baited with minced canned chicken or heptyl butyrate.

UCR-Style Trap – The foraging activity of yellowjackets was also monitored using a UCR-style trap constructed from a 946 ml (32oz.) plastic bleach bottle. A hole was drilled in the bottle, and a 9- or 13-ml glass vial was screwed into the hole. The glass vial contained a 7.6-cm piece of dental wick and 8 or 13 ml of heptyl butyrate (Reierson and Wagner 1975, Reierson et al. 2008). Wasps that entered the trap through 5 side ports were funneled into a bottom jar containing a solution of antifreeze coolant diluted with water (propylene glycol 70:30 vol:vol, Sierra® Antifreeze/Coolant, Old World Industries, Inc., Northbrook, IL, Fig. 2). The traps were hung from a piece of wire under trees and bushes about 0.5-1.5 m off the ground. The traps were inexpensive and re-useable. The heptyl butyrate vials were changed as needed.

The UCR-style traps were used at the Richmond Field Station, Irvine Regional Park, Ronald W. Caspers Wilderness Park, Tree of Life Nursery, UCR campus, and Silent Valley RV Park.

Fig. 2. The UCR-style trap with re-useable and interchangeable components.

Rescue Disposable Yellowjacket Traps – The Rescue Disposable Yellowjacket Traps (Model #YJTD-W, Sterling International Inc., Spokane WA) were used at the San Diego Zoo Safari Park (Fig. 3). The trap cost about $8.00, but it was very effective in trapping yellowjackets. The traps were hung under trees and bushes and from Shepard's hooks about 0.5-1.5 m off the ground. The bag contained hundreds of beads with heptyl butyrate. Instead of adding pure tap water to the trap's collection bag, a solution of propylene glycol coolant was made with water (1:2) and added to the collection bag. The solution was effective in killing and preserving the insects. The contents of the bag were removed, and the excess fluid drained. The contents were placed into 3.7-liter plastic zip lock bags and shipped to UC Riverside, where the number and species of yellowjackets were counted.

Fig. 3. Disposable Rescue yellowjacket trap used at the San Diego Zoo Safari Park.

Bait Stations

UCR Wooden Bait Stations – The UCR-style bait stations were constructed from two pieces of pine board about 18 x 18 cm and 1.8 cm thick and a piece of 2.54 cm hardware cloth (72 x 14 cm, Fig. 4). The hardware cloth was stapled to the edges of the boards to construct a cage (18 x 18 x 14 cm). The hardware cloth on one side of the cage was not stapled to the wood allowing for bait cups to be placed inside the cage. The opening was held closed with a twist tie. The bait stations were hung from a piece of wire and a Perky-Pet® ANT GUARD® (Woodstream Corp., Lititz, PA) to prevent ants from feeding on the baits.

These bait stations were used at the Richmond Field Station, Irvine Regional Park, Ronald W. Caspers Wilderness Park, UCR campus, and Silent Valley RV Park. In 2018, UCR stations were used at Lake Tahoe sites.

Fig. 4. A wooden bait station hung from tree to prevent bears and wild animals from disturbing them.

UCR Plastic Circular Bait Stations – The stations were constructed from plexiglass disks (29.2 diam, 5 mm thick, 2.54 cm PVC pipe and hardware cloth (1.27 by 2.54 cm mesh, Fig. 5). A ring of hardware cloth (8.9 by 91.7 cm) separated the disks and allowed yellowjackets to enter the bait station. The bait stations were hung from a bush, tree, or Shepard's hook with a wire. A Perky-Pet® ANT GUARD® (Woodstream Corp., Lititz, PA) prevented ants from feeding on the baits.

These bait stations were used at the San Diego Zoo Safari Park and Ronald W. Caspers Wilderness Park.

Fig. 5. The plastic circular bait stations used at the San Diego Zoo Safari Park.

Placer Bait Stations – The bait stations were constructed from black two-gallon buckets with four 13 cm by 13 cm openings cut into the sides (Fig. 6). The openings were covered with flexible plastic mesh poultry fencing material with 2 x 2-cm openings in the mesh to allow yellowjackets to enter and exit. Bait stations contained 3 cups filled with ≈ 25 g bait each and were hung along the trap line in an area of high yellowjacket activity. The station was suspended from a wire and a Perky-Pet® ANT GUARD® (Woodstream Corp., Lititz, PA) to prevent ants feeding on the baits.

The Placer-bait stations were only used at the Lake Tahoe sites.

Fig. 6. The Placer bait station hung from a tree to prevent bears and wild animals from damaging the stations.

Evaporation Controls –The above bait stations were modified to determine the amount of water loss from baits and food attractants during the baiting. The openings were covered by with window-screen (1 mm mesh) to exclude yellowjackets (Fig. 7). The evaporation stations were hung near the bait stations during the test.

Fig. 7. The openings in the bait stations were covered with window screening to prevent yellowjackets from foraging on the baits or food attractants.

To adjust for the water that evaporated from the baits during the exposure period, bait or food materials were placed in salsa cups in the above stations covered with window screen. The salsa cups and lids were weighed and ≈ 30 g of bait or food material was put in the cup. The entire cup (cup + lid + bait) was weighed. After the exposure period, the cups were sealed with the lids, returned to the laboratory, and weighed. The ratio of water loss was determined as [Evaporative Initial Bait weight (EIBw)-Evaporative Final Bait weight (EFBw)/Evaporative Initial Bait weight (EIBw)] for the cups placed in the evaporation control stations. The average ratio of the EIBw/EFBw was also calculated.

The following calculation was used to determine the amount of bait or food material taken by the yellowjackets with corrections for the water loss of the bait remaining at the end of the exposure. The amount of bait taken = Initial Bait weight – [Avg. EIBw/EFBw x (Final Bait weight)].

UC Berkeley Richmond Field Station, 2018

The UC Berkeley Richmond Field Station is approximately 9.7 km northwest of the main UC Berkeley campus (37° 54'47.57" N, 122° 20'02.93" W, elev. 28 m). It consists of 68.8 ha of which 40.5 ha are uplands and the remaining acreage is marsh or bay lands. This area is a natural coastal grasslands environment (Fig. 8).

Fig. 8. UC Berkeley Richmond Field Station coastal grasslands and marsh habitat.

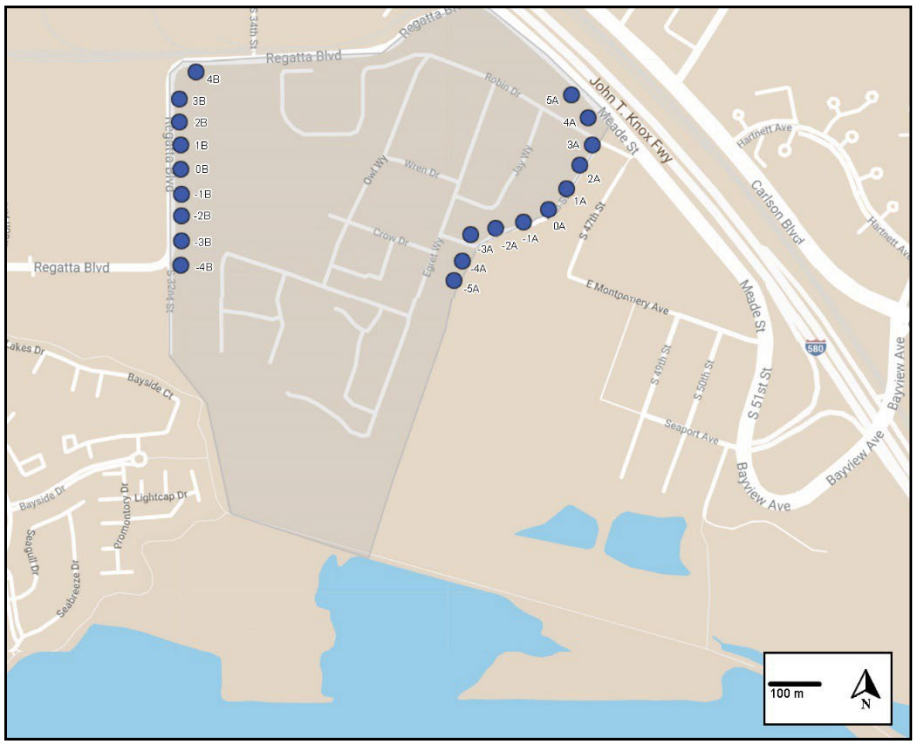


Fig. 9. The 2018 map of the UC Richmond Field Station with West and East Transects. UC Field station property outlined in grey.

Methods and Materials

Monitoring

The foraging activity of *V. pensylvanica* yellowjackets was monitored using UCR-style traps. Two monitoring transects (East and West) were maintained during the period 8/29/2018 to 10/2/2018, with three monitoring events (Fig. 9). The traps were hung on fences about 1.5 m off the ground (Fig. 10).

Choice Baiting Trial

The liquid contents from cans of Swanson's White Premium Chunk Chicken (Campbell Soup Co., Camden, NJ) were strained through cheesecloth. The chicken juice was then diluted with water (1:2) to make a 600 ml suspension to which 40 g of polyacrylamide crystals (PAA, Watering Storing Crystals, Miracle-Gro Lawn Products, Inc., Marysville, OH) were added, resulting in a PAA hydrogel matrix. A 0.1% aqueous solution of dinotefuran (Alpine 40WSG, BASF Corp., Research Triangle Park, NC) was prepared and added to the PAA hydrogels to make bait formulations containing 0.0025, 0.001 and 0.00075% active ingredient (AI).

A choice trial, evaluating yellowjacket preference for these formulations, was conducted on 9/5/2018 along the East transect. Salsa cups (59.1 ml) and lids were weighed, and 30 g of bait was added to each cup. The cups were weighed again. All three bait formulations were deployed in each of three UCR-style wooden bait stations, retrieved after 24 hours, returned to the laboratory, and weighed. To determine the amount of water lost to evaporation during deployment from the hydrogels, pre-weighed cups of each formulation were placed in one UCR-style bait cage covered with fine window screen (Fig. 8). These bait cups were also retrieved, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The yellowjacket trap catches before and after baiting were compared using a Wilcoxon signed-rank test. The amounts of each bait formulation that were removed in the choice test were compared with a one-way Anova.

Fig. 10. Bait station (yellow) and the evaporation control station.

Results

Monitoring

The only species collected in the traps was the western yellowjacket, *V. pensylvanica*. During the three monitoring events, 8,727 yellowjackets were trapped. The average trap counts in the East transect exceeded the threshold of 10 YJ/T/D at the first monitoring on 9/4/2018. The numbers of yellowjackets trapped in the West transect (untreated) peaked on 9/24/2018 (Fig.11).

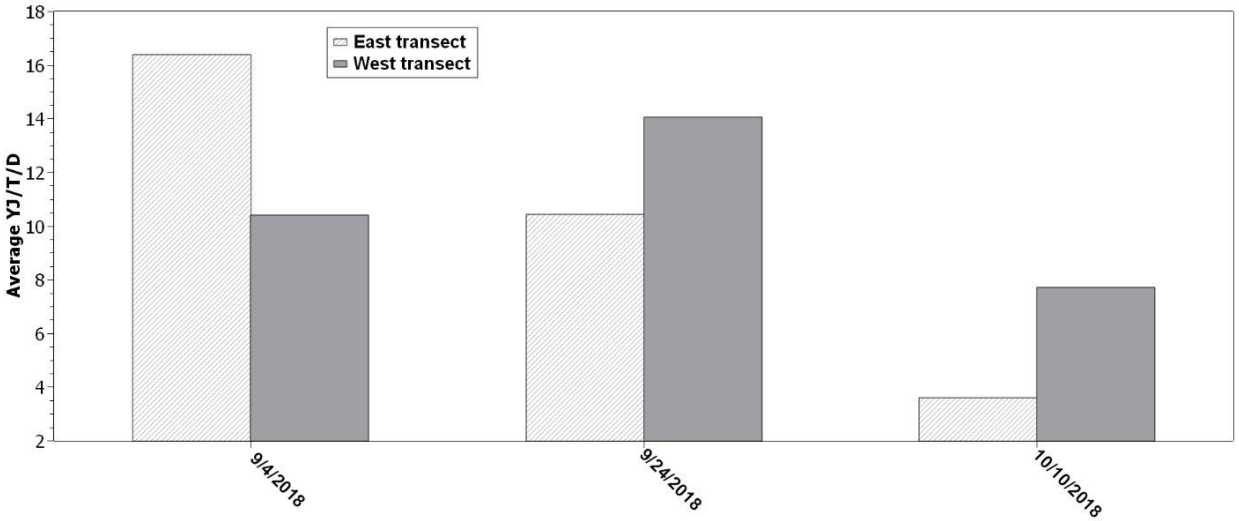


Fig. 11. The average number of yellowjackets/trap/day (YJ/T/D) before and after the choice bait test.

Choice Trial- Evaporation of water from the hydrogels was calculated to be about 17.6% of initial hydrogel mass during the 24-hour deployment period. Accounting for this loss of water, 32.9 g of dinotefuran bait was removed from the three different bait formulations: 0.0025% (10.2 g), 0.001% (9.5 g), and 0.00075% (13.2 g). There was no significant difference in the amount of each concentration of bait removed ($F = 2.62$; $df = 2,6$; $\mathbf{P} = 0.152$).

The yellowjacket trap counts along the East transect declined by 36.4% 18 days after the choice test, a statistically significant difference ($W = 46$, $Z = 2.02$, $\mathbf{P} = 0.043$). Trap counts were further reduced 26 days after baiting, with 65.3% fewer wasps trapped as compared with counts prior to baiting ($W = -66$, $Z = 2.91$, $\mathbf{P} = 0.001$). Along the West transect (considered as untreated control), there were no significant differences in trap counts before baiting and at days 18 ($W = -5$, $Z = -0.33$, $\mathbf{P} = 0.745$) and 26 ($W = 23$, $Z = 1.33$, $\mathbf{P} = 0.183$) after the choice test.

Discussion

The trap catches declined significantly in the East transect during both sampling periods after the choice test. The West transect (approximately 457 m from the East transect) was kept untreated to serve as the seasonal check (control). Trap catches in this untreated transect did not significantly decrease over our three sampling periods. In total, trap catches decreased by 78% in the East transect while trap catches in the West transect decreased by only 26%, perhaps in response to decreasing daily temperatures and photoperiods. Not enough of the dinotefuran bait was removed to reduce the number of yellowjackets trapped.

UC Richmond Field Station, 2019

Three transects were utilized at the Richmond Field Station during 2019, with 11 weekly monitoring events, beginning 5/6/2019 and ending 10/16/2019 (Fig. 12).

Fig. 12. Map of the UC Berkeley Richmond Field Station showing the locations of the three transects used during the 2019 trapping season.

Methods and Materials

Monitoring

In addition to the two transects used during 2018 (West = B, East = A), a third transect (transect C), with seven yellowjacket traps, was added along the southern boundary of the field station. Transect B was also shifted to the north to increase distance from the new transect C.

Bait Matrix Preference Trial

On 8/27/2019, two hydrogel matrices, the polyacrylamide crystals (PAA) and a novel seaweed alginate hydrogel (ALG), were deployed in tandem, without a toxicant, at two locations alongside evaporation controls (Fig. 8). The PAA gels were prepared by mixing 200 ml of chicken juice (as above), 600 ml of deionized water and 40 g of PAA crystals providing a 1:3 dilution ratio of chicken juice:water. The biodegradable ALG hydrogels were produced by the method described by Tay et al. (2017) with minor modifications. The Na-Alg solution (1%) was slowly dispensed dropwise through a modified 8-inch shower head nozzle (1.6 mm diameter). The droplets were immediately collected in a plastic container with 0.5% $CaCl_2$ crosslinker solution. The alginate hydrogel beads were crosslinked in the $CaCl_2$ solution for 2 minutes. The resulting hydrogel beads were filtered. The bait matrices were refrigerated and shipped overnight in a Styrofoam cooler on ice packs.

Salsa cups and lids were weighed and ≈ 30 g of PAA and ALG hydrogels were added to the cups. The entire cup (cup + lid + bait) was weighed again. Two salsa cups each of PAA and ALG baits were then deployed in the field at two locations along transect A within UCR wooden bait stations (Fig. 2). Two salsa cups each of PAA and ALG hydrogels were also deployed

within a screened evaporation cage (as above). One salsa cup each of PAA and ALG bait was removed from the bait station and the evaporation cage after 2 hours and 4 hours. These cups were then sealed, returned to the laboratory, and weighed.

After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6). The amount of each matrix removed was analyzed with a two-way Anova.

Efficacy Trial 1

A 0.001% dinotefuran bait was prepared by mixing 0.01 g dinotefuran, 100 ml of chicken juice, 300 ml of water, and 20 g of the PAA crystals (as above). This PAA bait formulation was then placed in the refrigerator and conditioned overnight for at least 16 hours. The baits were then packed in a cooler with an ice pack and shipped overnight to field sites for deployment.

The PAA bait containing 0.001% dinotefuran was deployed for 24 hours along transect A, centered at trap 2A on 9/4/2019 (Fig. 10). Three plastic salsa cups filled with bait (mean mass = 32.7 g, n = 9) were placed in each of three UCR bait stations that were hung about 1.5 m high and about 5 m apart. An evaporation check station, also with three cups of bait and screened to prevent wasp access, was hung alongside the central bait station.

After 24 hours, the bait cups were removed, covered, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The number of yellowjackets trapped before and after treatment was analyzed with a Wilcoxon signed-ranks test.

Efficacy Trial 2

A 0.0025% dinotefuran bait was prepared by mixing 0.025 g dinotefuran, 100 ml of chicken juice, 300 ml of water, and 20 g of the PAA crystals. The PAA mixture was placed in the refrigerator and conditioned overnight for 16 hours. The baits were then packed in a cooler with an ice pack and shipped overnight to be tested.

On 9/18/2021, PAA baits containing 0.0025% dinotefuran were deployed for 24 hours along transect A, centered at trap -3A. As with Efficacy Trial 1, three plastic salsa cups filled with bait (mean mass = 33.1 g, n = 9) were placed in each of three bait stations and hung alongside one evaporation check station.

After 24 hours, the bait cups were removed, covered, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The number of yellowjackets trapped before and after treatment was analyzed with a Wilcoxon signed-ranks test.

Results

Monitoring

The only species trapped was *V. pensylvanica*. A total of 25 queens and 15,077 workers were trapped during 2019.

Bait Matrix Preference Trial

The ALG beads lost 4% of their weight at 2 hours and 8% at 8 hours in the evaporation control. The PAA gels lost 2.8% of their weight at 2 hours and 6.2% at 8 hours (Table 1). After adjusting for water lost from each bait, yellowjackets removed significantly more of the PAA gels than the ALG beads ($F= 8.37$; $df = 1,7$; $\mathbf{P} = 0.034$).

Table 1. Choice tests with PAA and ALG hydrogels conditioned in chicken juice.

Bait matrix type	deployment (hours)	Average bait (g) removed (± SD)
polyacrylamide hydrogel (PAA)	2	1.44 ± 0.009
	4	6.85 ± 1.867
seaweed alginate hydrogel (ALG)	2	0.41 ± 0.142
	4	0.78 ± 0.219

Efficacy Trial 1

The bait cups in the evaporative controls lost about 20% of their initial mass during the 24-hour deployment period. Accounting for this evaporation, yellowjackets removed only 30.0 g of 0.001% dinotefuran bait, representing about 11.4% of the bait that was placed out on 9/4/2019.

The 0.001% dinotefuran bait provided significant reductions in the average number of yellowjackets trapped at day 7 ($W = 21$, $n = 7$, $\mathbf{P} = 0.03$) and 14 ($W = 24$, $n = 7$, $\mathbf{P} = 0.04$) after baiting (Table 2). The numbers of yellowjackets trapped at the untreated transects remained steady over the 14-day period.

Table 2. The average number of yellowjackets/trap/day (YJ/T/D) before and after deployment of 0.001% dinotefuran hydrogel bait.

	No. Traps	Average YJ/T/D (% reduction)		
		Pre-baiting	Day 7	Day 14
Transect C (treated with 0.001% dinotefuran)	7	16.69	9.33 (44.1%)	9.94 (40.5%)
Transect A (untreated)	9	15.25	8.70 (43.0%)	13.52 (0.0%)
Transect B (untreated)	7	10.18	8.37 (17.8%)	15.73 (0.0%)

Efficacy Trial 2

The bait cups in the evaporation control lost about 16.9% of their initial weights during the 24-hour deployment period. Accounting for this evaporation, yellowjackets only removed 26.3 g of 0.0025% dinotefuran bait from cups in the bait stations. This amount represented about 9.9% of the total bait deployed.

The 0.0025% dinotefuran bait failed to provide significant reductions and the number of yellowjackets trapped per day per trap was unchanged (Table 3). Along transect B (untreated) the average YJ/T/D significantly declined 28 days after the baiting ($W = 28$, $n = 9$, $\mathbf{P} = 0.016$), perhaps due to decreasing temperatures and or photoperiods.

Table 3. Yellowjacket wasp trap densities before and after deployment of 0.0025% dinotefuran hydrogel bait.

	No. traps	Average YJ/T/D (% reduction) days after baiting				
		Pre-baiting	Day 7	Day 14	Day 21	Day 28
Transect A (treated with 0.0025% dinotefuran)	7	7.73	7.89 (0.0%)	12.79 (0.0%)	5.72 (26.0%)	7.21 (6.8%)
Transect B (untreated)	7	12.24	10.29 (16.0%)	8.27 (32.4%)	11.93 (2.6%)	3.68 (69.9%)

Discussion

Yellowjacket trap density increased slowly during 2019, only surpassing the pest threshold of 10 YJ/T/D after 8/12/2019. The novel formulation of ALG bait was less attractive than the PAA hydrogel. The observations by the team members suggest that additional processing (maceration) of alginate hydrogel beads may be necessary to produce pieces of bait more easily handled by yellowjacket foragers.

The western transect (B) at the Richmond Field Station was left untreated as a seasonal density check for efficacy comparisons, while bait trials took place along the eastern (A) and southern (C) transects. A significant decline in wasp density was recorded between trapping events 10/8/2019 and 10/16/2019 along the untreated transect, probably due to seasonal phenology related to decreasing temperatures and photoperiods.

UC Richmond Field Station, 2020

Methods and Materials

Monitoring

Three transects were utilized at the UC Richmond Field Station during 2020, with 11 weekly trapping periods, beginning 5/12/2020 and ending 10/14/2020 (Fig. 13). The East transect (A) was baited during 8/27/20 and 8/28/2020 at location -1A, and again during 10/01/20 and 10/02/2020, at location -4A. The West transect (B) and the South transect C were both left untreated and considered as seasonal phenology checks (controls). Transect B was approximately 700 m from transect A and approximately 500 m from transect C.

Fig. 13. Map of the UC Berkeley Richmond Field Station showing the locations of the three monitoring transects used during the 2020 trapping season. Baits were applied along transect A while transects B and C were untreated and considered as seasonal checks (controls).

Efficacy Trial 1

Bait was prepared by mixing 420 g of minced chicken, 60 ml of chicken juice, and 0.4 ml fluralaner (Bravecto® 250 mg/ml, Intervet Inc., Madison, WI). The final concentration of fluralaner in the bait was 0.025%. The mixture was refrigerated overnight and shipped overnight on ice packs to northern California (as above).

The 0.025% fluralaner bait was deployed during daylight hours on two consecutive days along transect A, centered at trap -1A. Five plastic cups filled with bait (mean total mass ≈ 28 g, mean mass bait ≈ 25 g) were placed in each of three bait stations that were then hung about 1.5 m high and about 20 m apart. An evaporation check station with four cups of bait was hung alongside the central bait station. Bait stations were set out in the morning (1000 hours on 8/27/2020 and 0900 hours on 8/28/2020) and removed before sundown (1900 hours on both days). Bait was stored in a refrigerator overnight between these two baiting events. After day 2, the bait cups were removed, covered, and weighed. After adjusting for water loss, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

Efficacy Trial 2

A second bait trial, using similar methods as above and centered along transect A at trap -4A, was conducted with 0.025% fluralaner in minced chicken. This trial took place during a late-season heatwave and daytime temperatures were much warmer than is typical for this site (high temperatures 31.7° C and 33.3° C). Despite being at the end of the same transect associated with Efficacy Trial 1, trap -4A was used as the baiting location because wasp counts along transect A remained above the threshold of 10 YJ/T/D and were highest at -4A.

After day 2, the bait cups were removed, covered, and weighed. After adjusting for water loss, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

DNA Extraction and Microsatellite Genotyping

DNA was extracted from the thorax of *V. pensylvanica* workers using the DNeasy Blood and Tissue Kit (Qiagen, Hilden, Germany) following the manufacturer's instructions and stored at –20°C until used. Five workers from each trap in transect A of Richmond Field Station were scored at eight microsatellite loci: RUFA5, RUFA19, LIST2004, LIST2014, LIST2017, LIST2019, LIST2020, VMA6 (Daly et al. 2002; Hasegawa and Takahashi 2002; Thoren et al. 1995). In some traps with sample sizes smaller than five, fewer than five individuals were scored. PCR mixtures contained 1–2 µL of template DNA, 0.2 µM of each primer, 7.5 µL PCR Master Mix (Cat# K0171, Thermo Scientific, MA, USA), and ddH_2O (15 µL reactions volume in total). Forward primers were labeled with 5'-fluorescent tags (6-FAM or HEX; Integrated DNA Technologies, Iowa, USA) for genotyping. PCR conditions consisting of an initial denaturation of 3 min at 95°C, followed by 15 cycles of 30 sec at 95°C, 30 sec at an annealing temperature beginning at 60°C and decreasing 1°C each cycle, 30 sec at 72°C, then 25 cycles of 30 sec at 95°C, 30 sec at 50°C, 30 sec at 72°C, followed by a final 7-min extension at 72°C. The resulting PCR products were analyzed on an ABI-3730 Genetic Analyzer (Applied Biosystems) at the University of Arizona Genomic Analysis and Technology Core Facility (GATC). Microsatellite Analysis Software (available on Thermo Fisher Cloud) was used to visualize and score alleles.

The degree of relatedness among individual workers was estimated using the maximum likelihood sibship reconstruction method in COLONY ver. 2.0.6.6 (Jones and Wang 2010). This allowed us to group workers into colonies and to estimate the minimum number of colonies that had produced the workers present at the study site. The analysis was carried out with the following settings: female polygamous and male monogamous, outbreeding, dioecious haplodiploid organisms, and genotyping error rates ranged between 0–2.5% per locus. Colony analysis was run five times, using a different random number seed each time, to give a maximum likelihood reconstruction of full sibships overall runs.

Results

Monitoring

All the yellowjackets trapped were *V. pensylvanica.* The number of wasps trapped first surpassed the pest threshold of 10 YJ/T/D on 7/8/2020 at one trap (-1A). Baiting was not initiated until mid-August, when three traps in transect A exceeded 10 YJ/T/D. Transects B and C consistently yielded fewer wasps and were left untreated to serve as seasonal checks. A total of 33 queens and 9,266 workers were trapped during 2020.

Efficacy Trial 1

The baits in the evaporation cage lost an average of 12.4% of their initial weight during the 2-day exposure period. After compensating for this water loss, 172.1 g of bait (≈ 45.8 % of the bait applied) were removed by yellowjackets from 19 bait cups. Considering that the evaporation observed was less than in previous years and could not be explained by differences in temperature or humidity, we concluded that collecting the baits and storing them overnight reduced the amount of water lost and helped maintain their attractiveness.

After baiting, nine traps along transect A were monitored weekly to assess yellowjacket foraging populations. When considering only the trap at the baiting site (-1A) and the two traps nearest to the baiting site (0A and -2A), there were 94.3, 83.7, and 93.3% reductions in the average number of YJ/T/D at days 20, 27, and 34 post baiting, respectively (Table 4). When all nine traps were considered, there were 84.9 % (W =29, Z = 1.69, **P** = 0.098), 72.2% (W = 35, Z = 2.04, **P** = 0.041), and 75.3% (W= 35, Z = 2.04, **P** = 0.041) reductions in the average number of YJ/T/D at day 20, 27, and 34 post baiting, respectively. The untreated controls remained unchanged until 34 days after baiting, when there was a significant reduction in the number of yellowjackets trapped along transect B (W = 28, n = 7, **P** = 0.016).

Table 4. Percent reduction in the average number of YJ/T/D at Site A after baiting with 0.025% fluralaner in minced chicken. Baits applied on 8/26/2020 and 8/27/2020.

Traps	Average YJ/T/D (% reduction) days after baiting			
	Pre-baiting	Day 20	Day 27	Day 34
0A, -1A, -2A (Three traps nearest to bait application)	26.9	1.5 (94.3%)	3.4 (83.7%)	1.4 (93.3%)
Transect A (baited with 0.025% fluralaner, all 9 traps considered)	20.2	3.0 (84.9%)	5.6 (72.2%)	5.0 (75.3%)
Transect B (untreated)	6.1	4.9 (19.1%)	11.9 (0.0)	2.3 (62.4%)
Transect C (untreated)	4.4	16.8 (16.8%)	9.2 (0.0)	34.0 (8.9%)

Efficacy Trial 2

The baits in the evaporation cage lost an average of 12.4% of their initial weight during the 2-day exposure period. After compensating for this water loss, we calculated that a total of 83.7 g of bait (≈ 22.3 % of the bait applied) was removed by yellowjackets from 19 bait cups.

The second baiting reduced the trap counts at -2A, -3A, and -4A by 96.3 and 84.2% on days 11 and 20, respectively (Table 5). When considering the entire transect A (nine traps), there were 95.9% (W = 21, n = 7, **P** = 0.031) and 93.9% reductions (W= 34, Z = 2.35, **P** = 0.019) observed at days 11 and 20 after baiting, respectively. Wasp colonies along the untreated control transect B increased by 4 colonies and decreased by 1 colony along transect C 20 days after baiting, when there was a statistically significant reduction observed (W = 28, n = 7, **P** = 0.016).

Table 5. Percent reduction in the average number of YJ/T/D at Site A after a second baiting with 0.025% fluralaner in minced chicken. Baits were applied during 10/01/2020 and 10/02/2020.

Traps	Average YJ/T/D (% reduction) days after baiting		
	Pre-baiting	Day 11	Day 20
-2A, -3A, -4A (Three traps nearest to bait application)	27.4	0.5 (96.3%)	1.3 (84.2%)
Transect A (baited with 0.025% fluralaner, all 9 traps considered)	5.0	0.1 (95.9%)	0.2 (93.9%)

Transect B (untreated)	2.3	0.4 (67.9%)	0.2 (88.4%)
Transect C (untreated)	4.0	0.8 (59.5%)	0.4 (86.7%)

DNA Extraction and Microsatellite Genotyping

Before baiting, large numbers of samples were collected, but because of operational limitations, only 4% were genotyped (Table 6). A minimum of 27 colonies was identified along transect A. This number declined to 19 when examined 20 days after baiting. Of the 27 colonies detected before baiting, 9 of the same colonies were detected after the first baiting, and only 3 colonies were detected after the second baiting (Fig. 14). Sixteen new colonies were detected after the first baiting, and five new colonies were detected after the second baiting.

Ten different colonies were initially detected along transect B (untreated), and this number increased to 14 by the end of the study. Along transect C (untreated), 12 different colonies were detected at beginning, and 11 different colonies were detected at the end of the study.

Table 6. Analysis of yellowjackets at transects A, B, and C with an estimate of the minimum number of different colonies.

Transect		No. samples collected	No. samples genotyped	Proportion of genotyped individuals	Minimum No. colonies detected
A	Pre-baiting	1273	45	0.04	27
	20 d after 1st baiting	630	37	0.06	19
	34 d after 1st baiting	314	33	0.11	15
	11 d after 2nd baiting	13	10	0.77	8
	20 d after 2nd baiting	19	11	0.58	7
B	Pre-Baiting	298	34	0.11	10
	20 days after 1st baiting	792	30	0.04	9
	11 days after 2nd baiting	36	29	0.81	14
C	Pre-Baiting	214	26	0.12	12
	20 days after 1st baiting	585	30	0.05	11
	11 days after 2nd baiting	79	24	0.30	11

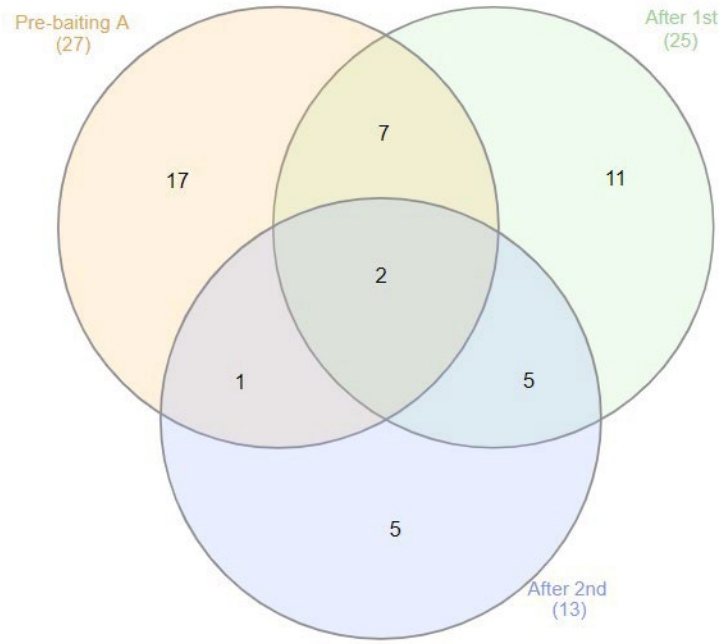


Fig. 14. Venn diagram of the number of colonies at transect A before and after baiting.

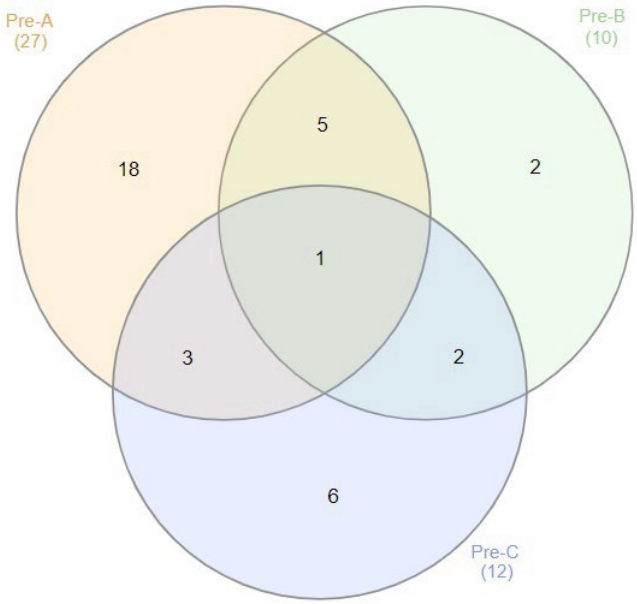


Fig. 15. Venn diagram of the number of colonies at transect A, B, and C before baiting.

The Venn diagram (Fig. 15) shows that individuals from 11 colonies foraged in more than one transect. For example, the foraging areas of 5 colonies contain both transect A and B, 3 colonies contain both transect A and C, and 1 colony foraged in all transects. In total, 31% (14 out of 45) of the individuals collected from transect A before baiting belonged to colonies which workers were also found in the two untreated transects, B and C.

Discussion

The yellowjackets actively foraged on and removed the 0.025% fluralaner in minced chicken. This bait removal resulted in significant reductions in the number of yellowjackets trapped after the first baiting. This decrease was observed during September when the number of foragers increased in the untreated control transects. The second baiting event significantly reduced the numbers of yellowjackets trapped 11 days after baiting. A significant reduction in number of yellowjackets trapped at one of the untreated transects 20 days after the second baiting indicated that the seasonal declines had begun well after the baiting.

Application of the fluralaner bait resulted in a decline in the number of colonies detected after the first baiting as based on the molecular analyses. Some colonies were eliminated and were not detected after the first and second baiting, while other new colonies appeared. The number of colonies detected at the untreated transect B increased by 4 and the at the untreated transect C decreased by 1.

We conclude that the addition of foragers from new colonies may have affected the wasp trapping data and associated analyses of wasp densities. Since new colonies were detected after baiting, the overall percent reduction in wasp density may have been underestimated due to an influx of new foragers, representing these new colonies. Thus, these trapping data might provide a conservative underestimate of the overall reductions in yellowjacket density.

The foraging range of colonies may be greater than 400 m. Some colonies were captured in more than one transect suggesting that the distances between the transects were not far enough to prevent the migration of workers among different transects.

UC Richmond Field Station, 2021

Previous comparison of genetic similarity among samples collected from the three transects indicated that 31% (14 out of 45) of the individuals collected from Transect A belonged to colonies whose workers also visited transects, B and C. This result suggested that the distances among transects were not enough to prevent the migration of workers between different transects in previous years. In 2021, an additional site (transect X) was established to provide greater distance from baited transects and therefore, serve as an additional seasonal check. The site was located about 500 m south of transect A and 800 m southeast of transect C (Fig. 16).

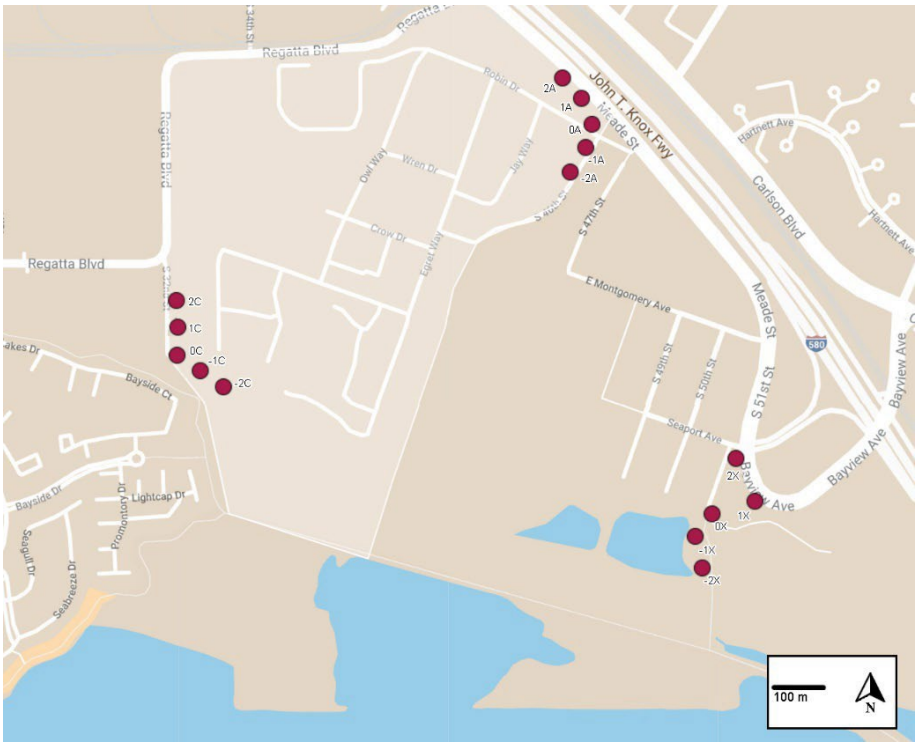


Fig. 16. The three transects monitored during 2021 at the Richmond Field Station.

Methods and Materials

Monitoring

As in previous years, monitoring traps were installed along transects A and C on 6/1/2021. Traps along transect X were installed on 6/8/2021. Transect B was eliminated for the 2021 season (Fig. 13). Monitoring along transects A, C, and X continued until 11/8/2021.

