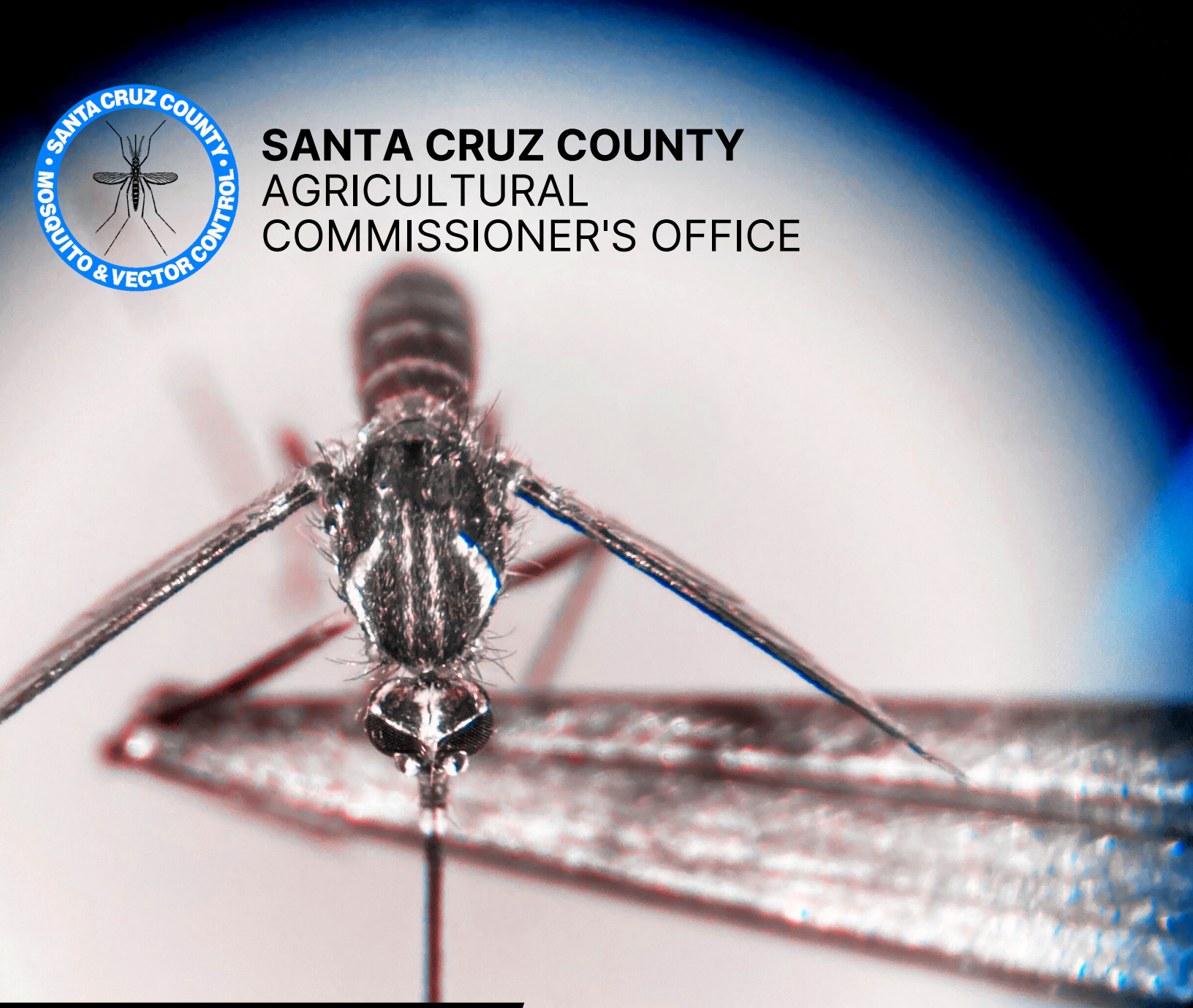
SANTA CRUZ COUNTY
AGRICULTURAL
COMMISSIONER'S OFFICE



ANNUAL REPORT
2022

MOSQUITO & VECTOR CONTROL

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MANAGER'S STATEMENT

Thanks to the hard-working team at Santa Cruz County Mosquito & Vector Control, I am pleased to present our 2022 Annual Report.

