

1

BACKGROUND: PUTTING WEED WORK IN CONTEXT



Invasive species are one of the most serious environmental problems of the twenty-first century. They crowd out native species, disrupt natural processes, and impose tremendous costs on human communities. This is even more true for California than for most other states in the country. A few key facts illustrate the scope of the problem:

- u Nearly half of the plants and animals listed as endangered species in the United States have been negatively affected by invasive species.
- u Invasive species inflict an estimated \$116 billion in economic damages annually in the United States and impose an additional \$21 billion in control costs.
- u Yellow starthistle has expanded its range in California at an exponential rate since mid-century. It now occupies 14 million acres of rangeland, more than 15 percent of the state's land area.
- u Of the nearly 1,400 non-native plant species naturalized in California, at least 72 have significant ecological impact.

Scientists have been watching these problems get worse for several decades, but only in recent years has the matter received serious attention at national and international levels. In 1997, five hundred scientists and land managers wrote an open letter to then-Vice President Gore requesting action on invasive species. They declared, "We are losing the war against invasive exotic species, and their

economic impacts are soaring. We simply cannot allow this unacceptable degradation of our Nation’s public and agricultural lands to continue.”

In response, President Clinton signed Executive Order 13112 in 1999. This established a National Invasive Species Council to coordinate federal activities and develop a National Invasive Species Management Plan. The council has since released a draft plan. The State of California is also working on its own plan, the California Noxious and Invasive Weed Action Plan.

But leadership is hardly limited to these formal institutions. In fact, such plans exist mainly because of a groundswell of public interest in invasive species and the damage they can cause. During the last decade, tens of thousands of Bay Area residents have dedicated at least part of a Saturday morning to removing weeds by hand. No matter what happens to the national and state plans, it’s people like them—weed workers and land stewards, dedicated volunteers and hardworking professionals—who will have the greatest impact on the invasive species problem in our local parks and open space for some time to come.



This handbook arose in response to widespread interest among Bay Area weed workers for a compilation of information on the best tools and techniques for addressing the invasive plant problem in local parks and open space. (Throughout this handbook, we refer to parks and open space in a general sense, meaning any parcel of land, whether public or private, where invasive plants pose a problem to remnant wild ecosystems.) During our months working on this handbook, we spoke with several dozen weed workers, most of whom have more than ten years of experience with Bay Area weeds. We have sought to distill their expertise and experience and deliver it to you in a clear and straightforward way.

The primary audience for this handbook includes volunteers who are just getting into weed work, more seasoned volunteers who aim to start a weed program on their own, and interns and seasonal staff who work for the diverse agencies that manage public open space. But even long-time volunteers and professionals may find something useful in these pages.

This sense of the audience drove some of our decisions about what to include. Because of the heavy emphasis on volunteers and interns, we focused our review of tools and techniques on hand tools and manual removal techniques, although we do provide some information about power tools and herbicide treatments as well.

This chapter provides an overview of the invasive problem in the Bay Area and the various agencies and non-profit organizations that are key actors in the field. The second chapter provides strategic advice about setting priorities. If you

can only remove a small portion of the weeds in a park, which ones do you work on, and where? Chapters 3 and 4 address some of the social dimensions of weed work: educating people about weeds and organizing volunteer work parties. The last two chapters are the heart of this handbook: chapter 5 contains a synopsis of the most useful tools and techniques used by Bay Area weed workers, and chapter 6 contains information on the control of thirty-six invasive plants found in the Bay Area.

WEEDS AND WEED WORK IN THE BAY AREA

Weeds have a long history in the Bay Area. Some may have arrived here as early as the middle of the eighteenth century, dispersing northward from European settlements in Baja California in advance of the arrival of the first Europeans in San Francisco Bay in 1769. The spread of invasive plants since then has been swift and steady. California's grasslands were the first to be transformed as invasive annual grasses from the Mediterranean quickly became dominant, helped by heavy overgrazing and droughts during the nineteenth century.

In the last few decades of the nineteenth century, land speculators planted tens of thousands of blue gum eucalyptus trees across California in an attempt to increase the value of their property for resale. Touting the silvicultural value of the trees, these speculators made profits while the unfortunate ones who purchased the land found that the trees were almost useless for lumber. Despite the mounting evidence, several more waves of eucalyptus plantings followed, finally stalling by the first part of the twentieth century.

This fervor for planting trees, stoked by the invention in Arbor Day in 1872 and the popularity of Frederick Law Olmsted's urban beautification movement, led to widespread plantings of many other tree species in the Bay Area, including some, like acacia and tree of heaven, that have since become invasive. Periwinkle and pampas grass were quite popular among gardeners in late nineteenth-century California, which explains their widespread distribution today.