Efficacy Trial #1

A 0.025% fluralaner bait was prepared by mixing 250 ml of chicken juice, 250 ml water, 33.3 g of PAA crystals, and 0.125 g fluralaner (0.5 tube of Bravecto). The mixture was refrigerated and conditioned overnight. The bait was then shipped overnight on ice packs to Richmond.

Salas cups and lids were weighed and ≈ 30 g of conditioned bait was placed in each cup. The entire cup (cup + lid+ bait) was weighed again. Three UCR-style bait stations were then each provisioned with 4 bait cups and hung along transect A on 8/18/2021. An evaporation cage (as above) was also provisioned with 4 bait cups and hung alongside the central bait station to serve as the evaporative control.

After day 2, the bait cups were removed, covered, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The number of yellowjackets trapped before and after baiting was compared with a Wilcoxon signed-ranks test.

DNA Extraction and Microsatellite Genotyping

Specimens collected along transects A, C, and X were analyzed as described above in 2020.

Results

Monitoring

All the specimens collected were *V. pensylvanica.* A total of 10,532 workers and 2 queens were trapped during 2021.

Efficacy Trial #1

The hydrogels in the evaporative control lost 10.0% of their initial weight during the 48-hour baiting period. After accounting for this water loss, we estimated that the yellowjackets removed a total of 56.6 g of bait (14.3% of the amount deployed).

There was no significant reduction detected in the numbers of yellowjackets trapped after baiting (Table 7). The average numbers of yellowjackets trapped in the two untreated transects varied over the 35 days, but these differences were not significant.

Table 7. The efficacy of 0.025% fluralaner PAA bait against western yellowjackets[a].

Treatment	Average YJ/T/D (% reduction) days after baiting					
	Pre-bait	Day 7	Day 14	Day 21	Day 28	Day 35
0.025% fluralaner	14.40	9.74 (32.3%)	7.83 (45.7%)	12.83 (10.9%)	10.31 (28.4 %)	20.8 (0.0%)
Transect C Untreated	2.40	5.86 (0.0%)	4.08 (0.0%)	13.5 (0.0%)	8.49 (0.0%)	20.80 (0.0%)
Transect X Untreated	0.57	0.23 (60.0%)	0.43 (25.0%)	0.54 (5.0%)	0.51 (10.0%)	0.57 (0.0%)

[a] Baited 8/20/2021 to 8/22/2021.

DNA Extraction and Microsatellite Genotyping

Before baiting, large numbers of samples were collected, but because of operational limitations, only 25 specimens were genotyped from transect A and a minimum of 8 colonies was identified on 8/18/2021. This number increased to 18 when examined 10 days after baiting. Of the 8 colonies detected before baiting, 6 of the same colonies were detected after the first baiting. Colony #1 which represented 48% of the pre-baiting specimens was not detected on 8/30/2021.

Twenty-one specimens were genotyped on transect C (untreated) on 8/18/2020. A minimum of 12 colonies were detected. Three of the same colonies (# 1, 3, and 5) were present in transects A and C pre-baiting, but none of them were present in the 10-day post-baiting sample. Six new colonies were present 10 days after baiting on 8/30/2021.

Discussion

Removal of the 0.025% fluralaner in PAA bait failed to reduce the numbers of yellowjackets trapped over the 35-day post baiting period. Only 14.3% of the bait deployed was removed by the yellowjackets. The wasp trap counts in the nearby untreated transect C remained high during and after the baiting period. From these findings we conclude that the experimental bait formulation comprised of 0.025% fluralaner in PAA was not effective at reducing yellowjacket numbers.

The number of colonies sampled in the traps increased to 18 colonies 10 days after baiting on transect A. Two colonies (# 1 and 6) were no longer detected after baiting. Colony # 1 represented 48% of the specimens genotyped prior to baiting. Even though the overall effect of the baiting with 0.025% fluralaner failed to significantly reduce the YJ/T/D along transect A, colony #1 appeared to be eliminated.

Tahoe-area Bait Trials, 2018
Placer Mosquito and Vector Control District

Seven different sites from the Lake Tahoe region were monitored for yellowjacket activity in September and October 2018. Trapping was initiated on 9/12/2018 and terminated on 10/2/2018. Monitoring traps were set up about every 30 m at each site. Two sites (North Star Village and Serene Lakes) were baited.

Methods and Materials

Attractant Choice Test

To determine which yellowjacket species responded to the heptyl butyrate and the minced chicken, two Placer-style traps baited with minced chicken and 2 traps baited with heptyl butyrate were placed at each of seven sites. Two traps were provisioned with a glass vial containing 5-7 ml of heptyl butyrate and a piece of dental wick. The other traps had a vial with 25 g of minced chicken. The trap contents were returned to the laboratory and the species and the number of yellowjackets was recorded.

The data were analyzed with a Wilcoxon signed-rank test.

Bait Preparation

The liquid contents from cans of chicken were strained through cheesecloth. The juice was diluted with water (1:1) to make a 400 ml suspension to which 40 g of PAA crystals were added. Another PAA gel was prepared by mixing 200 ml of chicken juice and 400 ml of deionized water (1:2) and 40 g of PAA crystals. A 0.1% aqueous solution of dinotefuran was added to 100 g of the PAA crystals to make baits containing 0.0025, 0.001, and 0.00075% active ingredient (AI). The mixture was placed in the refrigerator and the hydrogel gels were allowed to condition for 48 hours.

Salsa cups and lids were weighed and ≈ 30 g of bait was added to each cup. The entire cup (cup + lid+ bait) was weighed again. The baits were packed in a Styrofoam cooler with an ice pack and shipped overnight to be tested.

Choice Trial 1 – North Star Village

North Star Village is located about 6.1 km from Lake Tahoe (39°16'29.68" N, 120°07'16.35" W, elev. 1,945 m). The site is located within the Tahoe National Forest and is covered with pine trees and native shrubs. The monitoring sites were along a wooded border of a shopping and recreation area.

Ten monitoring traps were set up about every 30 m at the site. Monitoring began on 9/12/2018 and the traps were collected 9/19/2018. Placer-style traps baited with heptyl butyrate were hung in trees. Yellowjackets were removed from the traps and placed in containers to be identified to species.

On 9/19/2018, three UCR-style bait cages each with three bait cups (≈ 30 g bait per cup), one replicate (cup) each of three concentrations of dinotefuran (0.00075%, 0.001%, and 0.0025%) in a 1:2 chicken juice to water hydrogel bait were hung in trees. To control for water loss from the hydrogel baits, two evaporation control cages covered with fine window screen were also hung from trees. Five cups of the untreated hydrogel were placed in evaporation cages. The baits and the cups from the evaporation control were removed after 24 hours, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

On 9/21/2018, the monitoring traps were returned to their original sites in the field. The traps were collected and returned to the laboratory on 9/28/2018.

The trap catches before and after baiting were analyzed with a Wilcoxon signed-rank test. The amount of bait taken in the choice tests was analyzed with a Chi-square goodness of fit analysis.

Choice Trial 2 – Serene Lakes

Serene Lakes is a private lakeshore park and picnic area located in the Tahoe National Forest approximately 16 km west of Truckee, CA (39°17'56.62" N, 120°22'59.45" W, elev. 2,103 m). The forests are populated by tamarack, cedar, white fir, and lodge pole pines. Ten monitoring traps were set up about every 30 m at the site. Monitoring began on 9/20/2018 and the traps were collected 9/27/2018. Traps were hung in small trees bordering the lake. Placer-style traps baited with either minced chicken or heptyl butyrate were hung in trees.

On 9/27/2018, four UCR-style bait cages with three bait cups (≈ 30 g bait), one replicate (cup) each of three concentrations of dinotefuran (0.00075%, 0.001%, and 0.0025%) hydrogel bait was hung in trees. To determine the amount of water loss from the hydrogel baits, two

evaporation controls were also hung from trees. Five cups of the untreated hydrogel were placed in a bait cage covered with fine screen to prevent yellowjackets from feeding on the control baits. The baits and cups in the evaporation cages were removed after 48 hours. The bait cups were returned to the laboratory and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

On 9/28/2018, the monitoring traps were placed in their original position. The traps were collected on 10/5/2018 and returned to the laboratory.

The trap catches before and after baiting were analyzed with a Wilcoxon signed-rank test. The amount of bait taken in the choice tests was analyzed with a Chi-square goodness of fit analysis.

Results

Attractant Choice Test

Four species, *Vespula acadica*, *V. alascensis, V. atropilosa,* and *V. pensylvanica,* were collected over three trapping periods. The traps with minced chicken attracted *V. alascensis* (n = 235) and *V. pensylvanica* (n = 219). Heptyl butyrate attracted four species, *V. acadica* (n = 57), *V. alascensis* (n = 14)*, V. atropilosa* (n = 30)*,* and *V. pensylvanica* (n = 1885). The minced chicken caught 94.4% of the *V. alascensis* and only 10.4% of the *V. pensylvanica* caught at the seven different sites. The heptyl butyrate caught significantly more *V. pensylvanica* than did the minced chicken (W = 2.49, n = 6, **P** = 0.008).

Choice Trial 1 – North Star Village

The evaporation check baits lost 17.3% of their weight in 24 hours. When adjusted for the water loss, the yellowjackets removed 51.8 g of dinotefuran bait (Table 9). There was no significant difference in the amount of each concentration of dinotefuran bait removed by the yellowjackets ($\chi^2 = 0.018$, df = 2, **P** > 0.05).

Prior to the choice tests there were 14.03 YJ/T/D. Seven days after baiting, there was a 68.9% reduction in the number of *V. pensylvanica* trapped, but it was not significantly different from the pre-baiting count (W = 37, n = 9, **P** = 0.065).

Choice Trial 2 – Serene Lakes

The evaporation checks lost 22.9% of their weight in 24 hours. After adjusting for the water loss, the yellowjackets removed 81.8 g of dinotefuran bait (Table 8). There was no significant difference in the amount of each concentration of dinotefuran bait taken ($\chi^2 = 0.18$, df = 2, **P** > 0.05)

Table 8. Choice baiting study with 0.0025, 0.001, 0.00075% dinotefuran in PAA hydrogels at two sites near Lake Tahoe.

Site	traps	Mean (± SD) Bait removed (g)			Total Bait removed (g)
		0.0025%	0.001%	0.00075%	
North Star Village	3	5.7 ± 1.17	5.7 ± 0.85	5.9 ± 1.00	51.8
Serene Lakes	4	8.2 ± 1.37	6.7 ± 2.48	6.1 ± 1.56	81.8

Prior to baiting, there were 15.32 YJ/T/D (Table 9). Seven days after baiting, there was an 83.5% reduction in the number of *V. pensylvanica* trapped, but the difference was not significant (W = 37, n = 9, **P** = 0.065).

Table 9. The reduction in the number of yellowjackets after the choice tests with dinotefuran.

Site	traps	Average YJ/Trap/Day (% reduction)	
		Pre-baiting	7 days
North Star Village	10	14.03	4.36 (68.9%) n.s.
Serene Lakes	10	15.32	2.53 (83.50%) n.s.

Tahoe-area Bait Trials, 2019
Placer Mosquito and Vector Control District

Seven different sites from the Lake Tahoe region were monitored for yellowjacket activity in 2019 using a pair of Placer-style traps at each site, one with a heptyl butyrate attractant and one with minced chicken attractant. Two of these sites were selected for bait efficacy trials: Alpine Meadows Water District and North Star Village.

Methods and Materials

Bait Preparation

The contents from Swanson canned chicken were strained through cheesecloth. The juice (100 ml) was diluted with water (300 ml) and combined with 0.01 g dinotefuran. Twenty grams of the PAA were added to the mixture resulting in hydrogels containing 0.001% dinotefuran. The PAA mixture was placed in the refrigerator and conditioned overnight (minimum of 16 hours). The baits were packed in a cooler with an ice pack and shipped overnight to be tested.

Efficacy Trial 1 – North Star Village

Thirty monitoring traps were set up about every 25 m at the site (Fig. 17). Monitoring began on 8/10/2019 and the trap contents were collected weekly.

On 8/29/2019, three bait stations each containing three bait cups of ≈ 30 g of 0.001% dinotefuran bait were hung in trees. To control for water loss from the baits, one evaporation control bait station with three bait cups was hung. The bait and evaporation stations were removed after 24 hours. At the end of the baiting period, the cups were sealed, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

On 8/30/2019, monitoring traps were returned to their original sites in the field. Yellowjackets were collected and traps were collected at 7, 14, 21, and 28 days after baiting.

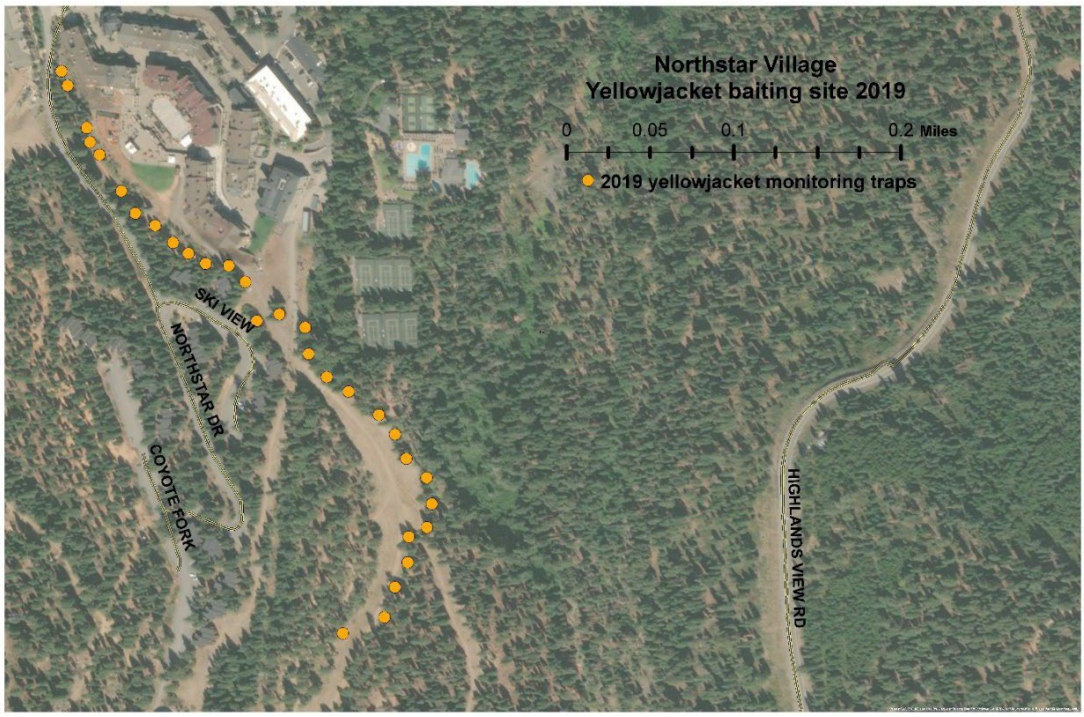


Fig. 17. North Star Village with monitoring traps indicated with yellow dots.

Efficacy Trial 2 – Alpine Meadows

The Alpine Meadows site (39°11'21.67" N, 120°11'55.62" W, elev. 1,975 m) is located about 5.6 km northwest of Lake Tahoe in a partly sloped and rocky area heavily forested with pine, fir, and incense cedar trees. The site is adjacent to the Alpine Meadows Water District offices and garbage collection area and is bordered to the south by a small, landscaped park and to the north by Bear Creek.

Thirty monitoring traps were set up about every 25 m at the site (Fig. 18). Monitoring began on 8/14/2019 and the traps were collected 8/21 and 8/28 (14 and 7 days prior to baiting). Placer-style traps baited with heptyl butyrate were hung in trees to prevent bears and other animals from disturbing them. Yellowjackets were removed from the traps and preserved in ethanol for later identification and counting.

On 9/10/2019, three bait stations each containing three cups of ≈ 30 g bait were hung in trees. To control for water loss from the baits, one evaporation control cage, also containing three bait cups, was hung. The bait stations were removed after 24 hours, and the bait cups were returned to the laboratory and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

On 9/11/2019, monitoring traps were placed in their original positions. Yellowjackets were collected and traps were collected at 7, 14, 21, and 28 days after baiting.

Fig. 18. The Alpine Meadows site with monitoring station indicated with yellow dots.

Results

Monitoring

Collections at North Star Village were predominantly *Vespula pensylvanica* (95%), but also included *V. alascensis*, *V. acadica, V. atropilosa, Dolichovespula maculata, and D. arenaria*. Yellowjackets captured at Alpine Meadows were predominantly *V. pensylvanica* (83%), followed by *V. acadica* (9%), *V. alascensis* (6%), *V. atropilosa*, *Dolichovespula maculata*, and *D. arenaria* (all < 2%).

The trap counts at all sites declined dramatically on 10/14/2019.

Baiting Trial 1 – North Star Village

The bait cups in the evaporation controls lost an average 9.2 g (10.1%) in 24 hours. A total of 130.1 g was removed by yellowjackets in 24 hours from 9 bait cups (Table 10). The numbers of yellowjackets trapped increased for the first 14 days after baiting. The decline in the number of yellowjackets trapped at 21 days preceded the declines at the other sites on 10/14/2019.

Baiting Trial 2 – Alpine Meadows

The bait cups in the evaporation controls lost an average of 9.2% of their weight in 24 hours. When adjusted for water loss, the total amount of bait removed was 15.8 g (Table 11).

The number of yellowjackets trapped increased 7 and 14 days after baiting and then sharply declined. However, the large decreases were also observed at this time at other unbaited sites as well (Fig. 19). The declines were likely due to drops in temperature. A number of the collection jars were frozen on October 2 (day 28).

Table 10. The amount of dinotefuran bait removed and the average number of yellowjackets/trap/day (YJ/T/D) before and after baiting.

Site Bait	Bait Taken (g)	Average YJ/T/D (% reductions)				
		Pre-baiting	Day 7	Day 14	Day 21	Day 28
North Star Village						
0.001% dinotefuran	130.1	47.28	70.87 (0.0%)	51.22 (0.0%)	27.03 (42.2%)	35.60 (24.7%)
Alpine Meadows						
0.0025% dinotefuran	15.82	18.06	25.31	22.24	0.91	Disc.

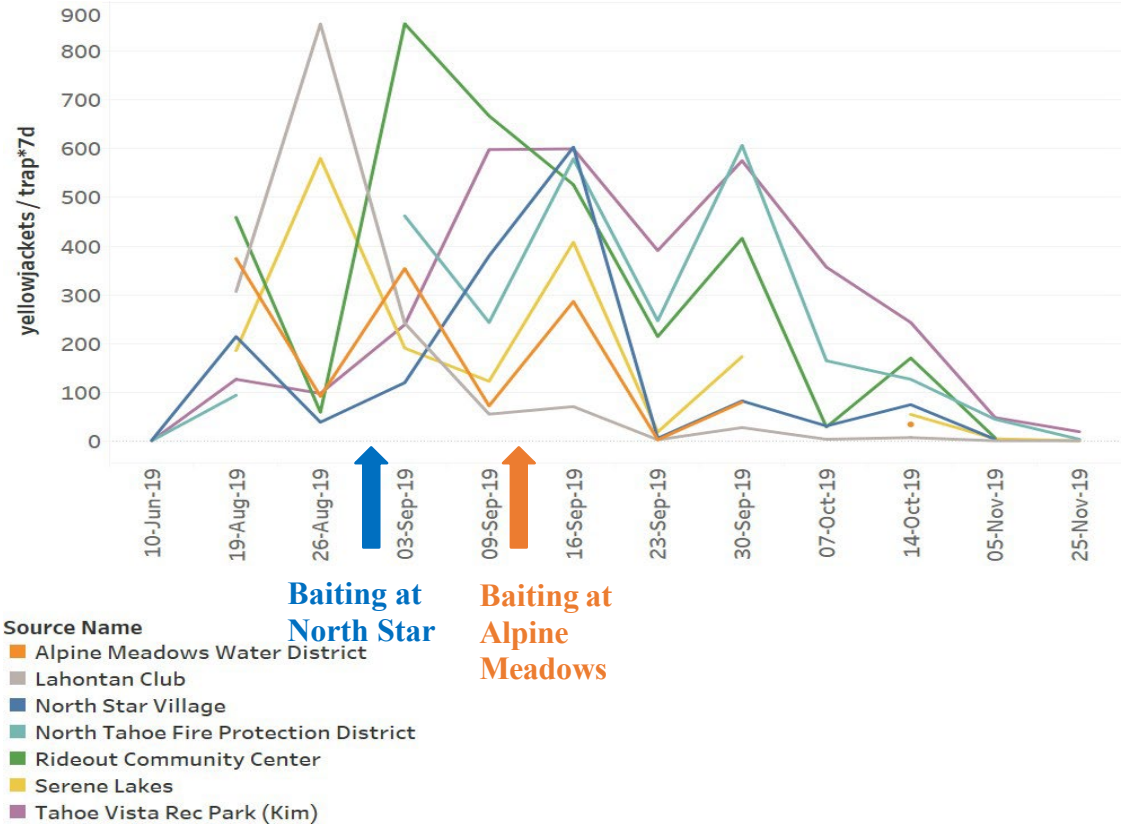


Fig. 19. Weekly monitoring data for all seven sites at Lake Tahoe (including the two baited sites). Only the yellowjackets from traps baited with heptyl butyrate are shown.

Tahoe-area Bait Trials, 2020
Placer Mosquito and Vector Control District

*S*even different sites from the Lake Tahoe region were monitored for yellowjacket activity in 2020 using a pair of Placer-style traps at each site, one with a heptyl butyrate attractant and one with chicken attractant. Two of these sites were selected for bait efficacy trials: Alpine Meadows Water District and North Tahoe Regional Park. Two additional sites, North Star Village and Tahoe City were used for bait preference trials.

Methods and Materials

Efficacy Trial 1 – Alpine Meadows

The Alpine Meadows site is located about 5.6 km northwest of Lake Tahoe in a partly sloped and rocky, naturally forested area. The site is adjacent to the Alpine Meadows Water District offices and garbage collection area. The site is bordered to the south by a small, landscaped park and to the north by Bear Creek (Fig. 18).

Bait was pre-mixed at UC Riverside using the selamectin + sarolaner (Revolution® Plus, Zoetis, Inc., Kalamazoo, MI). Four packets of Revolution Plus (240 mg selamectin + 40 mg sarolaner) were mixed with 80 ml of chicken juice and 420 g of minced canned chicken to make a 0.048% selamectin + 0.008% sarolaner bait. The bait was shipped via overnight mail in an insulated cooler.

Salsa cups and lids were weighed and ≈ 25 g bait was put into each salsa cup. The entire cup (cups + lid + bait) was weighed again. On 8/26/2020, four bait cages each containing four

bait cups of selamectin + sarolaner bait were hung in trees. One evaporation control bait station with three bait cups was also placed to control for water loss from the baits. The bait and evaporation cages were removed after 48 hours. The bait cups were placed in a cooler, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

On 8/28/2020, monitoring traps were returned to their original sites in the field. Yellowjackets were collected at 7 and 14 days after baiting. The trap catches before and after baiting were analyzed with a Wilcoxon signed-rank test.

Efficacy Trial 2 – North Tahoe Regional Park

The North Tahoe Regional Park site (39°14'59.69" N, 120°3'11.016" W, elev. 1,969 m) is in Tahoe Vista, about 1.2 km north of Lake Tahoe in a partly sloped and rocky, naturally forested area, heavily treed with pine, fir, and incense cedar. The 50.2 ha park includes picnic areas, sports fields, and other developed recreation areas including trails and natural areas.

Monitoring began on 8/18/2020 and the traps were collected seven days before baiting. Placer-style traps baited with heptyl butyrate were hung in trees to prevent bears and other animals from disturbing them. Yellowjackets were removed from the traps and preserved in alcohol for later identification to species.

Bait was pre-mixed at UC Riverside using technical fluralaner (98%, BOSCO Sciences, Inc., Shirley, NY) dissolved in 1 ml DMSO and 1 ml of water. The solution was added to 80 ml of chicken juice and 420 g of minced canned chicken to make a 0.05% bait. The bait was shipped via overnight on ice packs.

Salsa cups and lids were weighed and ≈ 25 g of bait was added to the cups. The entire cup (cup + lid + bait) was weighed again. Three cups of bait were put into three Placer-style bait stations and hung in trees to prevent bears and other animals from disturbing them. To control for water loss from the baits, one evaporation control cage containing four bait cups was also hung. The bait cups were removed after 48 hours, sealed, placed into coolers, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The trap catches before and after baiting were analyzed with a Wilcoxon signed-rank test.

Choice Preference Test – North Star Village

North Star Village is located about 6.1 km from Lake Tahoe (39°16'29.68" N, 120°07'16.35" W, elev. 1,945 m). The site is located within the Tahoe National Forest and is covered with pine trees and native shrubs. The trapping site is along a wooded border of a shopping and recreation area.

A choice test was prepared for different concentrations of clothianidin bait in either minced chicken or PAA crystals. Clothianidin cockroach bait (Maxforce Impact, 1% clothianidin, Bayer Environmental Sciences, Cary, NC) was mixed with 80 ml of chicken juice and 420 g of minced canned chicken so that the finish concentrations of bait were 0.05, 0.025, and 0.0125%.

Plastic salsa cups and lids were weighed and filled with ~25 g of bait each. The entire cup (cup + bait + lid) was weighed again. Cups were deployed on 9/23/2020 in bait cages as described above, with three cups of each matrix (PAA or minced chicken) placed in a screened cage to serve as controls for evaporation. Bait cups were collected and weighed after 24 hours.

After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The trap catches before and after baiting were analyzed with a Wilcoxon signed-rank test. The amount of bait taken in the choice tests was analyzed with a Chi-square goodness of fit analysis.

Choice Preference Test – Tahoe City

The Tahoe City site (39° 10' 3.954" N, -120° 8' 49.473" W, elevation 1,967.8 m) is a small greenbelt area 0.5 km west of Lake Tahoe containing pines, incense cedar and firs and bordered by a fire station, a golf course, a grocery store, and a retention basin (dry in summer). There is also a nearby drainage area creek that was still somewhat wet in summer 2020. Clothianidin baits were prepared for the North Star Village choice test above and deployed for 24 hours starting 9/30/2020. Bait cups were collected and weighed after 24 hours. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The amount of bait taken in the choice tests was analyzed with a Chi-square goodness of fit analysis.

Results

Efficacy Trial 1 – Alpine Meadows

The monitoring collections were predominantly *V. pensylvanica* (62.0%), but other species were collected in the heptyl butyrate traps including *V. acadica* (26.8%), *V. alascensis* (5.8%), *V. atropilosa* (5.4%), and *Dolichovespula maculata* (0.03%). Enough *V. alascensis* were trapped to analyze the data.

The bait cups in the evaporation checks lost an average of 28.8% of their weight during the 48-hour exposure. After correcting for evaporation, the yellowjackets removed 198 g of bait (about 48.4% of the bait) from 16 cups. The selamectin + sarolaner bait provided a significant 77.3 and 60.6% reductions in trap counts of *V. alascensis* after day 7 (W = 276, Z = 3.5, **P** = 0.0005) and 14 (W = 249, Z = 3.55, **P =** 0.0004). respectively (Table 11). The bait provided a significant 56.8 and 42.1% reduction of *V. pensylvanica* at days 7 (W = 258, Z = 2.78, **P** = 0.005) and 14 (W = 296, Z = 3.04, **P** = 0.002), respectively.

Table 11. The average number of yellowjackets/trap/day (YJ/T/D) and the percent reductions after baiting with 0.048% selamectin + 0.008% sarolaner in minced chicken.

	Average YJ/T/D (% reduction)		
Species	Pre-baiting	Day 7	Day 14
V. alascensis	0.75	0.22 (71.0%)	0.38 (49.5%)
V. pensylvanica	8.5	3.67 (56.8%)	4.86 (42.1%)

Efficacy Trial 2 – North Tahoe Regional Park

The predominant species collected in the traps was *V. pensylvanica* (89.8%) followed by *V. atropilosa* (5.1%), *V. alascensis* (2.9%), *V. acadica* (2.0%), and *Dolichovespula maculata* (0.07%). Enough *V. alascensis* were trapped to analyze the data.

The control baits lost 56.1% of their weight in the evaporation controls during the 48-hour exposure. After compensating for the water loss, yellowjackets removed 134.3 g of 0.05% fluralaner minced chicken bait from 9 bait cups.

The 0.05% fluralaner bait significantly reduced the number of *V. alascensis* trapped at days 7 ($W = 371$, $Z = 4.45$, $\mathbf{P} < 0.001$) and 14 ($W = 423$, $Z = 4.57$, $\mathbf{P} < 0.001$; Table 12). There were significant reductions in the number of yellowjackets trapped for *V. pensylvanica* at days 7 ($W = 457$, $Z = 4.69$, $\mathbf{P} < 0.001$) and 14 ($W = 266$, $Z = 2.73$, $\mathbf{P} = 0.005$).

Table 12. The average number of yellowjackets/trap/day (YJ/T/D) and the percent reductions after baiting with 0.05% fluralaner in minced chicken.

Species	Average YJ/T/D (% reduction)		
	Pre-baiting	Day 7	Day 14
V. alascensis	0.78	0.13 (83.4%)	0.14 (81.6%)
V. pensylvanica	17.14	2.39 (82.6%)	9.87 (42.4%)

Choice Preference Test – North Star Village

Choice tests with three concentrations of clothianidin in minced chicken and PAA crystals were conducted from 9/16/2020 to 9/17/2020 (Table 13). The minced chicken bait in the evaporation control lost 21.9% of its weight in 24 hours. After compensating for the weight loss, the yellowjackets removed 33.6 g of clothianidin in minced chicken and untreated chicken in 24 hours. The yellowjackets did not prefer any concentration or untreated chicken ($\chi^2 = 2.95$, $df = 3$, $\mathbf{P} > 0.05$).

Table 13. Choice acceptance tests with 0.0125, 0.025, and 0.05% clothianidin in minced chicken and PAA crystals tested from 9/16/2020 to 9/17/2020.

	Average bait taken g (±SD)			
Bait Type	0.0%	0.0125%	0.025%	0.05%
Minced Chicken	25.5 (0.057)	26.3 (0.014)	23.1 (0.023)	25.1 (0.031)
PAA	23.6 (0.022)	29.1 (0.062)	21.3 (0.007)	22.5 (0.023)

The choice test with three concentrations of clothianidin in PAA gels was conducted 9/16/2020 (Table 14). The PAA crystals in the evaporation control lost 25.1% of their weight in 24 hours. After adjusting for the water loss, the amount of all bait removed was 32.1 g. The yellowjackets did not prefer any concentration or untreated chicken ($\chi^2 = 3.51$, $df = 3$, $\mathbf{P} > 0.05$).

Choice Preference Test – Tahoe City

Choice tests with three concentrations of sodium selenate and sodium selenite were conducted from 9/23/2020 to 9/24/2020 (Table 14). The sodium selenate and sodium selenite lost 29.5 and 22.2% of their weight in the evaporative controls during the 24-hour exposure, respectively. After adjusting for the water loss, yellowjackets removed 304.0 g of sodium selenate and the untreated crystals and 303.6 g of sodium selenite and untreated crystals in 24 hours.

There were no significant differences in the amounts of sodium selenate bait taken between the concentrations ($\chi^2 = 0.003$, $n = 3$, $\mathbf{P} > 0.05$). Similarly, there were no significant

differences in the amount of sodium selenite bait removed between the concentrations (χ^2 = 0.003, n = 3, **P** > 0.05).

Table 14. Choice preference tests with 0, 0.0125, 0.025, and 0.05% sodium selenate and sodium selenite in PAA crystals.

	Average bait taken g (±SD)			
Bait Type	0.0%	0.0125%	0.025%	0.05%
Na Selenate	25.5 ± 0.27	25.4 ± 0.28	25.3 ± 0.33	25.2 ± 0.14
Na Selenite	25.5 ± 0.06	25.2 ± 0.10	25.2 ± 0.11	25.3 ± 0.18

Discussion

The 0.05% fluralaner baits initially provided > 80% reductions in the number of yellowjackets trapped. Trap numbers increased by the end of day 14. The 0.048% selamectin + 0.008% sarolaner in minced chicken provided significant reductions in *V. alascensis* and *V. pensylvanica* over 14 days post-baiting. The 0.05% fluralaner (technical AI) also provided significant reductions of both species. When baited, the percent reductions of *V. alascensis* were consistently higher than *V. pensylvanica*.

The yellowjackets retrieved similar amounts of all three concentrations of clothianidin and the untreated control in the choice tests. Similarly, all concentrations of sodium selenate and sodium selenite were taken by yellowjackets. Higher concentrations of each of these potential toxicants should be tested.

Tahoe-area Bait Trials, 2021
Placer Mosquito and Vector Control District

Monitoring began at the Lake Tahoe sites on 7/21/2021. The wildfires began on 8/14/2021 and burned 896 km^2. The baiting and monitoring were discontinued because of the excessive smoke and fire hazard. The fire was not contained for nearly two months.

The North Lake Tahoe site is located within the North Tahoe Regional Park (39°15'02.42" N, 120°03'13.58" W, elev. 1,977 m). The Park consists of 50.2 ha mostly forested with pines and fir trees. It is a multi-use facility with outdoor activities including hiking, trail biking, picnicking, and baseball and soccer fields.

Methods and Materials

Efficacy Trial 1 – North Lake Tahoe

The bait was prepared by mixing 8 tubes of Revolution Plus (480 mg selamectin and 80 mg of sarolaner), 250 ml of chicken juice, 250 ml of water and 33.33 g PAA crystals. The final bait consisted of 0.096% selamectin + 0.016% sarolaner. The gels were conditioned for 48 hours in a refrigerator and then shipped overnight to Placer Mosquito and Vector Control District along with pre-weighed plastic salsa cups and lids.

About 22-25 g of bait was added to each pre-weighed cup. The entire cup (cup + lid + bait) was weighed again. Four bait stations with 4 cups of bait (377.3 g) and an evaporation check station with 4 cups were place hung in trees on 8/11/2021. After 24 hours, the bait stations

and cups were retrieved. The bait cups were covered, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The number of yellowjackets per trap before and after baiting was analyzed with a Wilcoxon signed-rank test.

Results

Efficacy Trial 1 – North Lake Tahoe

The 30 monitoring stations trapped 13.4 YJ/T/D prior to baiting. The evaporative checks lost 49.3% of their weight. After compensating for water loss, yellowjackets removed 333.8 g of the selamectin + sarolaner bait (88.4% of the total).

At day 7, there was a significant 50.3% reduction in the number of YJ/T/D (W = 286, n = 30, **P** = 0.001). Similarly, at day 14 there was a significant 35% reduction (W = 217, n = 30, **P** = 0.014). At day 21, the reduction in the number of yellowjackets trapped (26.5% reduction) was no longer significant.

Discussion

The 0.096% selamectin + 0.016% sarolaner bait was readily accepted suggesting that higher concentrations of active ingredients may be feasible. The reductions in the number of yellowjackets trapped was initially statistically significant, but still not enough to provide area-wide control.

The wildfires disrupted the monitoring and baiting in late August.

Irvine Regional Park 2018

Irvine Regional Park (IRP, 33°47'46.82" N, 117°45'19.82" W, elev. 180 m) is a multiple-use park (≈ 64.7 ha) surrounded by undeveloped wilderness areas composed primarily of a riparian, coastal sage scrub, and oak woodland plant community. The Park offers many activities, including picnics, concession stands, horse stables, shady turf areas, a zoo, and a small lake (Fig. 20). The Park is nestled in the foothills and provides an excellent foraging setting for *V. pensylvanica*.

In 2017, an extensive wildfire burned much of the surrounding native habitat, especially along the northern boundary (Sites 34- 44), but the park remained open.

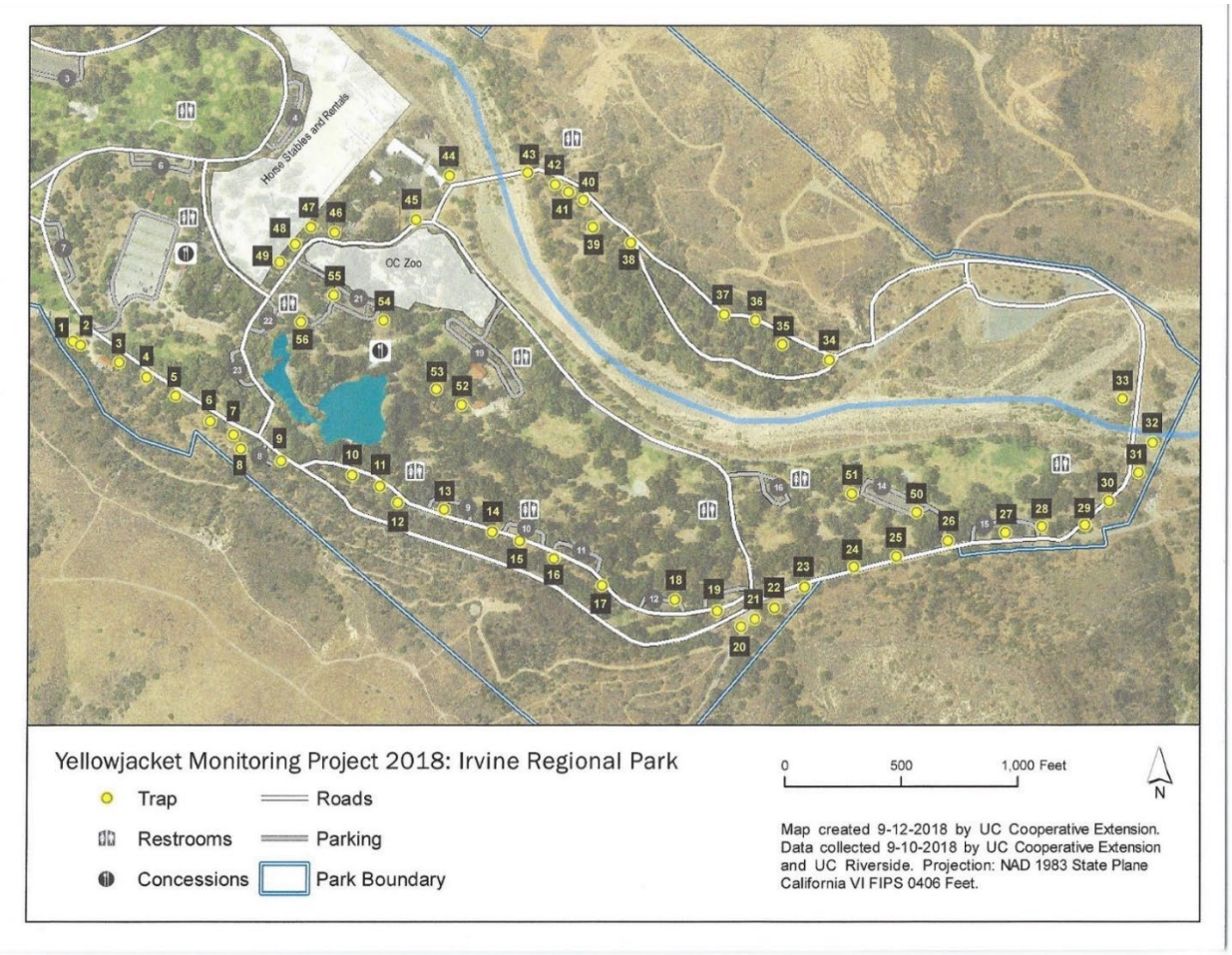


Fig. 20. Map of Irvine Regional Park and the yellowjacket monitoring sites in 2018.

Methods and Materials

Monitoring

The foraging activity of yellowjackets was measured using 56 UCR-style traps. Monitoring began on 8/27/2018 and ended on 10/29/2018. The collection jars were changed every 14 days. The heptyl butyrate vials were replaced as needed.

