

INTEGRATED PEST MANAGEMENT

2020 ANNUAL REPORT

Prepared by
Marin County Parks



2020 Summary

Marin County staff, contractors, and volunteers worked together in 2020.

In 2020, county staff, volunteer coordinators, landscape managers, and contractors focused on adapting the program during a rapidly changing year. Marin County's IPM program applies to 147 sites governed by the County's IPM ordinance, 130 of which were managed without pesticides, and included a total of 45,553 hours dedicated to non-chemical IPM.

This annual report for the year of 2020 is written for the Board of Supervisors as a requirement of the County of Marin Ordinance No. 3521 and the County of Marin Integrated Pest Management Policy. It serves as a review and summary of the county's pesticide use, cultural practices and non-chemical pest control activities, exemptions granted, training offered, proposed modifications to the county's pesticide list and suggestions for amendments or resources needed for effective implementation of the IPM policy and ordinance.

Measure A funding supports some IPM staff positions, and many volunteer projects. However, because Integrated Pest Management is being implemented by multiple departments across many project areas, funding for IPM work itself comes from a variety of associated sources, the majority of which comes from the Parks department and the Department of Public Works.

The IPM Ordinance and Policy were last updated in 2013, requiring that the IPM program is able to maintain accurate statistics that show meaningful reduction in pesticide use over time. Since then, organic and eco-exempt products have replaced synthetic pesticides, and overall product use has tapered down to a steadier and significantly lower rate, especially within the last three years. This Coordinator Annual Report presents completed set of data for product usage, non-chemical pest control activities, training offered, and proposed modifications to the county's pesticide list.

Marin IPM program staff had the opportunity to pilot new products in 2020, and will continue to search for new solutions that prioritize organic and minimum risk alternatives.



2020 IPM Achievement Awardees

Marin County Parks and Open Space (MCPOS) Volunteer Program Coordinators Greg Reza and Kirk Schroeder are a critical part of the County's IPM program. They help dedicated volunteers directly support the manual labor needed to reduce the use of pesticides in Marin County.

Kirk and Greg focus on education, fostering awareness and understanding of IPM, as well as teaching methods that volunteers can share at home and in their communities. Their programs focus on accessibility and engagement, facilitating events where diverse volunteers make meaningful contributions to IPM implementation and stewardship of public lands.

The IPM Achievement Award recognizes individuals and organizations that further the goal of eliminating pesticide use within the Marin County IPM Program.

IPM Governance

Marin County Integrated Pest Management

Integrated Pest Management (IPM) is a system of managing pests using careful consideration and integration of all available pest control tools and techniques. The target pest, goals, and site conditions guide a systematic decision-making process on what control methods to use. Mechanical and physical pest controls include weeding, mulching, weed-whipping, and mowing. Cultural control means changing work practices to reduce pests, such as altering irrigation practices to reduce weeds. Biological controls are natural enemies (predators, parasites, pathogens, and competitors) that control pests. Pesticides are used only after it is determined that alternative methods will not be effective. A pesticide is a natural or synthetic chemical preparation used to destroy plant, fungal, insect, or animal pests, and all pesticides used by the county are reported to the California Department of Pesticide Regulation.

Marin County Parks, in collaboration with other County departments, administers IPM for the County of Marin. The program is governed by County Ordinance 3598. This ordinance was approved by the Board of Supervisors, who work with IPM staff through the year to ensure that questions and concerns from the public are directed appropriately. IPM staff present a program summary to the Supervisors annually.

The Integrated Pest Management Commission oversees the implementation of the Marin County Integrated Pest Management ordinance and policy. The nine-member Commission also advises and makes recommendations to Marin County's IPM Coordinator and the County Board of Supervisors as needed. Commission meetings are held quarterly and are open to the public. Marin County Park's communications and administrative teams made especially important contributions to the IPM program this year by helping the program adapt. In 2020, due to Shelter-In-Place orders and for the safety of staff, commissioners, and the public, quarterly commission meetings were hosted virtually via Zoom.

The County's IPM policy applies to 147 sites that include county parks and libraries, Marin County government offices, Marin County Health and Human Services sites, County Service Areas, roadsides, Marin County parks, picnic, and playground areas, and traffic medians throughout Marin. Common IPM challenges in these locations include wasps, ants, roaches, rodents, and weeds. In addition to managing pests, the county IPM program provides outreach to the public through volunteer opportunities and education.

* See glossary on page 21 for definitions.