Other invasives were never planted intentionally but spread into Bay Area wildlands once they had arrived in the area. Yellow starthistle, a native of southern Europe and western Eurasia, was first documented in Oakland in 1869. It probably arrived here by way of Chile, as a contaminant in imported bags of alfalfa seed. It spread quickly in the Bay Area and the Sacramento Valley and eventually throughout the state. In 1919 botanist Willis Jepson noted how quickly it had spread near his boyhood home of Vacaville: "It is 1,000 times as common as ten years ago, and perhaps even six years ago." Now that's a good argument for catching the next invasion early and preventing it from getting out of hand!

Public Agencies and Organizations

Open space protection also has a long history in the Bay Area, including such notable events as William Kent's donation of Muir Woods to the nation in 1907; East Bay voters taxing themselves in the middle of the Great Depression to purchase lands that became the heart of the East Bay Regional Park District; the innovative preservation efforts in Marin that led to the founding of Audubon Canyon Ranch and the Point Reyes National Seashore; and the parks-to-the-people movement of the late 1960s and early 1970s that led to the creation of the Golden Gate National Recreation Area (GGNRA) in San Francisco, Marin, and San Mateo counties.

This network of protected open space is governed by an alphabet soup of different public agencies, each with a mandate to protect the natural resources they contain. Since that often means controlling invasive plants, these agencies are often at the forefront of the struggle. These agencies include the National Park Service, the California Department of Parks and Recreation, the East Bay Regional Park District, the Midpeninsula Regional Open Space District, and many other city, county, and regional authorities that manage Bay Area wildlands.

In 2000, the State of California authorized funding to promote local coordination among weed workers in every California county. The legislation encouraged the formation of Weed Management Areas to receive the state funding. Most counties now have WMAs, and these groups provide a forum for public and private landowners and interested non-profit organizations to coordinate their land management efforts and to develop countywide strategies for controlling weeds.

Non-Profit Organizations

In 1965, a group of citizens in the East Bay organized a campaign to save an arboretum in Tilden Park, and the California Native Plant Society evolved out of that effort. CNPS is now the largest such society in the United States. Its members have long been concerned about the growing threat of invasive plants to the state's flora. In 1990, its Yerba Buena chapter began regular weeding work parties in San Francisco under the leadership of Jake Sigg, who also became active in statewide invasive plant issues.

Around the same time, the GGNRA's invasive plant program got off the ground with the formation of the Habitat Restoration Team under the leadership of Maria Alvarez (National Park Service) and Greg Archbald (Golden Gate National Parks Association—now the Golden Gate National Parks Conservancy). That effort gave rise to one of the nation's largest community-based stewardship programs, involving thousands of community members in

weed work every year and training dozens of professional weed workers who now hold leadership positions throughout the Bay Area.

Also in the early 1990s, up in Davis, John Randall was developing what would become the Nature Conservancy's Wildland Invasive Species Program. And down in Santa Cruz, Ken Moore was leading the Wildlands Restoration Team in its efforts to address invasive plants in the Santa Cruz Mountains. As other groups began to join the struggle, it was clear that a critical mass was gathering.

In 1993, weed workers from around the state gathered to found Cal-EPPC, the California Exotic Pest Plant Council (now the California Invasive Plant Council). The organization patterned itself after the Florida EPPC, which was having considerable success bringing people together to strategize about invasive plants and develop better techniques for controlling them. Cal-IPC's annual symposium (held each October), newsletter, brochures, and Web site all aim to make information accessible to weed workers in the state. The group also coordinates efforts to assess which plants are invasive in California.

In a parallel development, public awareness and concern was beginning to grow about the state of San Francisco Bay and its natural resources. The Watershed Project (formerly the Aquatic Outreach Institute) formed to bring an educational message to the community—that our actions, whether through using pesticides in the garden, pouring oil down the storm drain, or allowing invasive plants to take over creeks and open space, affect the water quality of the Bay. The Watershed Project has helped support the steady growth of citizen involvement in creek groups, especially in the East Bay, where these groups are especially active in removing invasive plants. Through its workshops, newsletters, teacher training initiatives, and other outreach activities, Watershed Project staff members have taught thousands of students, teachers, and concerned citizens how to prevent pollution and protect and restore natural resources.

Today, these groups have partnered to produce this handbook. Drawing on the technical expertise of Cal-IPC members and the educational expertise of the Watershed Project, the handbook is aimed at increasing the effectiveness of Bay Area weed workers. The next episode of this story is yours to write!