Results

Only workers of *V. pensylvanica* were trapped from 8/27/2018 until 10/29/2018. By 10/29/2018, nearly 100% of the 56 traps had caught at least one yellowjacket. However, only 1,242 yellowjackets were caught throughout September and October (Fig. 21). The highest trap catch was 0.67 yellowjackets/trap/day (YJ/T/D).

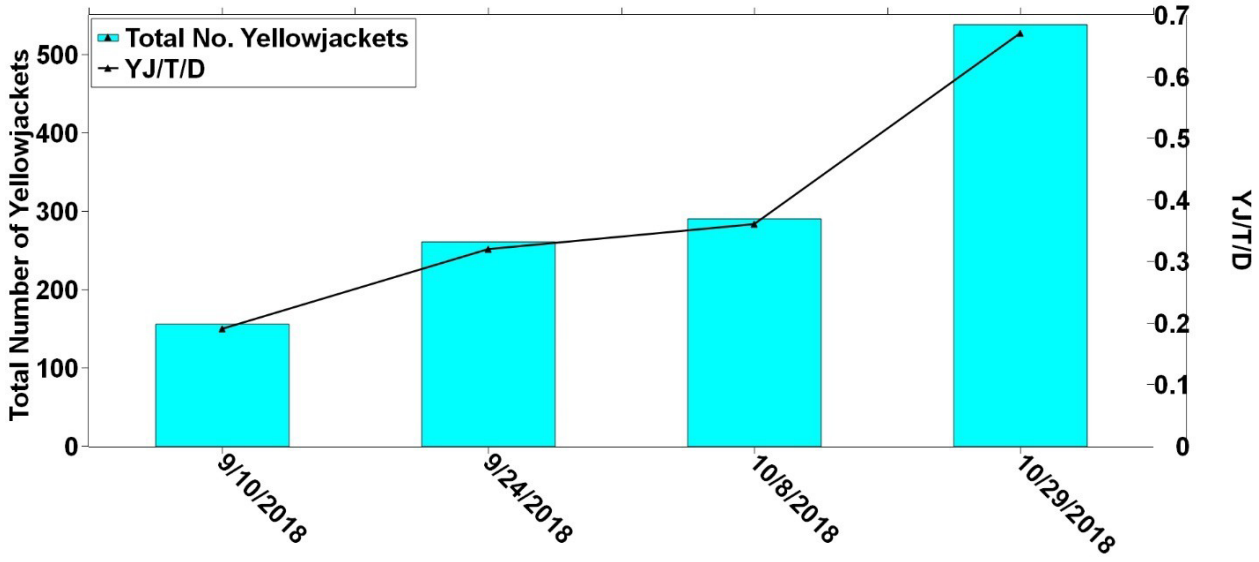


Fig. 21. Yellowjacket trapping data from Irvine Regional Park in 2018. Bars represent the total number of yellowjackets trapped. The straight line represents the average number of yellowjackets/trap/day (YJ/T/D) for all 56 traps.

Discussion

The average number of yellowjackets trapped remained below the 10 yellowjackets/trap/day (YJ/T/D) threshold to initiate a baiting trial. The wildfires in 2017 probably had a negative impact on the yellowjacket populations in 2018. Only a few yellowjackets were collected at monitoring trap locations 33 to 44, adjacent to the burn area. This area had historically high numbers of yellowjackets in the past (Rust et al. 2010).

Irvine Regional Park 2019

Methods and Materials

Monitoring

The monitoring began on 6/12/2019 and ended on 10/28/2019. UCR traps were hung under trees about 1 to 1.5 m off the ground and about 20–80 m apart. The park's perimeter was surrounded by 56 traps in the same configuration used in 2018 (Fig. 20).

Preparation of Food Baits

The Swanson White Premium Chunk Chicken and canned cat food (Friskies Flaked Ocean Whitefish Dinner, Nestle Purina Pet Care Co., St. Louis, MO) were selected because they were attractive and taken by foraging yellowjackets (Rust et al. 2010). To extract the juices from the canned meat and pet food, the contents of each can were poured into a large funnel lined with cheesecloth (Fig. 22). The liquid passed through the cheesecloth into the glass container. The cheesecloth containing the chicken or fish was squeezed over a bowl to collect the remaining juices. A 133-ml can of Swanson chicken (4.5 oz.) provided approximately 70-80 ml of fluid (from now on referred to as “chicken juice”). A can of whitefish dinner pet food (5.5 oz.)

provided approximately 47 ml of a very viscous liquid (from now on referred to as “fish juice”). Chicken broth was obtained by slowly cooking a whole chicken in water for 6 hours. The meat, bones, and skin were removed, and the liquid contents were poured through a strainer. The filtered liquid was refrigerated, and the fat hardened and solidified over the broth. The fat was removed, and only the liquid broth portion was used for preparing the PAA gels.

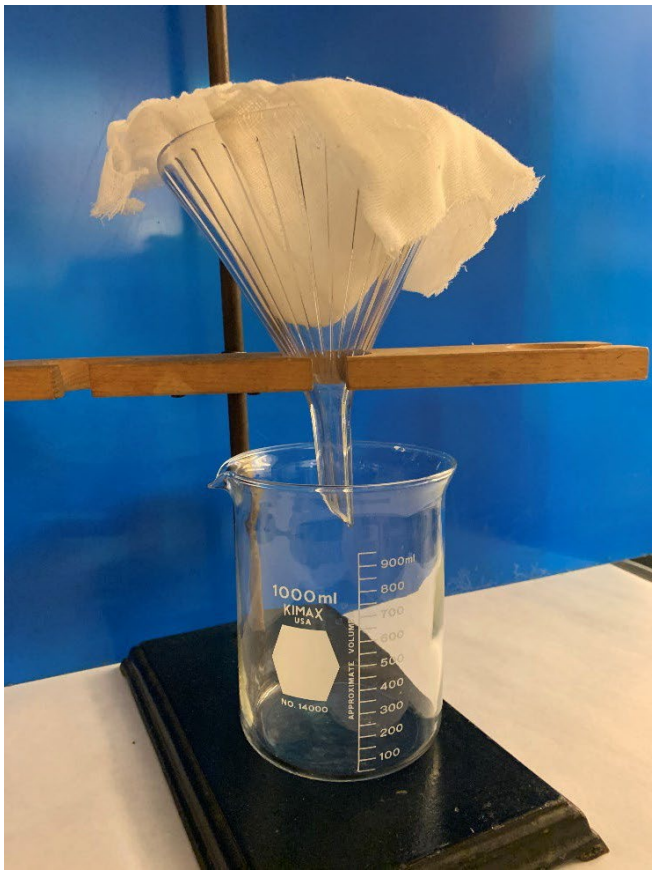


Fig. 22. Extract juices from canned minced chicken and whitefish pet food through cheesecloth.

The hydrogels were prepared with 20 g of PAA crystals for every 400 ml of liquid. The liquid consisted of either pure chicken broth, chicken juice, or fish juice diluted with water in a 1:1 or 1:3 ratio. The gels were prepared as follows:

> Step 1. Three types of baits (chicken juice, fish juice, and chicken broth) were prepared by extracting the juice from the canned meats or a cooked whole chicken into three separate 1-L glass containers.
>
> Step 2. All the juices and broth were collected, measured in a graduated cylinder, and poured into a 1-L glass beaker. Water was added to make 400 ml of conditioning liquid with the appropriate ratios (100% juice

or broth, 1:1, and 1:3 ratio). The conditioning liquid was stirred for approximately 2-3 minutes.

Step 3. The PAA crystals gels (20 g) were added to each mixture and liquid. The mixtures and the pure juice/broth were stirred using the stirring rod for an additional 2-3 minutes.

Step 4. The PAA gels were then conditioned by storing them inside the refrigerator for at least 16 hours (overnight).

Step 5. After the gels were conditioned, they were mixed with a stirring rod before being transferred to bait cups, weighed, and placed back into the refrigerator.

Preparation of hexane/aqueous fractions of chicken and fish juice

About 150 ml of either canned chicken or fish-based pet food juices were collected in a 250 ml Erlenmeyer flask with a glass stopper. About 100 ml of hexane was added to the flask. With the stopper securely closed, the flask was shaken vigorously. After shaking, the flask was left in a fume hood overnight until the two layers (bottom: aqueous fraction; top: hexane fraction) separated and settled. Each fraction was collected using a 5-ml glass pipette and transferred to a clean glass flask.

In some cases (especially for the fish juice), further fractionation and cleanup by centrifugation were necessary. The hexane and aqueous fractions were kept in the refrigerator, loosely covered with aluminum foil overnight. This process helped in further removing any additional hexane from the aqueous fractions.

For “water extract” treatment, 50 ml of the water fraction was used to hydrate 2.5 g of PAA. For “hexane extract” treatment, 50 ml of the hexane fraction were first placed in a glass jar (8 oz.), and hexane was evaporated under a gentle flow of N_2, leaving an oily residue at the bottom. PAA hydrogels fully hydrated in 0.9% NaCl isotonic solution (B. Braum Medical Inc. Irvine, CA; 2.5 g of PAA in 50 ml of 0.9% NaCl solution) were subsequently added to the glass jar and mixed with the oil residue using a spatula. For “both extracts together” treatment, PAA hydrogels hydrated with 50 ml of the aqueous fraction were subsequently treated with the oily residue from 50 ml of the hexane fraction by following the processes described above.

Choice Tests Polyacrylamide (PAA) Gels vs. Sodium Alginate (ALG) Gels

Choice tests were conducted with the hydrogels conditioned in chicken juice to determine if yellowjackets preferred either PAA or ALG hydrogels.

The PAA gels were prepared by mixing 200 ml of chicken juice, 600 ml of deionized water, and 40 g of PAA crystals, providing a 1:3 dilution ratio of chicken juice: water. The gels were allowed to condition in the refrigerator overnight. Excess liquid was drained from gels through a strainer resulting in about 840 g of conditioned gels.

The biodegradable ALG hydrogels were produced by the method described by Tay et al. (2017) with minor modifications. The Na-Alg solution (1%) was slowly dispensed dropwise through a modified 8-inch shower head nozzles (1.6 mm diam.). The droplets were immediately collected with 0.5% $CaCl_2$ crosslinker solution in a plastic container. The alginate hydrogel beads were crosslinked in the $CaCl_2$ solution for 2 minutes. The resulting hydrogel beads were passed

through a sieve. The resulting ALG hydrogels mainly were water, so to obtain an approximate 1:3 (chicken juice: water) ratio, 300 ml of chicken juice, 300 ml of deionized water, and 600 ml of the ALG gel were mixed. The ALG gels were placed in the refrigerator overnight to condition. After 24 hours, the excess liquid was drained from the gels through a strainer, resulting in about 750 g of conditioned gels.

Salsa cups and lids were weighed, and 30 g of gel were added to each cup. Then, the entire bait cup (cup+ gel + lid) was weighed again. The cups were kept in a refrigerator until used (within 1-2 days) and held on ice packs during transportation to the field site.

Two cups containing PAA and two cups containing ALG gel were placed in opposite corners in each bait station (Fig. 23). Six choice tests were set up (trap locations #1, 5, 22, 39, 42, and 44, Fig. 8). To estimate water loss from the hydrogel baits, four evaporation control stations with two ALG cups and two PAA gels cups were hung alongside a bait station (Fig. 24).

The choice test was initiated on 8/19/2019 at 1300 hours. At 1500 hours, one cup of PAA and 1 cup of ALG were removed from each station and the four evaporation control stations. The cups were covered, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

After 4 hours, all the remaining cups were empty, and the test was discontinued.

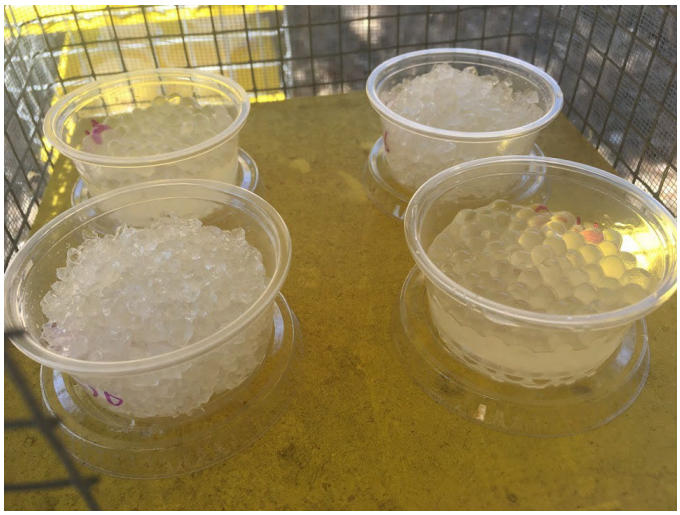


Fig. 23. Gel cups inside of a bait station. From the lower left, clockwise, cups contained PAA, ALG, PAA, and ALG hydrogels. The ALG hydrogels are spherical, and PAA hydrogels have an irregular shape.

Fig. 24. A bait station (left) and an evaporation control station (right). Note the fine metal screen on the evaporation check station to prevent yellowjackets from foraging on the hydrogels.

Choice Tests with Chicken Juice:Water PAA Gels

A choice test was conducted with PAA hydrogels prepared with different dilutions of chicken juice in water to determine the optimal amount of chicken juice to condition the hydrogels. The gels were prepared with pure chicken juice, chicken juice (diluted 1:1), and chicken juice (diluted 1:3) with deionized water (Table 15). The gels were conditioned overnight in the refrigerator and transported to the field on ice packs.

Table 15. Composition of PAA gels with various amounts of chicken juice and deionized water.

Bait name	Chicken Juice (ml)	Water (ml)	Total (ml)	PAA crystals (g)
Chicken juice gel (1:3 dilution)	30	90	120	6
Chicken juice gel (1:1 dilution)	60	60	120	6

Chicken juice gel (undiluted)	120	0	120	6

Salsa cups and lids were weighed, and 30 g of gel were added to each cup. The entire gel cup (cup + gel + lid) was weighed. Six choice tests with one cup of each concentration of chicken juice were set up in the field in the UCR bait stations. Evaporation control stations were hung alongside bait stations with 4 cups per concentration of chicken juice.

The choice test was initiated on 8/19/2019 at 1300 hours. After 3 hours, the cups were sealed and returned to the laboratory and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

Choice Test PAA Gels and Pet Food

Preliminary tests with PAA gels and whitefish pet food were conducted. The PAA gels were prepared with deionized water, chicken juice (1:1), and Swanson's chicken broth diluted with water 1:1. About 33.3 g of the PAA crystals were added to 400 ml of each fluid. The gels were conditioned in the refrigerator overnight.

Salsa cups and lids were weighed, and 30 g of gel or 30 g of whitefish pet food was placed in each cup. The entire bait cup (cup + gel + lid) was weighed and transported to the field on ice packs.

The test was initiated on 8/7/2019 and terminated on 8/8/2019. After 24 hours, the cups were covered, placed on ice, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

Choice Tests with Gels and Food Baits

A series of choice tests were conducted at several sites at Irvine Regional Park to determine which might be the most attractive. The choice tests conducted were as follows:

#1 - Swanson chicken, chicken juice, chicken juice (1:1 dilution), whitefish dinner, whitefish juice (1:1 dilution), whitefish juice (1:3 dilution).

#2 - Swanson chicken, chicken juice, chicken juice (1:1 dilution), chicken juice (1:3 dilution) (2 replicates).

#3 - Chicken juice, chicken broth, chicken broth (1:1 dilution) (3 replicates).

#4 - Fish juice hexane extract, fish juice water extract, and both extracts.

#5 - Chicken juice hexane extract, chicken juice water extract, and both extracts (3 replicates).

All dilutions were made with deionized water.

Salsa cups and lids were weighed, and 15 g of gel or solid food were added to each cup. The entire bait cup (cup + gel + lid) was weighed and transported to the field on ice packs.

The choice tests were conducted on 10/24/2019. Each choice station was placed out for 3 hours. The cups were covered, placed on ice packs, returned to the laboratory, and weighed. The

evaporation controls were conducted on 10/29/2019 on the UCR campus. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The amount of each fraction of chicken juice or fish juice taken was analyzed with a chi-square analysis.

Efficacy Trials

To determine the efficacy of dinotefuran baits against yellowjackets, baiting tests were conducted with low concentrations of dinotefuran, 0.00075%, 0.001%, and 0.0025% prepared in the PAA hydrogels. The baits consisted of 33.3 g of PAA crystals, 100 ml of chicken juice, and 300 ml of water (1:3 dilution). An aqueous stock solution of dinotefuran was added so that the final concentrations of the gels were 0.00075, 0.001, and 0.0025% (wt:vol). The hydrogels were allowed to condition in the refrigerator overnight.

Salsa cups and lids were weighed, and about 30 g of gel were added to each cup. Then the entire bait cup (cup+ gel + lid) was weighed. The baits were transported to the field on ice packets.

Three bait stations were placed at each site associated with a monitoring location with high yellowjacket trap counts. One station was placed next to a monitoring location, and the other bait stations were placed about 20 m away from the first one. The baits were placed out on 9/3/2019. Another site at the other end of the park greater than 400 m away from the bait sites was monitored and served as an untreated control.

After 24 hours, the bait cups were sealed and returned to the laboratory. The entire cup was weighed again. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The yellowjacket trapping data before and after baiting was analyzed with a paired *t*-test.

Results

Monitoring

The Park was monitored from 6/12/2019 until 10/28/2019. The number of workers trapped increased dramatically in early August, with 12 sites exceeding 10 YJ/T/D by mid-August (Fig. 25). The number of yellowjackets declined in early October. The total number of yellowjackets trapped during 2019 was 8,219.

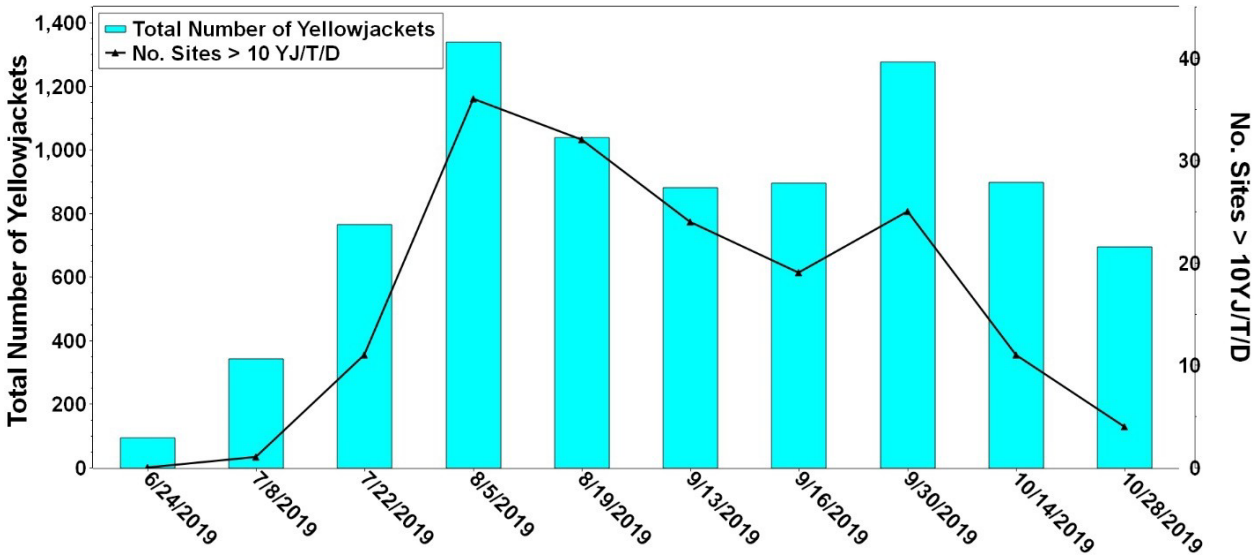


Fig. 25. The total number of yellowjackets trapped and the number of sites with > 10 yellowjackets/trap/day (YJ/T/D) at Irvine Regional Park during 2019.

Choice Test of Polyacrylamide (PAA) vs. Sodium Alginate (ALG) Hydrogels

All the PAA cups were empty or almost empty after 2-3 hours. At the sites where the PAA cups were empty, the ALG cups still had more than half of the bait left in them (Fig. 26). Based on data collected at 1500 hours, 19.0 ± 11 and 5.0 ± 3.4 g (mean ± SD, n = 6 cups each) of bait was removed by wasps from the cups. The PAA and ALG gels lost about 7.3% and 5.6% of their weight in 2 hours, respectively. When adjusted for water loss, the yellowjackets removed 122.8 g of PAA gels (about 68% of the total) at 2 hours. Only 32.7 g of the ALG gels (about 18% of the total) were taken at 2 hours. All the remaining bait cups were empty at 1750 hours.

Based on our site observation, the yellowjackets visited both gel baits. In contrast, wasps took a piece of PAA gel within 5 sec after landing on the bait cup, whereas wasps took more than 30 seconds longer to take off with a piece of ALG bead than with the PAA gel. The wasps spent more time handling the ALG beads before being able to take off with a small piece of the hydrogel.

Fig. 26. Choice test at monitoring location #1. The photo was taken about 2 hours after the initial setup. From the lower left, clockwise, cups contained PAA, ALG, PAA, and ALG hydrogels. Note both PAA cups were nearly empty while ALG cups still had most of the ALG hydrogel beads.

Choice Test with Chicken Juice:Water PAA Gels

The PAA gels conditioned in chicken juice were very attractive. All the gels from cups containing pure chicken juice or chicken juice and water (1:1) were removed within 2 hours. Very little of the diluted chicken juice (1:3) was removed at 2 hours, but it was removed entirely by the following morning (18 hours later).

Choice Tests with PAA Gels and Pet Foods

The yellowjackets preferred the Swanson chicken whenever it was a choice in the tests, with an average of 15.84 g (n=3) taken (Table 16). The PAA crystals conditioned with undiluted chicken juice were a second choice with an average of 11.1 g removed (n=6). The yellowjackets removed an average of 9.71 g (n=3) of PAA crystals conditioned in chicken broth. When the chicken juice was diluted with water (1:1), yellowjackets took an average of 4.66 g (n=3).

The hexane:water partition of the chicken juice was attractive. The yellowjackets removed an average of 17.6 g (n=3) of the three conditioned fractions. There was no significant difference in the amounts of each fraction retrieved by the yellowjackets ($\chi^2 = 1.67$, n = 2, **P** >0.05).

The canned whitefish dinner and the PAA gels conditioned in whitefish juice were not readily removed. The gels congealed together and were difficult to manipulate. Similarly, the

tests with the hexane and water partitions of the fish extract resulted in the lowest amount of bait removed in the studies.

Table 16. The removal of food materials and PAA gels ranked from various choice tests conducted at Irvine Regional Park.

Choice Test	Bait	Bait Taken (g)	% total	Rank
1	Swanson chicken	16.44	41.9	1
	Gels with chicken juice (undiluted)	14.91	38.0	2
	Gels with chicken juice (1:1)	4.17	10.6	3
	Whitefish pet food	1.58	4.0	4
	Gels with fish juice (1:1)	0.73	1.9	6
	Gels with fish juice (1:3)	1.33	3.6	5
	Total	39.30		
2	Swanson chicken	14.91	69.4	1
	Gels with chicken juice (undiluted)	1.58	7.4	3
	Gels with chicken juice (1:1)	4.24	19.8	2
	Gels with chicken juice (1:3)	0.73	3.4	4
	Total	21.46		
3	Swanson chicken	16.17	43.2	1
	Gels with chicken juice (undiluted)	10.96	29.3	2
	Gels with chicken juice (1:1)	5.57	14.9	3
	Gels with chicken juice (1:3)	4.74	12.7	4
	Total	35.64		
4	Gels with chicken juice (undiluted)	16.76	48.4	1
	Gels with chicken broth (undiluted)	11.18	32.3	2
	Gels with chicken broth (1:1)	6.66	19.3	3
	Total	34.60		
5	Gels with chicken juice (undiluted)	13.51	43.1	1
	Gels with chicken broth (undiluted)	10.03	32.0	2
	Gels with chicken broth (1:1)	7.82	24.9	3
	Total	31.36		
6	Gels with chicken juice (undiluted)	8.88	41.4	1
	Gels with chicken broth (undiluted)	7.93	36.9	2
	Gels with chicken broth (1:1)	4.66	21.7	3
	Total	21.47		
7	Gels with fish hexane	2.23	25.9	3
	Gels with fish water extract	3.04	35.3	2
	Gels with fish water + hexane extracts	3.35	38.8	1
	Total	8.63		
8	Gels with chicken hexane extract	2.76	13.5	3
	Gels with chicken water extract	9.67	47.2	1
	Gels with chicken water + hexane extracts	8.05	39.3	2
	Total	20.48		

9	Gels with chicken hexane extract	5.47	39.2	2
	Gels with chicken water extract	2.40	17.2	3
	Gels with chicken water + hexane extracts	6.09	43.6	1
	Total	13.97		
10	Gels with chicken hexane extract	5.11	36.6	3
	Gels with chicken water extract	6.78	48.5	1
	Gels with chicken water + hexane extracts	6.52	46.7	2
	Total	18.41		

Efficacy Trials

The yellowjackets removed about 20-25% of the dinotefuran bait placed out in stations within 24 hours. The 0.0025% dinotefuran bait provided a 40.6 and 37.3% reduction on days 14 and 28, but the YJ/T/D were still above the action threshold (Table 17). The trap counts increased with 0.001 and 0.00075% baits and the controls at day 28 (Table 18). On 10/15/2019 (42 days after baiting), yellowjacket traps started declining at all the sites at Irvine Regional Park. Even though there's a trend that shows a decline in the number of wasps associated with the treated locations starting as early as 14 days after the trial, no significant differences were found before 56 days, probably due to the limited number of monitoring stations and the high variability in trap catches at those sites. Significant reductions occurred at day 56 with 0.0075% dinotefuran bait ($T = 2.85$, $df = 4$, $\mathbf{P} = 0.05$) and 0.001% dinotefuran bait ($T = 5.10$, $df = 4$, $\mathbf{P} < 0.01$),

Table 17. Amount of bait removed at the bait stations containing 0.00075, 0.001, and 0.0025% dinotefuran PAA baits at Irvine Regional Park. The average number of yellowjackets/trap/day (YJ/T/D) and percent reduction at each location before baiting and 14, 28, 42, and 56 days after baiting.

Treatment	Bait taken (g)	Average YJ/T/D (% reduction)				
		Pre-baiting	14 days	28 days	42 days	56 days
Dinotefuran 0.00075%	69.1	17.6	18.5 (0.0 %)	19.8 (0.0 %)	13.3 (24.9 %)	9.2 (47.9 %)
Dinotefuran 0.001%	65.9	10.9	9.6 (11.2 %)	21.1 (0.0 %)	6.0 (45.0 %)	2.4 (78.3 %)
Dinotefuran 0.0025%	41.5	28.9	17.1 (40.6%)	18.1 (37.3 %)	10.0 (65.3 %)	6.0 (79.3 %)
Control		12.0	12.8 (0.0 %)	20.0 (0.0 %)	8.4 (29.9 %)	6.9 (42.6 %)

Conclusions

The findings were consistent with other San Diego Zoo Safari Park observations that chicken juice and water (1:3 dilution) were less preferred than pure chicken juice or chicken juice and water (1:1 dilution). To be competitive with food sources in the environment, the hydrogel baits need to be conditioned with higher concentrations of chicken juice.

Previous studies have shown that certain pet food containing whitefish and canned minced chicken were highly preferred and removed by yellowjackets (Rust et al. 2010). However, the fish pet food was not readily accepted by the foragers.

The presence of hexane-soluble oils on hydrogels' surface might initially attract the yellowjackets (unpublished data). Still, the presence of the oil was not sufficient to elicit the bait removal behavior of foraging yellowjackets. Our observation indicates that important phagostimulant(s) may be present in the aqueous fractions of the chicken juice.

The foragers readily accepted both the PAA and ALG gel baits conditioned in chicken juice, and all the offered bait was removed after 24 hours. However, the PAA gel was taken faster than the ALG. The wasps seem to spend more time handling the ALG beads, which explains the initial difference in the bait taken. ALG are larger and harder to handle, and some wasps were observed spending time “drinking” from the surface of gels in the cup. Since the goal of baiting is to have as much bait as possible removed to the colony before the foragers start to die under the effects of the insecticide, shorter handling time for the PAA gels might be essential to maximize the amount of bait taken. The handling time for ALG beads might be shortened if the hydrogel beads were cut into small/irregularly shaped pieces or the beads were made smaller. Also, the ALG beads lose less water than the PAA gels, which might extend the acceptability of the baits in the field. Based on our observation at the site, it was not clear if there is any inherent preference between PAA and ALG gel baits.

Relatively small amounts of the low concentrations of dinotefuran bait were taken, and there were no significant reductions in the number of yellowjackets trapped at day 28. This confirms an earlier study in which the dinotefuran baits were too toxic and killed workers too quickly (Rust et al. 2010), which results in reduced recruitment and bait take and, consequently, reduced effectiveness at reducing yellowjacket populations.

Irvine Regional Park 2020

Methods and Materials

Monitoring

The Park was surrounded by 56 traps initially installed on 6/29/2020 at the same locations as previous years (Fig. 20).

Choice Preference Tests

Choice tests were conducted to determine the acceptability of the potential toxicants such as the isoxazoline fluralaner and the neonicotinoid clothianidin, mixed in the minced chicken. The liquid juices were removed from the chicken and the chunks of chicken were chopped into fine pieces. About 80 ml of the chicken juice were added to 420 g of the minced chicken and thoroughly mixed.

Baits were prepared by mixing 1 tube of fluralaner (Bravecto® 250 mg) into the 80 ml of chicken juice and 420 g of finely minced chicken. The mixture was stirred and thoroughly mixed providing 0.05% fluralaner bait. This bait was diluted with untreated minced chicken to provide 0.025, 0.0125, and 0.00625% fluralaner bait. Clothianidin baits were prepared by mixing 25 g of clothianidin cockroach bait (Maxforce Impact, 1% clothianidin) into 420 g of minced chicken and 80 ml of chicken juice. This mixture was added to minced chicken to 0.1, 0.05, 0.025, and 0.0125% clothianidin yellowjacket bait.

Plastic salsa cups and lids were weighed, and ≈ 30 g of bait was added to each cup. Then the entire bait cup (cup + minced chicken + lid) was weighed again. The bait cups were refrigerated until tested.

Three bait stations were prepared for each series of bait. One cup of each concentration and an untreated cup of minced chicken were placed in a bait station for each toxicant. A bait station covered with a screen containing bait cups served as the evaporation control. The stations were placed at sites with high trap counts. The bait stations were deployed on 9/8/2020 and recovered on 9/9/2020.

After 24 hours, the cups were covered, placed on ice, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The data were analyzed with chi-square analysis.

Efficacy Trial on 10/12/2020

The number of yellowjacket foraging remained high at several sites in the park in September, and one late season baiting trial was conducted. Two sites were baited between 10/12/2020 to 10/13/2020 with 0.025% fluralaner in PAA gels (monitoring sites 35, 36, and 37) and 0.024% selamectin + 0.008% sarolaner gels (sites 41, 42, and 43). Monitoring traps were collected 7 days later.

After 24 hours, the cups were covered, placed on ice, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The number of yellowjackets trapped before and after baiting was analyzed with a Wilcoxon's signed-rank test.

Results

The total number of yellowjackets trapped at the 56 sites within the park is shown in Fig. 27. A total of 27,446 *V. pensylvanica* were trapped at Irvine Regional Park in 2020. The number of sites with > 10 YJ/T/D peaked on 9/8/2020.

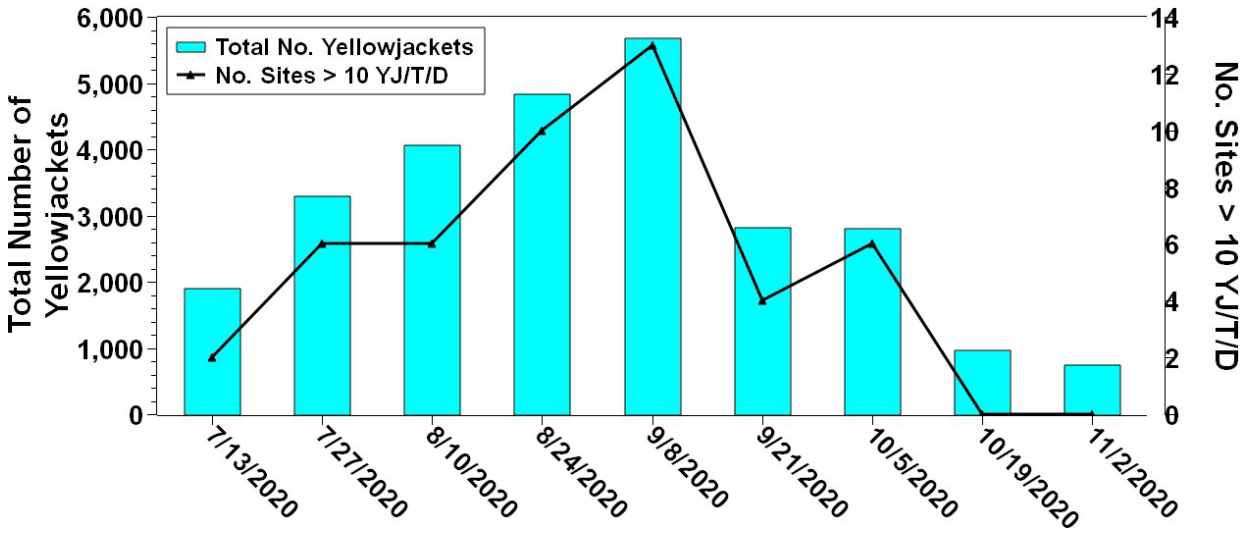


Fig. 27. The total number of yellowjackets trapped and the number of sites with >10 yellowjackets/trap/day (YJ/T/D).

Choice Preference Tests

There were no significant differences in the amount of the four concentrations of fluralaner bait removed by yellowjackets ($\chi^2 = 5.25$, df = 4, **P** > 0.05, Table 18). The amount of treated and untreated bait removed by yellowjackets varied from 27 to 75%, depending upon the location of the bait station. About 49% of all the treated bait (194.5 g) was removed.

There were no significant differences in the amount of the four concentrations of clothianidin bait removed by the yellowjackets ($\chi 2 = 0.561$, df = 4, **P** > 0.05). About 16.2% of the treated bait was removed (63.8 g).

Table 18. Bait acceptance study with fluralaner and clothianidin mixed in finely minced chicken.[1]

Bait	Concn. (%)	Avg. (± SD) Amount Taken (g)	% of Total Taken
Fluralaner	0.05	17.3 ± 8.18	18.65
	0.025	14.7 ± 8.70	16.65
	0.0125	17.2 ± 11.05	19.65
	0.00625	15.6 ± 3.58	18.10
	0.0	21.7 ± 1.72	26.9
Clothianidin	0.1	4.2 ± 0.60	15.26
	0.05	5.8 ± 1.36	20.93
	0.025	5.1 ± 1.00	18.75
	0.0125	6.2 ± 0.61	25.70
	0.0	6.1 ± 0.14	22.36

[1] Choice tests conducted for 24 hours from 9/8/2020 to 9/9/2020.

The number of yellowjackets began declining after September 8 throughout the Park and the untreated control (Fig. 28). However, there was a stronger reduction in the number of yellowjackets trapped at the three choice baiting sites with the clothianidin bait (84.8%) compared to the control sites (45.5%) two weeks after the choice test.

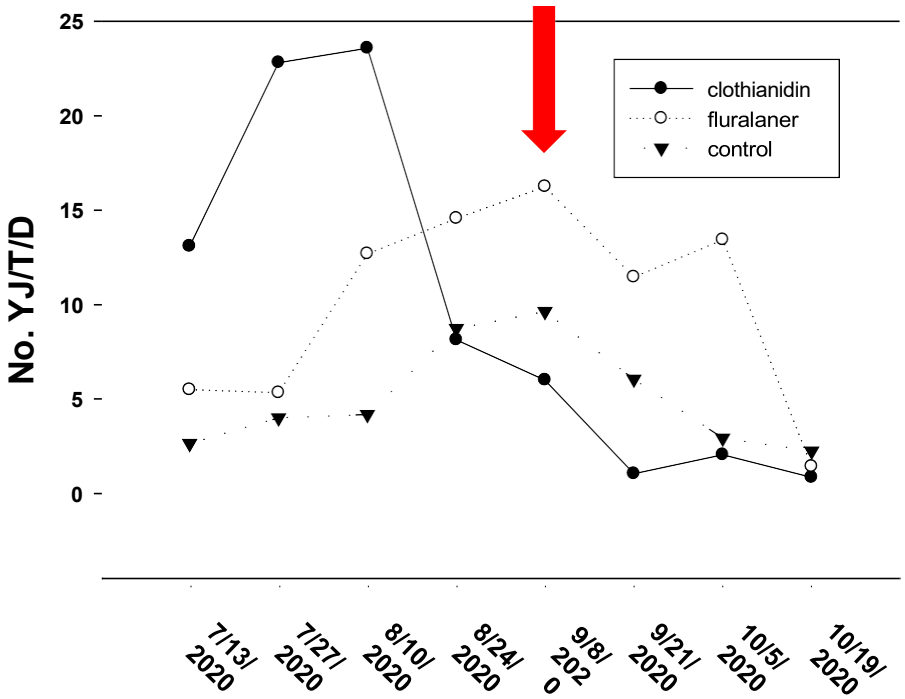


Fig. 28. The average number of yellowjackets/trap/day (YJ/T/D) at the two choice preference sites on September 8-9 and an untreated site on the opposite end of the park. The red arrow indicates when the choice tests were initiated.

Efficacy Trial 10/12/2020

The PAA gels in the evaporation control lost 22.2% of their weight in 24 hours. When adjusted for water loss, the yellowjackets removed 321.3 g of 0.025% fluralaner bait (61.2% of the total) and 412.6 g of 0.024% selamection + 0.004% sarolaner bait (77.9% of the total) in 24 hours (Table 19). The selamectin + sarolaner baits provided a significant reduction in the number of yellowjackets trapped after 7 days (W = 28, df = 6, **P** = 0.01) and 21 days (W = 21, df = 7, **P** = 0.03). The reductions with the 0.025% fluralaner were not significant. However, only 4 monitoring traps were close to those bait stations, and the variability in counts and the low number of traps limited the statistical analysis. The number of yellowjackets trapped in the untreated area remained unchanged during the test.

Table 19. The efficacy of 0.025% fluralaner and 0.024% selamectin + 0.004% sarolaner baits in a late-season baiting conducted on 10/12/2020 at Irvine Regional Park.

Baits	Bait Taken (g)	No. Monitoring Traps	Average YJ/T/D (% reduction)		
			Pre-baiting	7 days	21 days
0.025% fluralaner	321.4	4	6.4	0.6 (91.1%)	0.9 (85.5%)
0.025% selamectin + sarolaner	412.6	7	10.5	1.9 (82.1%)	1.0 (90.5%)
Untreated		8	2.24	2.2 (0.0%)	1.7 (25.6%)

Discussion

The yellowjackets removed all concentrations of fluralaner and clothianidin tested. During the 1-day test period, > 194 g of treated fluralaner bait were removed compared with only 61.2 g of the clothianidin. The fast-acting clothianidin likely decreased overall foraging. There was a significant decrease in the number of yellowjackets trapped in the monitoring traps near the fluralaner choice test. The data certainly warrants additional testing with 0.05% fluralaner and lower concentrations of the clothianidin bait.

The 0.024% selamectin + 0.004% sarolaner bait was well taken and provided a significant reduction in the number of yellowjackets before the yellowjacket populations declined in late October. The 0.025% fluralaner was also well taken, and the reduction in yellowjackets trapped exceeded 80%.