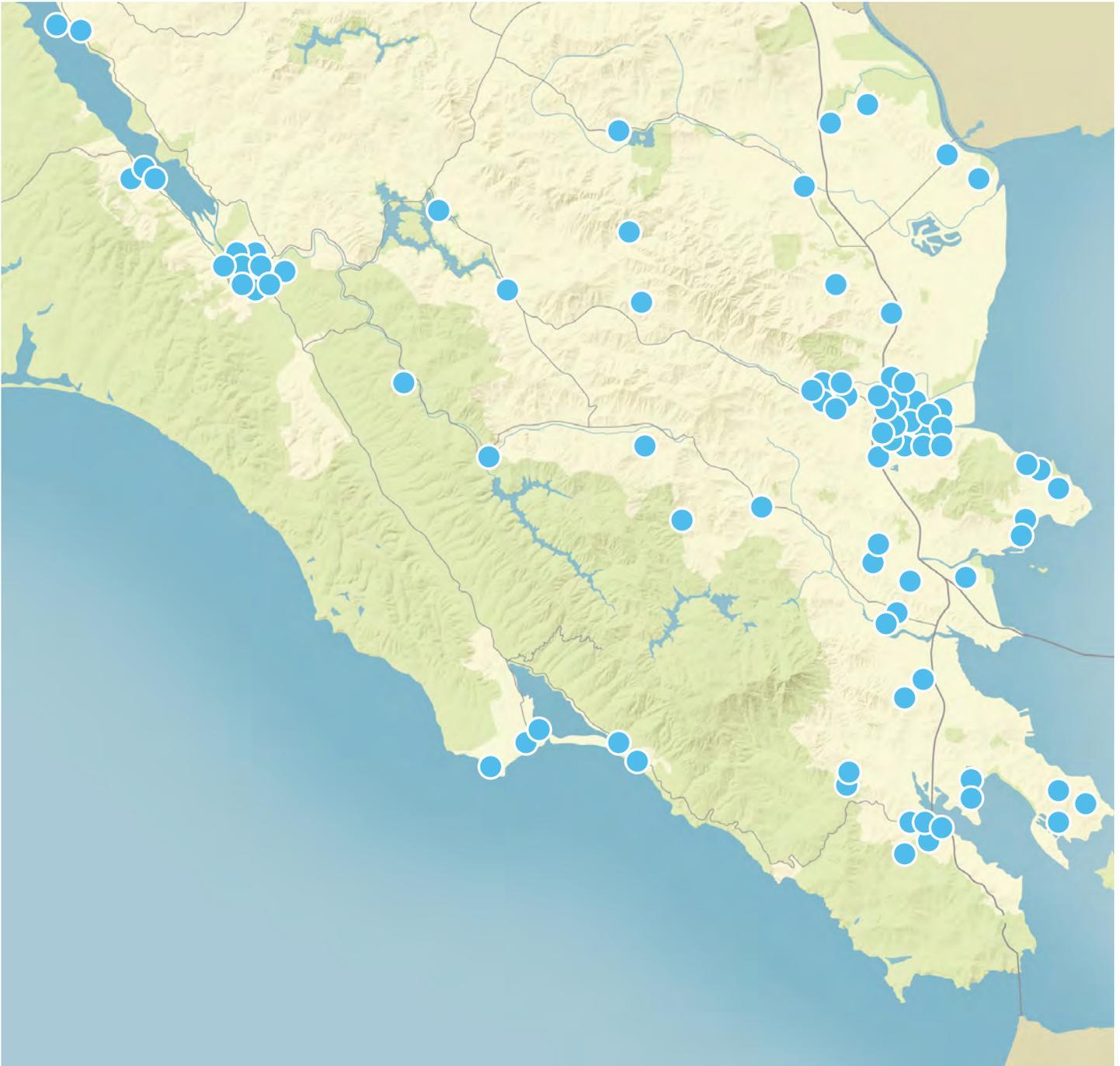


CC Peter Pearson

The County's IPM program cares for heavily populated locations where rodents, insects, and weeds may present a public health and safety hazard.

IPM Governance

In 2020, Marin County maintained 147 locations including 130 without pesticides.



County ordinance 3598 governs IPM for parks, libraries, fire stations, office buildings, traffic medians, other buildings, and ornamental landscapes on county properties across Marin. The Marin County Open Space Preserves are governed by the Parks and Open Space Commission and the Open Space District Board of Directors. They are not covered in this report. Visit marincountyparks.org to view the Vegetation and Biodiversity Report and Work Plan for more information on IPM in the preserve system.

2020 Achievements

In a year of changing conditions, volunteers adapted and consistently served their community in 2020.

While continuing to advance the goals of the IPM program, County Parks and Open Space staff were also tasked with supporting the county's efforts to keep the community safe from COVID-19. County staff served as Disaster Service Workers, and contractors and volunteers adapted to new safety standards.

The Adult Offender Work Program (AWOP)* "is a jail alternative program which is administered by the Marin County Probation Department. California law allows an individual to receive one day jail credit for every 8 hours of manual labor performed for a non profit agency."* The majority of AWOP volunteers that perform IPM are supervised by Marin County Parks staff. Landscape services supervisor Don Gallerani oversaw a record-setting 686 volunteer hours in May of 2020. Because the program often involves work in teams of one or two, and offers personal protective equipment such as masks and gloves, this has been a successful program that allows volunteers to work safely through the changing environment in 2020.

*Source: <https://www.marincounty.org/depts/pb/divisions/adult-services/alternatives-to-custody/aowp>



Above: Parks staff and volunteers use cardboard for sheet mulching (left) and remove weedy grasses (right) from Hal Brown Park.