Our staff's dedication and ability to provide full services to the community remained steadfast. Staff completed over 500 service calls (Service Requests) from the public, while maintaining almost 3,500 identified locations that breed mosquitoes throughout the County. Additionally, the laboratory and surveillance team set over 800 mosquito traps in different neighborhoods in the community to monitor for local species that can carry West Nile virus and invasive species that are making their way through California.

One of such invasive species was detected in Watsonville early October 2022. The mosquito is commonly called the Yellow Fever Mosquito (*Aedes aegypti*) and has invaded the majority of Southern and Central California. The Yellow Fever Mosquito is unique compared to our local species of mosquitoes. It prefers breeding and living in our backyards and homes and is thus very difficult to trace and eliminate. Despite the challenges of navigating unknown territory in containment and control of this mosquito, our staff persevered. I commend our staff for their dedication and skill in the critical first weeks of detection, as they spent extra hours through door-to-door outreach to residents and combing through properties in search of mosquitoes.

Overall, I am thankful for our team and the work they do to keep our community safe. I look forward to the year ahead as we continue to adapt to new changes, protect public health, and serve the beautiful County we live in.

About Us

Santa Cruz County Mosquito & Vector Control (MVC) is committed to protecting the public from pests capable of transmitting disease or creating a nuisance. Our service, consultation, and education, enable residents to resolve problems and protect themselves with a better understanding of vector biology, behavior, and vector-borne diseases.

MVC was established in 1993 as a County Service Area program within the Agricultural Commissioner's Office in response to public interest in mosquito relief. In August 2005, residents voted to enhance our services to include other vectors, as well as expand our service area to the entire county (446 square miles, population 273,000).

Our Team

The Santa Cruz County Mosquito and Vector Control team is dedicated to the protection of public health. Our team is comprised of five Vector Control Specialists, one Vector Ecologist, and our Assistant Vector Control Manager. We operate under our Director, the Santa Cruz County Agricultural Commissioner.

Each member of our staff brings a unique skillset that, together, form a highly efficient public service agency. It is our honor to serve the citizens of Santa Cruz County and educate them on vectors and vector borne disease. We work to empower our residents to take control of their health, homes, and families' safety.

