



ARTICLE

# Botany News – September 2022

[Golden Gate National Recreation Area \(https://www.nps.gov/goga/\)](https://www.nps.gov/goga/), [Point Reyes National Seashore \(https://www.nps.gov/pore/\)](https://www.nps.gov/pore/), [Presidio of San Francisco \(https://www.nps.gov/prsf/\)](https://www.nps.gov/prsf/)

*Issue compiled by Plant Community Monitoring Intern Alexandria Knoell, San Francisco Bay Area Network Botany Program*

---

## What we do

*The San Francisco Bay Area Inventory and Monitoring Network (SFAN) Botany Program consists of Plant Community Monitoring (PCM) and Invasive Species Early Detection (ISED) teams, both of which work to better understand trends in plant communities within the San Francisco Bay Area national parks.*

*While PCM aims to track long-term changes in vegetation structure and composition, ISED is focused on mapping, assessing, and promptly reporting occurrences of priority invasive plants along trails and roads, as well as treating infestations when feasible.*

---

## Coastal Wetland Wonders



*Grindelia stricta* (gumweed) in the foreground of a saltmarsh plot.

NPS / Alee Knoell

Due to the somewhat foul, sulfuric odor that often exists around them, wetlands can garner a bit of a negative reputation. However, beyond the smell lies an ecosystem of unique and astounding beauty, subtly offering environmental services that no other ecosystem provides.

The very way that water passes through a wetland improves water quality; the flow is slowed and the sediment drops, becoming a part of the substrate and thus filtering the water. Wetlands also act as a “buffer zone” between land and sea, protecting upland regions from floods and storm surges. A variety of organisms, such as the ever-revered great blue heron, rely on this ecosystem for food and shelter. For some species wetlands act as a nursery in which juveniles take refuge while they mature.

The botany team had the pleasure this season of getting very familiar with all the beauty, quirks, and smells of the salt-water marsh. Favorite plant species included the delicate-flowered but hardy *Frankenia salina* ([alkali heath](https://www.calflora.org/app/taxon?crn=3612) (<https://www.calflora.org/app/taxon?crn=3612>)) and the tentacle-like foliage of *Triglochin concinna* ([arrow grass](https://www.calflora.org/app/taxon?crn=8111) (<https://www.calflora.org/app/taxon?crn=8111>)).



*Frankenia salina* (alkali heath) sports delicate pink flowers on a woody stem.

NPS / Lisa Schomaker

---

## Post-fire Monitoring

In the early fall of 2020, the Woodward Fire burned nearly 5,000 acres in Point Reyes National Seashore. As we endure another hot, dry fire season in California, we wanted to take a quick look at some of the observations the PCM program has made in the two years following this fire, and to briefly highlight the [ecological benefits of wildfire](https://escholarship.org/uc/item/7hg7j88v) (<https://escholarship.org/uc/item/7hg7j88v>).



Though they were not on our regular survey rotation, we were able to add post-Woodward Fire visits to four Douglas-fir plots and one coastal scrub plot in both 2021 and 2022.

NPS / Jessica Weinberg McClosky

A handful of our permanent monitoring plots fell within the burn boundary, in both Douglas-fir forest and northern coastal scrub communities, and though neither of these were on the regular survey rotation for 2021 or 2022, we were able to add post-fire visits to four Douglas-fir plots and one coastal scrub plot in both years. Prior to the Woodward Fire, the Douglas-fir plots were last visited in 2018, and the northern coastal scrub plot was last visited in 2015. While these post-fire data represent a very small sample yet to be formally analyzed, the visual evidence of short-term fire-induced change is clear.

In April 2021, jumpsuits were donned (to prevent direct contact with the leafy new growth of poison oak) and the PCM team ventured into the post-burn scrub. Amidst the blackened branches of a dense, dead shrub layer, a bright green sea of bracken fern emerged from the char. Along with the ferns came nine new species not observed in 2015. During our 2022 visit, a distinct change in species composition was evident across the entire plot: the once-dense cover of *Baccharis pilularis* ssp. *consanguinea* (coyote brush) was opened by the fire to release a lush bloom of *Lupinus arboreus* (bush lupine, see photos). We also observed a more than two-fold increase in species richness from 2015 to 2022.



Northern coastal scrub plant community monitoring plot SCRB02 pre-fire and two years post-fire.