2020 Achievements

Marin County's volunteer coordinators adapted to facilitate safe IPM implementation in 2020.

Due to shelter in place orders in 2020, parks served as a hub for community service, exercise, recreation, and wellness. Volunteers were able to work outside with personal protective equipment and social distancing. These programs provided a large portion (25%) of non-chemical IPM hours in the spring and summer of 2020. Though some events were cancelled in late March, staff was able to adapt to these conditions to continue the volunteer program. Volunteer coordinators were an especially critical part of this effort, and stayed updated on changing policies related to safety to provide opportunities for outdoor exercise and community-building.



Mitzvah Day volunteers from Congregation Rodef Shalom install native plants at Hal Brown Park at Creekside on October 25, 2020. Volunteer groups were able to work together in "pods" of household units, and wore masks and gloves in order to reduce the risk of COVID 19.

2020 Achievements

Marin County's contractors adapted to facilitate safe IPM implementation in 2020.

Treating competitive weeds without herbicides. In 2020, the IPM program continued to manage the highly invasive Uruguayan creeping water primrose (*Ludwigia peploides* sp.) at the Civic Center Lagoon Park. When the shelter-in-place order began in March 2020, contractor operations were limited to essential services, postponing a *Ludwigia* removal project originally scheduled for April 2020. This delay allowed the plant to rapidly reproduce, increasing the need for more intensive mechanical removal at the end of 2020. The decision was made to use a floating, aquatic weed excavator, which was piloted by contractor DK Environmental. With a combination of early detection, the implementation of new equipment, and careful hand-pulling by contractors from Forster & Kroeger, a large amount of *Ludwigia* was able to be removed. While it is expected to return in 2021, continued early detection combined with hand-pulling should soon eradicate the species from the site entirely.

The IPM program continues to focus on organic and minimum-risk products. The IPM policy sets a goal of replacing non-organic products with those certified organic by the USDA's National Organic Program. In 2020 IPM staff were able to try a new minimum-risk insecticide called Essentria Wasp and Hornet spray that uses sodium laurel sulfate (a common detergent) and peppermint oil to manage wasps. Wasps can pose a threat to public safety for those that have severe allergies to stinging insects. This product was found to be less effective in parks compared to previously used insecticides, and staff returned to using PT Waspfreeze II. A product called WeedSlayer was added to the 2020 allowed products list due to its status as a "Minimum Risk" (FIFRA 25B) herbicide. However, use of the product was immediately halted when the California Department of Food and Agriculture removed the product's minimum risk status. IPM staff will continue to work with Pest Control Advisors to research and try new organic and minimum risk options in 2021.



Top 5 Park Pests

Some common pests are attracted to food. Others are found near paths of travel, like roadside landscapes and medians.

- Yellowjackets (*Vespula* species)
- Canada goose (*Branta canadensis*)
- California ground squirrel (*Otospermophilus beecheyi*)
- Invasive annual grasses and broad-leafed weeds— various species such as *Ludwigia* (pictured above)
- Argentine ant (*Linepithema humile*)



Invasive Ludwigia sp. removed by hand from Civic Center lagoon: before (left) and after (center). Aquatic excavation equipment is pictured on the right.

2020 Achievements

Partnerships and collaboration allow for work across jurisdictions.

Marin County Parks continues to participate in the Marin Knotweed Action Team (MKAT), which was formed in response to sightings of Japanese knotweed (*Fallopia japonica*). This class A noxious weed is considered to be one of the most invasive plant species in the world, and is currently spreading along San Geronimo Creek, which is home to endangered salmonids. Because this environmentally important watershed is managed by multiple agencies, collaboration is crucial to effective management. However, as of the release of this report, no knotweed has been found in Marin County Parks or Open Space lands. In addition to MKAT, IPM staff represent the department in the newly reconvened Sonoma/Marin Weed Management Area, Bay Area IPM Regional Coordinators, and the Maintenance and Superintendents Association's Redwood Empire Chapter.



Partnerships

The Marin County IPM program would not be possible without community partners and their volunteers, including but not limited to:

- Hungry Owl Project and Wildcare
- Marin Knotweed Action Team (MKAT)
- Marin Master Gardeners
- Marin County's Adult Work Offender Program
- YardSmartMarin (YSM)
- Conservation Corps North Bay
- California Invasive Plant Council
- Sonoma Marin Weed Management Area
- Marin County Department of Agriculture
- Maintenance and Superintendents Association

2020 Achievements

In 2020, volunteers contributed 11,889 hours in support of non-chemical IPM. Volunteer hours increased by 2% from 2019.



The Marin County Parks community of volunteers make it possible to successfully manage our parks, playgrounds, and picnic areas without herbicides. They receive and provide education related to IPM, and perform services including trash cleanup, sheet mulching, hand-pulling, weed-whipping.