Irvine Regional Park 2021

Methods and Materials

Monitoring

The foraging activity of yellowjackets was measured using a total of 56 UCR traps (Fig. 20). Monitoring began on 6/14/2021 and ended on 11/17/2021. The collection jars were changed every 14 days. The heptyl butyrate vials were replaced as needed.

Efficacy Trial #1

The 0.05% fluralaner bait was prepared with 500 ml of diluted chicken juice (1:1), 33.3 g of PAA crystals, and 250 mg of fluralaner. The selamectin + sarolaner bait was prepared with 500 ml of diluted chicken juice (1:1), 33.3 g of PAA crystals, and 12 tubes of Revolution Plus (720 mg of selamectin + 120 mg sarolaner). The mixtures were allowed to condition for 24 hours in the refrigerator.

The salsa cups and lids were weighed, and filled with ≈ 25 g of bait, and weighed again. Four bait stations were assembled for each type of bait, with four cups of bait in each station. The fluralaner bait stations were hung at sites 25, 26, 27, and 50. The selamectin + sarolaner baits were hung at sites 38, 39, 40, and 42. Four cups of each bait were placed in two evaporation control stations (Sites 41). The baits were hung on 8/24/2021 and retrieved on 8/26/2021. The traps at sites 1-10 served as controls.

After 24 hours, the cups were covered, placed on ice, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The trap counts were analyzed with a Wilcoxon signed-rank test.

Efficacy Trial #2

The same sites from 8/24/2021 were treated again on 9/21/2021 to 9/23/2021 with the same baits as described above.

Results

Monitoring

The only species trapped was *V. pensylvanica*. Two queens were trapped between 6/14/2021 and 6/28/2021. A total of 17,795 yellowjackets were trapped during 2021 (Fig. 29).

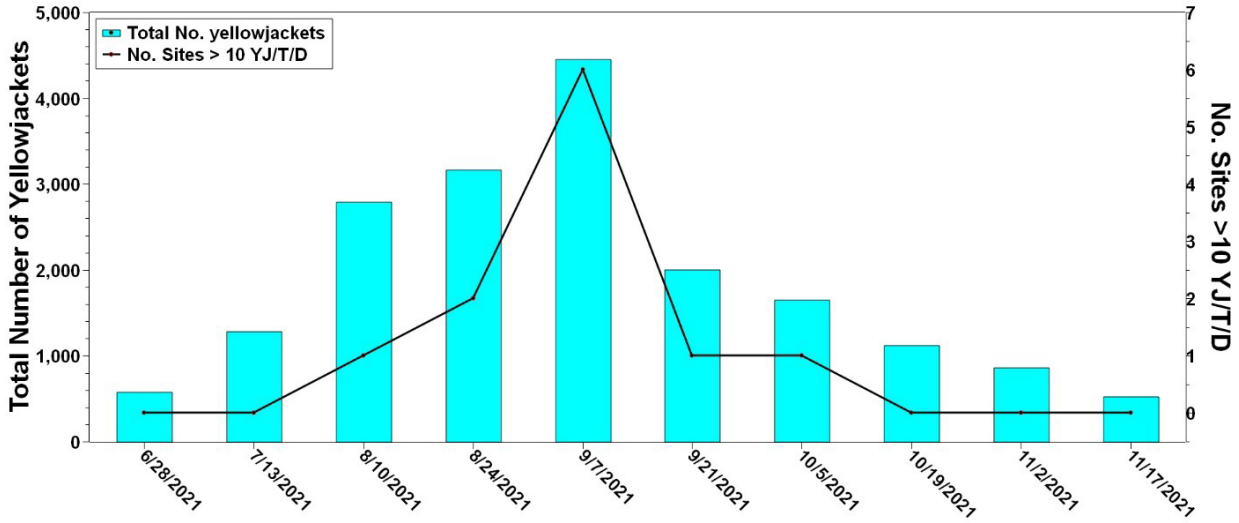


Fig. 29. The total number of yellowjackets trapped and the number of sites with >10 yellowjackets/trap/day (YJ/T/D) at Irvine Regional Park in 2021.

Efficacy Trial # 1

The weather had been warm, and the baits in the evaporative control lost about 70% of their weight over the 48-hour baiting period. After compensating for the water loss, the yellowjackets removed 40.0 g of 0.05% fluralaner (about 9% of the total) and 219.2 g of selamectin + sarolaner (about 54% of the total). The 0.05% fluralaner baits provided significant reductions in the number of yellowjackets trapped after 14 days (W = 34, n = 8, **P** = 0.01) and 28 days (W = 36, n = 8, **P** = 0.007, Table 20). Similarly, the 0.144% selamectin + 0.024% sarolaner provided significant reductions after 14 days (W = 55, n = 10, **P** = 0.002) and 28 days (W = 55, n = 10, **P** = 0.002). The untreated controls declined after 14 days (W = 46, n = 10, **P** = 0.01), but were unchanged after 28 days (W = 35, n = 10, **P** = 0.08). The selamectin + sarolaner bait was more readily removed by the yellowjackets than the fluralaner bait.

Table 20. The efficacy of 0.05% fluralaner and 0.144% selamectin + 0.024% selamectin PAA gel baits.

Toxicant	Bait Taken g (% of total)	Monitoring Sites	Average YJ/T/D (% reduction)		
			Pre-baiting	14 days	28 days
0.05% fluralaner	40.0 (9.4%)	8	5.78	1.93 (55.2%)	2.23 (50.9%)
0.144% selamectin + 0.024% sarolaner	219.3 (54.5%)	10	6.96	2.45 (64.8%)	1.52 (78.2%)
Untreated		10	4.00	3.03 (24.2%)	3.16 (21.0%)

EfficacyTrial # 2

The weather was warm, and the baits in the evaporative controls lost about 70% of their weight. After compensating for the water loss, the amount of 0.5% fluralaner bait removed was very low compared with the 0.144% selamectin + 0.024% sarolaner bait (Table 21). The fluralaner resulted in significant reductions in the numbers of yellowjackets after 14 days (W = 28, n = 10, P = 0.01), 28 days (W = 36, n = 10, **P** < 0.01), and 42 days (W = 36, n = 10, **P** < 0.01). The selamectin + sarolaner also provided significant reductions after 14 days (W = 34, n = 9, **P** = 0.04), 28 days (W = 55, n = 9, **P** = 0.002), and 42 days (W = 55, n = 9, **P** = 0.002). In the untreated controls, there was a significant reduction after 14 days (W = 35, n = 10, **P** = 0.3) and 42 days (W = 45, n = 10, **P** = 0.003).

Table 21. The efficacy of 0.05% fluralaner and 0.144% selamectin + 0.024% selamectin PAA baits against western yellowjackets.

Toxicant	Bait Taken g (% of total)	Monitoring Sites	Average YJ/T/D (% reduction)			
			Pre-baiting	14 days	28 days	42 days
0.05% fluralaner	2.5 (0.6%)	8	1.29	0.38 (70.6%)	0.39 (69.4%)	0.21 (83.3%)
0.144% selamectin + 0.024% sarolaner	228.4 (53.1%)	10	1.52	1.10 (27.7%)	0.76 (50.2%)	0.49 (68.1%)
Untreated		10	3.16	2.67 (15.4%)	1.86 (41.2%)	1.57 (50.2%)

Discussion

The number of YJ/T/D never reached the treatment threshold at most sites in Irvine Regional Park. However, it was decided to try to reduce the numbers at those sites with > 10 YJ/T/D. Those sites were baited on 9/21/2021. The selamectin + sarolaner bait was well accepted by foraging yellowjackets and provided significant reductions in the number of yellowjackets trapped after the first baiting.

The numbers of yellowjackets trapped at the 56 different sites in the park significantly declined after 9/21/2021, and the second baiting data was not conclusive.

Silent Valley RV Park 2019

Silent Valley Recreational Vehicle Camp is located about 8 km south of Banning, CA in the San Jacinto Mountains (33°50′57.51″ N, 116°51′08.45″ W; elev. 1,093 m) on California Route 243. The year around park consists of about 186 ha with 850 campsites. The Park supports multiple activities, including a small lake, swimming pools, a restaurant, and a general store. The campground is covered with numerous oaks, and the park is surrounded by native chaparral. Over the last 10 years, there have been sporadic problems with yellowjackets.

Methods and Materials

Monitoring

A total of 43 UCR-style monitoring traps were hung along the park's perimeter, beginning on 6/3/2019 and ending on 10/7/2019. The traps were checked every 14 days, and the heptyl butyrate vials were changed as needed.

Efficacy Trial

The dinotefuran bait was prepared with 100 ml of chicken juice, 600 ml of water, and 40 g of PAA crystals. The mixture was placed in the refrigerator, and the hydrogels were allowed to condition for 48 hours. A 0.1% aqueous solution of dinotefuran was prepared. Appropriate quantities of 0.1% dinotefuran were added to 100 g of the conditioned hydrogel to make baits containing 0.0025, 0.001, and 0.00075% dinotefuran. The baits were stored overnight in the refrigerator.

Plastic salsa cups and lids were weighed and ≈ 30 g of bait was added to each cup. The entire cup (cup + bait + lid) was weighed again. The bait cups were refrigerated and transported to the field on ice packs.

Three bait cups of each bait concentration were placed in UCR-style bait stations. The three bait stations were hung within about 15 m of each other. Evaporation controls with five cups were hung alongside bait stations to estimate water loss from hydrogel baits. After 24 hours, the bait cups and evaporation controls were removed, covered, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The amount of bait taken by the yellowjackets was analyzed with a one-way ANOVA and means compared with a Tukey's HSD.

Results

Monitoring

Queens of *V. pensylvanica* were collected on 6/17/2019 (n=4), 7/1/2019 (n=3), 7/15/2019 (n=2), and 7/29/2019 (n=1) along with a few workers. Low numbers of *V. atropilosa* and *V. sulphurea* workers were collected beginning 7/29/2019 (Table 22). However, the most predominant species trapped (n = 29,451) throughout the summer was *V. pensylvanica* (Fig. 30).

Table 22. The number of *V. atropilosa* and *V. sulphurea* workers trapped at Silent Valley RV Park during 2019.

Species	7/29/2019	8/12/2019	8/26/2019	9/9/2019	9/23/2019	10/7/2019
atropilosa	0	27	44	5	10	0
sulphurea	3	5	11	10	1	2

Efficacy Trial

In the evaporation controls, the 0.00075%, 0.001%, and 0.0025% dinotefuran baits lost 15.0%, 14.9%, and 13.7% of their weight in 24 hours. After adjusting for water loss, the yellowjackets removed the baits in the following order: 0.001% > 0.00075 > 0.0025% ($F = 54.94$, $df = 2, 24$; $\mathbf{P} < 0.001$).

The 0.001% and 0.0025% dinotefuran baits resulted in 62.5% and 58.7% reductions in the number of yellowjackets trapped at day 28, respectively (Table 23). Of the 270 g of bait deployed at each site, about 24.9%, 18.7%, and 2.8% of the 0.00075%, 0.001%, and 0.0025% dinotefuran baits, respectively, were removed by yellowjackets within 24 hours.

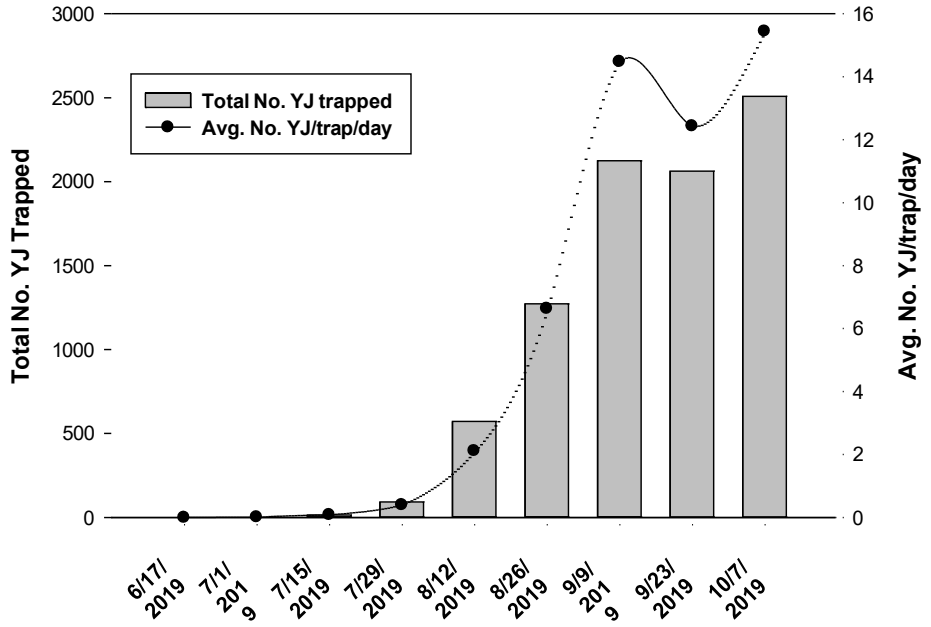


Fig. 30. The total number of *V. pensylvanica* trapped and the average number of yellowjackets/trap/day (YJ/T/D) for Silent Valley in 2019.

Table 23. Dinotefuran bait removal by yellowjackets and the average number of yellowjackets trapped (YJ/T/D) before and after baiting.

Treatment	YJ/T/D (no. traps)[a]	Total bait[b] removed (g)	Average YJ/T/D (% Reduction)	
			14 days	28 days
0.0025%	16.4 (1)	7.6 a	8.5 (48.3%)	6.8 (58.7%)
0.001%	11.8 (3)	67.5 c	7.7 (35.1%)	4.4 (62.5%)

0.00075%	11.0 (4)	50.6 b	10.2 (7.6%)	11.2 (0.0%)
Untreated	16.8 (14)		13.0 (23.5%)	16.0 (5.1%)

[a] The number of monitoring traps near the bait stations in parenthesis.
[b] Means followed by the same letter are not significantly different at $\mathbf{P} < 0.05$.

Discussion

There were not enough monitoring stations at all the bait stations to permit the statistical analysis of the baiting trial. The amount of 0.0025% dinotefuran baits removed by yellowjackets was less than 10 g. The 0.001% dinotefuran provided a 62.5% reduction at 28 days, and the two lower concentrations of dinotefuran were better accepted. The lowest concentration, 0.00075%, failed to reduce the number of yellowjackets trapped. This data is consistent with other studies that suggested that higher concentrations of dinotefuran kill the foragers too quickly and prevent them from recruiting other foragers (Rust et al. 2010).

Silent Valley Park 2020

Methods and Materials

Monitoring

The foraging activity of yellowjackets was monitored using UCR-style traps. Initially, 43 traps were hung under trees and bushes about 0.5-1.5 m off the ground on 6/29/2020. An additional 10 traps were added on 7/13/2020. On 7/27/2020, 3 more traps were added, making up a total of 56 traps along the perimeter of the RV park. The length of each monitoring session was 14 days. The monitoring continued until 11/2/2020.

Choice Tests with ALG and PAA Hydrogel Baits

Hydrogels made from biodegradable alginate (ALG) or polyacrylamide gels (PAA) were conditioned with diluted chicken juice. A choice test was conducted to determine which hydrogel was more attractive and taken by yellowjackets. Details regarding the production of the ALG and PAA gels see Irvine Regional Park 2019 (Methods and Materials section page 39). The choice test was conducted on 8/24/2020.

Plastic salsa cups and lids were weighed, and ≈ 20 g of each hydrogel was added to each cup. Then the entire bait cup (cup+ gels + lid) was weighed again. A total of 20 cups were prepared for each hydrogel type. The cups were placed on ice packs and transported to the field.

The UCR-style bait stations served as choice test arenas. The salsa cups with PAA and ALG gels were placed into the stations. The choice tests were placed at 4 active monitoring sites where the number of yellowjackets trapped per day ranged from 10.9 to 30.8. The choice tests were conducted for 4 hours. A site with low yellowjacket activity was selected for the evaporative control. The evaporative controls were placed in a bait station covered with window screen. After 4 hours, the cups were retrieved, covered, placed in a cooler, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The data was analyzed with a paired *t*-test.

Choice Preference Tests

Choice tests were conducted to determine the acceptability of the isoxazolines, fluralaner and sarolaner, and the neonicotinoid clothianidin mixed in minced chicken.

The baits were prepared with 80 ml of chicken juice, 420 g of minced chicken, and 1 tube of Bravecto (250 mg fluralaner) resulting in a 0.05% fluralaner bait. The 0.05% bait was diluted with untreated chicken to provide 0.025, 0.0125, and 0.00625% fluralaner. The selamectin + sarolaner baits were prepared by mixing 4 tubes of Revolution Plus (240 mg selamectin + 40 mg sarolaner) into 80 ml of chicken juice and 420 g of the minced chicken. The initial concentration (0.048% selamectin + 0.008% sarolaner) was diluted by mixing with untreated chicken to make the lower concentration listed in Table 24. The clothianidin bait was prepared by mixing 50 g of clothianidin cockroach bait (Maxforce Impact, 1% clothianidin) into 80 ml chicken juice and 420 g of minced chicken to make a 0.1% clothianidin yellowjacket bait. Appropriate quantities of 0.1% clothianidin bait were mixed with untreated minced chicken to make 0.025, 0.0125, and 0.00625% baits.

Table 24. Concentrations of the active ingredients in the selamectin + sarolaner baits prepared in minced chicken.

tubes /500 g chicken	Active ingredient (mg)		% Concn		
	selamectin	sarolaner	selamectin	sarolaner	combination
4	240	40	0.048	0.008	0.056
2	120	20	0.024	0.004	0.028
1	60	10	0.012	0.002	0.014
0.5	30	5	0.006	0.001	0.007

Plastic salsa cups and lids were weighed and ≈ 30 g of bait was added to each cup. Then, the entire bait cup (cup+ minced chicken baits + lid) was weighed again. Bait cups were refrigerated until they were deployed.

Three UCR-style bait stations were deployed for each choice preference test. One cup of each concentration and an untreated chicken cup were placed in a bait station for each toxicant. The stations were placed at sites with high trap counts. The choice tests were conducted on 9/8/2020 and lasted 4 hours. Bait cups were also placed in a bait station covered with screen to serve as evaporative controls. After 4 hours, the cups were covered with a lid, returned to the laboratory, and weighed.

After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The data was analyzed with Chi-square analysis.

Efficacy Trials

Three contiguous monitoring sites in which the average trap counts exceeded 100 yellowjackets per trap for the previous 14 days on 9/8/2020 were baited on 9/21/2020. The baits were prepared with minced chicken and PAA hydrogels (Table 25). The baits with minced chicken were prepared with 80 ml of the chicken juice and 420 g of minced chicken and thoroughly mixed. One and a half tubes of Bravecto were added to the mixture to make a 0.05% and 0.025% fluralaner final concentration, respectively. Four tubes of Revolution Plus were

added to the minced chicken to make a final concentration of 0.048% selamectin + 0.008% sarolaner. The baits were stored in the refrigerator and transported to the field on ice packs.

About 15 g of PAA crystals were soaked in 300 ml of chicken juice (1:1 dilution) to prepare the PAA hydrogels. Four tubes of Revolution Plus were added to the mixture to make a final concentration of 0.048% selamectin + 0.008% sarolaner. The sodium selenate and sodium selenite baits were made by adding 10 or 50 mg of each to the chicken juice and crystals. All gels were conditioned in the refrigerator overnight.

Plastic salsa cups and lids were weighed, and ≈ 30 g of bait was added to each cup. Then the entire bait cup (cup + bait + lid) was weighed again. Bait cups were refrigerated until they were deployed.

UCR-style bait stations were provisioned with three bait cups containing 30 g of each bait and hung within 15 m of the monitoring traps. Bait cups in a bait station covered with window screen served as evaporative controls. After 24 hours, the bait cups were collected, covered, returned to the laboratory, and weighed. The data were analyzed with Chi-square analysis.

The number of yellowjackets trapped was compared with Wilcoxon signed-rank test and, when possible, a paired *t*-test with small sample sizes.

Table 25. Yellowjacket baits tested at Silent Valley on 9/21/2020.

Toxicant	Bait base[a]	Bait Sites	Pre-Count YJ/T/D (9-8-2020)
Fluralaner, 0.05%	chicken	F91, F87, F80	16.1
Fluralaner, 0.025%	chicken	F73, F69, F59	14.9
Selamectin, 0.048% + sarolaner, 0.008%	chicken	F50, F48, F44	8.2
Selamectin, 0.048% + sarolaner, 0.008%	PAA	F39, F27, F17	12.6
0.01% Na Selenate	PAA	A551, A560, A568	12.6
0.005% Na Selenate	PAA	A699, A708, A721	10.4
0.01% Na Selenite	PAA	B776, B804, BIP	22.3
0.005% Na Selenite	PAA	C438, C421, C407	14.1
Control site		BRH, B848, B843	12.0

[a] Minced chicken, PAA – polyacrylamide gels

Results

Monitoring

The yellowjackets trapped during the 2020 season included 8 *V. pensylvanica* queens and 36,547 *V. pensylvanica* workers, 400 *V. atropilosa* workers, and 1,701 *V. sulphurea* workers (Fig. 31).

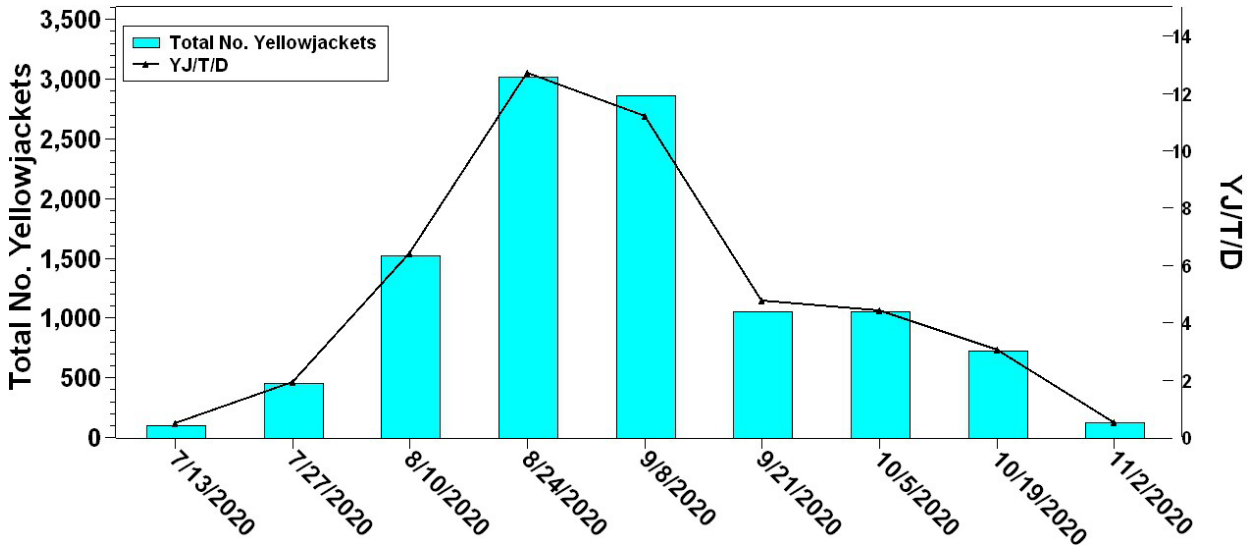


Fig. 31. The total number of yellowjackets trapped and the average number of yellowjackets/trap/day (YJ/T/D) for the untreated sites at Silent Valley in 2020.

Choice Tests with ALG and PAA Hydrogel Baits

When the choice tests were observed at 90 minutes, the majority of the yellowjackets were on the cups with PAA hydrogels. The workers cut the PAA hydrogels into manageable pieces with their mandibles. The amount of PAA gel bait removed by yellowjackets was significantly greater than the ALG bait at 24 hours (Table 26; $t = 2.41$, df = 6, **P** = 0.05).

Table 26. The amount of ALG and PAA gel baits removed by yellowjackets[a]

Gel bait	n	Amount taken (Avg ± SD)	% removed
ALG	7	14.2 ± 4.85	70.9
PAA	7	19.4 ± 0.18	96.5

[a] Tests completed at 4 hours.

Choice Tests with Experimental Toxicants

The yellowjackets took significantly less of the 0.05% fluralaner than the lower concentrations and the untreated chicken (Table 27, $\chi^2 = 33.5$, df = 4, **P** < 0.005). Yellowjacket foragers retrieved a total of 135.4 g of treated bait within 4 hours. There was a 63.6% reduction in the number of yellowjackets trapped 14 days later at those three bait sites.

There was no preference for any of the concentrations of selamectin + sarolaner or the untreated chicken ($\chi^2 = 3.98$, df = 4, **P** > 0.05). Yellowjacket workers removed 249.6 g of treated bait. There was an 83.8% reduction in the number of yellowjackets trapped 14 days later at the three baiting sites compared with a 19% reduction at 11 traps in an untreated area of the park.

The two highest concentrations of clothianidin taken were significantly less than the two lowest concentrations and the untreated bait ($\chi^2 = 24.18$, df = 4, **P** < 0.005). Foragers took only 20.8 g of treated bait in 4 hours. There was a 55.3% reduction in the number of yellowjackets trapped 14 days later.

There was a 19.0% reduction in the number of yellowjackets trapped 14 days after the choice tests in the control areas.

Table 27. Bait acceptance studies with fluralaner, selamectin + sarolaner, and clothianidin mixed in finely minced chicken.[1]

Bait	Concn. (%)	Avg. Amount Taken (± SD)	% Total Taken
Fluralaner	0.05	8.9 (±1.95)	15.7
	0.025	12.0 (± 0.84)	21.6
	0.0125	11.1 (±1.64)	19.9
	0.00625	9.4 (± 4.62)	16.8
	0.0	10.5 (± 3.29)	18.9
Selamectin + sarolaner	0.056	24.3 (± 0.66)	23.8
	0.028	18.7 (± 2.78)	18.3
	0.014	18.2 (± 0.52)	17.8
	0.007	22.0 (±7.61)	21.5
	0.0	19.1 (± 5.73)	18.7
Clothianidin	0.1	1.0 (± 0.17)	11.1
	0.05	1.3 (± 0.75)	14.3
	0.025	2.1 (± 1.02)	23.8
	0.0125	2.6 (±1.72)	29.5
	0.0	15.6 (± 0.21)	21.2

[1] Choice tests conducted for 4 hours on 9/8/2020.

Efficacy Trials

Only a small amount of 0.05% fluralaner bait in minced chicken was removed compared with the 0.025% fluralaner bait after 24 hours (Table 28). The 0.048% selamectin + 0.008% sarolaner PAA and chicken baits were taken by yellowjackets. Yellowjackets readily accepted the sodium selenate and sodium selenite PAA baits.

Table 28. The amount and percentage of bait taken by yellowjackets in 24 hours.

Bait[a]	Concn. (%)	Bait Base	Amount Taken (g)	% Total Bait Taken
Fluralaner	0.05	Chicken	23.73	7.16
Fluralaner	0.025	Chicken	106.79	30.71
Selamectin + sarolaner	0.048 + 0.008	PAA	80.55	20.22
Selamectin + sarolaner	0.048 + 0.008	Chicken	78.67	21.82
Na selenate	0.01	PAA	169.84	58.86
Na selenate	0.005	PAA	217.72	55.90
Na Selenite	0.01	PAA	161.83	41.64
Na Selenite	0.005	PAA	84.08	21.77

[a] Baits were placed out 9/21/2020 and picked up 24 hours later.

It was not possible to statistically test the trap counts for all the baits applied on 9/21/2021. Some monitoring sites were too far away from bait stations, and thus, the number of monitoring traps nearby was limited. The selamectin + sarolaner formulated in the PAA gels provided significant reductions in the number of yellowjackets trapped at days 14, 28, and 42 (W= 21, n = 6, **P** = 0.03, Table 29). The selamectin + sarolaner in the minced chicken also provided significant reductions in the number of yellowjackets trapped at days 14, 28, and 42 (W= 21, n = 6, **P** = 0.03).

There were no significant reductions in the average number of yellowjackets trapped after baiting with 0.01% sodium selenite for 42 days. The 0.005% sodium selenite failed to significantly decrease the number of yellowjackets trapped over the entire 42 days.

The average number of yellowjackets trapped in the untreated controls remained unchanged from 9/21/2020 until 10/19/2020 and significantly declined at day 42 (W = 64, Z = 2.82, **P** = 0.002).

Table 29. The average number of yellowjackets per trap per day (YJ/T/D) before and after baiting with experimental baits.

Toxicant	Bait base	Average YJ/T/D (% reduction)			
		Pre-baiting	14 days	28 days	42 days
Fluralaner, 0.05%	Minced chicken	2.9	0.5 (82.2%)	0.3 (89.0%)	0.1 (96.3%)
Fluralaner, 0.025%	Minced chicken	2.59	0.60 (76.5%)	0.27 (89.4%)	0.14 (94.4%)
Selamectin 0.048% + sarolaner 0.008%	Minced chicken	2.33	0.42 (82.2%)	0.22 (89.0%)	0.09 (96.3%)
Selamectin 0.048% + sarolaner 0.008%	PAA	1.64	0.47 (71.1%)	0.32 (80.4%)	0.10 (94.2%)
Sodium selenate, 0.01%	PAA	6.60	8.92 (0.0%)	0.55 (91.7%)	0.45 (93.1%)
Sodium selenate, 0.005%	PAA	6.02	11.69 (0.0%)	5.10 (15.4%)	0.48 (92.1%)
Sodium selenite, 0.01%	PAA	3.29	3.08 (6.4%)	1.52 (53.6%)	0.12 (96.4%)
Sodium selenite, 0.005%	PAA	0.86	0.62 (28.2%)	0.52 (38.9%)	0.29 (66.7%)
Untreated		8.18	8.17 (0.2%)	4.42 (46.0%)	0.60 (92.7%)

Discussion

The polyacrylamide gels (PAA) conditioned in chicken juices and water were more readily removed than the alginate hydrogels. Within 4 hours, nearly 100% of the PAA gels were removed. At 24 hours, about 70% of the ALG gels were removed. The yellowjackets were able to manipulate the PAA crystals easier than the ALG beads. If the ALG beads were smaller and possible cut into pieces, they might be easier to handle.

The yellowjacket foragers readily took the baits containing 0.025% fluralaner and all concentrations of selamectin + sarolaner. Significantly less 0.05% fluralaner in minced chicken was taken, indicating that this concentration was somewhat repellent. All the concentrations of clothianidin had minimal amounts of bait removed, suggesting that clothianidin was too fast-acting and repellent. All concentrations of sodium selenate and sodium selenite were taken by foraging yellowjackets but failed to reduce the number of yellowjackets trapped.

The number of yellowjackets trapped peaked in late August and early September. The numbers declined in September when the first efficacy trial was being applied. The numbers of yellowjackets remained constant in the untreated sites throughout September. The selamectin + sarolaner formulated in minced chicken and PAA gels baits provided significant reductions for 28 days after baiting.

Silent Valley RV Park 2021

Commercial supplies of heptyl butyrate had not been available for the previous 12 months. We had enough heptyl butyrate to conduct the monitoring in 2021. However, we explored the possibility of using another attractant. Heptyl crotonate was effective as an attractant (Wagner and Reierson 1964). The relative efficacy of heptyl crotonate and heptyl butyrate has not been determined. Dr. Jocelyn Millar synthesized the heptyl crotonate and preference tests were conducted to compare both compounds.

Methods and Materials

Monitoring

A total of 56 UCR traps were placed along the perimeter of the RV park. The monitoring began on 6/14/2021 and continued until 9/27/2021. The length of each monitoring session was 14 days, except for the last period, which was 21 days.

Synthesis of Heptyl Crotonate

A mixture of crotonic acid (137.6 g, 1.6 mol), 1-heptanol (216 g, 2.05 mol), and 8 ml concentrated sulfuric acid was refluxed in 500 mL benzene overnight, with a Dean-Stark trap to remove water. The solution was then cooled to room temp, diluted with 500 mL hexane, and washed sequentially with water, saturated aq. $NaHCO_3$, brine, then dried over anhydrous Na_2SO_4 and concentrated under reduced pressure. The crude product was fractionally distilled, removing the excess heptanol by heating to 60°C at a 9 mm Hg vacuum. The remainder was then distilled with a Kugelrohr distillation apparatus in two batches (bp~65-70 °C at 0.25 mm Hg), giving a quantitative yield, >98.5% pure by gas chromatography on a nonpolar DB-5 column.

Choice Tests with Heptyl Butyrate and Heptyl Crotonate

The attractiveness of heptyl butyrate (HB) and heptyl crotonate (HC) foraging activity of yellowjackets was compared using UCR-style traps provisioned with 8-ml vials containing about 7.2 ml of heptyl butyrate or heptyl crotonate and a 5-cm piece of dental wick. One trap with HB and one with HC were hung under trees and bushes about 0.5-1.5 m off the ground and about 5 m apart. A total of 8 sites were used. The test began on 7/27/2021 and ended on 8/9/2021. The traps were returned to the lab, and the number of yellowjackets and species was recorded.

Traps with either the 8-ml vial containing about 7.2 ml of HB or HC and a 5-cm piece of dental wick were hung outdoors. The vials were weighed daily. The evaporation rates of HB and HC were determined by determining the change in weight of the vials and dental wick.

The trap catches were compared with a paired *t*-test.

Results

Monitoring

The numbers of *V. pensylvanica* never reached the critical threshold of 10 YJ/T/D throughout the 2021 season (Fig. 32). The total number of yellowjackets trapped included, 1 queen and 6,010 workers of *V. pensylvanica*, 1 queen and 2 workers of *V. atropilosa*, and 7 queens and 234 workers of *V. sulphurea*. The trap counts peaked on 8/23/2021 and gradually declined through September.

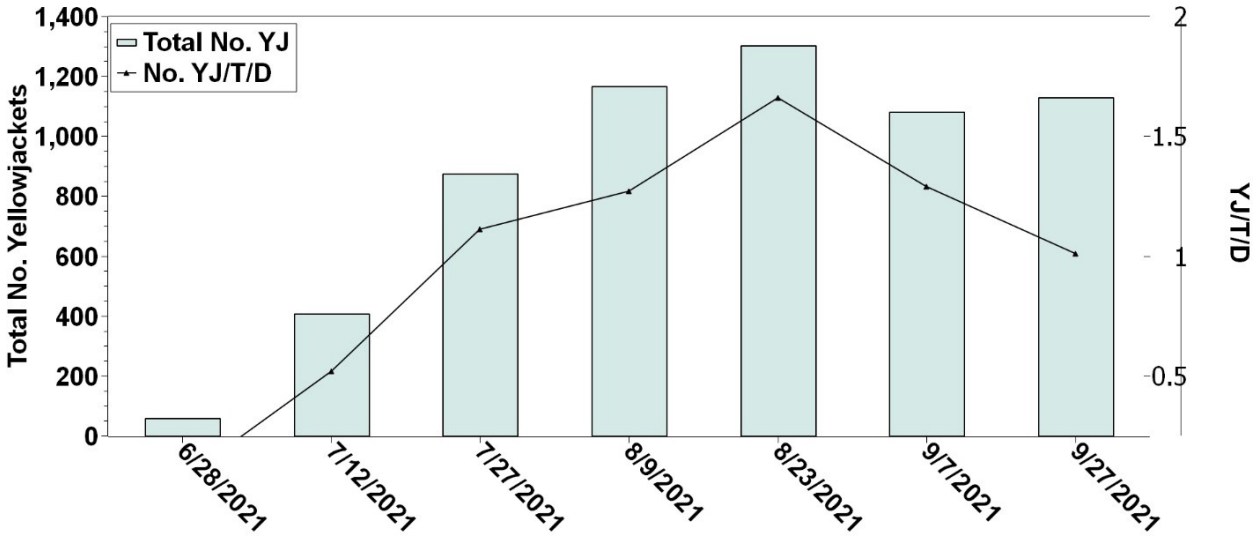


Fig. 32. The total number of yellowjackets trapped and the average YJ/T/D for 2021 at Silent Valley RV Park.

Choice Tests with Heptyl Butyrate and Heptyl Crotonate

The traps with HB and HC caught two yellowjacket species, *V. pensylvanica* and *V. sulphurea*. There were no significant differences in the numbers of *V. pensylvanica* in the HC (n = 196) or HB traps (n = 149) (T = 1.13, df = 7, **P** = 0.296). Similarly, there were no differences

in the number of *V. sulphurea* caught by either attractant (HC = 21 and HB = 16, T = -0.47, df = 7, **P** = 0.65).

Both HB and HC had similar evaporation rates (0.3 g/day; ≈ 0.35 ml/day) from the vials. Thus, even the smallest vial (7 ml) provided at least 20 days of attractant in the field.

Discussion

The total number of yellowjackets trapped in 2021 (6,010) declined dramatically from that in 2020 (36,547). Climatic conditions may have contributed to this decline and are discussed in Appendix I.

The heptyl crotonate and heptyl butyrate caught similar numbers of yellowjackets and species. Both attractants evaporate slowly, and the vials needed to be replaced every 3-4 weeks.

San Diego Zoo Safari Park 2019

The Park is a 728.4 ha animal sanctuary located within the San Pasqual Valley near Escondido, CA (33°05'50.80" N, 116°59'44.60" W, elev. 137 m). It is largely surrounded by coastal sage scrub and chaparral which are ideal habitats for the western yellowjacket, *V. pensylvanica*. Several sites within the park have had serious problems with foraging yellowjackets and park personnel were trapping them with disposable traps in 2019. A cooperative project with park personnel was established in September 2019 in which park personnel set up traps and bait stations in the park and monitored them. The experimental baits were prepared at UC Riverside and transported to the park. The trapped specimens were collected and sent to UCR to be counted and identified.

All of the sites were baited because of the large number of yellowjackets, and the Park personnel and animals were being stung. Each site was baited three times to dramatically reduce the number of yellowjackets.

Methods and Materials

Monitoring

Six sites at the park were trapped with Rescue Disposable Yellowjacket Traps (Fig. 3). The sites included the Condor Enclosure (CON), Bird Breeding Complex (BBC), Wings of the World (WOTW), Cheetah Breeding Compound (CBC), Burrowing Owl Site (BUR), and Forage Warehouse (FOR). The traps were hung under trees and bushes about 0.5-1.5 m off the ground. Instead of adding pure tap water to the trap's collection bag, a solution of propylene glycol coolant was made with water (1:2 dilution) and added to the collection bag. The solution is effective in killing and preserving the insects. The contents of the bag were removed, and the excess fluid drained. The contents were placed into 1-gal plastic zip lock bags and shipped to UC Riverside where the number and species of yellowjackets were counted

Efficacy Trials

Baits were prepared at UC Riverside with fipronil (Termidor SC, BASF Corp., Research Triangle Park, NC), 400 ml chicken juice, 400 ml water, and 66.6 g PAA crystals so that the final concentration of fipronil was 0.025%. The dinotefuran baits were prepared with 200 ml

chicken juice, 200 ml water, and 33.3 g PAA crystals so that final concentrations of dinotefuran were 0.05, 0.025, and 0.0125% AI.

Salsa cups and lids were weighed and ≈ 30 g of bait was placed in each cup. The entire bait cups (cups + lids + bait) were weighed again. The baits were held on ice packs and transported to the animal park.

The cups of bait were placed inside Havahart® animal traps on the ground at each of the sites. The salsa cups with bait were collected after 24-72 hours and the cups were covered with lids. The baits were refrigerated until they were returned to UC Riverside. The cups were weighed, and the amount of bait removed was determined. Another set of baits was held in UCR-style bait stations covered with fine screen to prevent yellowjackets from foraging on the baits. These served as the evaporation control.