NPS

Adding hard hats to the jumpsuit attire, the PCM crew then ventured into the post-burn landscape of Douglas-fir forest, hugging scorched tree trunks for DBH (diameter at breast height) measurements and marveling at the lack of woody understory vegetation compared to pre-fire photos. We observed decreases in both woody and herbaceous understory cover in the first post-fire survey, followed by a distinct increase in the latter in

2022. This was most evident at a plot on the flanks of Mount Wittenberg, where cover estimates of both the woody native *Rubus ursinus* (blackberry) and the herbaceous invasive *Ehrharta erecta* (panic veldt grass) decreased in 2021. In 2022, *E. erecta* cover rebounded to exceed pre-fire levels, while *R. ursinus* cover remained low.



Douglas-fir forest plant community monitoring plot DGFR02, pre-fire and two years post-fire.

NPS

The ecological benefits of the mixed-severity nature of the Woodward Fire are discussed in detail in a recent case study: early observations by park scientists suggest net-positive ecological effects including reduced fuel loads, seed-bank release of rare plant species, and increased landscape heterogeneity (O’Gallagher et al. 2021). That said, an increase in invasive plant species is also expected after fire in this area due to the existing abundance of some non-native species (*E. erecta*, *Cortaderia jubata*, *Leucanthemum vulgare*) and the inevitable introductions from fire-suppression and continued recreational activities in scarred landscapes. Ongoing surveys by staff at Point Reyes as well as the I&M PCM team will continue to reveal the trajectory of landscape change in response to this fire.

Read more: [2020 Woodward Fire case study: Examining the role of fire as an ecological process in a coastal California ecosystem \(escholarship.org\)](https://escholarship.org/uc/item/7hg7j88v) (<https://escholarship.org/uc/item/7hg7j88v>)

---

## September Surveys

### ISED

The month of September found the ISED crew wandering the Presidio’s dense network of roads and trails. The hustle and bustle of busy sidewalks and traffic marked quite a departure from the austere ridges of the Marin Headlands or the quiet valleys of the Muir Woods. As the most urban of the Bay Area Network units, the Presidio plays host to a unique variety of monitoring challenges.

Over 9,000,000 visitors pass through the Presidio each year – more than visit the Grand Canyon or Zion National Park – not to mention Hwy 101 passing through the center of the park. Each car or foot presents a potential vector for invasive seeds or propagules to colonize the park. Similarly, the park’s proximity to external residential areas creates more potential for ornamental plants to escape gardens and displace native plants. Influenced by these factors, the Presidio boasts the highest diversity of invasive species of all park regions surveyed this season.



Katherine and Alea collect data on invasive species near a road in the Presidio.

NPS / Lisa Schomaker

The Presidio kept the crew on their toes with some first-time sightings of several priority species. Populations of *Lamium galeobdolon* ([yellow archangel](https://www.calflora.org/app/taxon?crn=8615) (<https://www.calflora.org/app/taxon?crn=8615>)), *Acacia paradoxa* ([kangaroo thorn](https://www.calflora.org/app/taxon?crn=37) (<https://www.calflora.org/app/taxon?crn=37>)), *Pittosporum undulatum* ([Victorian box](https://www.calflora.org/app/taxon?crn=6548) (<https://www.calflora.org/app/taxon?crn=6548>)), and *Tradescantia fluminensis* ([small leaf spiderwort](https://www.calflora.org/app/taxon?crn=8017) (<https://www.calflora.org/app/taxon?crn=8017>)) were all spotted in the central regions of the Presidio. Though none of these plants' populations numbered more than a few individuals, the ISED crew also observed more than 150 distinct occurrences of two more prolific invaders, *Hedera helix* ([English ivy](https://www.calflora.org/app/taxon?crn=4023) (<https://www.calflora.org/app/taxon?crn=4023>)) and *Rubus armeniacus* ([Himalayan blackberry](https://www.calflora.org/app/taxon?crn=10319) (<https://www.calflora.org/app/taxon?crn=10319>)). That said, restoration efforts throughout the Lobos Creek and Tennessee Hollow regions of the park seem to be making an impact; there was a lower density of invasive species throughout these regions than in other areas nearby.