Volunteers coordinators had to adapt to changing circumstances. In January, families volunteered to help remove litter from the Marin Civic Center Campus (left). On Coastal Cleanup Day in September, families continued to work to keep our communities clean (right), with extra safety precautions such as masks and working in family “bubbles.”

2020 Achievements

Overall IPM labor hours stayed steady in 2020 despite changing conditions.

Labor Hours by Month

Month	Staff IPM	Volunteer IPM	Contractor IPM	Total Hours
JANUARY	1,149	1,182	1,009	3,340
FEBRUARY	1,370	1,376	985	3,731
MARCH	1,706	570	745	3,021
APRIL	1,862	976	1,193	4,031
MAY	1,851	451	1,011	3,313
JUNE	2,419	993	1,085	4,497
JULY	1,756	879	1,138	3,773
AUGUST	1,946	1,325	1,062	4,333
SEPTEMBER	1,740	1,384	914	4,038
OCTOBER	2,137	1,257	944	4,337
NOVEMBER	2,323	1,075	891	3,804
DECEMBER	2,001	421	915	3,337
Total Hours	22,259	11,889	11,891	46,038

Labor Hours Year-Over-Year

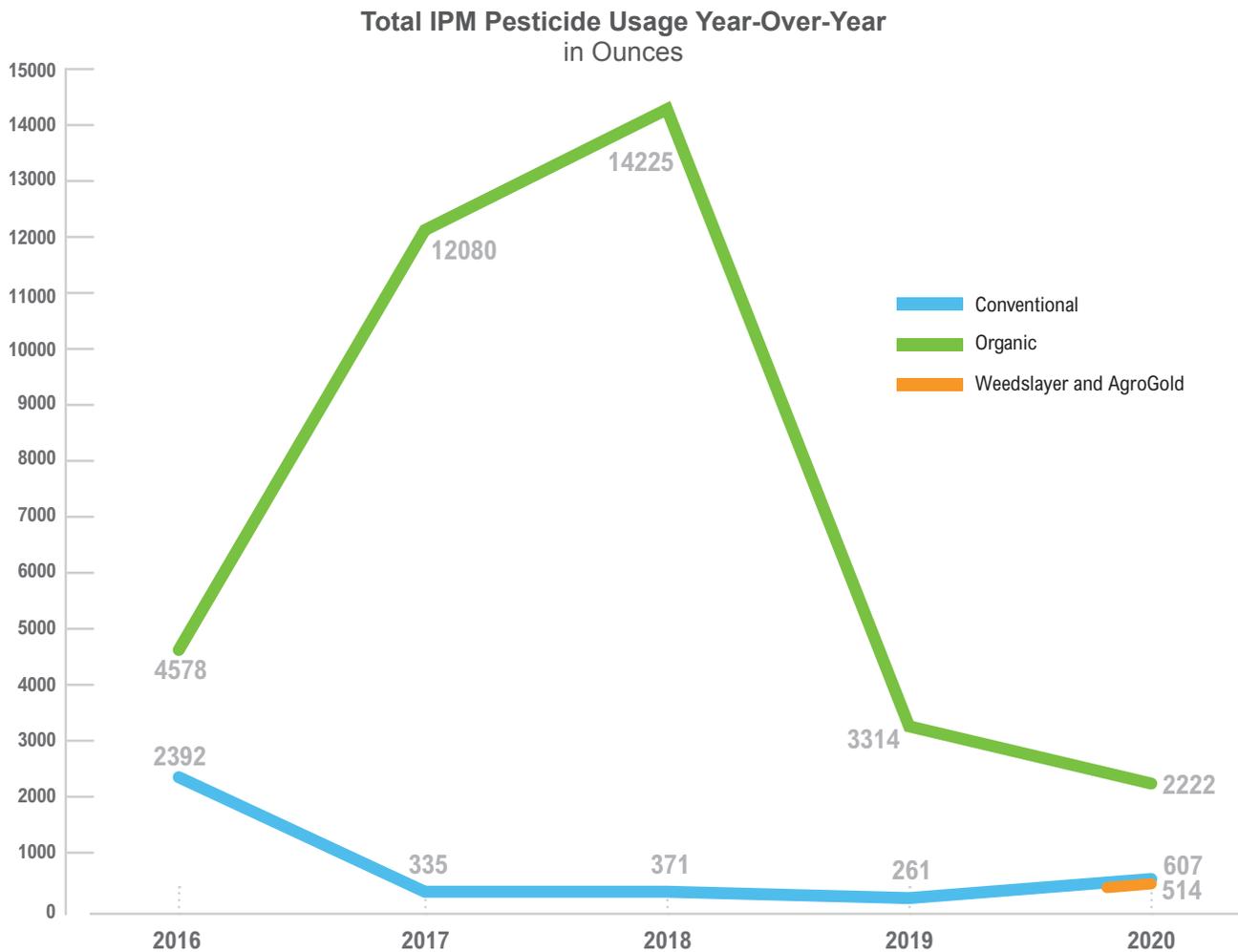
Year	Staff IPM	Volunteer IPM	Contractor IPM	Total Hours	% Change Total
2014	15,774	6,678	8,201	30,653	4
2015	20,718	7,983	8,687	37,388	22
2016	26,888	7,086	8,808	42,782	14
2017	25,052	9,439	8,542	43,033	.6
2018	21,970	10,766	10,563	43,299	.62
2019	23,328	11,694	11,232	46,254	7
2020	22,259	11,889	11,891	46,038*	-.5

The County maintains a strong commitment to Integrated Pest Management that emphasizes non-chemical, least toxic methods. Mechanical and manual weed removal, sheet mulching, mowing, trapping, turf aeration, irrigation system improvements, and other site modifications are used in combination to help control various pest populations.