These bait cups were retrieved, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The 0.025% fipronil PAA baits were placed out from 9/11/2019 to 9/13/2019, 10/1/2019 to 10/3/2019, and 11/15/2019 to 11/18/2019 at the CON site. The PAA baits containing 0.05, 0.025, and 0.0125% dinotefuran were placed out on 9/24/2019 to 9/26/2019 at the remaining five sites. The five sites were baited with 0.025% dinotefuran on 10/15/2019 and 11/14/2019.

Some of the sites had sufficient monitoring traps to permit the data to be analyzed with a Wilcoxon signed-rank test. Monitoring traps from sites treated with the same concentration of bait were pooled.

Results

Monitoring

The trapping period was reduced from 14 days to 4-7 days to ensure that the sites could be baited before the end of September. The total number of *V. pensylvanica* trapped in 2019 were 21,427. A few *V. atropilosa* and *suplhurea* were also collected.

Efficacy Trial 1

Condor Breeding Site **(CON)-**The baits lost 47.7% of the weight due to evaporation of water during the 48-hour exposure beginning on 9/11/2019. The yellowjackets removed a total of 316.6 g of bait (37.5% of the total) from 30 cups placed out at the site. All 30 cups had detectable feeding during the first baiting period. The 0.025% fipronil PAA baits provided a 53.2% (W = 36, Z = 2.49, **P** = 0.01), 53.9% (W = 24, Z = 1.65, **P** = 0.09), and 44.4% (W = 36, Z = 2.49, **P** = 0.01) reduction in the average number of yellowjackets/trap/day (YJ/T/D) at day 3, 10, and 17 at the condor rearing facility.

During the second baiting period (10/1/2019 to 10/3/2019), the baits lost 35.1% of their weight due to evaporation. A total of 178.6 g of bait were retrieved. There was no detectable removal of bait in 10 of the 30 cups. The second baiting on 10/1/2019 to 10/3/2019 with 0.025% fipronil PAA resulted in a 57.6% (W = 30, Z = 2.07, **P** = 0.04), 57.8 % (W = -10, Z = -0.74, **P** = 0.46), 80.9% (W = 36, Z = 2.49, **P** = 0.013), and 93.1% (W = 36, Z = 2.49, **P** = 0.01) reduction in trap counts on day 10, 18, 25, and 40, respectively.

The third baiting with 0.025% fipronil began on 11/14/2019 and ended on 11/18/2019. All the sites across the park experienced > 90% reduction in the average number of YJ/T/D on

12/5/2019. Monitoring was suspended and the data were not analyzed because of the lack of yellowjacket activity at the Park.

Wings of the World **(WOTW) –** At the WOTW site, the 0.05% dinotefuran bait lost 19.0% of its weight due to evaporation during the 48-hour exposure period. After adjusting for water loss, a total of 23.2 g of bait were removed from the 6 bait cups (about 12.3% of the total available bait). The 0.5% dinotefuran bait provided a 55.3% reduction (4.25 YJ/T/D) at day 4, but the trap counts returned to 17.7 and 11.78 YJ/T/D by day 11 and 18, respectively.

The WOTW site was baited again with 0.025% dinotefuran from 10/15/2019 to 10/17/2019. The baits in the evaporative checks lost about 46.3% of their weight. When adjusted for weight loss, the yellowjackets removed 23.06 g of bait (≈ 18.9% of the total). At day 5 there was a 16.7% reduction in the average number of YJ/T/D, but the numbers were 2.3-fold higher than before baiting at day 27.

A third baiting with 0.025% dinotefuran was performed on 11/15/2019 to 11/18/2019. All the sites across the park experienced > 90% reduction in the average number of YJ/T/D on 12/5/2019. The monitoring was suspended, and the data were not analyzed because of the lack of yellowjacket activity at the Park.

Bird Breeding Complex **(BBC),** ***Forage Warehouse*** **(FOR) –** Both sites were baited with 0.025% dinotefuran PAA bait from 9/24/2019 to 9/26/2019. In the evaporation control, the bait lost 22.1% of its weight in 48 hours. After adjusting for water loss, the yellowjackets retrieved 78.4 and 73.4 g of bait from FOR and BBC, respectively.

The 0.025% dinotefuran bait provided 65.3, 18.4, and 44.1% reduction in the average number of YJ/T/D at days 4, 7, and 14, respectively. The reductions were significant at day 4 (W = 95, Z = 2.97, **P** = 0.001) and day 14 (W = 92, Z = 2.60, **P** = 0.009).

The second baiting with 0.025% dinotefuran occurred from 10/15/2019 to 10/18/2019. The control baits lost 46.3% of their weight during the 72-hour exposure. After adjusting for water loss, the yellowjackets retrieved 70.5 and 42.7 g of bait from BBC and FOR, respectively. The baiting provided 0.0%, 37.7%, and 0.0% reductions in the average number of YJ/T/D at day 4, 11, and 26, respectively.

The third baiting with 0.025% dinotefuran began on 11/14/2019 and ended on 11/18/2019. All the sites across the park experienced > 90% reduction in the average number of YJ/T/D on 12/5/2019. The monitoring was suspended, and the data were not analyzed because of the lack of yellowjacket activity in the Park.

Cheetah Breeding Compound **(CBC),** ***Burrowing Owl Site*** **(BUR) –** Both sites were baited with –0.0125% dinotefuran PAA baits on 9/24/2019. The evaporative controls lost 19.3% of their weight during the 48-hour exposure. After adjusting for water loss, the yellowjackets took 30.3 and 69.7 g of bait from BUR and CBC sites, respectively.

There was a significant 35.7% reduction in the average YJ/T/D at day 4 (W=21, n = 6, **P** =0.03), but the reductions were not significantly lower at days 11 and 18. There was an average of 5.19 YJ/T/D at day 18.

The second baiting with 0.0125% occurred on 10/15/2021. The evaporation controls lost 46.3% of their weight during the 72-hour exposure. When adjusted for water loss, the yellowjackets took 4.4 and 64.3 g of bait from BUR and CBC, respectively.

There were no reductions in the average YJ/T/D after the second baiting with 5.19 YJ/T/D before baiting and 8.50, 6.58, and 5.57 YJ/T/D 4, 11, and 26 days after baiting, respectively.

The third baiting with 0.0125% dinotefuran occurred on 11/14/2019. All the sites across the park experienced > 90% reduction in the average YJ/T/D on 12/5/2019. The monitoring was suspended, data was not analyzed because of the lack of yellowjacket activity in the Park.

Discussion

The monitoring traps at all the sites revealed very large numbers of yellowjacket foragers. The pre-bait monitors trapped a combined total of 4,112 yellowjackets (Avg. 128.5/trap, n = 32) with almost all being *V. pensylvanica*. The greatest numbers of yellowjackets trapped was at the CON site with > 47 yellowjackets/trap/day.

Even though the 0.025% fipronil baits provided a steady decline of yellowjackets trapped, the numbers being collected in the monitoring traps were still well above 10 YJ/T/D threshold. Rust et al. (2017) reported that 0.025% fipronil provided > 75% reductions in the number of yellowjackets trapped. About 25-50% of the bait (1:3 chicken juice:water dilution) applied was removed and the baits were simply not attractive enough to compete with the food sources at the CON site.

The dinotefuran baits provided inconsistent results. The amount of bait removed varied between concentrations and the sites baited. Only 13% of 0.05% bait was taken compared with 17.3% at 0.0125% and 28.2% at 0.025%. In the second baiting, only 13.1% of the 0.025% dinotefuran bait was taken. The baits were simply not attractive enough to lure the yellowjackets away from food sources being placed out at each site.

San Diego Zoo Safari Park 2020

Methods and Materials

Monitoring

The monitoring period was expanded to 3 weeks to reduce the amount of labor and traps being installed. Additional traps were installed so that each site had a minimum of 6 disposable traps. Monitoring traps were initially installed on 5/7/2020 and the last traps were collected 10/7/2020.

Bait Stations

In the first and second bait trials, the bait cups were placed inside Havahart® animal traps on the ground at each of the sites. In the subsequent bait trials, UCR circular baits stations were used to prevent ants from feeding on the baits. The bait stations were hung from a bush or tree with a wire and a Perky-Pet® ANT GUARD® (Woodstream Corp., Lititz, PA) was used to prevent ants from feeding on the baits (Fig. 5). The bait stations were placed next to an existing monitoring station.

Efficacy Trials

The first baiting trial began on 7/29/2020 to 7/30/2020 with three sites being baited. The baits included 0.05% fluralaner (98% technical grade, BOC Sciences Shirley, NJ), 0.05%

selamectin + sarolaner (Revolution Plus), and 0.05% fluralaner (Bravecto® 250 mg). The toxicants were mixed into 80 ml of chicken juice and 420 g of finely minced chicken. The mixture was stirred and thoroughly mixed providing 0.05% baits.

A second baiting trial was initiated on 8/18/2020 at WOTW. The 0.05% fluralaner bait was prepared with 430 g of minced chicken, 70 ml of chicken juice and 1 vial of Bravecto. The mixture was stirred and refrigerated overnight.

The third baiting trial was initiated on 9/3/2020 at CBC, CON, FOR, and BUR. The 0.048% selamectin + 0.008% sarolaner was prepared with 8 tubes of Revolution Plus, 430 g of minced chicken, and 70 ml of chicken juice. The 0.05% fluralaner bait was prepared with 430 g of minced chicken, 70 ml of chicken juice and 1 vial of Bravecto or 250 mg of technical fluralaner. The 0.05% fipronil bait was prepared with 430 g of minced chicken, 70 ml of chicken juice and 2.6 ml of Termidor SC. The mixtures were stirred and refrigerated overnight.

Salsa cups and lids were weighed and ≈ 30 g of bait was added to each cup. The entire cup (cup + lid + bait) was weighed again. Cups and bait were refrigerated and transported to the park on ice packs.

These bait cups were retrieved, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

Results

Monitoring

The total number of *V. pensylvanica* queens and workers trapped was 17 and 41,595, respectively (Fig. 33). BBC was the only site not baited during 2020 and it served as an untreated seasonal control.

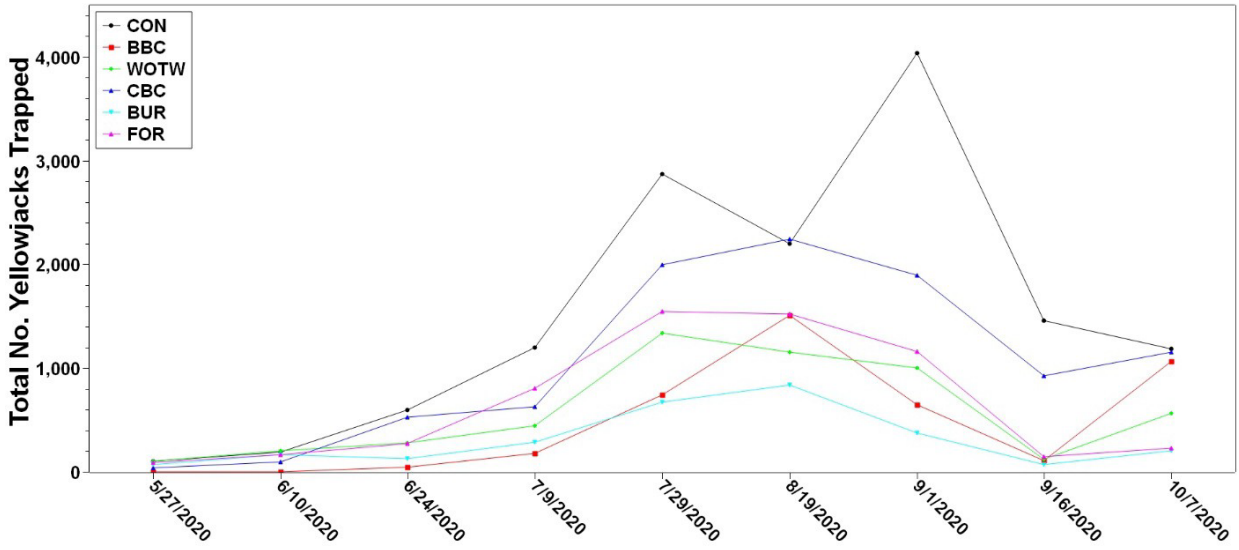


Fig. 33. The total number of yellowjackets trapped at each of the 6 sites in the Park during 2020.

Efficacy Trial #1

The evaporative controls of the 0.05% fluralaner (tech.), 0.05% fluralaner (Bravecto), and the 0.048% selamectin + 0.0048% sarolaner lost 81.0, 56.6, and 67.4% of their weight in 48 hours. After adjusting for water loss, the yellowjackets removed 135.4, 72.8, and 44.8 g of the 0.05% fluralaner (tech.), 0.05% fluralaner (Bravecto), and the 0.048% selamectin + 0.008% sarolaner, respectively. Some of the ant baits were covered with ants.

None of the baits provided significant reductions in the average YJ/T/D (Table 30). The average YJ/T/D increased at the untreated site BBC. The numbers remained above the critical threshold after 32 days at CON and FOR and these sites were baited again.

Table 30. The efficacy of 0.05% fluralaner and 0.048% selamectin + 0.008% sarolaner in minced chicken.

Site	Bait (formulation)	Bait Taken (g)	Average YJ/T/D (% reduction)		
			Pre-baiting	Day 19	Day 32
CON	0.05% fluralaner (tech.)	135.4	11.97	10.01 (16.4%)	25.88 (0.0%)
FOR	0.05% fluralaner (Bravecto)	72.8	12.88	12.65 (1.75%)	14.87 (0.0%)
CBC	0.048% selamectin + 0.008% sarolaner (Rev. Plus)	44.8	8.33	9.35 (0.0%)	7.9 (5.1%)
BBC	Untreated		3.72	7.20 (0.0%)	4.61 (0.0%)

Efficacy Trial #2

The evaporation controls lost 53.3% of their weight during the 48-hour exposure. After adjusting for the water loss, yellowjackets took 41.3 g of the 0.05% fluralaner bait. There were lots of ants in the bait cups and the Havahart traps.

There were significant reductions in the average YJ/T/D at days 28 (W= 55, Z = 2.78, **P** = 0.006) and 49 (W = -55, Z = -2.83, **P** = 0.005, Table 31). The average YJ/T/D declined at BBC (untreated control) at day 28 but increased by day 49.

Table 31. The efficacy of 0.05% fluralaner bait in minced chicken at WOTW site.

Site	Bait (formulation)	Average YJ/T/D (% reduction)			
		Pre-baiting	Day 14	Day 28	Day 49
WOTW	0.05% fluralaner	5.50	7.17 (0.0%)	0.87 (84.1%)	2.69 (51.0%)
BBC	Untreated	7.20	4.61 (0.0%)	0.79 (82.3%)	5.06 (0.0%)

Efficacy Trial #3

A third baiting trial was conducted from 9/1/2020 to 9/3/2020. The baits were applied in UCR-style circular bait stations suspended from the ground to prevent ants from feeding on the baits. All the baits were formulated in minced chicken. The minced chicken lost 43.9% of its weight in 48 hours. After adjusting for water loss, the yellowjackets removed 89.0, 86.3, and 92.4 g of selamectin + sarolaner, fluralaner (technical), and fluralaner (Bravecto) baits,

respectively. The 0.05% fipronil baits gained weight and it is likely that the sprinkler system had sprayed the baits (Table 32).

The 0.05% fluralaner bait (tech.) provided significant reductions in the average YJ/T/D at days 13 (W = 78, Z = 3.04, **P** = 0.002) and 34 W = 76, Z = 2.96, **P** = 0.003). The 0.05% fluralaner formulated with Bravecto also provided significant reductions at days 13 (W = 21, n = 6, **P** = 0.03) and 34 (W = 21, n = 6, **P** = 0.03). The selamectin + sarolaner provided significant reductions in the number of yellowjackets at days 13 (W= 43, Z = 2.17, **P** = 0.03) and 34 (W = 47, Z = 2.37, **P** = 0.02). There was a significant decrease in the average YJ/T/D in the untreated control at day 13 (W = 51, Z = 2.57, **P** = 0.006), but the numbers returned to pre-baiting levels at day 34.

Table 32. The third baiting trial was initiated on 9/1/2020 at four sites.

Site	Bait (formulation)	Bait Taken (g)	Average YJ/T/D (% reduction)		
			Pre-baiting	Day 13	Day 34
CON	0.05% fluralaner (tech.)	86.3	25.88	8.11 (68.7%)	5.64 (78.2%)
FOR	0.05% fluralaner (Bravecto)	92.4	14.87	1.88 (87.3%)	1.80 (87.9%)
CBC	0.048% selamectin + 0.008% sarolaner (Rev. Plus)	89.0	5.06	3.87 (51.1%)	5.49 (30.6%)
BUR	0.05% fipronil	NA	4.83	0.88 (81.7%)	1.60 (67.0%)
BBC	Untreated		4.61	0.79 (82.9%)	5.06 (0.05%)

Discussion

The first and second baiting trials failed to significantly reduce the numbers of yellowjackets trapped. The third baiting with 0.05% fluralaner did provide significant reductions in the number of yellowjackets at days 13 and 34. In the untreated control site, the numbers of yellowjackets increased during the first baiting period, dropped on 9/16/2020, and then returned to levels in August. The reason for this dramatic drop in the number of yellowjackets at BBC during the first 14 days of September is unknown. It is the only time in the study where we observed this dramatic of a decline followed by a resurgence in the untreated sites.

Less than 30% of the baits applied were taken by yellowjackets. The baits simply failed to attract enough yellowjackets away from other competitive food sources being provided.

San Diego Zoo Safari Park 2021

Methods and Materials

Monitoring

The monitoring was initiated on 5/25/2021 and the last traps were collected on 11/11/2021. The CON and FOR sites were baited on 8/17/2021 and 9/29/2021. CBC and BCC are more than 2,100 m away from the CON and FOR sites and served as the untreated control sites.

Efficacy Trial #1

The 0.05% fluralaner bait was prepared with 250 ml of chicken juice, 250 ml of water, 33.33 g PAA crystals, and 1 tube of Bravecto (250 mg fluralaner). The mixture was stirred and conditioned in the refrigerator overnight.

Salsa cups and lids were weighed and ≈ 30 g of bait was added to each cup. The entire cup (cup + lid + bait) was weighed again. Cups and bait were refrigerated and transported to the park on ice packs.

These bait cups were retrieved, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

Efficacy Trial # 2

The 0.05% fluralaner bait was prepared with 250 ml of chicken juice, 250 ml of water, 33.33 g PAA crystals, and 1 tube of Bravecto (250 mg fluralaner). The 0.025% fluralaner bait was prepared with the same ingredients, except only 0.5 tubes of Bravecto (125 mg fluralaner) were used. Both mixtures were stirred and conditioned in the refrigerator overnight.

Salsa cups and lids were weighed and ≈ 30 g of bait was added to each cup. The entire cup (cup + lid + bait) was weighed again. Cups and bait were refrigerated and transported to the park on ice packs.

These bait cups were retrieved, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The number of yellowjackets trapped before and after baiting was compared with a Wilcoxon signed-rank test.

Results

Monitoring

A few *V. atropilosa* and *V. sulphurea* were taken in the first monitoring event, but all the remaining yellowjackets were *V. pensylvanica*. A total of 14,914 yellowjackets were trapped during the 2021 season. The number of YJ/T/D at CBC and BBC peaked on 9/29/2021 (Fig. 34). The numbers never reached the treatment threshold of 10 YJ/T/D at any of the sites.

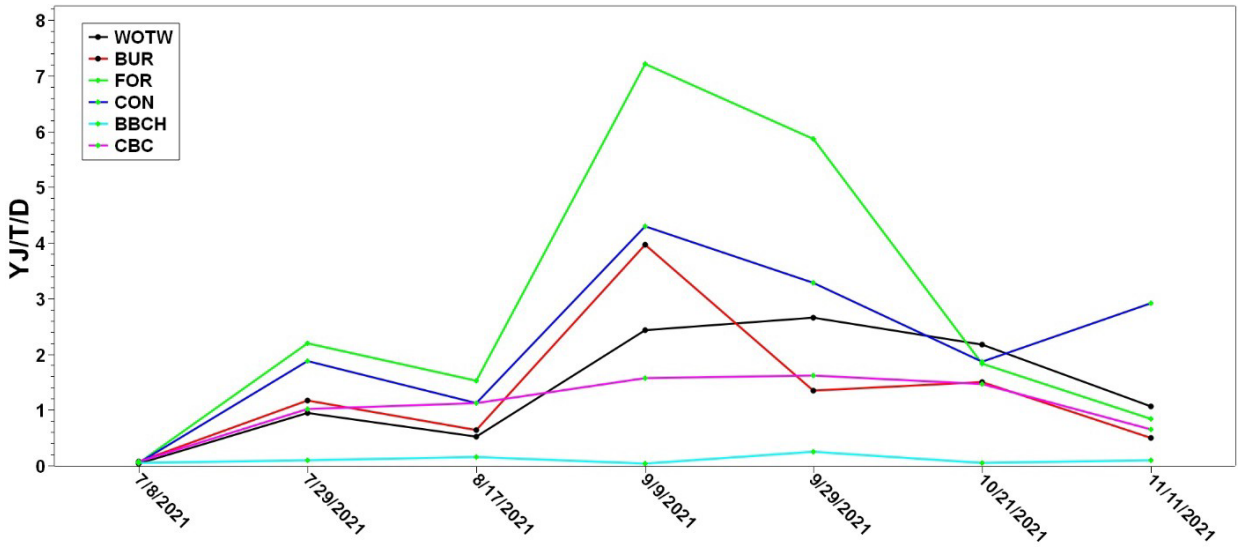


Fig. 34. The average number of yellowjackets/trap/day collected at the Park in 2021.

Efficacy Trial #1

The 0.05% fluralaner PAA bait lost 57.3% of their weight in the evaporation control during the 48-hour exposure. After compensating for the water loss, the yellowjackets removed 91.2 g of bait.

The average YJ/T/D prior to baiting was 1.12. It increased to 4.30 YJ/T/D at day 21 and 3.28 YJ/T/D at day 41.

Efficacy Trial # 2

Even though the trap counts were well below the threshold of 10 YJ/T/D two sites were baited because of large numbers of yellowjackets and complaints. The baits lost 17.5 % of their weight in the evaporative controls during the 24-hour period. When the bait taken was adjusted for water loss, the yellowjackets removed 80.5 and 30.3 g of 0.05% fluralaner and 0.025% fluralaner, respectively (Table 33).

There were no significant declines in number of yellowjackets trapped in the site baited with 0.05% fluralaner bait. At day 42, there was a significant reduction in the numbers trapped at FOR with the 0.025% bait (W = 21, n = 6, **P** = 0.03).

Table 33. The efficacy of 0.025% and 0.05% fluralaner in PAA crystals.

Site	Bait	Bait Taken (g)	Average YJ/T/D (% reduction)		
			Pre-baiting	Day 21	Day 42
CON	0.05% fluralaner	80.5	3.28	1.87 (43.1%)	2.92 (10.9%)
FOR	0.025% fluralaner	30.3	5.86	1.83 (68.7%)	0.84 (85.6%)
CBC	Untreated		1.62	1.46 (9.9%)	0.65 (59.7%)
BBC	Untreated		0.25	0.05 (80.5%)	0.1 (59.4%)

Discussion

The winter and spring rainfall was well below normal and may have impacted the development of the yellowjacket colonies (See Appendix I). The number of YJ/T/D was below the threshold of 10 YJ/T/D at each of the sites throughout the 2021 season. The numbers of yellowjackets at both sites were still a problem and baiting trials were conducted. The amounts of bait taken were less than 100 g during both trials. The numbers of yellowjackets trapped at the two baited sites were not significantly lower after baiting.

Ronald W. Caspers Wilderness Park 2020

The Ronald W. Caspers Wilderness Park consists of 3,238 ha (8,000 acres) of protected wilderness preserve in the coastal Santa Ana Mountains (33°31′57.76″ N, 177°33′04.31″ W, elev. 115 m). The Park has native Coastal Live Oaks and stands of California Sycamore. It provides camping, picnicking, hiking, and equestrian activities.

The numbers of yellowjackets created a severe situation during the summer of 2020 when we were contacted. The monitoring traps were checked weekly so that the site could be baited in September.

Methods and Materials

Monitoring

Fifty UCR-style traps were installed between 9/23/2020 and 9/24/2020 along the main roadway in the park (Fig. 35). The monitoring sites were separated by at least 100 m. Traps were serviced once a week with the last traps being collected 10/26/2020.

Efficacy Trial # 1

The baits were prepared with minced chicken and PAA gels and three different toxicants, 0.024% selamectin + 0.004% sarolaner, 0.025% sodium selenate, and 0.025% fipronil. The PAA baits consisted of 33.3 g of PAA crystals, 100 ml of chicken juice, and 300 ml water (1:3 dilution) and either 125 mg of sodium selenate or 125 mg of fipronil (Termidor SC). The hydrogels were allowed to condition in the refrigerator overnight. The meat bait was prepared by mixing 2 tubes Revolution Plus into the 80 ml of chicken juice and 420 g of finely minced chicken. The baits were stored in the refrigerator.

Salsa cups and lids were weighed, and ≈ 30 g of gel or minced chicken were added to each cup. Then the entire bait cup (cup+ bait + lid) was weighed. The baits were transported to the field on ice packets.

Three UCR bait stations were placed at each of three sites associated with a monitoring location with high yellowjacket trap counts. The selamectin + sarolaner bait stations were hung at Sites 25, 26, and 27. The sodium selenate baits were hung at Sites 34, 36, and 37. The fluaralaner baits were hung at Sites 2, 5, and 6.

After 9 days, the baits were retrieved and covered with tight lids. The cups were placed in on ice packs, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The yellowjacket trapping data before and after baiting was analyzed with a Wilcoxon signed-rank test or a paired *t*-test.

Results

Monitoring

The 50 UCR-style traps collected 28,262 *V. pensylvanica* in 7 days with 49 of sites with > 10 YJ/T/D on 10/1/2020.

Efficacy Trial # 1

The evaporation controls of minced chicken and the PAA gels lost 60.9% and 77.1% of their weight in 4 days, respectively. After adjusting for the water loss, the yellowjackets took 412.9 g of 0.024% selamectin + 0.004% sarolaner bait (80.8% of the total), 446.1 g of 0.025% sodium selenate (86.0% of the total), and 352.1 g of 0.025% fipronil (67.0% of the total).

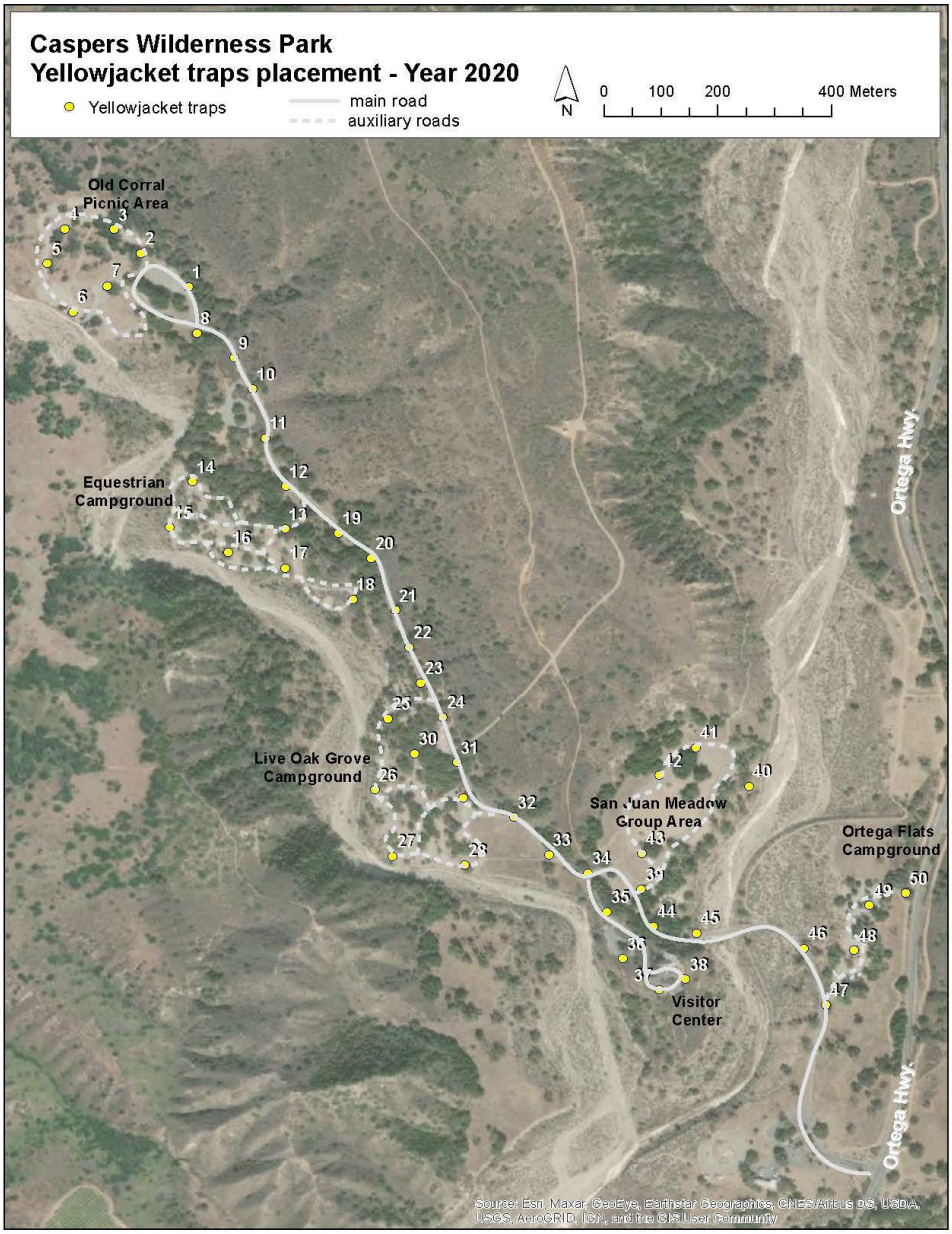


Fig. 35. Yellowjacket trap placement at Ronald W. Caspers Wilderness Park.

The selamectin + sarlonaer bait provided significant reductions at days 7 (W = 55, Z =2.78, **P** = 0.005, Table 34), 14 (W = 55, Z = 2.78, **P** = 0.005), and 21 (W = 55, Z = 2.78, **P** = 0.005). The sodium selenate provided significant reductions at days 7 (W = 36, Z =2.49, **P** = 0.013), 14 (W = 36, Z = 2.49, **P** = 0.013), and 21 (W = 36, Z = 2.49, **P** = 0.013). The 0.025% fipronil provided a significant reduction in the number of yellowjackets at 7 days (W = 36, Z =2.49, **P** = 0.013), 14 days (W = 36, Z = 2.49, **P** = 0.013), and 21 days (W = 36, Z = 2.49, **P** = 0.013). There was a significant reduction in the number of yellowjackets trapped at the 5 untreated monitors at days 14 (T = 3.45, df = 4, **P** = 0.026) and 21 (T = 3.72, df = 4, **P** = 0.020).

Table. 34. The efficacy of 0.024 % selamectin + 0.004% sarolaner, 0.025% sodium selenate, and 0.025% fipronil baits.

Toxicant	Bait Taken (g)	Monitoring Sites	Average YJ/T/D (% reduction)			
			Pre-baiting	7 days	14 days	21 days
selamectin + sarolaner	412.9	10	76.66	1.00 (98.7%)	0.54 (99.3%)	0.14 (99.8%)
sodium selenate	489.6	8	75.84	10.05 (86.7%)	2.34 (96.9%)	0.64 (99.2%)
fipronil	455.8	8	107.34	1.00 (99.1%)	0.30 (99.7%)	0.27 (99.8%)
Untreated		5	18.57	9.51 (48.8%)	1.66 (97.1%)	0.46 (97.5%)

Discussion

The baiting occurred late in the season after we were alerted by Park personnel of complaints of large populations of yellowjackets in mid-September. All three baits were readily accepted by the yellowjackets and provided significant reductions in the number of yellowjackets trapped in the park 7 days after baiting and before the untreated controls significantly declined at 14 days.

Ronald W. Caspers Wilderness Park 2021
Tree of Life Nursery 2021

The exact same sites at the Ronald W. Caspers Wilderness Park were monitored again in 2021. Additional monitoring sites were established at the Tree of Life Nursery which was about 1,000 m west of the Park (see Tree of Life Nursery Report). These sites served as a seasonal control so that the entire Park could be baited.

Methods and Materials

Monitoring

Fifty UCR-style traps were installed on 6/15/2021 along the main roadway at the same sites in the park as in 2020 (Fig. 36). The traps were checked every two weeks until 11/15/2021. Ten UCR traps were installed along a transect at the Tree of Life Nursery to serve as seasonal checks. The traps were installed on 6/15/201 and checked every two weeks with the last collection on 11/15/2021.

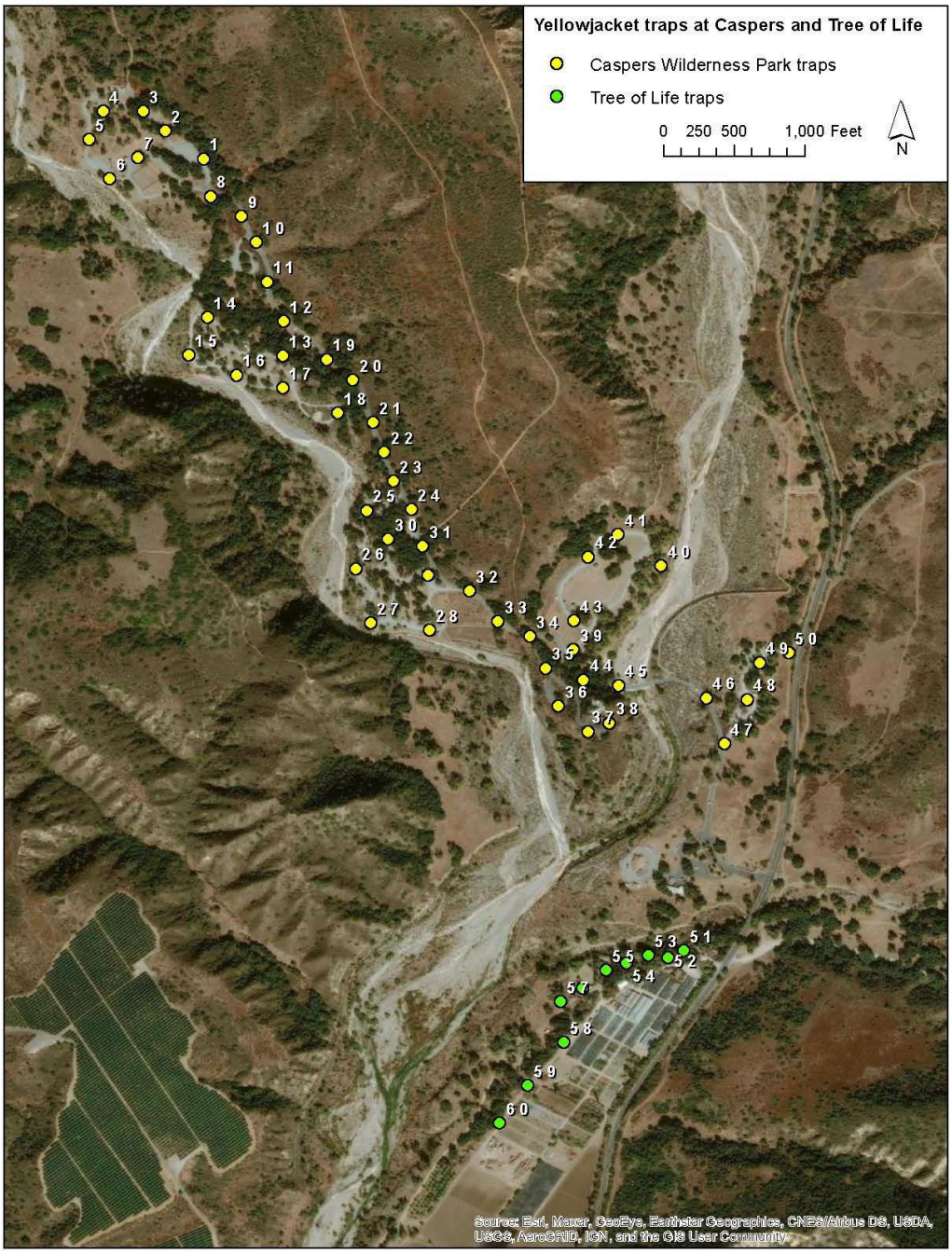


Fig. 36. Monitoring trap locations at Ronald W. Caspers Park (yellow dots) and the Tree of Life Nursery (green dots).

Efficacy Trial # 1

The 0.05% fluralaner bait was prepared with 250 ml of chicken juice, 250 ml of deionized water, 33.33 g of PAA crystals, and 1 tube of Bravecto (250 mg fluralaner). The 0.096% selamectin + 0.016% sarolaner bait was prepared with 250 ml of chicken juice, 250 ml

of deionized water, 33.33 g of PAA crystals, and 8 tubes of Revolution Plus. The baits were allowed to condition in the refrigerator overnight.

Salsa cups and lids were weighed, and ≈ 30 g of bait were added to each cup. Then the entire bait cup (cup+ bait + lid) was weighed. The baits were transported to the field on ice packets.

Four bait cups were placed in each of four UCR bait stations. The fluralaner bait stations were place at Sites 33, 36, 40, and 47. The selamectin + sarolaner baits were placed out at Sites 3, 10, 17, and 27. The baits went out on 8/11/2021 and were retrieved on 8/13/2021.

After 2 days, the baits were retrieved and covered with tight lids. The cups were placed in on ice packs, returned to the laboratory, and weighed. After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The yellowjacket trapping data before and after baiting was analyzed with a paired *t*-test.

Efficacy Trial # 2

The same baits were applied again on 9/20/2021 (see methods above).

Results

Monitoring

The only species of yellowjackets trapped were *V. pensylvanica*. A total of 15,344 yellowjackets were trapped over the summer and fall.

Efficacy Trial # 1

The evaporation controls for the fluralaner and selamectin + sarolaner baits lost 65.3 and 60.3%, respectively. After compensating for the water loss, the yellowjackets took 316.1 g of fluralaner bait (78.4% of the total) and 384.5 g of selamectin + sarolaner bait (95.1% of the total, Table 35). The selamectin + sarolaner provided significant reductions at days 9 (W=462, Z = 4.75, **P** < 0.001), 14 (W = 461, Z = 4.74, **P** < 0.001), and 28 (W = 462, Z = 4.15, **P** < 0.001). The fluralaner bait provided significant reductions at days 9 (W = 188, Z =3.77, **P** < 0.001), 14 (W = 184, Z = 3.69, **P** < 0.001). and 28 (W = 190, Z = 3.81, **P** < 0.001). The number of yellowjackets trapped in the untreated area at Tree of Life Nursery remained unchanged for 14 days after the baiting and then there was a significant reduction in the number of yellowjackets at 28 (W = 55, Z = 2.78, **P** = 0.006).

Table 35. The efficacy of 0.05% fluralaner and 0.096% selamectin + 0.016% sarolaner baits in PAA crystals at Ronald W. Caspers Wilderness Park.

Toxicant	Bait Taken (g)	Monitoring Sites	Average YJ/T/D (% reduction)			
			Pre-baiting	9-10 days	14-15 days	27-28 days
Selamectin + sarolaner	384.5	31	5.78	0.45 (92.2%)	0.71 (87.8%)	0.40 (93.1%)
Fluralaner	316.1	19	4.26	1.25 (78.4%)	1.35 (76.6%)	0.75 (87.0%)
Untreated[a]		10	8.19	11.18 (0.0%)	5.189(36.6%)	2.43 (70.3%)

[a] Trap counts from the Tree of Life Nursery.