## PCM

PCM salt-marsh monitoring went by relatively quickly compared to other field visits this season, most notably Douglas-fir plots with their [extended protocol](https://www.nps.gov/articles/000/sfan_botany-news_august-2022.htm) ([https://www.nps.gov/articles/000/sfan\\_botany-news\\_august-2022.htm](https://www.nps.gov/articles/000/sfan_botany-news_august-2022.htm)). Located primarily in Point Reyes National Seashore, salt-marsh plots not only lack the physical vegetative obstructions of previous plots, but also the species diversity. This is not to say the community is struggling. Rather, it is telling of the unique qualities plants must possess in order to survive and thrive in such a harsh habitat. As the name implies, the water that flows through and saturates the substrate of salt-marshes is quite salty. So the plants that call this habitat home must be well adapted to higher salinity, otherwise known as halophytic. They also need to be tolerant of semi-frequent inundation, as the tidal cycle may cause the flora to spend some time underwater.

The salt-marsh plots we visited this season were all lush with one of two dominant taxa: *Distichlis spicata* ([salt grass](https://www.calflora.org/app/taxon?crn=2743) (<https://www.calflora.org/app/taxon?crn=2743>)) or *Salicornia pacifica* ([pickleweed](https://www.calflora.org/app/taxon?crn=12001) (<https://www.calflora.org/app/taxon?crn=12001>)). However, there is no one parcel of land exactly like another. While some plots were adorned with fleshy flowering herbs, such as *Jaumea carnosa* ([fleshy jaumea](#)

<https://www.calflora.org/app/taxon?crn=4424>), others encompassed large mud flats or were peppered with squishy splotches of algae.



Brett and Alee read a plot in coastal salt marsh at Point Reyes National Seashore.

NPS / Lisa Shomaker

## Noteworthy Invasive Species

### False ice plant (*Conicosia pugioniformis*)

While you may be yet unfamiliar with *C. pugioniformis*, a relatively uncommon sight throughout the Bay Area, you have likely encountered a few of its close Aizoaceae relatives, *Carpobrotus chilensis* (Sea fig) and *Carpobrotus edulis* (Ice plant). Both *Carpobrotus* species are frequently spotted on bluffs, open fields, and even roadsides around the city while *C. pugioniformis* has primarily been observed in the southwest region of the Presidio. ISED documented three patch occurrences of *C. pugioniformis* whereas the *Carpobrotus* spp. were observed in 16% of the surveyed sub-watersheds.

All three of these invasive plants sport fleshy, crescent-shaped leaves sprouting upright from a low-growing stem. Along with differences in leaf shape and growth habit, *C. pugioniformis* is distinguished from its cousins by its exclusively yellow blooms that have an unpleasant odor. *Carpobrotus* species will flower in shades of brilliant magenta ranging to a pale yellow-pink, but typically have a few pink-tinged blossoms present on any given plant. The references to figs in their names describe the edible fruits, which swell below the base of the senesced flowers into a gelatinous, seedy yet sweet orb. *C. pugioniformis* has been described as edible, but has a drier and less palatable fruit.

Because *C. pugioniformis* does not tend to form dense mats as *Carpobrotus* species do, it is not as immediately impactful to the landscape. However, it can still crowd out native vegetation particularly in coastal dune habitats. The *C. pugioniformis* populations near Lobos Creek, observed by ISED this year, are currently



*Conicosia pugioniformis* is distinguished by its exclusively yellow blooms that have an unpleasant odor.

© Zoya Akulova / 1012 2220 / CalPhotos / 2012 / CC BY-NC 3.0

*L. vulgare* has been a familiar companion this season, often spotted trailside on high ridges throughout the Marin Headlands and Rancho Corral de Tierra. Though native to Europe, *L. vulgare* can thrive in a wide range of California habitat types, from the high Sierra through the Central Valley and Southern coast. This season, the ISED crew detected 12 patch occurrences of *L. vulgare*, altogether totaling a few thousand plants.

This perennial aster is quite charming with its bright flowers and petite lobed leaves that clasp its stem, yet it easily outcompetes native species. As mentioned in the above article on the Woodward Fire, *L. vulgare* can quickly colonize disturbed areas by way of its rhizomatous growth habit and its bountiful yearly seedbank. *L. vulgare* grows as a rosette in its first year, differentiable from other asters by its lobed (rather than toothed) basal leaves and its singly flowered stems. In subsequent years the plant develops a taller growth form with up to 40 stems sprouting 1-2 ft tall from the original base – though each stem still typically develops only a single flowerhead.