* Equal to 23 full-time staff.

Total Pesticide Use

In 2020, the total amount of conventional and organic/Minimum Risk* pesticide use decreased in volume by 6%.

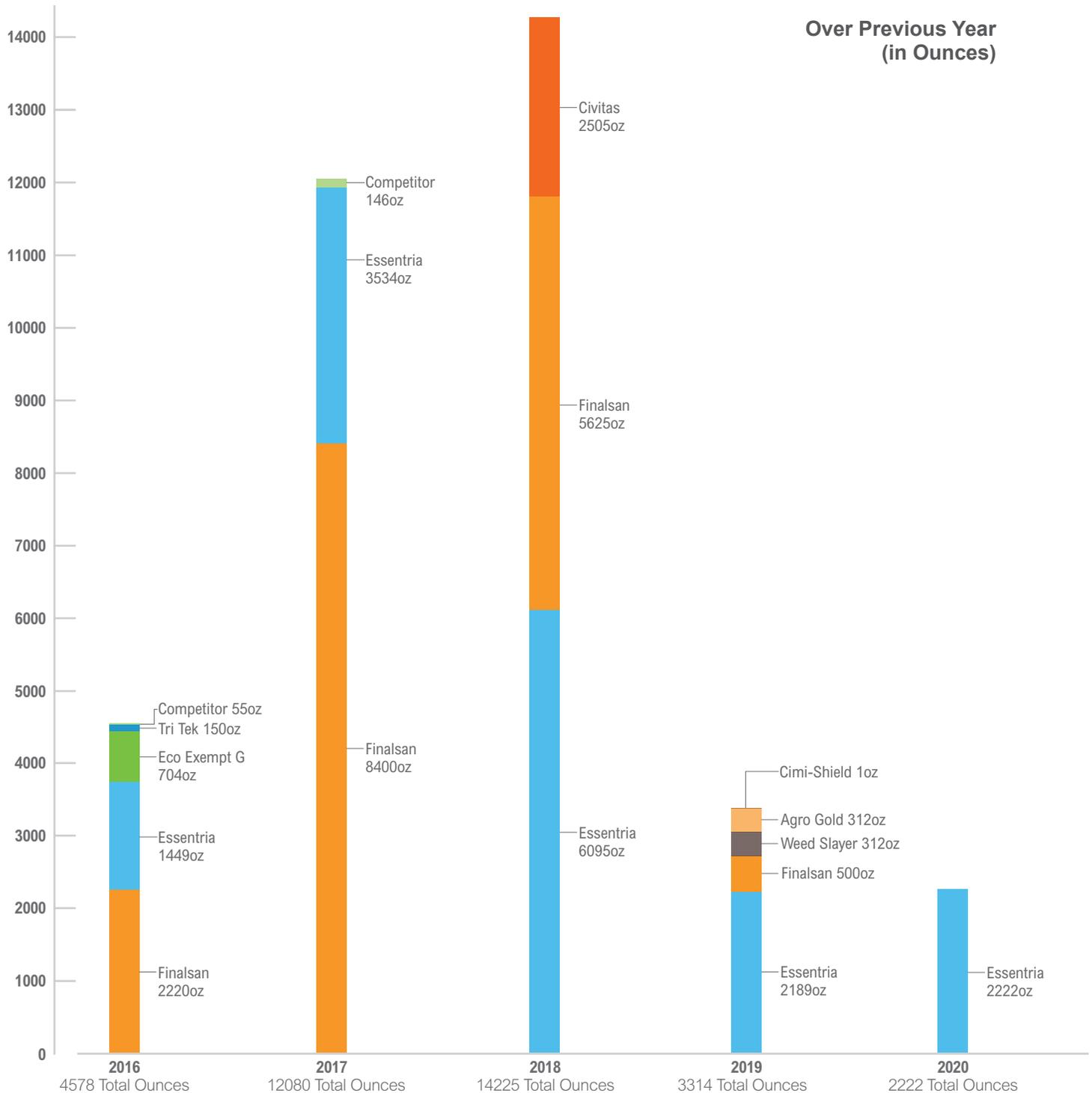


Conventional pesticide use increased in volume by 132% in 2020, while organic pesticide use decreased by 32%. This increase in conventional product use is largely attributed to a single application of Termidor and BoraCare at the Lucas Valley field office, which accounted for 60% of the total volume of conventional products used in 2020. At the end of 2020, WeedSlayer was removed from the list of “Minimum Risk” (FIFRA25B) pesticides, and all use was immediately halted. Because of this change, WeedSlayer was removed from these calculations and is displayed separately from organic and conventional products. IPM will vary each year based on the types of pests, risks, and conditions in the field.