Stephen Bowling
Vector Control Specialist

Michael Pini
Vector Control Specialist

Steven Driscoll
Vector Control Specialist

Emma McDonough
Vector Ecologist

Ray Travers
Vector Control Specialist

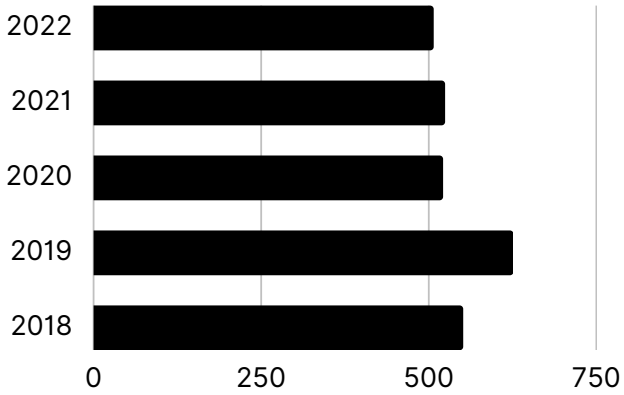
Nader Sidhom
Vector Control Specialist

Amanda Poulsen
Assistant Vector Control Manager

Jack Barco
Agricultural Bio. Seasonal Aide

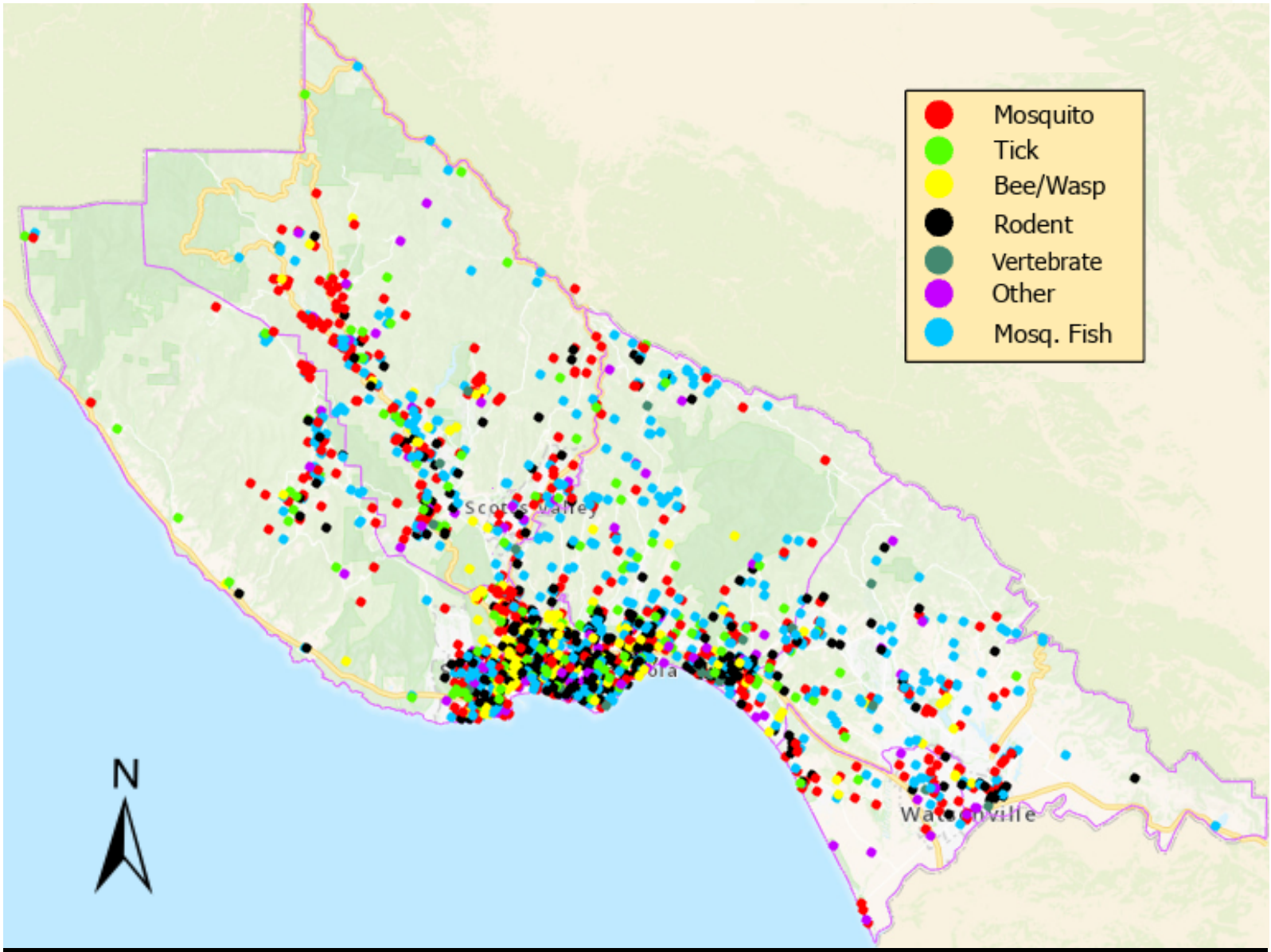
Requests for our services remained high in 2022.

Fig. 1: Service Requests in recent years.



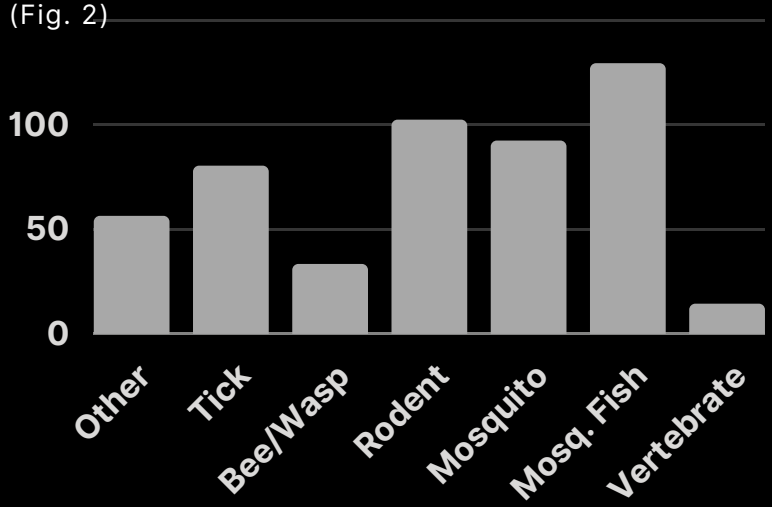
Our Free Services:

- MOSQUITO CONTROL AND DISEASE SURVEILLANCE.
- MOSQUITO FISH DELIVERY FOR PONDS, ANIMAL TROUGHS, FOUNTAINS, AND UNUSED SWIMMING POOLS.
- TICK IDENTIFICATION, SURVEILLANCE AND DISEASE MONITORING.
- CONTROL OF YELLOW JACKET WASPS IN PUBLIC AREAS.
- RODENT EXCLUSION INSPECTIONS FOR HOMES & BUSINESSES.
- ADVICE ON BEES, BATS, RACCOONS, FLIES, BED BUGS, MITES, HEAD LICE, FLEAS, AND ANY OTHER PESTS.
- PUBLIC EDUCATION ABOUT VECTOR BIOLOGY AND CONTROL.



Types of Service Requests

(Fig. 2)



SCCMVC responded to over **506** requests for service in 2022. Over 18% of requests involved mosquito issues, and 25% of requests were for mosquito eating fish. Rodent inspections comprised 20% of service requests, and tick identifications made up 16%. Calls about bees and yellowjacket wasps made up 6% of calls. The "Other" category made up 15% of all service request calls, which included: mysterious biting, mites, fleas, bedbugs, spiders, various vertebrates and invertebrates, and unknown parasites (Fig. 2)

Mosquito Control

Decisions to control mosquitoes are made based on their species, abundance, potential to vector diseases, proximity to humans, and the presence of natural predators or protected wildlife species.

Minimizing mosquito breeding potential is paramount to mosquito control. We provide water management advice to residents, stock mosquito-eating fish for backyard ponds, and consult on new development projects in the County. If mosquito breeding in an area reaches intervention thresholds, we apply low-toxicity larvicides to the water so the mosquito larvae do not develop into adults. In 2022, we treated over 4,000 breeding sources. When controlling mosquitoes in the larval stage is not feasible, as with adult tree-hole breeding mosquitoes, we employ other methods like applying garlic oil-based sugar bait barrier treatments to shrubbery.

Targeting adult mosquitoes is a last resort for our program, as control of larvae is more selective and efficient. Wide area spraying (the dispersal of products via micro-droplets into the air) is not part of our current program and would require approval by the County Board of Supervisors as part of the Emergency Disease Response Plan.

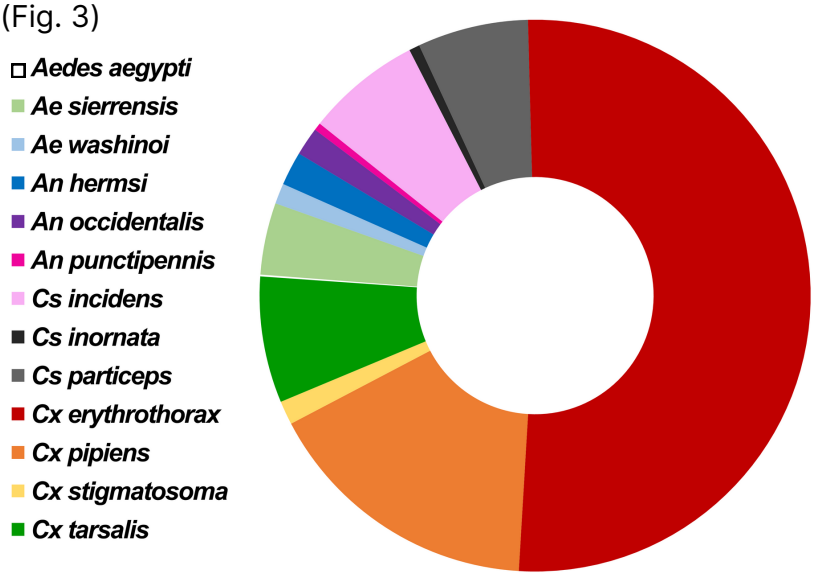
This year we endeavored to become FAA licensed drone pilots. Drones allow us to treat and monitor hard to reach locations with less impact on the environment.