While *L. vulgare* is beneficial to some pollinators, its spread contributes to decreased biodiversity in invaded regions – particularly a reduction in the number of wildflower species. Two endemic wildflowers, *Arabis blepharophylla* ([coast rock cress](https://www.calflora.org/app/taxon?crn=436) (<https://www.calflora.org/app/taxon?crn=436>)) and *Navarretia heterodoxa* ([Calistoga navarretia](https://www.calflora.org/app/taxon?crn=5782) (<https://www.calflora.org/app/taxon?crn=5782>)), are known to grow in the same areas *L. vulgare* was observed this year. Left unmanaged, the Bay's ridgeline views could shift from a kaleidoscope of colorful blooms to an endless sea of white petals.

under management in order to protect threatened native species including *Lessingia germanorum* ([San Francisco lessingia](https://www.calflora.org/app/taxon?crn=4738) (<https://www.calflora.org/app/taxon?crn=4738>)).

## Resources

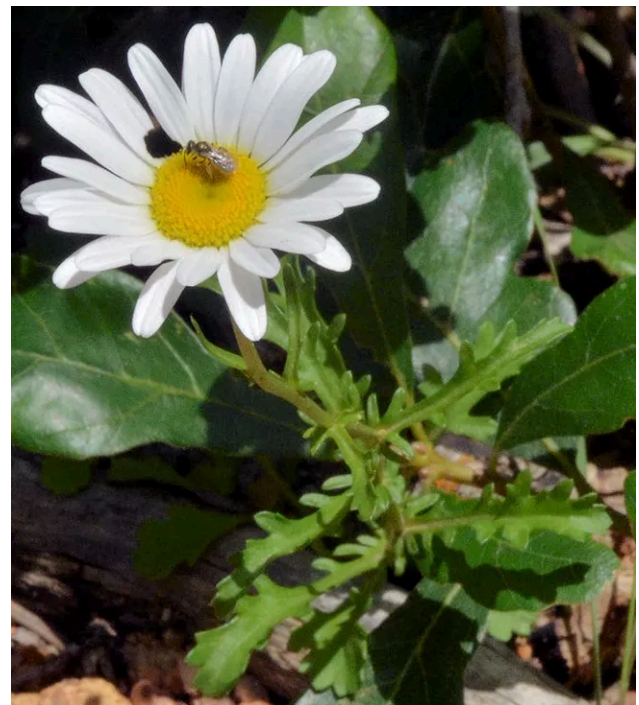
[Conicosia pugioniformis - Cal-IPC](https://www.cal-ipc.org/plants/profile/conicosia-pugioniformis-profile/)

(<https://www.cal-ipc.org/plants/profile/conicosia-pugioniformis-profile/>).

[Carpobrotus edulis - CABI](https://www.cabi.org/isc/datasheet/10648)

(<https://www.cabi.org/isc/datasheet/10648>)

## Oxeye daisy (*Leucanthemum vulgare*)



This season, the ISED crew detected 12 patch occurrences of *Leucanthemum vulgare*, altogether totaling a few thousand plants.

© Barry Breckling / 0915 0221 / CalPhotos / 2015 / CC BY-NC-SA 3.0

This charismatic invader is not without its culinary uses: its buds may be pickled and used like capers. Historically, its flowerheads have also been dried and used to brew a chamomile-like tea in the plant's native range.

## Resources

[Leucanthemum vulgare - Cal-IPC \(https://www.cal-ipc.org/plants/profile/leucanthemum-vulgare-profile/\)](https://www.cal-ipc.org/plants/profile/leucanthemum-vulgare-profile/)  
[Leucanthemum vulgare - CABI \(https://www.cabi.org/isc/datasheet/13357\)](https://www.cabi.org/isc/datasheet/13357)

---

# Native Species Spotlight

## Point Reyes bird's-beak (*Chloropyron maritimum* ssp. *palustre*)



Though it is only found sporadically in the PCM salt-marsh plots, *Chloropyron maritimum* ssp. *palustre*'s unique shape and sticky texture make it a rather memorable species.

NPS / Lisa Schomaker

*Chloropyron maritimum* ssp. *palustre* (hereafter *C. maritimum*) is a fleshy, annual herb that is found exclusively in high-salinity environments, such as salt-marshes. Like most species that inhabit this ecosystem, *C. maritimum* is [halophytic](https://docs.google.com/document/d/1h5MsJkfwy2v9XVKF7CykKazcBPYIcvAiO77u0ZxgUws/edit#heading=h.vey6kdimgpr4) (<https://docs.google.com/document/d/1h5MsJkfwy2v9XVKF7CykKazcBPYIcvAiO77u0ZxgUws/edit#heading=h.vey6kdimgpr4>). Though it is only found sporadically in the PCM salt-marsh plots, its unique shape and sticky texture make it a rather memorable species.