Efficacy Trial # 2

The evaporation controls of the fluralaner and the selamectin + sarolaner baits lost 52.1% and 41.7% of their weight in 48 hours. After adjusting for water loss, the yellowjackets removed 148.5 g of fluralaner bait (35.6% of the total) and 213.7 g of selamectin + sarolaner bait (49.3% of the total, Table 36).

The selamectin + sarolaner provided significant reductions in the number of yellowjackets trapped at days 12 (W = 430, Z = 4.64, **P** < 0.001), 28 (W = 435, Z = 4.70, **P** < 0.001), 42 (W = 404, Z = 4.59, **P** < 0.001), and 56 (W= 406, Z = 4.62, **P** < 0.001). The fluralaner provided significant reductions of yellowjackets trapped at days 12 (W = 186, Z = 3.73, **P** < 0.001), 28 (W = 170, Z = 3.41, **P** < 0.001), 42 (W = 171, Z = 3.71, P < 0.001), and 56 (W = 190, Z = 3.81, **P** < 0.001). The trap counts in the untreated section of Tree of Life Nursery remained unchanged from 9/17/2021 until 10/18/2021. There were significant reductions at days 42 (W = 55, Z = 2.78, **P** = 0.002) and 56 (W = 55, Z = 2.78, **P** = 0.002).

Table 36. The efficacy of the second baiting with 0.05% fluralaner and 0.096% selamectin + 0.016% sarolaner baits in PAA crystals.

Toxicant	Bait Taken (g)	Monitoring Sites	Average YJ/T/D (% reduction)				
			Pre-baiting	12 days	28 days	42 days	56 days
Selamectin + sarolaner	213.7	31	0.46	0.11 (75.4%)	0.08 (83.1%)	0.04 (91.4%)	0.01 (97.0%)
Fluralaner	148.5	19	0.86	0.28 (67.4%)	0.30 (65.0%)	0.11 (87.0%)	0.03 (96.3%)
Untreated[a]		10	2.43	2.84 (0.0%)	1.85 (23.9%)	0.55 (77.4%)	0.19 (99.2%)

[a] Trap counts from the Tree of Life Nursery.

Discussion

Both the fluralaner and selamectin + sarolaner baits provided significant reductions in the number of yellowjackets trapped. The yellowjackets removed more of the selamectin + sarolaner than the fluralaner. The numbers of YJ/T/D were well below the treatment threshold at the time of the second baiting, but park personnel wanted an additional baiting before the end of the season. The second baiting also significantly reduced numbers for the next 28 days.

Tree of Life Nursery 2021

The Tree of Life Nursery is located along Rte. 74 about 6.4 km east of Rancho Mission Viejo, CA (33°31'50.53" N, 117°33'01.90"W, elev. 116 m). The nursery is adjacent to the Ronald W. Casper Wilderness Park. The area consists of native Coastal Live Oaks and stands of California Sycamore. The site was selected to serve as a seasonal control for the baiting studies in the nearby Ronald W. Caspers Wilderness Park.

Methods and Materials

Monitoring

Ten UCR-style traps were spread along a transect along the northeast edge of the nursery about 115 m apart (Fig. 31). The nearest monitoring traps in the Ronald W. Casper Wilderness Park was ≈ 381 m away. The traps were installed on 6/15/2021 and checked every 14 days. The last traps were collected on 11/15/2021.

Monitoring Attractants Choice Test

The attractiveness of heptyl crotonate (HC) and heptyl butyrate (HB) was tested from 8/9/2021 to 8/23/2021. Ten UCR traps were provisioned with HC vials and 10 UCR traps were provisioned with HB vials. One HC trap was placed about 2 m from a HB trap at each of the 10 locations. After 14 days, the traps and collection jars were returned to the laboratory and counted.

The number of yellowjackets trapped with each attractant was analyzed with a Wilcoxon signed-ranks test.

Results

Monitoring

The only species of yellowjackets trapped was *V. pensylvanica*. The number of yellowjackets steadily increased in July and reached a maximum in the first weeks of August. Only 3 sites in August had > 10 yellowjackets/trap/day during the study (Fig. 37).

Monitoring Attractants Choice Test

There were no significant differences in the number of yellowjackets trapped in either HC or HB traps (W=9, n = 10, **P** = 0.69). Both attractants were equally effective in luring yellowjackets to the traps.

Discussion

The site served as an excellent control for the baiting trials at Ronald W. Caspers Wilderness Park. The numbers of yellowjackets significantly declined in September and again in late October.

Heptyl butyrate and heptyl crotonate attracted similar numbers of *V. pensylvanica* during the study. Wagner and Reierson (1969) added heptyl crotonate to mirex baits and tripled the amount of bait removed by yellowjackets. The heptyl crotonate is acceptable substitute for heptyl butyrate.

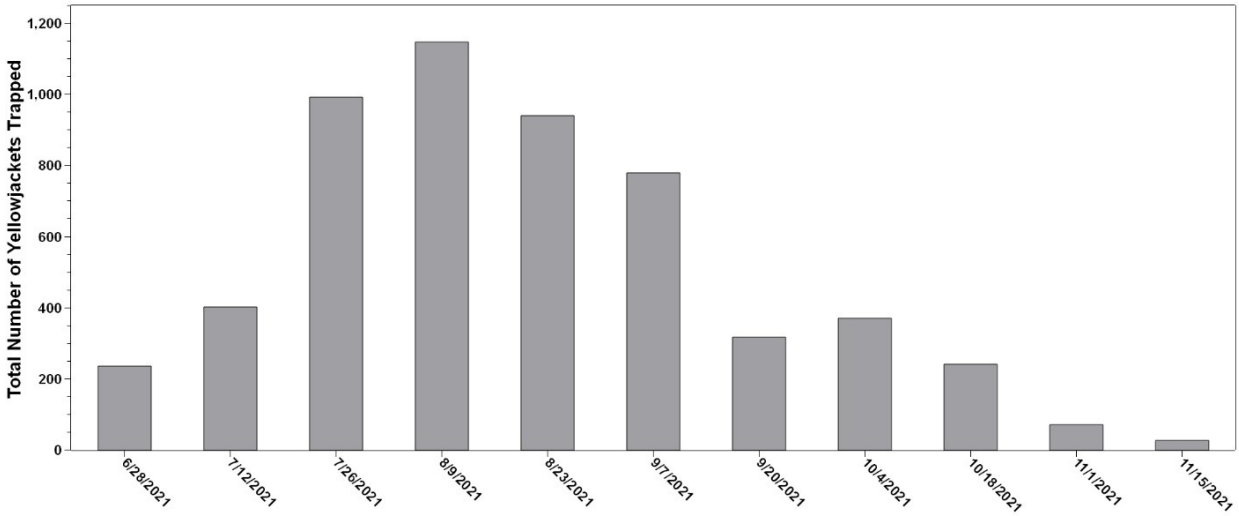


Fig. 37. The total number of yellowjackets trapped at Tree of Life Nursery in 2021.

University of California Riverside Campus Site 2019

The University of California Riverside campus is located next to the Box Springs Mountains (33°58'04", 117°19'34"W, elev. 356 m). The botanical gardens and the southern edge of the campus abuts native coastal sage scrub with mixed non-native grasses. A transect of monitoring traps was placed along a driveway and parking lot adjacent to a hillside of native scrub and grasses on the University of California Riverside campus.

Methods and Materials

Monitoring

The foraging activity of yellowjackets was measured using UCR-style traps. The monitoring traps were hung under trees and bushes about 0.5-1.5 m off the ground. A total of 10 traps were placed along a driveway and parking lot. The traps were hung about 30 m apart beginning on 5/13/2019. The traps were checked every 14 days and the number of queens and workers trapped was recorded for the entire summer and fall until 12/9/2019 (the last trap count).

Repellency Tests with Essential Oils

A solution of four essential oils (EOs) has been shown to be highly repellent to *V. pensylvanica* (Zhang et al. 2012). The EOs included natural clove oil, geranium oil, lemongrass oil, and rosemary oil. The objective was to determine if this solution would prevent yellowjackets from foraging on minced chicken. Clove oil natural (density 1.016 g/ml), geranium oil (0.91 g/ml), lemongrass oil (0.87 g/ml), and rosemary oil (0.906 g/ml) were purchased from LorAnn Oils, Inc. (Lansing, MI).

The solution was prepared with 1 ml of each of the EOs and 10 ml of acetone. Pieces of cheesecloth were cut into 19 by 19 cm squares. Each square was impregnated with the 14 ml of the solution and allowed to dry in the fume hood for about 1 hour.

To determine if the solution was repellent to yellowjacket foragers, two UCR-style bait stations were placed about 5 m apart at each of three sites on 11/25/2019. In one bait station, one cup with minced chicken was placed in the center of the cage. In the other station, a piece of cheesecloth impregnated with the EO solution was placed on the bottom of the cage and a cup with minced chicken was placed at the center of the cheesecloth. At the end of the day the piece of treated cheesecloth was removed from the cage, put into a plastic bag and stored in the refrigerator overnight. The test was repeated the next day with the same piece of treated cheesecloth.

On the second day, the amount of minced chicken removed was determined. Salsa cups and lids were weighed and ≈ 20 g of minced chicken was added to the cups. The entire cup (cup + lid + chicken) was weighed. To estimate the water loss from the minced chicken on the second day, an evaporation control station containing two cups of minced chicken was hung away from the other stations. The evaporation stations were removed at the end of the test. The cups were covered with lids and returned to the laboratory and weighed.

After adjusting for water loss of the baits, the amount of bait removed by the yellowjackets was determined (see Evaporation Control, page 6).

The data (the amount of chicken removed from EOs treated cloths and untreated cloths) were log transformed and compared with a paired *t*-test.

Results

Monitoring

The only species collected at the UCR site was the western yellowjacket, *V. pensylvanica*. A total of 11 queens were trapped during May and 5 queens were trapped in the first two weeks of June. The total number of workers trapped gradually increased during the summer and finally peaked on 10/28/2019 with 950 workers (Fig. 38). The numbers of yellowjackets trapped dramatically decreased after 11/12/2019. At the peak, the largest number of yellow jackets trapped was 6.8 YJ/T/D. The total number of workers trapped was 5,330.

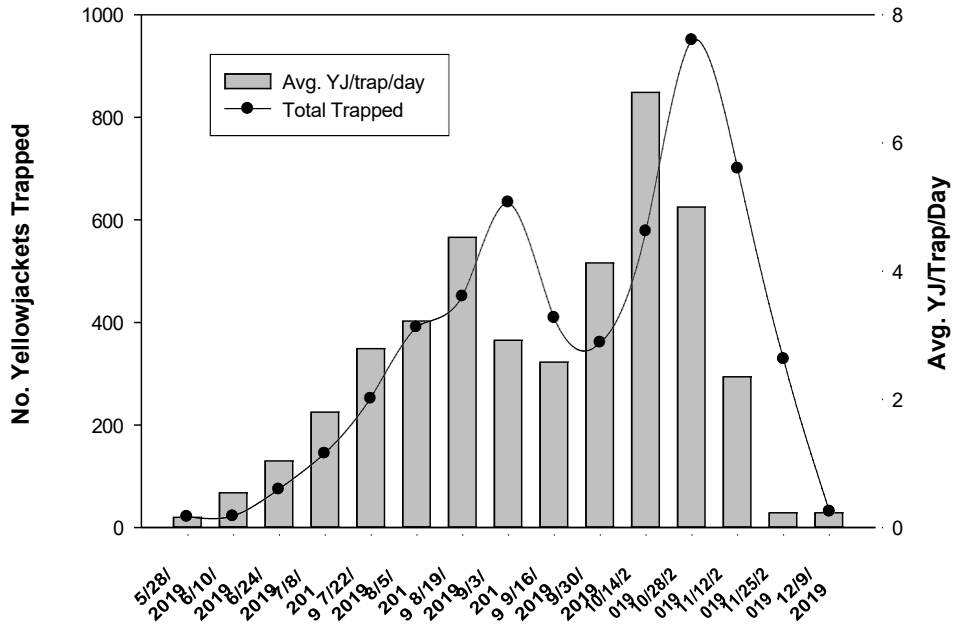


Fig. 38. The total number of yellowjackets trapped and the average number of yellowjackets/trap/day (YJ/T/D) at UCR during 2019.

Repellency Tests with Essential Oils

On the first day, the bait stations were checked hourly to determine if yellowjackets were foraging and removing the minced chicken. At 6 hours, the minced chicken on top of the treated cheesecloth was untouched whereas the yellowjackets had removed all the chicken from 2 of the 3 untreated bait stations. About half of the chicken was removed from the third untreated bait station.

On the second day, the same treated cheesecloths were tested again after being refrigerated overnight. The yellowjackets continued to forage on the minced chicken in the bait cups in the untreated control. No yellowjackets were observed in the bait stations with the treated cheesecloths during the second day but there was some removal. The minced chicken in the evaporative control lost 8.2% of its weight during the test. After adjusting for the water loss, a total of 5.1 g and 32.9 g of minced chicken was removed from the treated and untreated cloths, respectively. This difference was significantly different (t = -4.29, df = 2, **P** = 0.05, Table 37).

Table 37. The amount of minced chicken removed from the bait stations with and without the 1-day-old deposits of the EO solution.

	Treated Cheesecloth		No cheesecloth	
Sites	Taken (g)	% removed	Taken (g)	% removed
1	2.02	15.1	13.40	70.2
2	1.62	8.5	4.28	27.8
3	1.46	9.6	15.25	87.5

[a] 1-d-old deposits tested 11/26/2019 for 6.7 hours.

University of California Riverside
Campus Site 2020

Methods and Materials

Monitoring

The foraging activity of yellowjackets was monitored with 10 traps placed about 30 m apart. Monitoring began on 6/29/2020. The traps were checked every 14 days and the number of queens and workers trapped were recorded for the entire summer and fall. The last trap count was 11/2/2020.

Results

Monitoring

The only species collected at UCR was *V. pensylvanica*. No queens were trapped in 2020. The trap catches at UCR increased steadily over the summer and the total number of yellowjackets trapped peaked on 10/5/2020 (Fig. 39). The numbers dramatically declined in late October. The number of yellowjackets/trap/day never exceeded 10 YJ/T/D. A total of 6,190 yellowjackets were trapped during 2020.

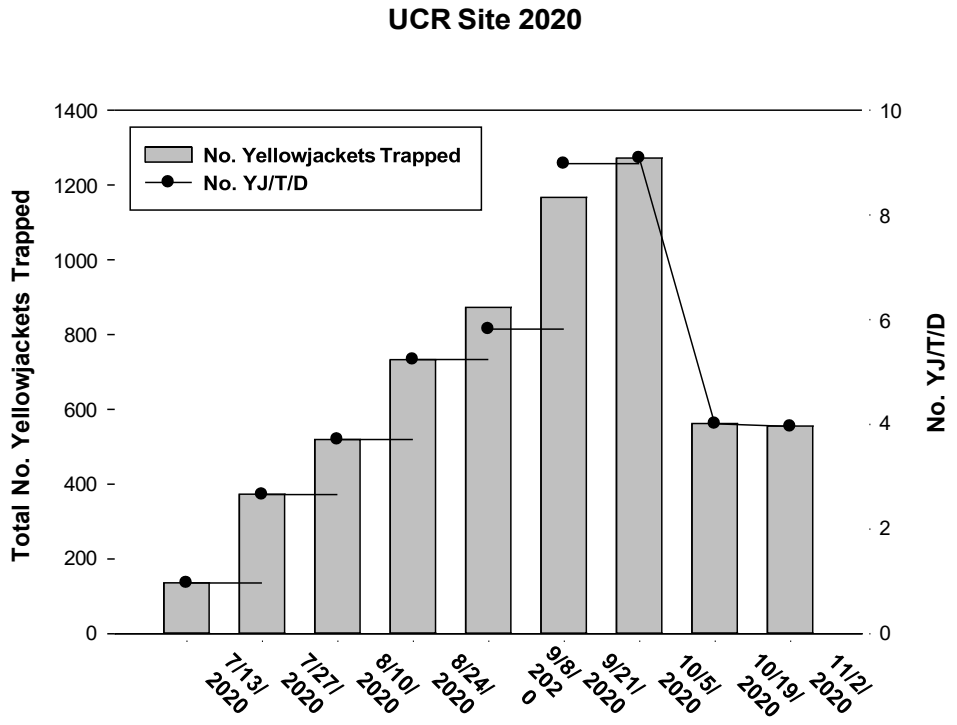


Fig. 39. The total number of yellowjackets trapped and the number of yellowjackets/trap/day (YJ/T/D) at the UCR site during 2020.

Discussion

The number of yellowjackets trapped never reached a critical threshold during 2020. The site was used a seasonal phenology.

University of California Riverside
Campus Site 2021

Methods and Materials

Monitoring

The foraging activity of yellowjackets was monitored with 10 traps placed about 30 m apart. Monitoring began on 6/14/2021. The traps were checked every14 days and the number of queens and workers trapped were recorded for the entire summer and fall. The last trap count was on 11/3/2021.

Results

Monitoring

The only species trapped was *V. pensylvanica*. No queens were trapped and a total of only 466 yellowjackets were trapped during the entire season (Fig. 40).

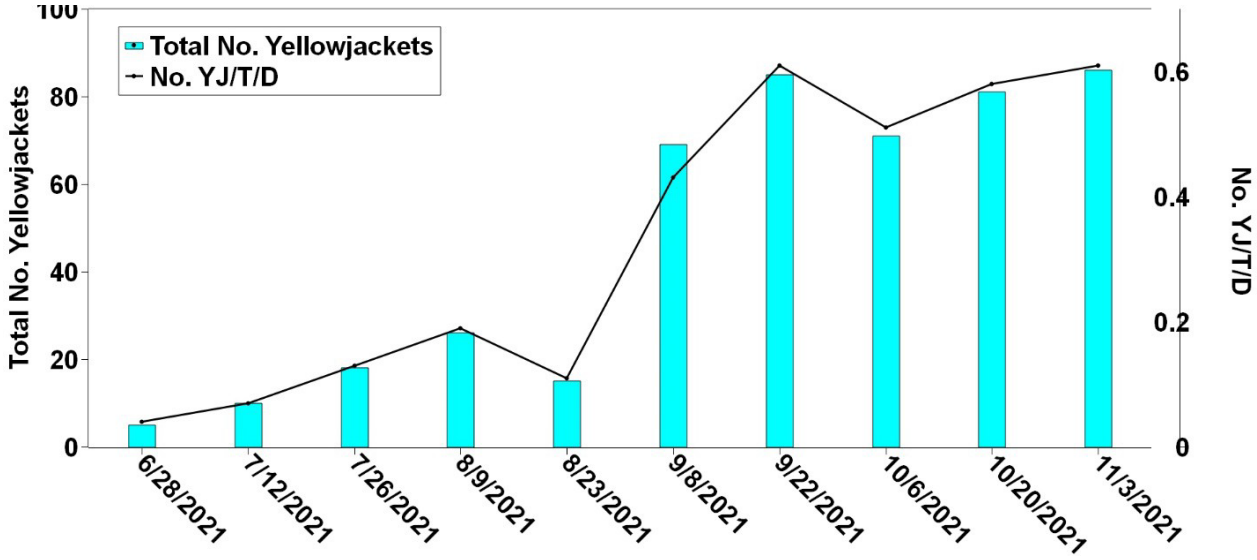


Fig. 40. The number of yellowjackets trapped and the yellowjackets/trap/day (YJ/T/D) for UCR site in 2021.

Discussion

The number of yellowjackets trapped at the UCR site never reached the action threshold of 10 YJ/T/D during 2021. The warmer temperatures and the lack of rain in 2021 negatively impacted the yellowjacket populations (Appendix I). The lack of rain probably contributed to a decline of vegetation and insects in the spring depriving queens and workers of food sources.

Acknowledgements. We would like to thank Mary Rust for assisting with the monitoring and baiting at Silent Valley RV Park. Linda Post and the Integrated Pest Management Team at the San Diego Zoo Safari Park did an outstanding job monitoring and baiting the site. The San Diego Zoo was extremely generous and assisted us in purchasing active ingredients for the study. Dr. Jocelyn Millar synthesized the heptyl crotonate.

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Summary

1). When conditioned in diluted chicken juice, the polyacrylamide hydrogels (PAA) were preferred over the alginate hydrogel beads. The PAA gels were easier to manipulate by the workers.

2). Minced chicken (Swanson's White Premium Chunk Chicken, Campbell Soup Co., Camden, NJ) and the liquid contents in the can were highly preferred by foraging yellowjackets. PAA gels conditioned in pure chicken juice or chicken juice diluted in water (1:1) were the most attractive bait base tested.

3). Heptyl crotonate and heptyl butyrate were attractive to 6 species of yellowjackets. There were no significant differences in the numbers of yellowjackets trapped. Heptyl crotonate is an acceptable substitute for heptyl butyrate.

4). Baits consisting of 0.025% fipronil in PAA or minced chicken were effective in reducing the number of yellowjackets trapped at most sites. However, dense populations of yellowjackets and considerable amounts of competitive foods at the San Diego Zoo Animal Safari reduced its effectiveness.

5). Baits containing dinotefuran and clothianidin failed to provide adequate control. Both toxicants probably killed workers too quickly and lower concentrations of each failed to reduce the number of foragers.

6). Baits containing sodium selenate and sodium selenite were readily accepted by yellowjackets but failed to provide control. The baits were not repellent and possibly even greater concentrations of bait might be tested in the future.

7). The isoxazolines, fluralaner and sarolaner, were tested. Fluralaner baits containing 0.025% and 0.05% in both PAA and minced provided varying levels of control. However, dense populations of yellowjackets and considerable amounts of competitive foods at the San Diego Zoo Animal Safari reduced its effectiveness. Higher concentrations of 0.144% and 0.024% sarolaner provided excellent reductions of yellowjackets at several locations. This combination toxicant looks extremely promising.

8). The isoxazoline and fipronil baits were also effective against *V. alascensis* in the trials where there were enough wasps to tests. The baits were not attractive and did not affect the other species of yellowjackets captured in the heptyl butyrate traps.

9). As expected, there was large decline in bait acceptance of minced chicken and PAA gels. The appearance of reproductive increases the workers focus to plants and carbohydrate foods.

10). The lack of rainfall in 2021 probably had a severe impact on yellowjacket populations at most sites.

APPPENDIX I

Several of the sites included in this study have been monitored in the past. On occasion the numbers of yellowjackets have been extremely high resulting in serious problems. Rust et al. (2017) examined the weather patterns at Irvine Regional Park from 2012-2014 and noted that a lack of rainfall in January and warmer spring temperatures may have contributed to a decline in the number of yellowjackets.

Irvine Regional Park

The total number of yellowjackets trapped in 2019, 2020, and 2021 were 8,219, 27,446, and 17,795, respectively. A wildfire in 2017 along the northern boundary of the Park may have had some impact on the low numbers of yellowjackets trapped in 2019.

From 1991-2020, the first 6 months of the year averaged 22.71 cm of rain with January and February receiving the highest level of rainfall of 7.32 and 8.03 cm of rain, respectively (fire station, Santa Ana, CA, 33°44'39.04" N, 117°52'.05.35"W, 33.5 m elev.). The only year that the Park received greater than normal rainfall was 2019 (Table 1).

The amount of rainfall from the preceding months from September to December is included in Table 2.

Table 1. Temperatures and precipitation near the Irvine Regional Park site for 2018 to 2021.

2018					2019				
	Temperature (°C)[a]					Temperature (°C)			
Month	Mean Max.	TAVG	Mean Min.	rainfall (cm)	Month	Mean Max.	TAVG	Mean Min.	rainfall (cm)
Jan	22.2	16.3	10.4	2.79	Jan	19.2	14.4	9.67	12.78
Feb	20.2	14.8	9.4	0.81	Feb	16.2	11.8	7.6	13.94
Mar	19.7	15.6	11.3	3.10	Mar	19.8	15.7	11.6	3.61
Apr	22.1	17.5	12.9	0.13	Apr	21.7	17.7	13.7	0.08
May	21.3	17.8	14.4	0.20	May	20.2	17.2	14.4	1.27
June	23.9	20.4	16.9	0	June	23.1	19.9	16.8	0.03
total				7.04					31.70

2020					2021				
	Temperature (°C)					Temperature (°C)			
Month	Mean Max.	TAVG	Mean Min.	rainfall (cm)	Month	Mean Max.	TAVG	Mean Min.	rainfall (cm)
Jan	20.8	15.4	10.0	0.38	Jan	20.44	14.78	9.11	4.47
Feb	22.2	16.7	11.0	0.97	Feb	20.11	15.00	9.89	0.08
Mar	20.2	16.5	12.8	8.10	Mar	19.44	14.61	9.83	2.95
Apr	22.6	18.9	15.1	6.93	Apr	22.06	17.78	13.50	0.05
May	25.6	21.6	17.6	0.03	May	22.33	19.06	15.78	0.38
June	25.2	21.5	17.7	0.03	June	24.8	21.1	17.4	0.0
total				16.43					7.93

[a] TAVG – average temperature. Santa Ana John Wayne Airport (33°40'34.28" N, 117°52'02.91" W, elev. 13.7 m)

Table 2. Temperatures and precipitation near the Irvine Regional Park site for 2018 to 2021 including September to December.

2017					2018				
	Temperature (°C)[a]					Temperature (°C)			
Month	Mean Max.	TAVG	Mean Min.	Rainfall[a] (cm)	Month	Mean Max.	TAVG	Mean Min.	rainfall (cm)
Sept	26.9	22.7	18.2	0.0	Sept	25.9	22.3	18.7	0.0
Oct	27.7	22.1	16.6	0.0	Oct	25.2	20.8	16.5	1.32
Nov	23.5	18.4	13.4	0.0	Nov	23.9	18.4	12.9	1.96
Dec	23.1	16.2	9.3	0.03	Dec	19.1	14.6	10.1	8.23
			total	0.03				total	11.51
2018					2019				
Jan	22.2	16.3	10.4	2.79	Jan	19.2	14.4	9.67	12.78
Feb	20.2	14.8	9.4	0.81	Feb	16.2	11.8	7.6	13.94
Mar	19.7	15.6	11.3	3.10	Mar	19.8	15.7	11.6	3.61
Apr	22.1	17.5	12.9	0.13	Apr	21.7	17.7	13.7	0.08
May	21.3	17.8	14.4	0.20	May	20.2	17.2	14.4	1.27
June	23.9	20.4	16.9	0.0	June	23.1	19.9	16.8	0.03
total				7.04					31.70

2019					2020				
	Temperature (°C)					Temperature (°C)			
Month	Mean Max.	TAVG	Mean Min.	rainfall (cm)	Month	Mean Max.	TAVG	Mean Min.	rainfall (cm)
Sept	28.2	24.1	20.0	0.08	Sept	29.4	24.3	169.1	0.0
Oct	27.6	21.6	15.6	0.0	Oct	27.7	22.6	17.5	0.0

Nov	23.4	17.9	12.5	3.56	Nov	22.7	17.0	11.2	0.94
Dec	19.6	15.0	10.5	3.40	Dec	21.5	15.0	8.5	2.72
			total	7.04				total	3.66
2020					2021				
Jan	20.8	15.4	10.0	0.38	Jan	20.44	14.78	9.11	4.47
Feb	22.2	16.7	11.0	0.97	Feb	20.11	15.00	9.89	0.08
Mar	20.2	16.5	12.8	8.10	Mar	19.44	14.61	9.83	2.95
Apr	22.6	18.9	15.1	6.93	Apr	22.06	17.78	13.50	0.05
May	25.6	21.6	17.6	0.03	May	22.33	19.06	15.78	0.38
June	25.2	21.5	17.7	0.03	June	24.8	21.1	17.4	0.0
total				16.43					7.93

[a] Rainfall averages from 1991-2020. Sept-Dec = 11.7 cm; Jan-March = 19.69.

UCR Campus

Over the years the UCR site has served as a control site because the average number of yellowjacket trapped/trap/day rarely exceeds 10. The total number of yellowjackets trapped for 2019, 2020, and 2021 was 4,624, 6,190, and 466, respectively.

From historical rainfall from 1970-2021, the average rainfall for the first 6 months was 15.35 cm with February (5.3 cm) and March (4.2 cm) receiving the greatest rainfall. The rainfall exceeded the normal average in both 2019 and 2020, but there was a severe drought in the spring of 2021 which reflects the very low number of yellowjackets trapped.

Table 3. Temperature and precipitation for the UCR site for 2019 to 2021. The annual average precipitation for Riverside is 24.4 cm of rain per year (1970-2021).

2019					2020				
	Temperature (°C)			rainfall (cm)		Temperature (°C)			rainfall (cm)
Month	Mean Max.	TAVG	Mean Min		Month	Mean Max.	TAVG	Mean Min	
Jan	17.3	10.4	4.0	5.13	Jan	18.8	9.5	1.7	0.25
Feb	13.7	7.8	1.9	9.40	Feb	20.6	11.4	2.1	1.04
Mar	18.5	11.8	5.2	5.03	Mar	17.7	11.5	5.3	10.87
Apr	24.1	15.4	7.7	0.58	Apr	21.9	14.8	7.9	9.58
May	21.9	14.7	8.7	2.74	May	28.8	19.4	10.6	0.00
June	29.1	20.0	13.7	0.00	June	29.9	20.5	12.9	0.13
total				22.89					21.87

2021				
	Temperature (°C)			Rainfall (cm)
Month	Mean Max.	TAVG	Mean Min.	
Jan	19.7	10.9	2.7	3.43
Feb	19.0	10.8	2.9	0.03

Mar	19.1	11.5	3.9	3.66
Apr	24.7	15.9	7.4	0.00
May	26.3	17.3	10.9	0.00
June	33.1	23.5	14.3	0.15
total				7.26

[a] TAVG – average temperature. March AFB (33°53'28.08" N, 117°15'43.97" W, elev. 462.4 m).

San Diego Zoo Safari Park

The total number of yellowjackets trapped during 2020, and 2021 were 41,592 and 7,231, respectively.

From 2000 to 2021, the first 6 months of the year averaged 20.7 cm of rain with January and February receiving the highest level of rainfall of 5.77 and 6.76 cm of rain, respectively. The average annual rainfall was 32.68 cm. From January to June, the Park received greater than normal rainfall during 2019 and 2020, but 2021 was extremely dry.

Table 4. Temperature and precipitation for the San Diego Zoo Safari Park for 2019 to 2021.

2019					2020				
	Temperature (°C)[a]					Temperature (°C)			
Month	Mean Max.	TAVG	Mean Min	rainfall (cm)	Month	Mean Max.	TAVG	Mean Min	rainfall (cm)
Jan	19.2	13.4	7.6	9.07	Jan	21.2	14.1	6.9	1.19
Feb	16.3	11.3	6.4	16.44	Feb	22.4	15.3	8.2	1.59
Mar	20.6	15.2	9.9	1.14	Mar	19.8	14.9	10.0	14.25
Apr	24.3	18.4	12.6	0.41	Apr	23.1	17.9	12.8	13.39
May	22.0	17.6	13.2	3.56	May	27.6	21.4	15.3	0.05
June	27.0	21.7	16.3	0.18	June	28.6	22.4	16.3	0.36
total				31.3					30.83

2021				
	Temperature (°C)			
Month	Mean Max.	TAVG	Mean Min.	Rainfall (cm)
Jan	21.8	14.4	7.2	7.75
Feb	21.8	14.7	7.6	0.58
Mar	21.1	14.6	8.0	4.80
Apr	24.6	18.1	11.4	0.25
May	24.9	19.1	13.4	0.08
June	29.3	22.5	15.7	0.0
total				13.46

[a] TAVG – average temperature. (33°07'24.20" N, 117°05'42.06" W, elev. 196.6 m)

UC Berkeley Richmond Field Station

The total number of yellowjackets for 2019, 2020, and 2021 was 15,077, 7,070, and 10,480.

The historical rainfall from 2000 to 2021 for the first six months of the year averaged 24.24 cm of rain with January, February and March receiving an average of 8.08, 9.55, and 7.84 cm of rain. The annual average rainfall is 53.14 cm. In 2018 and 2019, the rainfall exceeded the average for the first six months.

Table 5. Temperature and precipitation for the Oakland International Airport for 2019 to 2021.

2018					2019				
	Temperature (°C)[a]					Temperature (°C)			
Month	Mean Max.	TAVG	Mean Min.	rainfall (cm)	Month	Mean Max.	TAVG	Mean Min.	rainfall (cm)
Jan	14.7	10.7	6.6	11.66	Jan	15.7	11.8	7.9	9.52
Feb	16.7	10.9	5.1	0.86	Feb	13.7	10.1	6.6	15.42
Mar	16.1	11.7	7.1	9.27	Mar	17.2	12.8	8.3	9.27
Apr	18.2	13.7	9.1	5.44	Apr	19.9	15.8	11.6	1.20
May	18.7	14.96	11.3	0	May	19.0	15.6	12.1	2.97
June	21.6	16.7	11.9	0	June	24.4	18.8	13.8	0
total				27.23					38.38

2020					2021				
	Temperature (°C)					Temperature (°C)			
Month	Mean Max.	TAVG	Mean Min.	rainfall (cm)	Month	Mean Max.	TAVG	Mean Min.	rainfall (cm)
Jan	15.1	10.8	6.6	4.42	Jan	16.7	11.9	7.2	6.15
Feb	19.2	13.4	7.6	0	Feb	18.6	13.2	7.7	4.44
Mar	17.8	13.3	8.8	3.84	Mar	17.9	12.7	7.5	4.4
Apr	19.7	15.4	11.1	2.31	Apr	17.6	13.5	9.4	0
May	23.7	18.4	13.1	1.12	May	19.8	15.2	10.5	0.03
June	24.2	19.2	14.2	0	June	21.5	17.7	13.4	0.0
total				11.69					14.72

[a] TAVG – average temperature. Oakland International Airport (37°43'09.83" N, 122°13'06.06" W, elev. 1.8 m)

Discussion

Yellowjacket queens emerge in May and June to begin nest construction. As the colonies are established, there will be increasing demands for insects to provision the developing larvae. Exogenous factors affecting populations of *V. germanica* and *alascensis* have been examined, but nothing definitive has been shown to effect populations. In the arid west, wildflowers and vegetation are extremely dependent on the spring rains. Bowers (2005) found that rains prior to good wildflower years were at least 30% greater than long-term averages in the Mohave Desert and at least 50% greater in the Sonoran Desert. In comparing the months prior (September through March) for Irvine Regional Park, the rainfall was far short the average rainfall over the past 30 years. Only in 2019, did the numbers approach the historical average rainfall for those months.

References Cited:

Bowers, J.E. 2005. El Niño and displays of spring-flowering annuals in the Mojave and Sonoran deserts. J. Torrey Botanical Soc. 132: 38-49.

Final Report

Reporting Period: 10-19-2018 to 8-31-2020

Submittal Date: 10-21-2020

Project Title: **"Improving Urban Pest Ant Management by Low-Impact IPM Strategies"**

Grant Agreement No.: 26710

Principal Investigator: Dong-Hwan Choe
Department of Entomology
University of California, Riverside, CA

Please see following pages for the contents of the final report (total 14 pages including this cover page).

Based on my inquiry of the persons who manage the project, or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Dong-Hwan Choe

Digitally signed by Dong-Hwan Choe
DN: cn=Dong-Hwan Choe, o, ou, email=donghwan.choe@ucr.edu, c=US
Date: 2020.10.21 21:07:07 -08'00'

10-21-2020

Principal Investigator's Signature Date

EXECUTIVE SUMMARY

Pest ants are among the top reasons for the public calling for professional pest management service. Residual treatment is often employed by professionals for outdoor treatment of pest ants. In an effort to minimize the environmental impacts of off-site movement of insecticides used in outdoor treatments, various reduced-risk strategies have been developed and implemented. However, it remains important for the reduced-risk strategies to maintain an acceptable level of control efficacy.

Two new technologies (spray with a pheromone adjuvant + biodegradable hydrogel bait delivery method) were used to develop a unique IPM protocol for Argentine ant at urban structural settings. The IPM protocol included a one-time perimeter treatment with 0.03% fipronil (mixed with a pheromone adjuvant) at the beginning of the ant season to achieve a quick knock down. The initial spray application was followed by hydrogel baiting with boric acid (1%) as a one-time supplementary or maintenance treatment. This low-impact IPM protocol was compared with other two conventional methods: (1) one initial fipronil application and one pyrethroid spray application for maintenance, or (2) one initial fipronil application and one essential oil insecticide spray application for maintenance. The protocols were compared for efficacy based on the Argentine ant foraging activity. Insecticide use information and service time were also recorded and compared among different treatment protocols.

Our research findings suggest that the pheromone adjuvant for perimeter spray and biodegradable hydrogel bait containing boric acid can be effective and feasible tools for Argentine ant IPM. Without the pheromone adjuvant, one-time application of 0.03% fipronil perimeter treatment following the California specific label instruction did not provide consistent control. However, the pheromone adjuvant maximized the efficacy of residual spray products. Pyrethroid and essential oil insecticide sprays did not provide consistent control of Argentine ants when used for follow-up maintenance. With its relatively low toxicity profile on non-target organisms, boric acid baiting is an important tool for the follow-up maintenance services. Relatively high cost associated with material and labor has been a drawback for conventional baiting methods. The use of a biodegradable hydrogel matrix as a carrier of liquid bait can be an important breakthrough in addressing this challenge.

INTRODUCTION

In many urban residential areas of the United States, the Argentine ant is one of the most common nuisance ant species treated by pest management professionals (PMPs). Contact and residual insecticide sprays are among the most common treatment options for Argentine ant control because of their ease of application and cost-effectiveness. However, many of these insecticides are frequently detected in urban waterways (Greenberg et al., 2014, references cited therein).

In this study, we used two new approaches (i.e., pheromone adjuvant for spray applications and biodegradable hydrogel bait) to develop a low-impact IPM protocol (Choe et al., 2014; Choe and Campbell, 2014; Tay et al., 2017). It was compared with other two other methods that mimic the treatment protocols that are often adopted by PMPs. A one-time perimeter treatment with a fipronil spray at the beginning summer was incorporated in all protocols. The initial spray application was followed by one follow-up maintenance treatment at week 4. Ant foraging activity levels were monitored throughout the season (July – October) and compared among different treatment protocols. Insecticide use amount and treatment time data were also compared between different treatment protocols.

MATERIALS AND METHODS

Experimental settings

Residential houses in Riverside, CA, USA were used for the experiments. Five houses were assigned to each of three protocols, each house representing one replicate. Foraging activity level of ants was estimated based on the total amount of sucrose solution consumed over a 24-hour period (Welzel et al., 2016). The average value from 10 monitoring sites around foundation was used for statistical analyses. To understand the overall Argentine ant activity in the absence of treatment efforts, an untreated control house was monitored over the entire project period.

Conventional protocols

Two different conventional protocols mimicked ant treatment protocols used by PMPs. Both conventional protocols consisted of a one-time 0.03% fipronil spray treatment (Termidor SC, BASF,

Research Triangle Park, NC) at early summer (Fig. 1), followed by maintenance treatment with another spray product (Table 1). For the maintenance treatment, conventional protocol #1 used a 0.06% bifenthrin spray (Talstar P, FMC, Philadelphia, PA) and conventional protocol #2 used a botanical insecticide spray containing a mixture of rosemary oil, geraniol, peppermint oil and wintergreen oil (Essentria IC3, Central Garden & Pet Company, Schaumburg, IL). The maintenance treatment focused on active ant trails on soil, lawn, and other horizontal surfaces within 5 m of the building (Fig. 2). All spray products were prepared and applied with a backpack sprayer (Birchmeier Iris 15, Stetten, Switzerland) following the label recommendations. The initial fipronil treatment was made in late July, and the maintenance treatment was made in late August or early September (week 4).