Mosquito Monitoring

Several types of traps were utilized to collect adult mosquitoes for population and disease monitoring. Over 800 CO2-baited and gravid traps were deployed from March to November 2022, in which over 17,000 adult mosquitoes were captured. Weekly trap data enables our staff to focus our control efforts on high-risk areas.

2022 Adult Mosquito Species Collected in Traps

(Fig. 3)



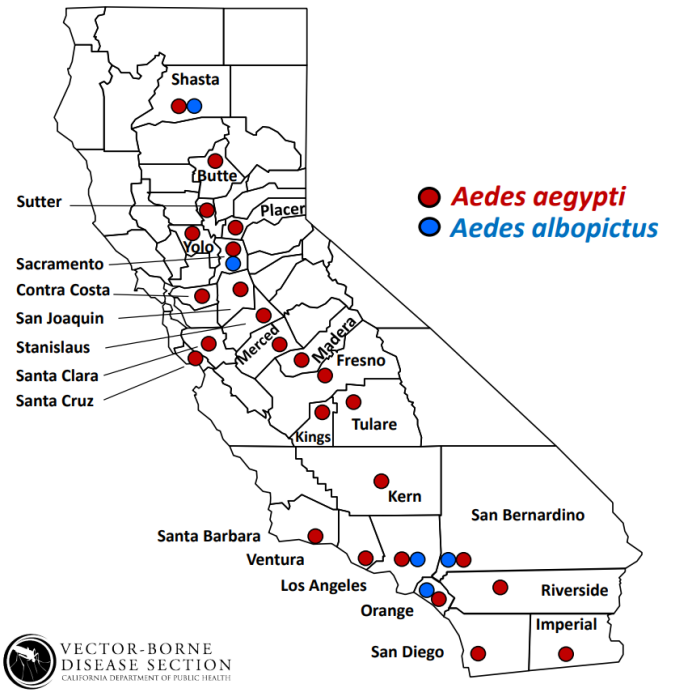
Of the species in our county capable of transmitting West Nile Virus (WNv) to humans, *Culex pipiens* made up 16% (n = 2,768) and *Culex tarsalis* made up 7% (n = 1,251) of all mosquitoes caught. Culex erythrothorax were the most numerous as they made up 51% (n=8,684) of total mosquitoes caught (Fig. 3).

Of the **125 pools** of mosquitoes that were submitted to CDPH for WNV, SLEV, and EEV testing, none were positive for any disease. Of the **57 dead birds** that were reported by the public for WNV testing, none were positive for WNV.

THE INVASIVE *AEDES AEGYPTI* MOSQUITO

On October 13, 2022, we detected Aedes aegypti (Yellow Fever Mosquito) mosquitoes in Watsonville. It was the first detection in Santa Cruz County. This is an aggressive mosquito which can transmit Zika Virus, Dengue, Chikungunya, and Yellow Fever, although these viruses are not currently present in our area. We immediately responded with two rounds of door to door yard inspections, mail-outs, and high density trap deployment. We set 125 in2care and 12 BG Sentinel traps within a 250m radius of the initial detection site. We used CO2-baited traps with human scent lures for intermediate monitoring, and conducted further inspections within the 500m radius.

Aedes aegypti* and *Aedes albopictus

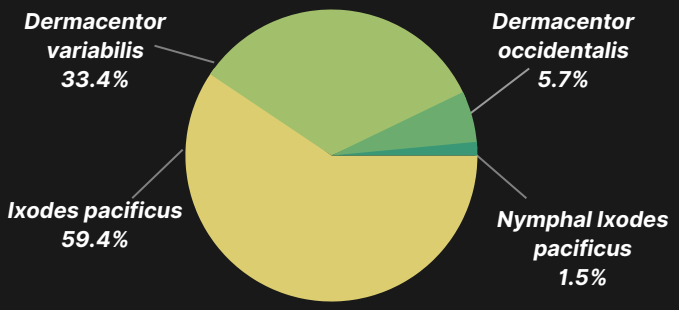


Data from our surveillance efforts so far indicate that the infestation is isolated, but still has the potential to spread. Our next steps include the Integrated Pest Management (IPM) strategies of monitoring their population, continuing yard inspections, and treating water-holding containers in backyards to prevent the immature stages of the mosquito from developing into adults.