The latter part of the common name—Point Reyes bird's-beak—is derived from the beak-like flower that grows at the apex of the stem. Pink to purple in color, *C. maritimum* flowers from May to October. As the former half suggests, it is typically nestled along the Point Reyes National Seashore. This is the northernmost park of the San Francisco Bay Area Inventory and Monitoring Network, where the botany team has been conducting the majority of its plant community monitoring these last few months.

*C. maritimum* is a hemiparasite, meaning it siphons water and nutrients from other plant species in order to photosynthesize. Contrary to the generally negative connotation associated with the term

parasite, there is research indicating that hemiparasites have positive ecological benefits. According to a report done by the Oregon Department of Agriculture, they reduce abundance of competitive dominant plants, promoting plant species diversity. Additionally, the report claims they may decrease root zone salinity stress.

Sadly, *C. maritimum* ssp. *palustre* is a threatened species in California ([CNPS rare plant rank 1B.2](https://map.dfg.ca.gov/rarefind/view/RF_FieldDescriptions.htm#CA_RARE_PLANT_RANK) ([https://map.dfg.ca.gov/rarefind/view/RF\\_FieldDescriptions.htm#CA\\_RARE\\_PLANT\\_RANK](https://map.dfg.ca.gov/rarefind/view/RF_FieldDescriptions.htm#CA_RARE_PLANT_RANK))). Primarily threatened by habitat loss, often at the hands of increasing development, it is also thought to be impacted by water pollution and accelerated sea level rise. *Spartina densiflora*, a non-native grass species, poses an additional threat by outcompeting the native species that *C. maritimum* relies on for nourishment.

[OR Dept. of Agriculture](#)

[https://sdmmp.com/upload/SDMMP\\_Repository/0/MP263\\_USFWS\\_2009\\_Chlorophyon%20maritimum5Yr.pdf](https://sdmmp.com/upload/SDMMP_Repository/0/MP263_USFWS_2009_Chlorophyon%20maritimum5Yr.pdf)

## September ISED Survey Results

This month's ISED records may be viewed in an interactive map at the [Calflora Observation Search](#) (<https://www.calflora.org/entry/observ.html#srch=t&src=SFNPS+Early+Detection&before=2022-09-30&after=2022-09-01&cols=b&incobs=f>) website. Navigate to the [Help Site](#) (<http://www.calflora.org/entry/help/observ-help.html>) for assistance using the Observation Search page.

### ☒ Want more information or to get involved?

To report early detections or for more information [contact us](#) (<https://www.nps.gov/im/sfan/contactus.htm>)!

Learn more about ISED & PCM:

[Invasive Plants Monitoring Program](https://www.nps.gov/im/sfan/invasive-plants.htm) (<https://www.nps.gov/im/sfan/invasive-plants.htm>).

[Plant Community Monitoring Program](https://www.nps.gov/im/sfan/plant-communities.htm) (<https://www.nps.gov/im/sfan/plant-communities.htm>).

[San Francisco Bay Area I&M Network](https://www.nps.gov/im/sfan/index.htm) (<https://www.nps.gov/im/sfan/index.htm>).

[Newsletter archives](https://www.nps.gov/im/sfan/botany-news.htm) (<https://www.nps.gov/im/sfan/botany-news.htm>).

[Invasive Plants Priority Species Lists](https://www.nps.gov/articles/invasive-plant-species-priority-lists.htm) (<https://www.nps.gov/articles/invasive-plant-species-priority-lists.htm>).

Volunteer Opportunities:

[Invasive Plant Patrol](http://www.parksconservancy.org/get-involved/volunteer/drop-in-programs/invasive-plant-patrol.html) (<http://www.parksconservancy.org/get-involved/volunteer/drop-in-programs/invasive-plant-patrol.html>).

[Habitat Restoration Team](http://www.parksconservancy.org/get-involved/volunteer/drop-in-programs/habitat-restoration-team.html) (<http://www.parksconservancy.org/get-involved/volunteer/drop-in-programs/habitat-restoration-team.html>).



golden gate national recreation area

point reyes national seashore

presidio of san francisco

sfan

san francisco bay area

california

botany

plant communities

invasive plants

invasive species

early detection

pcm

ised

monitoring

newsletter

point reyes national seashore

point reyes

woodward fire

Last updated: February 22, 2023

## Was this page helpful?

☐ Yes

☐ No



An official form of the United States government. Provided by [Touchpoints](https://touchpoints.app.cloud.gov/)  
(<https://touchpoints.app.cloud.gov/>)