Low-impact IPM protocol

The low-impact IPM protocol consisted of a one-time fipronil spray treatment (mixed with a pheromone adjuvant – microencapsulated (Z)-9-hexadecenal, Suterra, LLC., Bend, OR; 25 ml per 3.8 liter of spray) at early summer followed by the use of a biodegradable hydrogel bait (1% boric acid) at week 4 post-treatment as a maintenance treatment (Table 1).

The biodegradable hydrogel bait was produced by the method described by Tay et al. (2017) with minor modifications. Several methodological modifications were incorporated in the method to either establish or achieve following:

a) Three-step and three-day manufacturing process. The first step (day 1) is the preparation of the alginate solution (1% alginate). The second step (day 2) is the formation of the hydrogels with an appropriate cross-linking time using a calcium chloride solution (0.5% CaCl2). The final step (day 2 – day 3, overnight) is the conditioning of the hydrogel to create hydrogel beads containing 25% sucrose and 0.5% boric acid (wt/vol).
b) Quick production of the hydrogel beads (e.g., 1 -2 kg of hydrogel in 5 min) for conditioning. The conditioning process takes about 18 h. In the final hydrogel product, each bead contained 0.14-0.17 ml of the liquid bait (Fig. 3).
c) Precise concentrations of sugar (25%) and boric acid (0.5 %) in the final hydrogel bait.

d) Ease of application with hand-held spreader. (Fig. 4).

e) Potential rehydration of the hydrogel if there is enough amount of moisture provided (Fig. 5).

The Na-Alg solution (1%) was slowly dispensed dropwise through a modified 8-inch shower head nozzles (1.6 mm diameter). The droplets were immediately collected in a plastic container with 0.5% $CaCl_2$ crosslinker solution. After 2 minutes, the resulting hydrogel beads were filtered out from the crosslinking solution and rinsed with clean water. The rinsed hydrogel beads were "conditioned" by submerging them in a liquid bait containing sucrose and boric acid overnight (24 h). Concentrations of the sucrose and boric acid in the final hydrogel bait were 25 and 1%, respectively. To improve stability of the final hydrogel bait, 0.25% sorbic acid potassium salt was incorporated in the final hydrogel bait. A pheromone adjuvant (microencapsulated (Z)-9-hexadecenal; 1 ml per liter of bait) was also mixed with the hydrogel bait immediately before application.

About 4-7 liter of hydrogel bait was used per house (approximately 40-70 g boric acid per house). The hydrogel bait was scattered on the ground using a manual or motorized spreader, mostly on active ant trails, soil, or vegetated surfaces within 5 m of the building (Fig. 6). As in the conventional protocols, the bait was not used on horizontal impervious surfaces (e.g., concrete).

Data collection and statistical analyses

For the initial treatment, the sites were monitored on day 1 pre-treatment, and weeks 1, 2, and 4 after the treatment. Follow-up maintenance treatment was made after the monitoring at week 4, and sites were further monitored at weeks 5, 6, and 8. For each treatment, the amount of spray and bait applied (in liter) and the time required to make the applications were recorded.

A Kruskal-Wallis test was used to compare three groups of houses in their pre-treatment ant activity levels. A Friedman test, a non-parametric alternative to a one-way repeated-measures ANOVA (Kim, 2014), was used to assess differences in ant visits between different monitoring time points within a treatment protocol. If the Friedman test indicated a significant difference among different monitoring

time points, Conover's all-pairwise comparisons test was used for multiple comparisons (Analytical Software, 2008).

RESULTS AND DISCUSSION

Control efficacy

Before the initial spray treatment, three groups of houses showed similar levels of Argentine ant foraging activity (Kruskal-Wallis test: $P = 0.8$). Pre-treatment ant visit numbers for conventional #1, conventional #2, and IPM houses were 21,283 ± 21,034, 19,863 ± 18,413, and 21,433 ± 10,268 per monitoring vial (mean ± SD), respectively.

Over the entire study period, the ant visit numbers in conventional #1 group showed some significant changes over time (Friedman test: $F = 3.07$, $P = 0.02$) (Fig. 7A). However, multiple comparisons test indicated that significant changes occurred between week 5 and 6 (reduction), and between week 6 and 8 (increase), during which no treatments were made. The numbers of ant visit in conventional #2 group showed no significant changes over time (Friedman test: $F = 0.36$, $P = 0.90$) (Fig. 7B). During the entire study period, the untreated control house did not show any consistent drop in ant activity level.

In contrast, ant visit numbers in the reduced-risk IPM group showed significant changes over time (Friedman test: $F = 6.00$, $P = 0.0006$). Multiple comparisons test indicated that both the initial perimeter spray treatment (between pre-treatment and week 1) and the follow-up treatment with biodegradable hydrogel bait (between week 4 and 5) provided significant reductions in the ant foraging activity level immediately after those treatments (Fig. 7C).

Pesticide use and treatment time

The pesticide use and treatment time data are shown in Table 2. The overall amount of spray used per house for the initial perimeter treatment was 0.9-1.2 liter (0.23-0.31 gallon), providing all three protocols had similar amount of fipronil applied per house. Time spent for the initial treatment was 5-8 minutes. For the follow-up treatment, the conventional protocol #1 had the smallest amount of material

applied (1 liter per house) compared to the other protocols (3.8 and 5.6 liter per house for conventional #2 and IPM, respectively). Relatively low application rate and targeted use of bifenthrin spray in the current study may be responsible for this difference. For example, only pervious (e.g, soil, lawn) areas around the structure were treated with a band application (0.6 m or 2 ft width). All horizontal impervious surfaces (e.g., concrete) and other adjacent vegetated areas were treated only with "spot" (0.19 m^2 or 2 ft^2 in size) or "pin stream" (up to 2.54 cm or 1 inch wide) applications. Interestingly, in spite of the largest amount of material being applied, the baiting in the IPM protocol had substantially shorter treatment time (about 7 minutes) than the other protocols (about 10 minutes), indicating the ease of application of the hydrogel baits with the hand-held spreaders. Since PMPs spend about 20 minutes treating a typical residential account for ants (Choe et al., 2019), the time component of tested protocols was considered reasonable.

CONCLUSIONS

Data from conventional protocols #1 and 2 indicated that the use of 0.03% fipronil alone for perimeter treatment failed to provide 4-weeks control of Argentine ants. Large amounts of variation in ant foraging activity levels across different houses might be responsible, at least in part, for the overall non-significant reduction of ant activity at week 1 post-treatment. For example, in both conventional protocols, two of five houses had increased ant activity levels at week 1 when compared to corresponding pre-treatment data. Additional applications of fipronil spray might be necessary to provide an acceptable level of control. The current label of Termidor SC allows up to 4 separate applications per calendar year in California.

In contrast, the addition of the pheromone adjuvant in the fipronil spray reduced this large variation among different houses. All five houses in the reduced-risk IPM protocol had substantial reductions in ant foraging activity level at week 1, showing a statically significant difference when compared to pre-treatment data (65% reduction). The level of ant activity decreased until week 2 (85% reduction). The current findings corroborate the utility of pheromone adjuvant in improving control efficacy of a non-repellent spray insecticide (Choe et al., 2014).

By week 4, all treatment protocols (including IPM protocol) experienced some levels of recovery in Argentine ant activity. Follow-up maintenance treatment with the bifenthrin spray alone did not provide any significant reduction in ant foraging activity (4 of 5 houses had increased ant activity). Even though 4 of 5 houses showed some reductions in ant activity levels after the botanical insecticide spray application when compared to week 4 data, our data indicated that the botanical insecticide sprays alone failed to provide any significant reduction in ant foraging activity.

In contrast, 1% boric acid bait in biodegradable hydrogels provided a consistent efficacy across all houses tested, keeping the ant activity levels low at week 5 (88% reduction). All five houses had reductions in ant foraging activity level immediately after the baiting (week 5), showing a statistically significant difference when compared to week 4 data. By week 8, the houses in the IPM protocol had an overall 80% reduction in ant activity level when compared to pre-treatment data.

The novel spray and bait protocol developed in the current study was effective in providing a season-long control for Argentine ants without repeated use of sprays. The pheromone adjuvant will maximize the efficacy of residual spray products. When used as a stand-alone method, the biodegradable hydrogel bait with boric acid takes a few weeks to achieve the acceptable levels of control (>80% reduction) for Argentine ants (D.-H. Choe, unpublished data). Thus, perimeter treatment with an effective spray material was useful in providing the initial quick control. With its relatively low toxicity profile on non-target organisms, boric acid baiting is an important tool for the follow-up maintenance services. Relatively high cost associated with material and labor has been a drawback for conventional baiting methods. The use of a biodegradable hydrogel matrix as a carrier of liquid bait is an important breakthrough in addressing this challenge.

ACKNOWLEDGMENTS

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Table 1. Treatment protocols used in the current study

Treatment protocol	Conventional #1	Conventional #2	Reduced-risk IPM
Initial perimeter treatment	0.03% fipronil Perimeter (15 cm up and 15 cm out) 1 L / linear 50 m (0.25 gal / 160 linear ft) of diluted spray		0.03% fipronil + pheromone adjuvant
Follow-up maintenance treatment	0.06% bifenthrin 4 L / 100 m^2 (1 gal / 1,000 ft^2) of diluted spray	118 ml (4 ounces) of Essentria IC3 per 3.8 L (1 gal) of water 8 L / 100 m^2 (2 gal / 1,000 ft^2) of diluted spray	Biodegradable hydrogel bait (1% boric acid) + pheromone adjuvant 4-8 L / 100 m^2 (1-2 gal / 1,000 ft^2)

Table 2. Pesticide use amount and the time required to treat each house (average value from five houses)

Treatment protocol	Conventional #1	Conventional #2	Reduced-risk IPM
Initial perimeter treatment	1.2 L (0.31 gal) 8 min	0.9 L (0.23 gal) 5 min	1.0 L (0.25 gal) 7 min
Follow-up maintenance treatment	1.0 L (0.26 gal) 10 min	3.8 L (1 gal) 10.8 min	5.6 L (1.48 gal) 7.4 min

Fig. 1. Treatment of a house with a perimeter spray (fipronil spray).

Fig. 2. Treatment of a house with a spot treatment (bifenthrin or botanical spray).

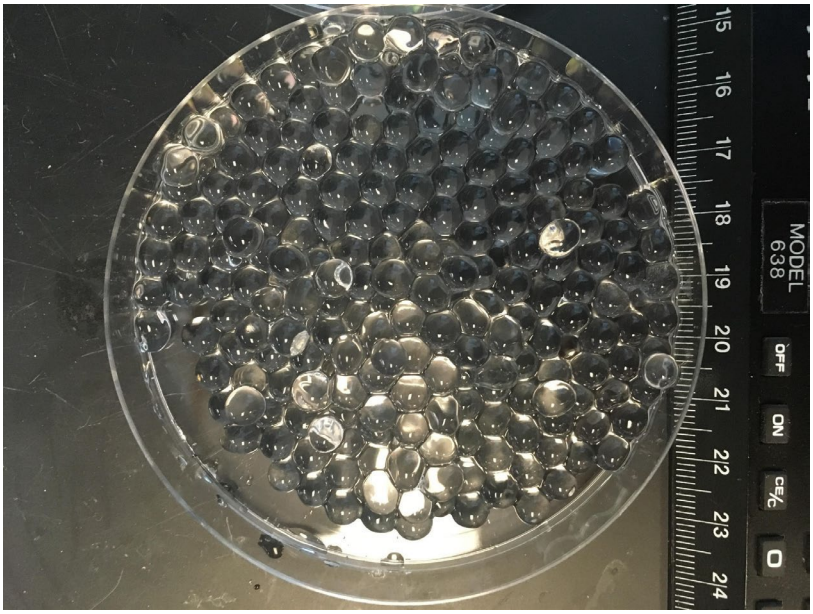


Fig. 3. Final hydrogel baits manufactured using the modified methods.

Fig. 4. Testing with the hand-held spreader.

Fig. 5. Rehydration test with the final hydrogel bait. The hydrogel bait beads on the left are completely dried. When enough amount of water is provided, these dry hydrogel beads can be rehydrated (right), becoming palatable to forging ants once again.

Fig. 6. Treatment of a house with biodegradable hydrogel beads containing 25% sucrose and 1% boric acid.

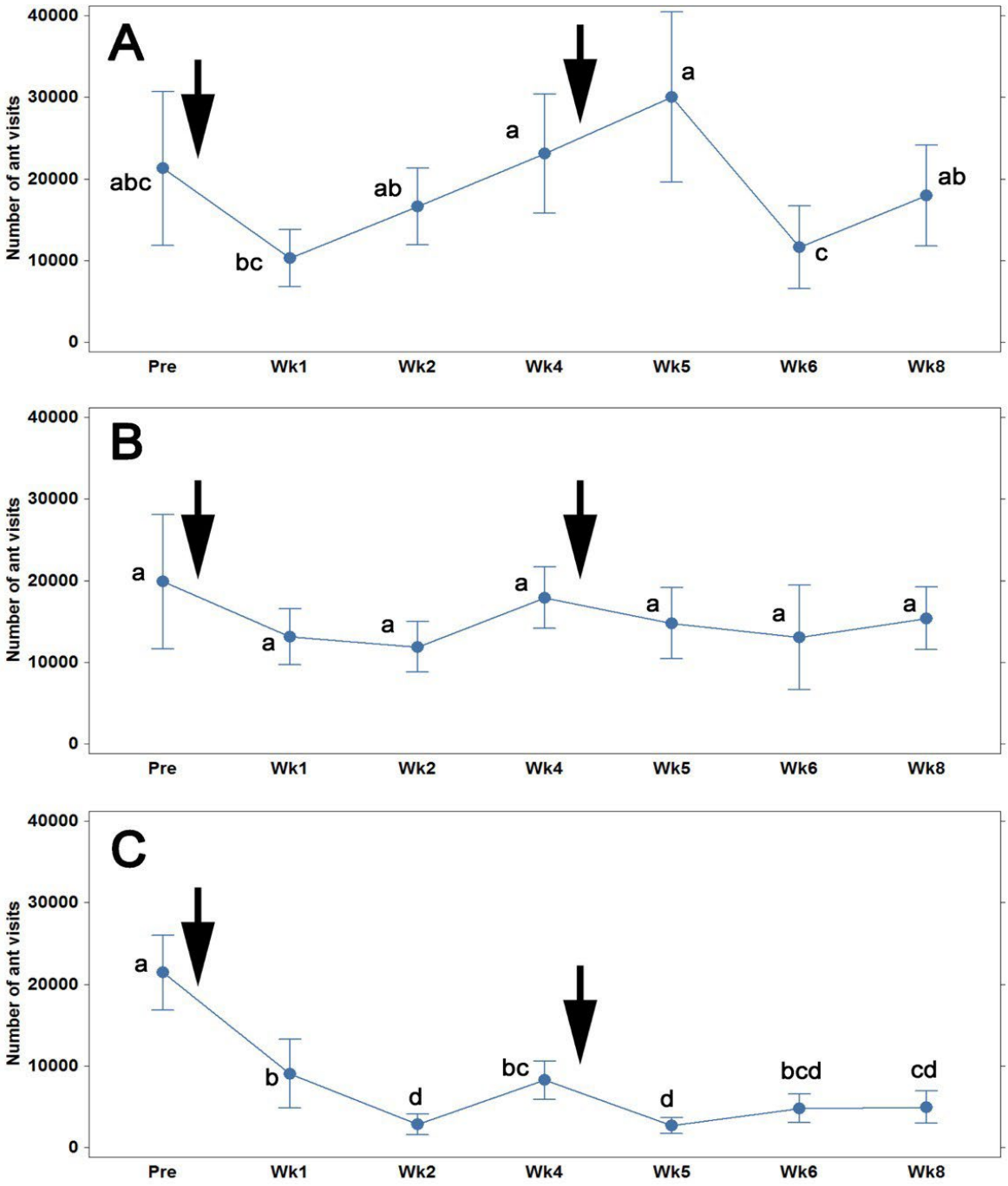


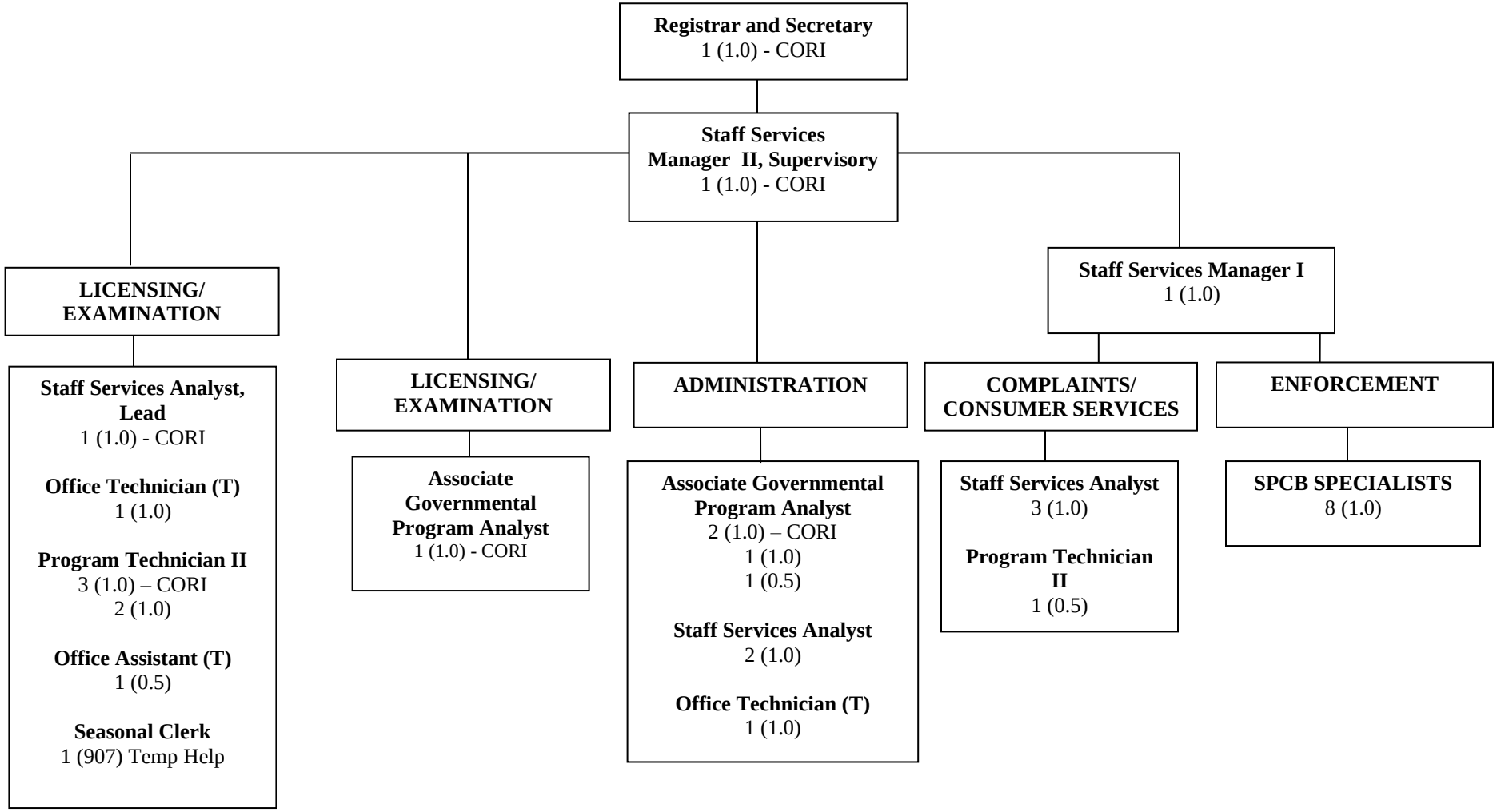
Fig. 7. Level of Argentine ant foraging activity (number of ant visits at the monitoring tubes; mean ± SEM, n = 5 for each treatment protocol) for (A) conventional protocol #1, (B) conventional protocol #2, and (C) low-risk IPM protocol. Arrows indicate the timing of initial perimeter spray treatment (left) and follow-up maintenance treatment (right). Data with different letters within a treatment are significantly different (Conover's all pairwise comparison test followed by Friedman's test: $\alpha = 0.05$). Pre: pre-treatment; Wk: week post-treatment.

Attachment D

Year-end Organization Charts

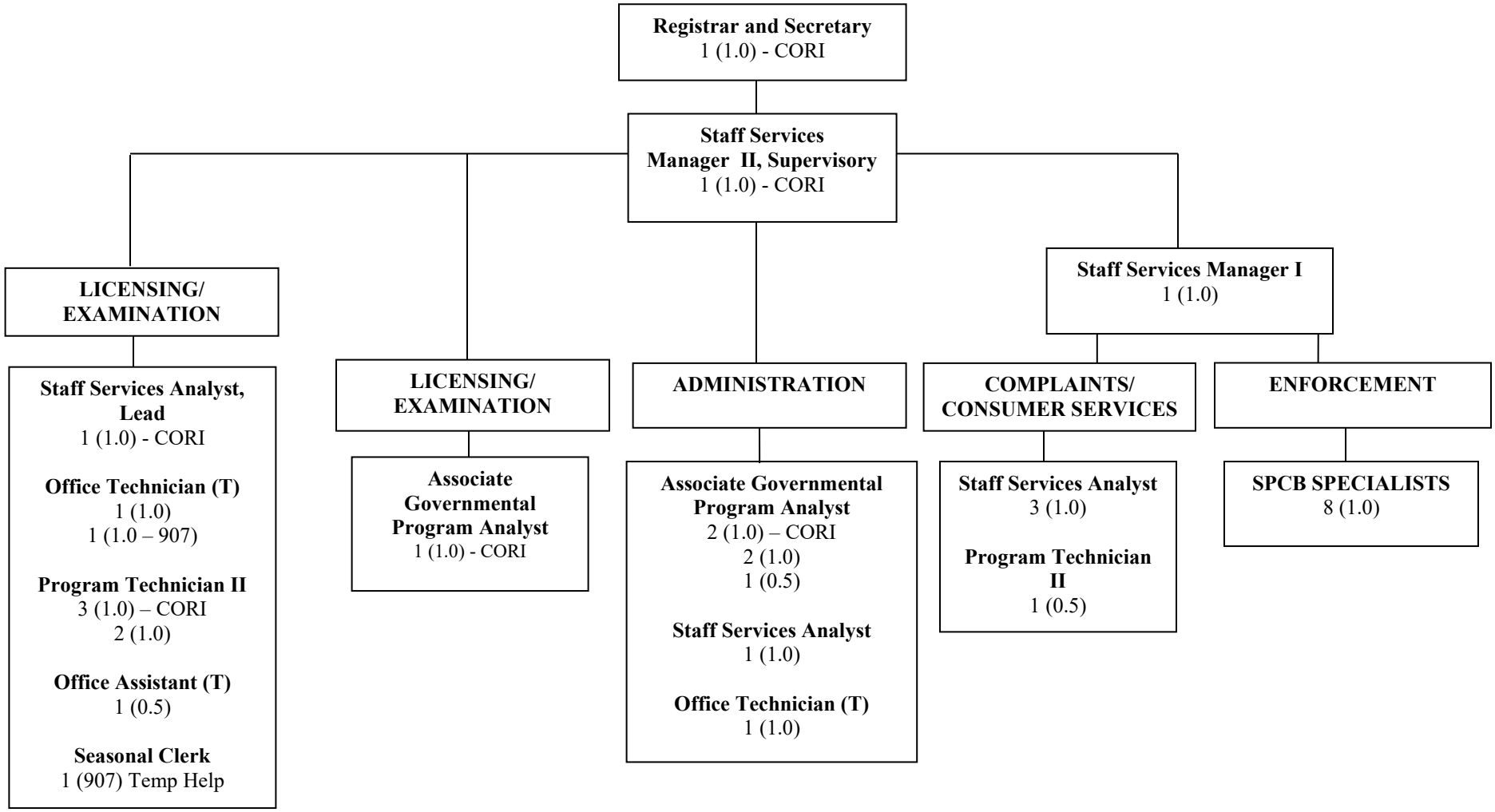
Department of Consumer Affairs
Structural Pest Control Board
July 1, 2018

CURRENT
FY 2018-19
Blanket Positions: 1.0
Authorized Positions: 29.5



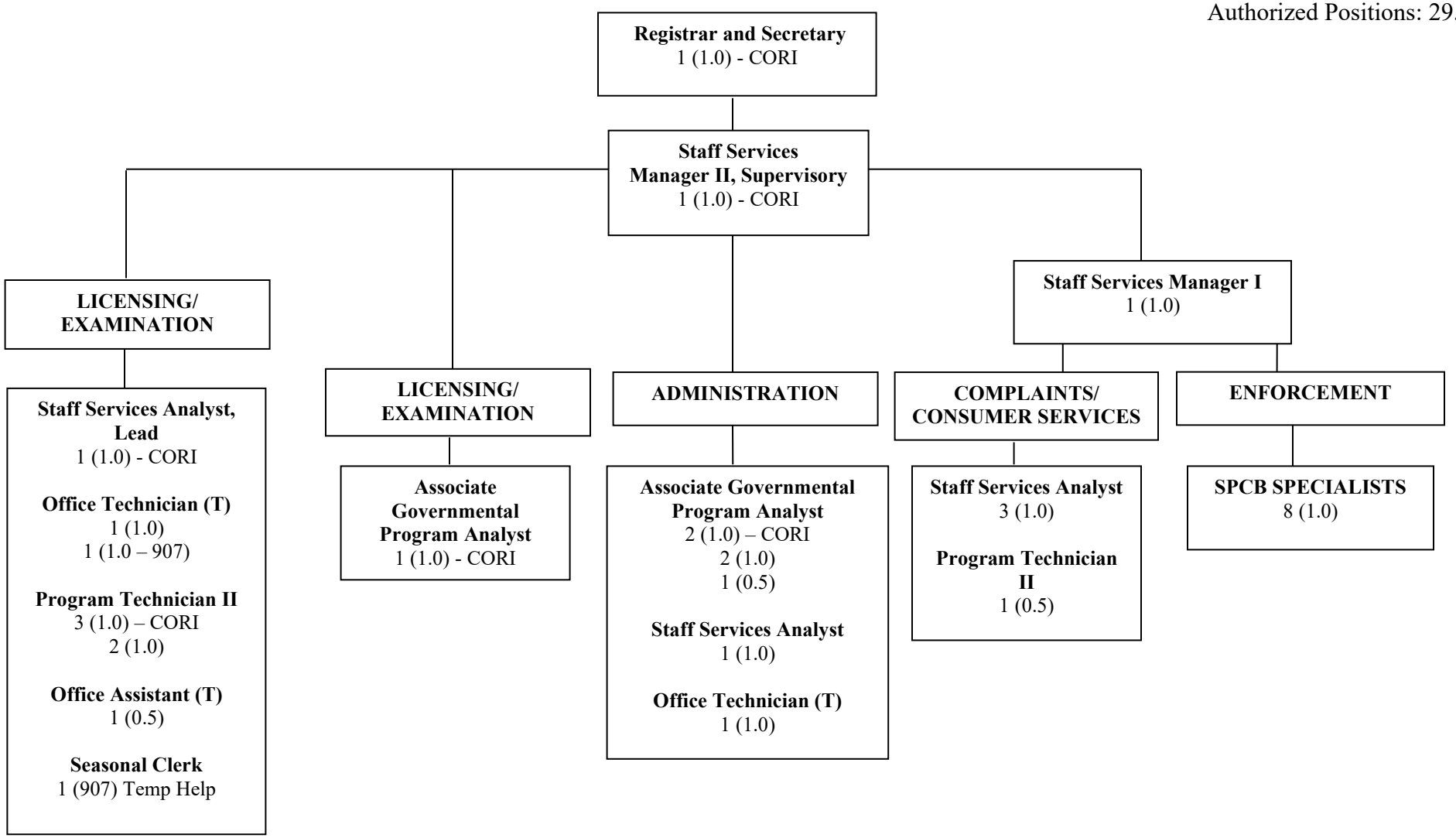
Department of Consumer Affairs
Structural Pest Control Board
July 1, 2019

CURRENT
FY 2019-20
Blanket Positions: 2.0
Authorized Positions: 29.5



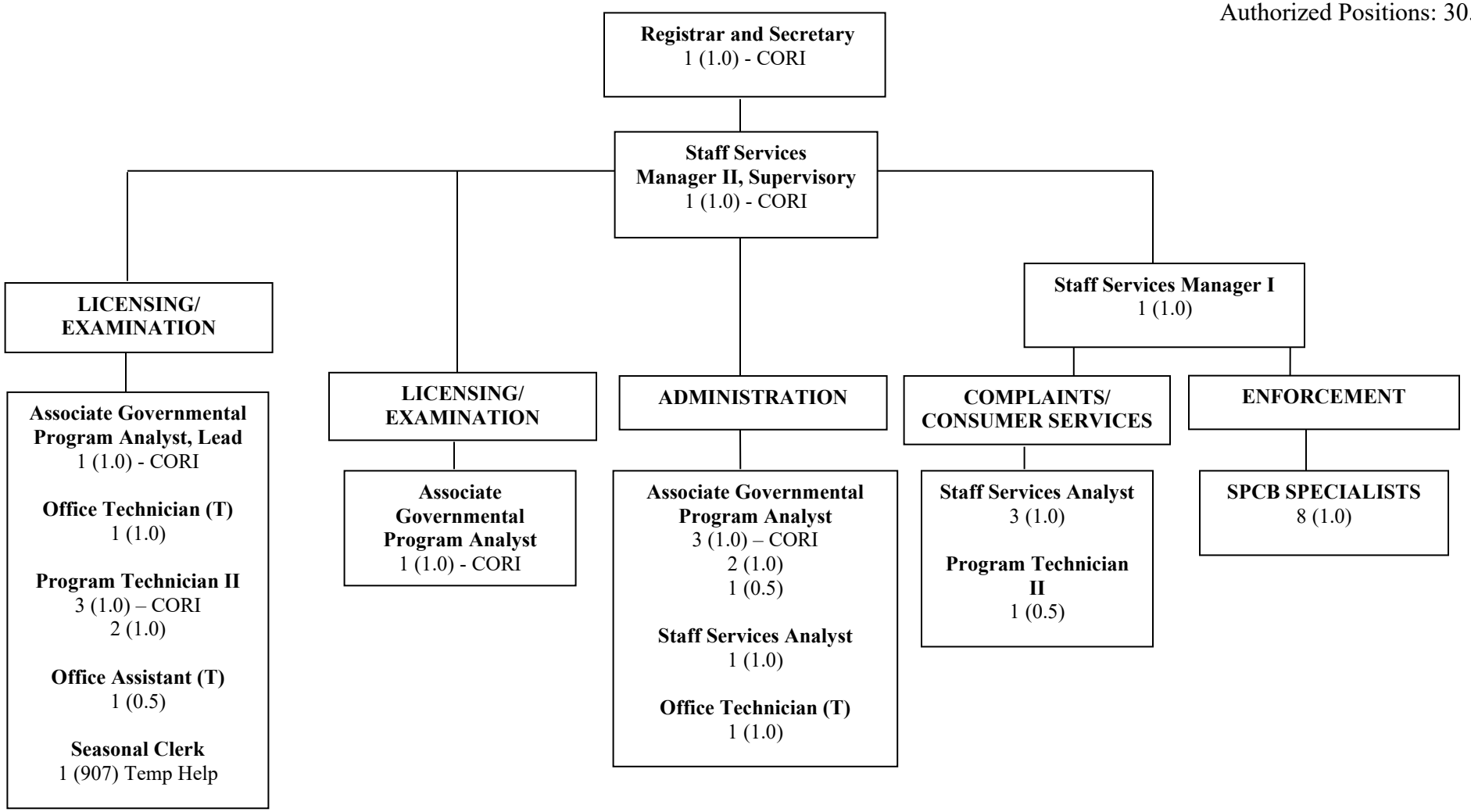
Department of Consumer Affairs
Structural Pest Control Board
July 1, 2020

CURRENT
FY 2020-21
Blanket Positions: 2.0
Authorized Positions: 29.5



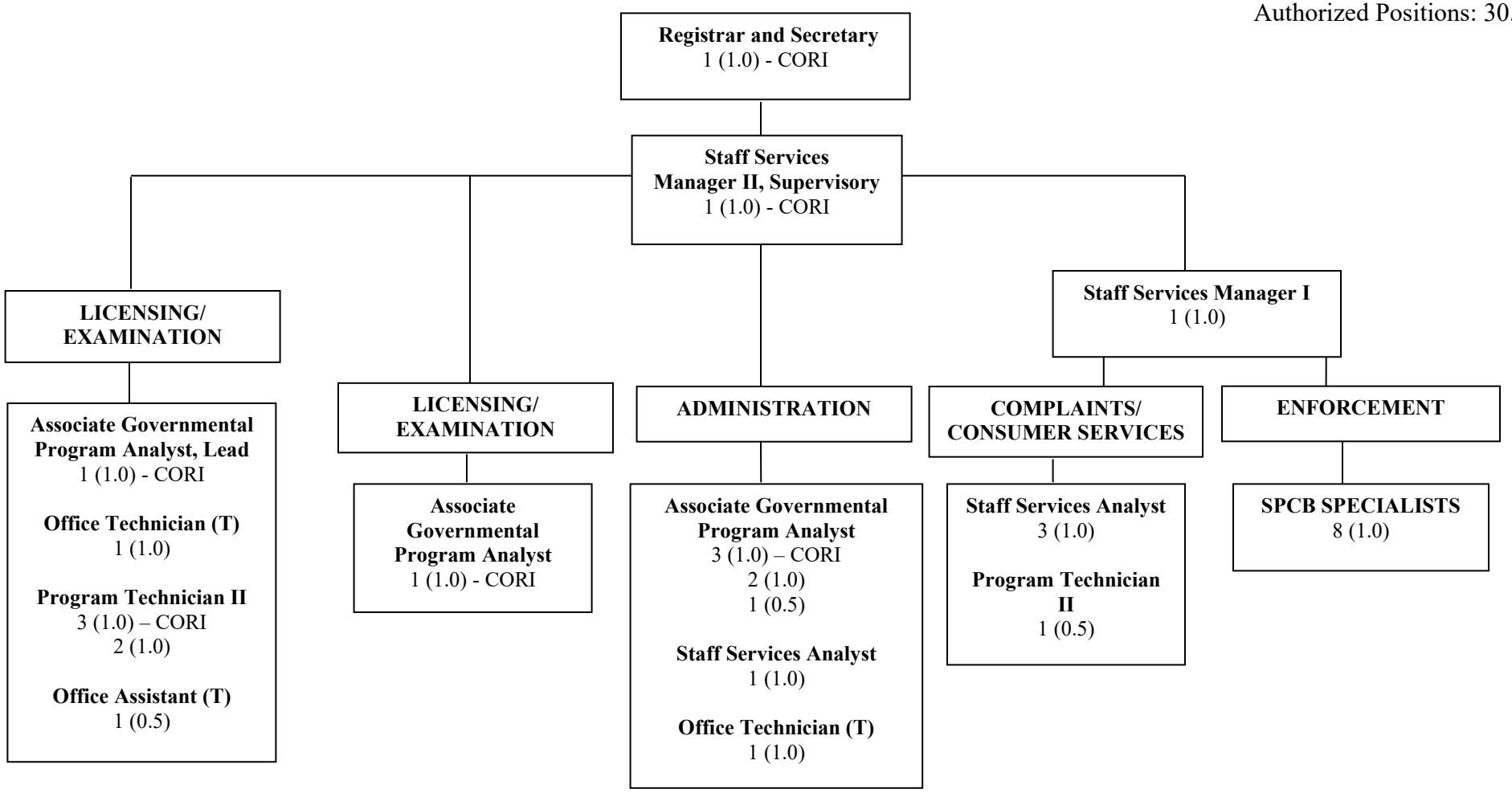
Department of Consumer Affairs
Structural Pest Control Board
July 1, 2021

CURRENT
FY 2021-22
Blanket Positions: 1.0
Authorized Positions: 30.5



Department of Consumer Affairs
Structural Pest Control Board
July 1, 2022

CURRENT
FY 2022-23
Blanket Positions: 0
Authorized Positions: 30.5



Attachment E

Licensing Performance Measures

Licensing Performance Measures

FY 2018/19						
Application Type	**Volume Complete Applications**	**Target Processing Time Complete Applications**	**Actual Processing Time Complete Applications**	**Variance from Target**	**Volume Incomplete Applications**	**Cycle Time Incomplete Applications**
Applicator - Examination	1981	14	2	12	240	24
Field Representative - Examination	2758	14	5	9	171	200
Operator - Examination	147	14	5	9	51	60
Applicator - License	776	14	4	10	541	31
Field Representative - License	1207	21	13	8	558	40
Operator - License	118	45	37	8	60	107
Principle Registration - License	148	45	37	8	123	109
Branch Office Registration - License	42	45	40	5	7	109

FY 2019/2020						
Application Type	**Volume Complete Applications**	**Target Cycle Time Complete Applications**	**Cycle Time Complete Applications**	**Variance from Target**	**Volume Incomplete Applications**	**Cycle Time Incomplete Applications**
Applicator - Examination	1898	14	2	12	128	27
Field Representative Examination	2678	14	14	0	126	65
Operator - Examination	173	14	9	5	57	109
Applicator License	488	14	4	10	276	47
Field Representative - License	906	21	13	8	508	51
Operator - License	103	45	20	25	31	84
Principal Registration - License	140	45	23	22	75	65
Branch Office Registration - License	41	45	24	21	6	140

Licensing Performance Measures

FY 2020/2021						
Application Type	**Volume Complete Applications**	**Target Cycle Time Complete Applications**	**Cycle Time Complete Applications**	**Variance from Target**	**Volume Incomplete Applications**	**Cycle Time Incomplete Applications**
Applicator - Examination	2073	14	7	7	115	28
Field Representative - Examination	2717	14	12	2	160	86
Operator - Examination	166	14	13	1	78	95
Applicator - License	917	14	7	7	379	29
Field Representative - License	1102	21	13	8	570	44
Operator - License	163	45	19	26	76	50
Principal Registration - License	200	45	18	27	17	43
Branch Office Registration - License	35	45	24	21	1	36
FY 2021/2022						
Application Type	**Volume Complete Applications**	**Target Cycle Time Complete Applications**	**Cycle Time Complete Applications**	**Variance from Target**	**Volume Incomplete Applications**	**Cycle Time Incomplete Applications**
Applicator - Examination	2451	14	5	9	209	28
Field Representative - Examination	2812	14	5	9	267	86
Operator - Examination	195	14	5	9	82	95
Applicator - License	1115	14	5	9	536	29
Field Representative - License	1126	21	5	16	643	44
Operator - License	145	45	12	33	31	50
Principal Registration - License	256	45	12	33	13	43
Branch Office Registration - License	35	45	13	32	1	36