* Product verified by the Organic Materials Review Institute (OMRI) to meet federally-regulated organic standards used by certified organic food and fiber producers, or is exempt from EPA registration by qualifying for the FIFRA 25B Minimum Risk ingredients list (aka “Eco-Exempt”).

Organic* Pesticide Use

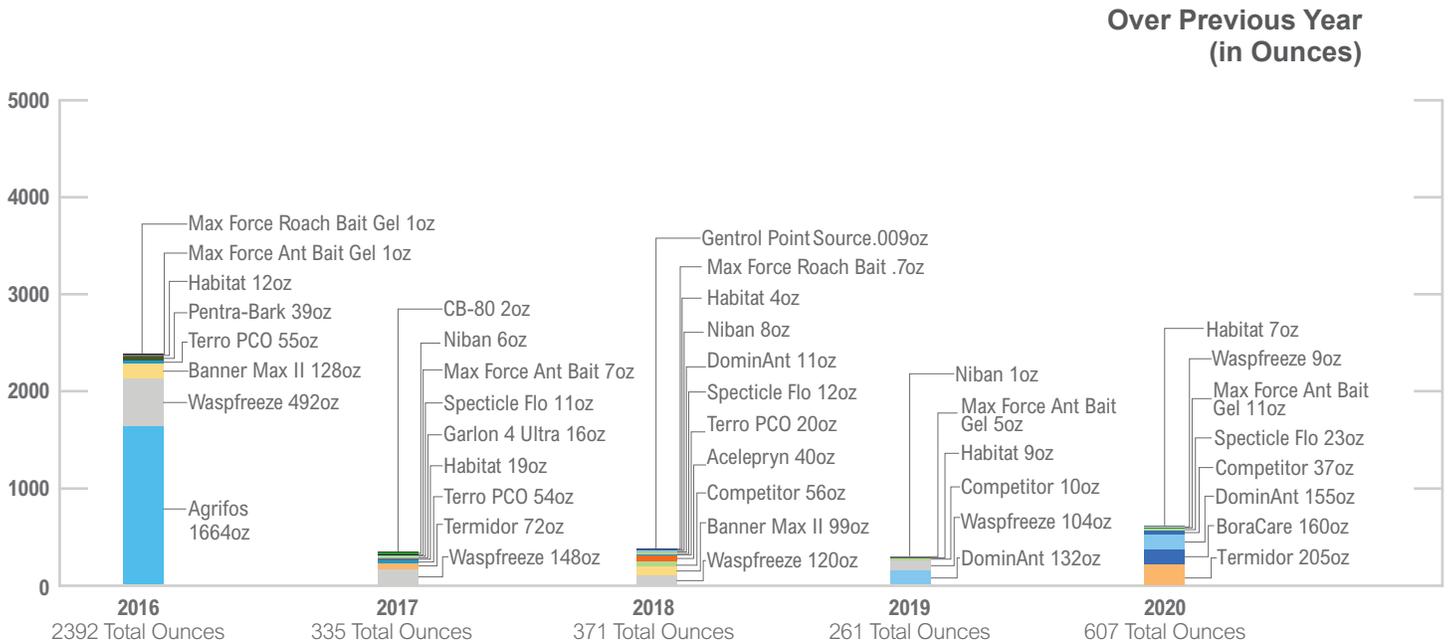
Organic Pesticides Proportional Usage Decreased 32%



In 2020, the only organic and/or minimum risk product applied to Marin County IPM sites was Essentria IC3. This insect repellent is comprised primarily of essential oils, and applied quarterly to building exteriors.

Conventional Pesticide Use

Use of Conventional Products Increased



The most commonly used conventional pesticides on IPM sites are small ant bait stations filled with boric acid, and are the same product commonly used in households to manage ants. A single application of Termidor and BoraCare accounted for 60% of the total volume of conventional pesticides used on Marin County properties in 2020. Refer to page 14 of this report for detailed summaries of each product used.

Information from previous years and the full list of allowable organic and conventional pesticides is available at marincountyparks.org.

Conventional Pesticides Applied in 2020

In 2020, Marin County Parks applied the following conventional pesticide products.

Conventional* Products Used in 2020

Competitor is a surfactant with active ingredient ethyl oleate. It is a substance that is added to a liquid to reduce its surface tension, thereby increasing its spreading and wetting properties. It is mixed with other products like Finalsan to increase efficacy and was applied to weeds growing at Sir Francis Drake and Rush Creek medians in 2019.

Habitat, an herbicide with active ingredient imazapyr, is formulated specifically for aquatic and riparian areas. It is used in spot treatment as part of the Bay Area wide invasive Spartina project. Only 9 oz were applied this year to Hal Brown Marsh as part of the final stages of the battle against Spartina densiflora.