Eradication efforts will need to be maintained for at least two years, as recommended by the California Department of Public Health. Residents must be vigilant in eliminating standing water from their property to prevent mosquito breeding as we fight the establishment of *Aedes aegypti* in Santa Cruz County.

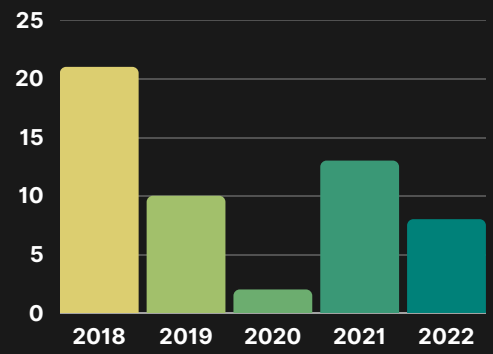
TICK SPECIES COLLECTED

For abundance, diversity, & pathogen testing in Santa Cruz County in 2022.



CASES OF LYME DISEASE

Reported to the Public Health Department in Santa Cruz County over the past 5 years.



TICKS

Lyme Disease is our most important vector borne disease. In 2022, there were 8 confirmed human cases of Lyme disease in Santa Cruz County; slightly less than the 5 year average of 12 cases per year. We responded to 80 tick service requests, 12 of which were doctor referrals. Lyme Disease is transmitted by the bite of an infected Western Black-Legged tick, *Ixodes pacificus*. We provide both in person and online tick species identification, Lyme disease testing resources, and disease risk consultation to the public. We post warning signs in recreational areas of high tick exposure, sample for species diversity and abundance, and test for pathogen prevalence. Our partners at the California Department of Public Health and UC Davis support us in testing ticks for various pathogens.

RODENTS

Call us for free inspection and advice.

We offer free exterior rodent inspections for homes, businesses, and new development projects. We also provide in depth consultations on rodent eradication and exclusion methods, empowering Santa Cruz residents with the knowlege needed to solve their rodent issues. When additional assistance with exclusion work is desired, we refer residents to local pest control operators. Rodents and their ectoparasites can spread many diseases to human beings including: Bubonic Plague, Salmonellosis, Tularemia, Rat-Bite Fever, Leptospirosis, Hantavirus Pulmonary Syndrome, and more. Rodent control should be taken seriously as they can also destroy personal property and cause electrical fires by chewing on wires. Exclusion and sanitation are the foremost means of preventing rodent activity in the home. Over 20% of our requests for service in 2022 regarded rodents, primarily rats. Our staff performed 102 rodent inspections this year, an increase of over 300% since 2015.

MOSQUITO FISH

Mosquito fish (Gambusia affinis) provide excellent control of mosquitoes in many situations. Their use in Santa Cruz County pre-dates our program, having been established statewide for several decades.

FREE DELIVERY

SCCMVC cooperates with wildlife management agencies by not introducing mosquitofish into natural water bodies where they may compete with native fish and amphibians. They are stocked in yard containers such as fountains, animal water troughs, fishponds, and unmaintained pools.

(831) 454-2590

640 Capitola Rd. Santa Cruz, CA 95076

Monday - Friday
8:00AM-4:00PM

Serving our Community

For the MVC budget, see the County website: http://www.sccvision.us, under "Department Budgets" and "Agricultural Commissioner".

SCCMVC provides free services funded by a tax assessment that appears on your property bill. For rates, please visit our website: www.agdept.com/mvc.html MVC cooperates with the Santa Cruz County Integrated Pest Management Departmental Advisory Group and receives oversight from the CA Department of Public Health and the Agricultural Commissioner. MVC applies aquatic larvicides under a National Pollution Discharge Elimination System permit as required in waters of the United States, and reports use to the State Water Resources Control Board (WRCB) and County Agricultural Commissioner. MVC has a Mosquito Management Plan on file with WRCB, state and federal Fish and Wildlife agencies. We comply with Water Quality Control Board requirements, and are in a Cooperative Agreement with the CA Department of Public Health