Attachment F

Enforcement Performance Measures

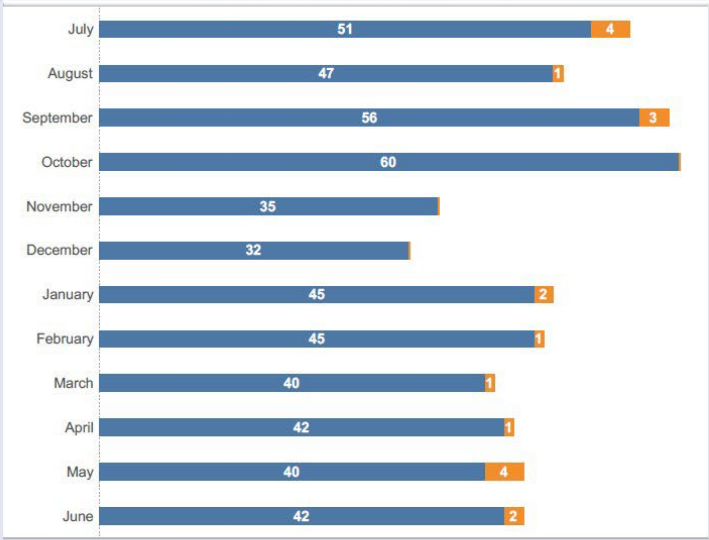
FY 2018/19 PERFORMANCE MEASURE 1: INTAKE VOLUME

Board Name
Structural Pest Control Board

State Fiscal Year
SFY 2018

Enforcement Case Type
Complaints | Conviction/Arrest

Structural Pest Control Board
SFY 2018: 12-Month | **PM1:** Case Volume by Type



Structural Pest Control Board
SFY 2018: 12-Month | **PM1:** Summary

	Complaints	Conviction/Arrest	Total Volume
Grand Total	**535**	**19**	**554**
July	51	4	55
August	47	1	48
September	56	3	59
October	60	0	60
November	35	0	35
December	32	0	32
January	45	2	47
February	45	1	46
March	40	1	41
April	42	1	43
May	40	4	44
June	42	2	44

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

FY 2018/19 PERFORMANCE MEASURE 2: INTAKE CYCLE TIME

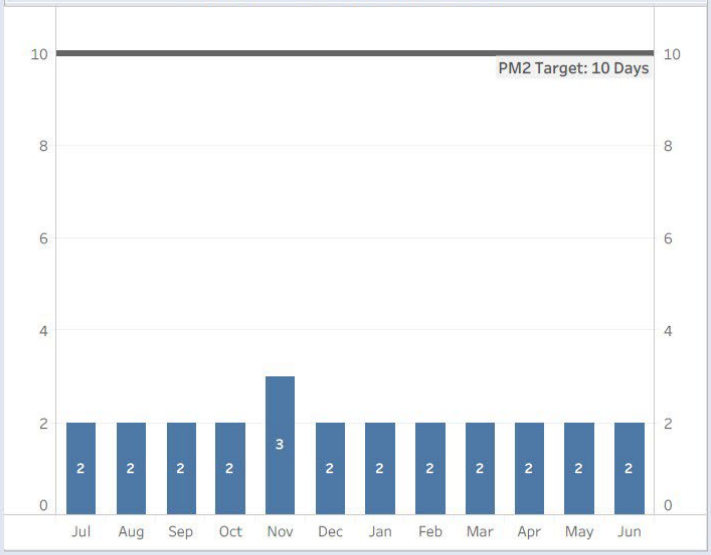
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2018

Cycle Time
Actual | Target

Performance v Target
Below Target

Structural Pest Control Board
SFY 2018: 12-Month | **PM2** - Intake Cycle Time



Structural Pest Control Board
SFY 2018: 12-Month | **PM2** - Summary

	Case Volume	Avg. Target	Actual	Variance
Grand Total	551	10 Days	2 Day(s)	▼ -8 Day(s)
July	53	10 Days	2 Day(s)	▼ -8 Day(s)
August	52	10 Days	2 Day(s)	▼ -8 Day(s)
September	57	10 Days	2 Day(s)	▼ -8 Day(s)
October	61	10 Days	2 Day(s)	▼ -8 Day(s)
November	35	10 Days	3 Day(s)	▼ -7 Day(s)
December	32	10 Days	2 Day(s)	▼ -8 Day(s)
January	47	10 Days	2 Day(s)	▼ -8 Day(s)
February	46	10 Days	2 Day(s)	▼ -8 Day(s)
March	40	10 Days	2 Day(s)	▼ -8 Day(s)
April	42	10 Days	2 Day(s)	▼ -8 Day(s)
May	46	10 Days	2 Day(s)	▼ -8 Day(s)
June	40	10 Days	2 Day(s)	▼ -8 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

FY 2018/19 PERFORMANCE MEASURE 3: INVESTIGATIONS CYCLE TIME

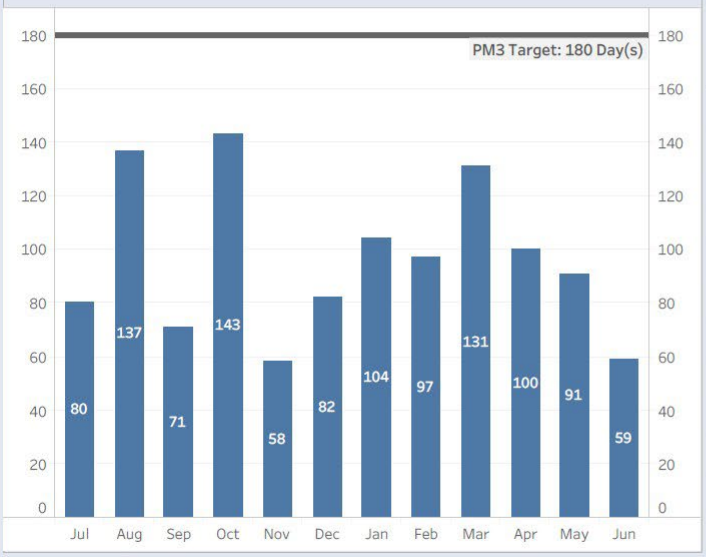
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2018

Cycle Time
Actual | Target

Performance versus Target
Below Target

Structural Pest Control Board
SFY 2018: 12-Month | **PM3** - Investigations Cycle Time



Structural Pest Control Board
SFY 2018: 12-Month | **PM3** - Summary

	Case Volume	Avg. Target	Actual	Variance
Grand Total	464	180 Days	100 Day(s)	▼-80 Day(s)
July	40	180 Days	80 Day(s)	▼-100 Day(s)
August	70	180 Days	137 Day(s)	▼-43 Day(s)
September	27	180 Days	71 Day(s)	▼-109 Day(s)
October	30	180 Days	143 Day(s)	▼-37 Day(s)
November	28	180 Days	58 Day(s)	▼-122 Day(s)
December	40	180 Days	82 Day(s)	▼-98 Day(s)
January	36	180 Days	104 Day(s)	▼-76 Day(s)
February	44	180 Days	97 Day(s)	▼-83 Day(s)
March	39	180 Days	131 Day(s)	▼-49 Day(s)
April	38	180 Days	100 Day(s)	▼-80 Day(s)
May	41	180 Days	91 Day(s)	▼-89 Day(s)
June	31	180 Days	59 Day(s)	▼-121 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

FY 2018/19 PERFORMANCE MEASURE 4: FORMAL DISCIPLINE CYCLE TIME

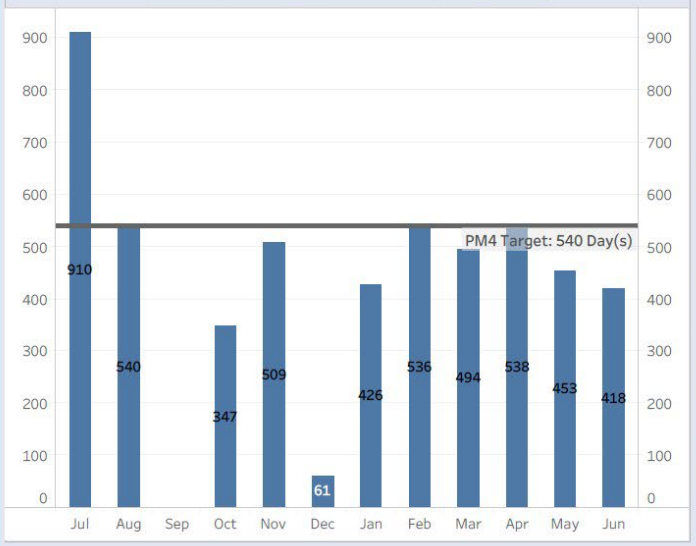
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2018

Cycle Time
Actual | Target

Performance versus Target
Above Target | At Target | Below Target

Structural Pest Control Board
SFY 2018: 12-Month | **PM4** - Formal Discipline Cycle Time



Structural Pest Control Board
SFY 2018: 12-Month | **PM4** - Summary

	Case Volume	Target	Actual	Variance
Grand Total	67	540 Days	493 Day(s)	▼-47 Day(s)
July	3	540 Days	910 Day(s)	▲370 Day(s)
August	11	540 Days	540 Day(s)	0 Day(s)
October	4	540 Days	347 Day(s)	▼-193 Day(s)
November	15	540 Days	509 Day(s)	▼-31 Day(s)
December	2	540 Days	61 Day(s)	▼-479 Day(s)
January	4	540 Days	426 Day(s)	▼-114 Day(s)
February	5	540 Days	536 Day(s)	▼-4 Day(s)
March	3	540 Days	494 Day(s)	▼-46 Day(s)
April	6	540 Days	538 Day(s)	▼-2 Day(s)
May	7	540 Days	453 Day(s)	▼-87 Day(s)
June	7	540 Days	418 Day(s)	▼-122 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

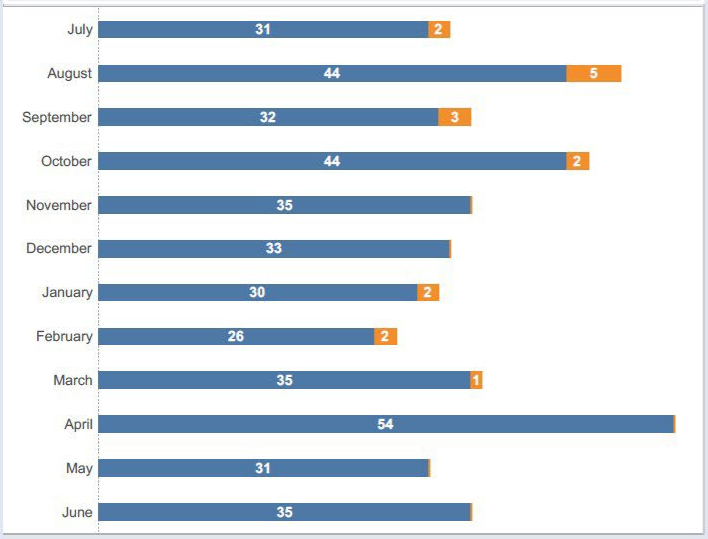
FY 2019/20 PERFORMANCE MEASURE 1: INTAKE VOLUME

Board Name
Structural Pest Control Board

State Fiscal Year
SFY 2019

Enforcement Case Type
Complaints | Conviction/Arrest

Structural Pest Control Board
SFY 2019: 12-Month | **PM1:** Case Volume by Type



Structural Pest Control Board
SFY 2019: 12-Month | **PM1:** Summary

	Complaints	Conviction/Arrest	Total Volume
Grand Total	430	17	447
July	31	2	33
August	44	5	49
September	32	3	35
October	44	2	46
November	35	0	35
December	33	0	33
January	30	2	32
February	26	2	28
March	35	1	36
April	54	0	54
May	31	0	31
June	35	0	35

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

FY 2019/20 PERFORMANCE MEASURE 2: INTAKE CYCLE TIME

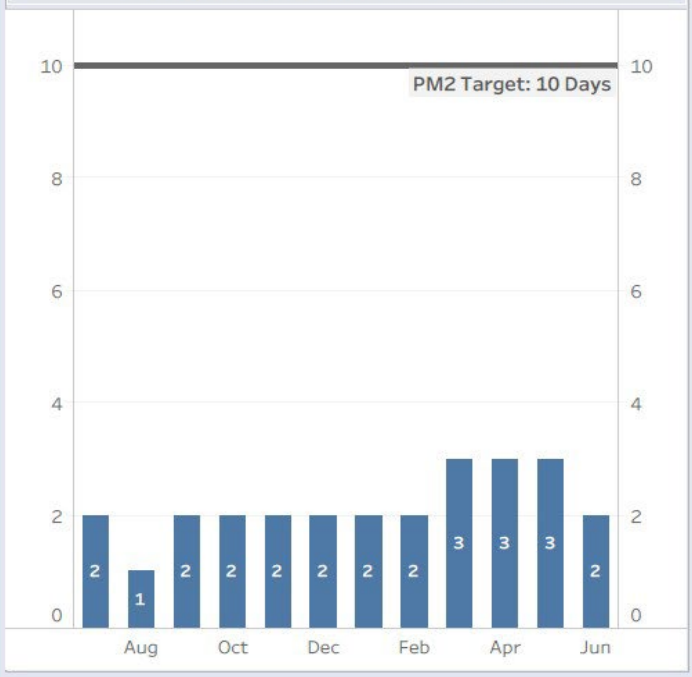
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2019

Cycle Time
Actual | Target

Performance v Target
Below Target

Structural Pest Control Board
SFY 2019: 12-Month | **PM2** - Intake Cycle Time



Structural Pest Control Board
SFY 2019: 12-Month | **PM2** - Summary

	Case Volume	Avg. Target	Actual	Variance
Grand Total	451	10 Days	2 Day(s)	▼ -8 Day(s)
July	37	10 Days	2 Day(s)	▼ -8 Day(s)
August	48	10 Days	1 Day(s)	▼ -9 Day(s)
September	34	10 Days	2 Day(s)	▼ -8 Day(s)
October	47	10 Days	2 Day(s)	▼ -8 Day(s)
November	35	10 Days	2 Day(s)	▼ -8 Day(s)
December	31	10 Days	2 Day(s)	▼ -8 Day(s)
January	35	10 Days	2 Day(s)	▼ -8 Day(s)
February	27	10 Days	2 Day(s)	▼ -8 Day(s)
March	35	10 Days	3 Day(s)	▼ -7 Day(s)
April	54	10 Days	3 Day(s)	▼ -7 Day(s)
May	31	10 Days	3 Day(s)	▼ -7 Day(s)
June	37	10 Days	2 Day(s)	▼ -8 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool d..

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FY 2019/20 PERFORMANCE MEASURE 3: INVESTIGATIONS CYCLE TIME

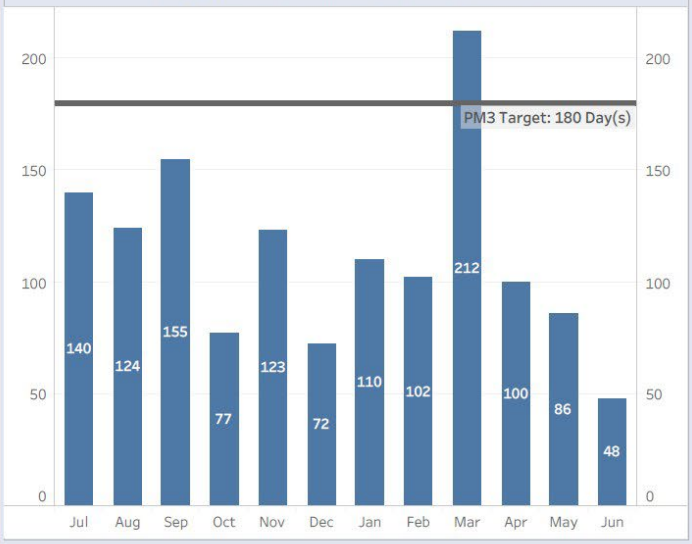
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2019

Cycle Time
Actual Target

Performance versus Target
Above Target Below Target

Structural Pest Control Board
SFY 2019: 12-Month | **PM3** - Investigations Cycle Time



Structural Pest Control Board
SFY 2019: 12-Month | **PM3** - Summary

	Case Volume	Avg. Target	Actual	Variance
Grand Total	481	180 Days	120 Day(s)	▼ -60 Day(s)
July	47	180 Days	140 Day(s)	▼ -40 Day(s)
August	41	180 Days	124 Day(s)	▼ -56 Day(s)
September	41	180 Days	155 Day(s)	▼ -25 Day(s)
October	36	180 Days	77 Day(s)	▼ -103 Day(s)
November	37	180 Days	123 Day(s)	▼ -57 Day(s)
December	33	180 Days	72 Day(s)	▼ -108 Day(s)
January	44	180 Days	110 Day(s)	▼ -70 Day(s)
February	39	180 Days	102 Day(s)	▼ -78 Day(s)
March	59	180 Days	212 Day(s)	▲ 32 Day(s)
April	36	180 Days	100 Day(s)	▼ -80 Day(s)
May	44	180 Days	86 Day(s)	▼ -94 Day(s)
June	24	180 Days	48 Day(s)	▼ -132 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

FY 2019/20 PERFORMANCE MEASURE 4: FORMAL DISCIPLINE CYCLE TIME

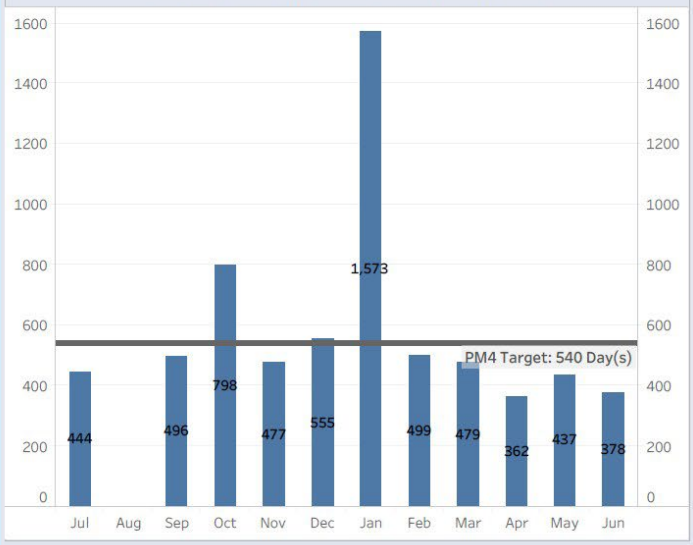
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2019

Cycle Time
Actual Target

Performance versus Target
Above Target Below Target

Structural Pest Control Board
SFY 2019: 12-Month | **PM4** - Formal Discipline Cycle Time



Structural Pest Control Board
SFY 2019: 12-Month | **PM4** - Summary

	Case Volume	Target	Actual	Variance
Grand Total	80	540 Days	513 Day(s)	▼ -27 Day(s)
July	4	540 Days	444 Day(s)	▼ -96 Day(s)
September	13	540 Days	496 Day(s)	▼ -44 Day(s)
October	7	540 Days	798 Day(s)	▲ 258 Day(s)
November	8	540 Days	477 Day(s)	▼ -63 Day(s)
December	8	540 Days	555 Day(s)	▲ 15 Day(s)
January	1	540 Days	1,573 Day(s)	▲ 1,033 Day(s)
February	12	540 Days	499 Day(s)	▼ -41 Day(s)
March	4	540 Days	479 Day(s)	▼ -61 Day(s)
April	6	540 Days	362 Day(s)	▼ -178 Day(s)
May	15	540 Days	437 Day(s)	▼ -103 Day(s)
June	2	540 Days	378 Day(s)	▼ -162 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

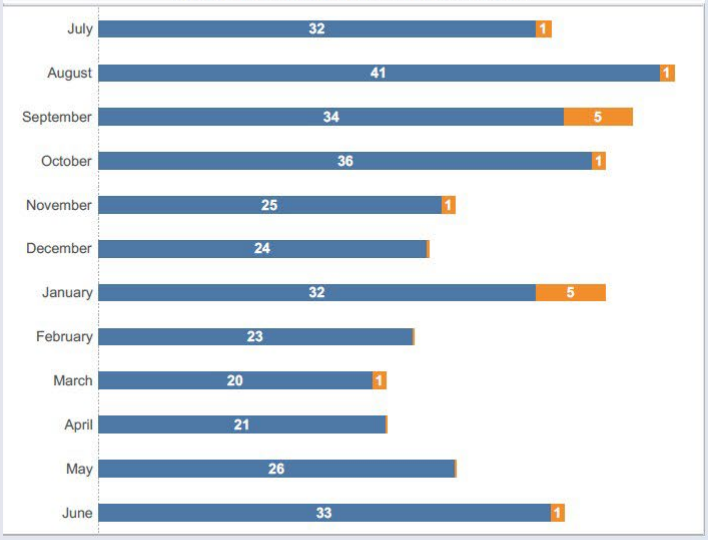
FY 2020/21 PERFORMANCE MEASURE 1: INTAKE VOLUME

Board Name
Structural Pest Control Board

State Fiscal Year
SFY 2020

Enforcement Case Type
Complaints | Conviction/Arrest

Structural Pest Control Board
SFY 2020: 12-Month | **PM1:** Case Volume by Type



Structural Pest Control Board
SFY 2020: 12-Month | **PM1:** Summary

	Complaints	Conviction/Arrest	Total Volume
Grand Total	**347**	**16**	**363**
July	32	1	33
August	41	1	42
September	34	5	39
October	36	1	37
November	25	1	26
December	24	0	24
January	32	5	37
February	23	0	23
March	20	1	21
April	21	0	21
May	26	0	26
June	33	1	34

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

FY 2020/21 PERFORMANCE MEASURE 2: INTAKE CYCLE TIME

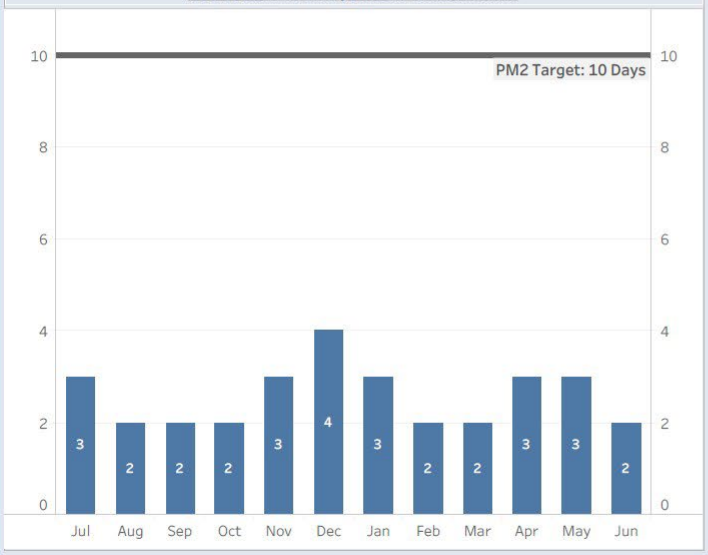
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2020

Cycle Time
Actual | Target

Performance v Target
Below Target

Structural Pest Control Board
SFY 2020: 12-Month | **PM2** - Intake Cycle Time



Structural Pest Control Board
SFY 2020: 12-Month | **PM2** - Summary

	Case Volume	Avg. Target	Actual	Variance
Grand Total	363	10 Days	3 Day(s)	▼ -7 Day(s)
July	32	10 Days	3 Day(s)	▼ -7 Day(s)
August	41	10 Days	2 Day(s)	▼ -8 Day(s)
September	37	10 Days	2 Day(s)	▼ -8 Day(s)
October	40	10 Days	2 Day(s)	▼ -8 Day(s)
November	23	10 Days	3 Day(s)	▼ -7 Day(s)
December	25	10 Days	4 Day(s)	▼ -6 Day(s)
January	40	10 Days	3 Day(s)	▼ -7 Day(s)
February	21	10 Days	2 Day(s)	▼ -8 Day(s)
March	21	10 Days	2 Day(s)	▼ -8 Day(s)
April	20	10 Days	3 Day(s)	▼ -7 Day(s)
May	28	10 Days	3 Day(s)	▼ -7 Day(s)
June	35	10 Days	2 Day(s)	▼ -8 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

FY 2020/21 PERFORMANCE MEASURE 3: INVESTIGATIONS CYCLE TIME

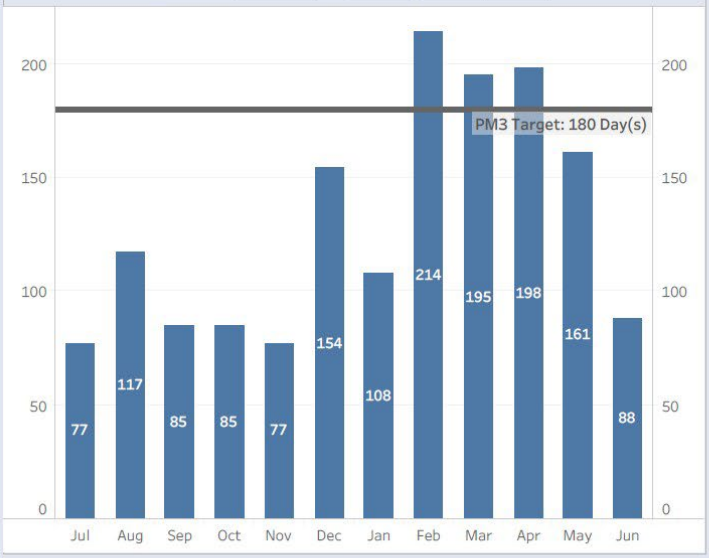
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2020

Cycle Time
Actual | Target

Performance versus Target
Above Target | Below Target

Structural Pest Control Board
SFY 2020: 12-Month | **PM3** - Investigations Cycle Time



Structural Pest Control Board
SFY 2020: 12-Month | **PM3** - Summary

	Case Volume	Avg. Target	Actual	Variance
Grand Total	403	180 Days	129 Day(s)	▼ -51 Day(s)
July	33	180 Days	77 Day(s)	▼ -103 Day(s)
August	48	180 Days	117 Day(s)	▼ -63 Day(s)
September	36	180 Days	85 Day(s)	▼ -95 Day(s)
October	37	180 Days	85 Day(s)	▼ -95 Day(s)
November	29	180 Days	77 Day(s)	▼ -103 Day(s)
December	30	180 Days	154 Day(s)	▼ -26 Day(s)
January	24	180 Days	108 Day(s)	▼ -72 Day(s)
February	40	180 Days	214 Day(s)	▲ 34 Day(s)
March	34	180 Days	195 Day(s)	▲ 15 Day(s)
April	27	180 Days	198 Day(s)	▲ 18 Day(s)
May	26	180 Days	161 Day(s)	▼ -19 Day(s)
June	39	180 Days	88 Day(s)	▼ -92 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

FY 2020/21 PERFORMANCE MEASURE 4: FORMAL DISCIPLINE CYCLE TIME

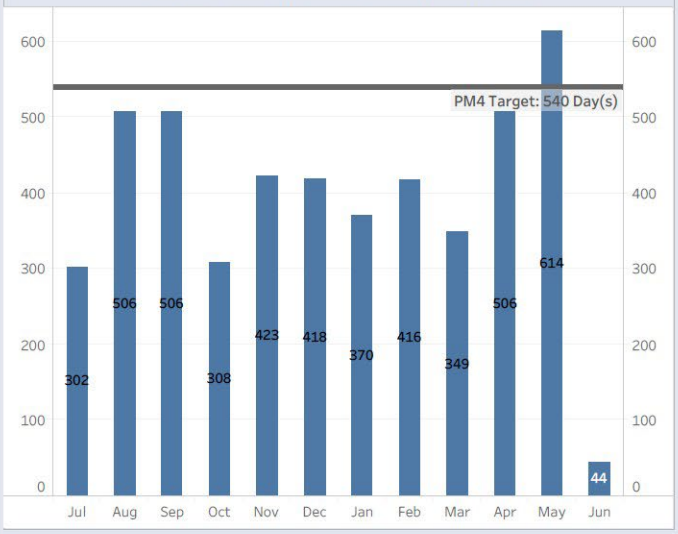
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2020

Cycle Time
Actual | Target

Performance versus Target
Above Target | Below Target

Structural Pest Control Board
SFY 2020: 12-Month | **PM4** - Formal Discipline Cycle Time



Structural Pest Control Board
SFY 2020: 12-Month | **PM4** - Summary

	Case Volume	Target	Actual	Variance
Grand Total	91	540 Days	402 Day(s)	▼ -138 Day(s)
July	10	540 Days	302 Day(s)	▼ -238 Day(s)
August	9	540 Days	506 Day(s)	▼ -34 Day(s)
September	4	540 Days	506 Day(s)	▼ -34 Day(s)
October	10	540 Days	308 Day(s)	▼ -232 Day(s)
November	5	540 Days	423 Day(s)	▼ -117 Day(s)
December	11	540 Days	418 Day(s)	▼ -122 Day(s)
January	5	540 Days	370 Day(s)	▼ -170 Day(s)
February	8	540 Days	416 Day(s)	▼ -124 Day(s)
March	7	540 Days	349 Day(s)	▼ -191 Day(s)
April	10	540 Days	506 Day(s)	▼ -34 Day(s)
May	7	540 Days	614 Day(s)	▲ 74 Day(s)
June	5	540 Days	44 Day(s)	▼ -496 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

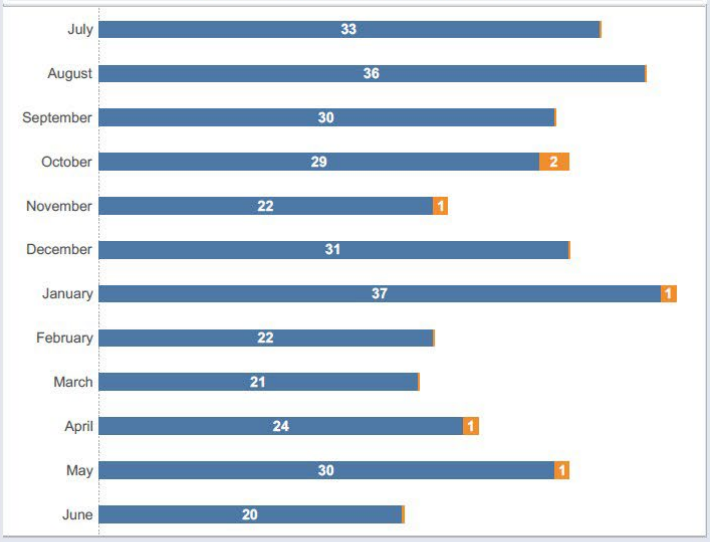
FY 2021/22 PERFORMANCE MEASURE 1: INTAKE VOLUME

Board Name
Structural Pest Control Board

State Fiscal Year
SFY 2021

Enforcement Case Type
Complaints | Conviction/Arrest

Structural Pest Control Board
SFY 2021: 12-Month | **PM1:** Case Volume by Type



Structural Pest Control Board
SFY 2021: 12-Month | **PM1:** Summary

	Complaints	Conviction/Arrest	Total Volume
Grand Total	**335**	**6**	**341**
July	33	0	33
August	36	0	36
September	30	0	30
October	29	2	31
November	22	1	23
December	31	0	31
January	37	1	38
February	22	0	22
March	21	0	21
April	24	1	25
May	30	1	31
June	20	0	20

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

FY 2021/22 PERFORMANCE MEASURE 2: INTAKE CYCLE TIME

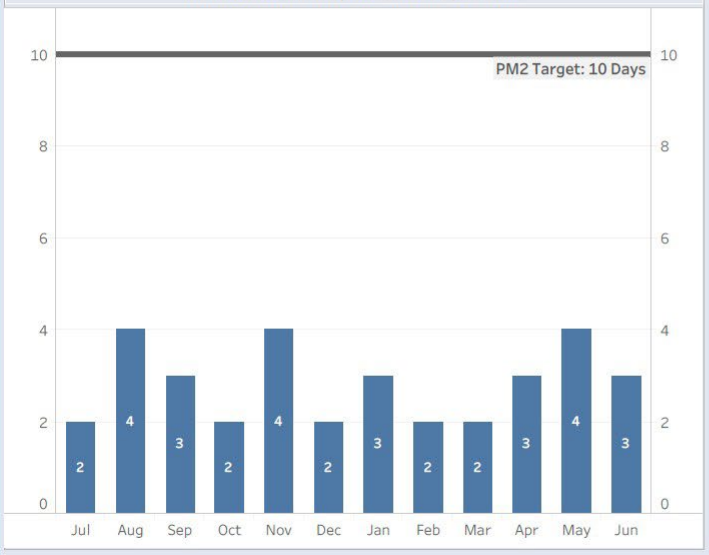
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2021

Cycle Time
Actual | Target

Performance v Target
Below Target

Structural Pest Control Board
SFY 2021: 12-Month | **PM2** - Intake Cycle Time



Structural Pest Control Board
SFY 2021: 12-Month | **PM2** - Summary

	Case Volume	Avg. Target	Actual	Variance
Grand Total	336	10 Days	3 Day(s)	▼ -7 Day(s)
July	33	10 Days	2 Day(s)	▼ -8 Day(s)
August	35	10 Days	4 Day(s)	▼ -6 Day(s)
September	29	10 Days	3 Day(s)	▼ -7 Day(s)
October	31	10 Days	2 Day(s)	▼ -8 Day(s)
November	22	10 Days	4 Day(s)	▼ -6 Day(s)
December	31	10 Days	2 Day(s)	▼ -8 Day(s)
January	37	10 Days	3 Day(s)	▼ -7 Day(s)
February	23	10 Days	2 Day(s)	▼ -8 Day(s)
March	16	10 Days	2 Day(s)	▼ -8 Day(s)
April	29	10 Days	3 Day(s)	▼ -7 Day(s)
May	26	10 Days	4 Day(s)	▼ -6 Day(s)
June	24	10 Days	3 Day(s)	▼ -7 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

FY 2021/22 PERFORMANCE MEASURE 3: INVESTIGATIONS CYCLE TIME

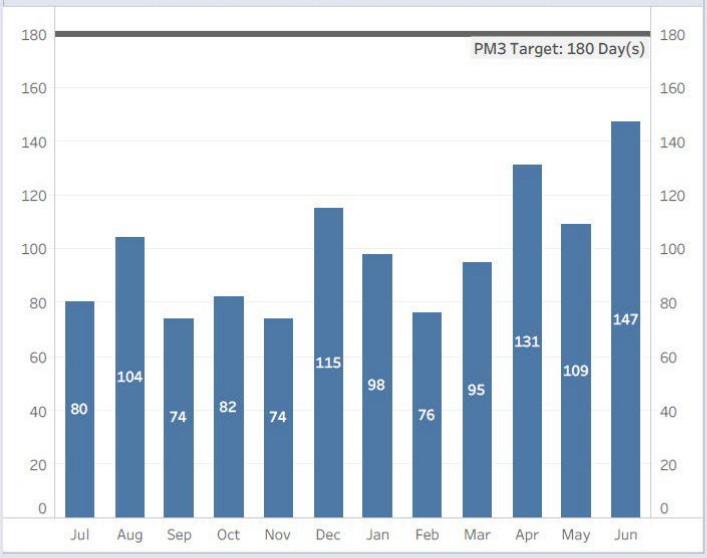
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2021

Cycle Time
Actual | Target

Performance versus Target
Below Target

Structural Pest Control Board
SFY 2021: 12-Month | **PM3** - Investigations Cycle Time



Structural Pest Control Board
SFY 2021: 12-Month | **PM3** - Summary

	Case Volume	Avg. Target	Actual	Variance
Grand Total	354	180 Days	97 Day(s)	▼-83 Day(s)
July	30	180 Days	80 Day(s)	▼-100 Day(s)
August	33	180 Days	104 Day(s)	▼-76 Day(s)
September	30	180 Days	74 Day(s)	▼-106 Day(s)
October	38	180 Days	82 Day(s)	▼-98 Day(s)
November	24	180 Days	74 Day(s)	▼-106 Day(s)
December	25	180 Days	115 Day(s)	▼-65 Day(s)
January	26	180 Days	98 Day(s)	▼-82 Day(s)
February	31	180 Days	76 Day(s)	▼-104 Day(s)
March	31	180 Days	95 Day(s)	▼-85 Day(s)
April	29	180 Days	131 Day(s)	▼-49 Day(s)
May	43	180 Days	109 Day(s)	▼-71 Day(s)
June	14	180 Days	147 Day(s)	▼-33 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

FY 2021/22 PERFORMANCE MEASURE 4: FORMAL DISCIPLINE CYCLE TIME

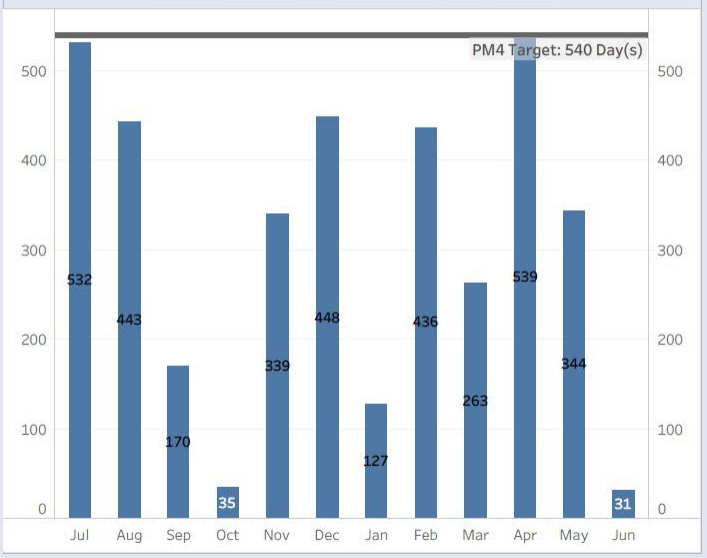
Select a DCA Entity
Structural Pest Control Board

Select a Fiscal Year
SFY 2021

Cycle Time
Actual | Target

Performance versus Target
Below Target

Structural Pest Control Board
SFY 2021: 12-Month | **PM4** - Formal Discipline Cycle Time



Structural Pest Control Board
SFY 2021: 12-Month | **PM4** - Summary

	Case Volume	Target	Actual	Variance
Grand Total	47	540 Days	376 Day(s)	▼-164 Day(s)
July	10	540 Days	532 Day(s)	▼-8 Day(s)
August	9	540 Days	443 Day(s)	▼-97 Day(s)
September	6	540 Days	170 Day(s)	▼-370 Day(s)
October	1	540 Days	35 Day(s)	▼-505 Day(s)
November	1	540 Days	339 Day(s)	▼-201 Day(s)
December	2	540 Days	448 Day(s)	▼-92 Day(s)
January	2	540 Days	127 Day(s)	▼-413 Day(s)
February	6	540 Days	436 Day(s)	▼-104 Day(s)
March	4	540 Days	263 Day(s)	▼-277 Day(s)
April	2	540 Days	539 Day(s)	▼-1 Day(s)
May	3	540 Days	344 Day(s)	▼-196 Day(s)
June	1	540 Days	31 Day(s)	▼-509 Day(s)

Data Source: California Department of Consumer Affairs, OIS/Data Governance Unit. The data included in this interactive tool is compiled from monthly enforcement statistical reporting from DCA Boards and Bureaus. In some instances historical enforcement performance data may differ slightly from the data reported in this tool due to errors and omissions in the previously released reports.

SPCB

STRUCTURAL PEST CONTROL BOARD

SUNSET REVIEW REPORT 2022

PRESENTED TO THE SENATE COMMITTEE ON BUSINESS, PROFESSIONS AND ECONOMIC DEVELOPMENT, AND THE ASSEMBLY COMMITTEE ON BUSINESS AND PROFESSIONS

GAVIN NEWSOM
GOVERNOR

LOURDES M. CASTRO RAMÍREZ
SECRETARY, BUSINESS, CONSUMER SERVICES AND HOUSING AGENCY

KIMBERLY KIRCHMEYER
DIRECTOR, DEPARTMENT OF CONSUMER AFFAIRS

SOPHIA CORNEJO
EXECUTIVE OFFICER, STRUCTURAL PEST CONTROL BOARD

PDE 22 310