Weed Slayer and Agro Gold mix to form the Weed-slayer herbicide that was most commonly used in 2019. With active ingredients eugenol (clove oil) and Bacillus megaterium (a bacteria found commonly in many environments), Gardener's Guild used this product more than any other pesticide.

Specticle FLO, with active ingredient indaziflam, was applied to Sir Francis Drake Medians and Civic Center medians in January of 2020. This pre-emergent herbicide prevents germination.

Max Force Ant bait gel with active ingredient fipronil was used to control insects at Marin Center Exhibit Hall through controlled bait stations.

Conventional* Products Used in 2020 (cont'd.)

DominAnt also uses boric acid and was used to aid controlling ants and other crawling insects at multiple structural sites including the civic center interior and Gross Field buildings. This product uses borax as its active ingredient and was used in protected bait stations.

PT WaspFreeze II, with active ingredient prallethrin, was applied to as few nests as possible, and only when a yellowjacket nest posed a health risk to the public or staff. These products were applied in limited quantities at various park sites during the summer and fall.

Termidor HE, active ingredient fipronil, EPA 7969 329, is a liquid mixed with a foaming agent to reduce drift. This product was selected as a first line treatment, as opposed to fumigating the building. This more localized treatment will use less product and create less potential for drift, and was applied once to the Lucas Valley Field office.

Bora Care, active ingredient disodium octaborate tetrahydrate, EPA 83465-1-64405, was used alongside Termidor HE to protect treated wood against further infestation or infection of wood destroying organisms.

Organic and/or Minimum Risk Products Used in 2020

Essentria IC3 is an insecticide with active ingredients comprised of rosemary oil, genaniol, and peppermint oil. When applied to the perimeter of a building, this product can prevent insect pest problems from affecting structures. This product was used at McInnis Clubhouse, juvenile hall, the road department building and others.

* Conventional pesticides are pest control substances or mixtures that are generally produced synthetically. If a product has not been verified by the Organic Materials Review Institute (OMRI) to meet federally-regulated organic standards, or is not on the EPA's FIFRA 25B Minimum Risk ingredient list (aka "Eco-Exempt"), the Marin County IPM program lists it as "conventional".

Proposed Changes to 2021 Allowed Products List

County IPM staff refined the allowed products list for 2021

Proposed Product Removal

The following products were removed from the county's list of allowed products

- Agro Gold: herbicide with active ingredient Bacillus megaterium was removed from the FIFRA25b "Minimum Risk" list.
- Weedslayer: herbicide with active ingredients eugenol, and molasses was removed from the FIFRA25b "Minimum Risk" list.
- Safari 20 SG: insecticide with active ingredient dinotefuran
- Avenger: with active ingredient d-limonene 60%, is no longer in use by the county.
- Envoy Plus: with active ingredient clethodim, is no longer in use by the county.
- Liberate: with active ingredient lecithin, alcohol ethoxylate, is no longer in use by the county.

Proposed Product Additions

IPM staff propose the addition of the following products:

- Tract 70: clarified hydrophobic extract of neem oil, is an insecticide for use as a pest lure, repellent, or as part of a trap, or as a disease control. May be used for other pesticidal purposes if the requirements of 205.206(e) are met, which requires the use of preventive, mechanical, physical, and other pest, weed, and disease management practices.
- Essentria IC3: this product has been described on page 13, and has been used on building exteriors as an insect repellent. This product is also being proposed for addition on the landscape products list, for use on insect infestations in landscapes.

Marin County Parks IPM Team



Jim Chayka

Parks and Open Space Superintendent, Integrated Pest Management Program Coordinator

Jim Chayka has worked for 20 years in the fields of natural resource management, watershed restoration, and environmental stewardship. Prior to joining Marin County Parks, Jim served as Director of Natural Resources at Conservation Corps North Bay—a regional program dedicated to developing and engaging youth through environmental stewardship. As a consultant with Watershed Sciences and the Urban Creeks Council, Jim spent 10 years as a fluvial geomorphologist supporting research and restoration efforts throughout Bay Area watersheds. Jim has also held leadership positions with FireSafe Marin, East Bay Conservation Corps, the Student Conservation Association, and the Sonoma Ecology Center.

Jim holds the following degrees, licenses, and certifications: a BA in Political Science and a MS in Geosciences; Parks and Recreation Professional (CPRP) certification through the National Recreation and Parks Association; C-27 Landscape Contractors License; Qualified Stormwater Pollution Plan Developer & Practitioner (QSD/QSP); Certified Professional in Erosion and Sediment Control (CPESC).

Katherine Knecht

Integrated Pest Management Specialist

Katherine joined the IPM team in February 2018, bringing experience with education programming, habitat restoration planning, and volunteer coordination. After growing up in Mill Valley, San Rafael, and Novato, she obtained a B.S in Environmental Studies with an emphasis on ecological systems and habitat restoration from UC Santa Barbara. Her graduate thesis focused on salmonid habitat restoration project planning on the Columbia River, which was accompanied by work managing Japanese knotweed in Clark County Washington. In 2015, she worked as a program coordinator and educator at an outdoor and environmental education facility and is thrilled to have the opportunity to bring these skills and experience home to serve Marin County as IPM specialist.

Kirk Schroeder

Volunteer Program Coordinator

Kirk Schroeder has worked at Marin County Parks for 18 years, and has 12 years of experience organizing volunteers. In his current role he coordinates volunteers to support non-chemical IPM in County parks, multiuse pathways, and other landscape areas. He began his career as a seasonal extra-hire and moved up to Park Ranger and Supervising Ranger positions. Kirk graduated from University of California, Santa Cruz with a bachelor's degree in Fine Art, and is a certified professional lifeguard.

Glossary

Active Ingredient. Active ingredients are the chemicals in a pesticide product that act to control the pests. Active ingredients must be identified by name on the pesticide product's label together with its percentage by weight. An "active ingredient" prevents, destroys, repels, or mitigates a pest, or is a plant regulator, defoliant, desiccant, or nitrogen stabilizer.

Biological Control. A method of controlling pests using predators, parasites, pathogens, and competitors. An example of biological control is releasing green lacewings to control aphids.

Conventional Pesticide. Pest control substances or mixtures of substances that are generally produced synthetically. Synthetic products are made by a synthetic or chemical process as opposed to occurring naturally. To avoid confusion with organic standards, the Marin County IPM program lists all non-OMRI verified pesticides as "conventional" even if the active ingredient is naturally occurring.

Cultural Control. A method of controlling pests by changing work practices to reduce pest establishment, reproduction, dispersal, and survival. Changing irrigation practices to reduce the amount of root diseases and weeds is an example of cultural control.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 25(b) aka "Minimum Risk" The EPA has exempted certain products from federal registration. This designation is sometimes referred to as "minimum risk." However, these products are subject to registration by individual states. Products that are on this list must meet a series of requirements, which limit the ingredients that can be allowed. It is required that these products list all active and inert ingredients on the product label.

Fungicide. A substance or preparation used to kill fungi, including blights, mildews, molds, and rusts.

Herbicide. A substance or preparation used to kill weeds and other plants that grow where they are not wanted.

Insecticide. A substance or preparation used to kill insects and other arthropods.

Integrated Pest Management (IPM). An ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control

materials are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment.

Mechanical Control. The management and control of pests using physical means such as weeding, mowing, fences, or barriers.

Organic Materials Review Institute (OMRI). A 501(c)(3) nonprofit organization providing organic certifiers, growers, manufacturers, and suppliers an independent review of products intended for use in certified organic production, handling, and processing.

Organic Pesticide. Pest control substances or mixtures of substances that are compliant with USDA National Organic Program standards. In the United States, the term "organic" is federally regulated and governed by standards in the Code of Federal Regulations when used on food or fiber products. When the Marin County IPM program uses the term "organic," it refers to pesticides verified by OMRI to meet federally-regulated organic standards used by certified organic food and fiber producers.

Glossary

Pest. Pests are organisms that damage or interfere with desirable plants in fields and orchards, landscapes, or wildlands, or damage homes or other structures. Pests also include organisms that impact human or animal health. Pests may transmit disease or may be just a nuisance. A pest can be a plant (weed), vertebrate (bird, rodent, or other mammal), invertebrate (insect, tick, mite, or snail), nematode, pathogen (bacteria, virus, or fungus) that causes disease, or other unwanted organism that may harm water quality, animal life, or other parts of the ecosystem.

Pesticide. A pesticide is any substance or mixture of substances intended for: preventing, destroying, repelling or mitigating any pest; use as a plant regulator, defoliant, or desiccant; or use as a nitrogen stabilizer. Fungicides, herbicides, insecticides, and rodenticides are all types of pesticides.

Pesticide Precautionary

Statements. Each pesticide product label is required to bear hazard and precautionary statements. These provide the pesticide user with information regarding the toxicity, irritation and sensitization on hazards associated with the use of a pesticide as well as treatment instructions and information to reduce exposure potential.

Pesticide Product Label. The written, printed, or graphic matter on, or attached to, the pesticide or device or any of its containers or wrappers. It provides critical information about how to safely and legally handle and use pesticide product. Unlike most other types of product labels, pesticide labels are legally enforceable, and all of them carry the statement: "It is a violation of Federal law to use this product in a manner inconsistent with its labeling."

Pesticide Toxicity Category. The EPA established four Toxicity Categories for acute hazards of pesticide products, with "Category I" being the highest toxicity category. Acute toxicity studies examine a product's toxicity as it relates to six different types of exposures (acute oral, acute dermal, acute inhalation, primary eye irritation, primary skin irritation, and dermal sensitization). The product is assigned a toxicity category (I–IV) for each type of exposure based on the results of five of the six studies.

Rodenticide. A substance or preparation used to control mice and other rodents.