

Control of Invasive Exotic Mayweed Chamomile and Its Positive Effects on Nesting California Least Terns

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Abstract

Invasive exotic plants are a major threat to many wild bird species. The rapid colonization of noxious weeds can result in substandard nesting habitat. The Hayward Regional Shoreline located along the eastern shore of San Francisco Bay, supports the second largest California Least Tern (*Sternula antillarum browni*) colony north of Ventura County. This colony is situated on 0.24 ha (0.6 ac) island that was specifically restored for terns by placing filter fabric, and 185 tons of sand/oyster shells to create nesting substrate. However, the rapid spread of Mayweed Chamomile (*Anthemis cotula*) created crowded tern breeding conditions.

We used the line intercept method with modifications to document the increase in a vegetation cover from 30% (height of 24 cm) in 2007 to 90% (height of 30.25 cm) in 2011. This threefold increase in vegetative cover on the site attracted nesting waterfowl, mammalian predators, and restricted tern-nesting to a few open space areas.

In an effort to reduce the crowded tern nesting conditions and improve their reproductive success, we sought an effective means for controlling Mayweed Chamomile. Licensed pest control advisers prescribed herbicides that have been proven to be "practically nontoxic" in laboratory conditions to curb this overgrowth of vegetation. Dow AgroSciences contributed a combination of Milestone®, Capstone®, Rodeo® and Dimension® specialty herbicides that were applied using the technical expertise and equipment of Caltrans specialists. During the 2012 tern breeding season the vegetation cover value was less than 10% (height of 23 cm), and a record number of 189 nests were incubated on the site producing 228 chicks. This presentation will highlight the success of this partnership that brought unique skills and resources to accomplished habitat preservation for an endangered species.



Figure 1. California Least Tern a federally endangered species hovering above invasive Mayweed Chamomile (*Anthemis cotula*) looking for a nest site. By Juan Benjuama-Wildlife Volunteer.

Introduction

The California Least Tern (*Sternula antillarum browni*) is a migratory species, nesting along the West Coast of North America from Baja California north to the San Francisco Bay. They establish nesting colonies on sandy soils with little vegetation along Pacific Ocean beaches, lagoons, and bays. Least terns are generally present at nesting areas between mid-April through late September. The California Least Tern was listed as a federally endangered species in 1970 and as a state endangered species in 1971 due to a population decline resulting from loss of habitat, disturbance of nesting sites, and predation by domestic and wild mammals.

Invasive exotic plants are a major threat to many wild bird species. The rapid colonization of noxious weeds can result in substandard nesting habitat. Due to California Least Tern nesting preferences, they are vulnerable to the spread of invasive vegetation that can quickly colonize their habitat. From 2009-2011, Mayweed Chamomile (*Anthemis cotula*) became the dominant plant cover, creating a monoculture and confining terns to suboptimal conditions (Figure 1).



Figure 2. Rick Miller (Dow AgroSciences) and Bill Nantt (California Department of Transportation) testing equipment on island prior to applying herbicide treatment. By D Riensche, Certified Wildlife Biologist ©

Study Area

The study site is Island Five (37.629739N Lat., 122.146039W Long.) within a brackish water marsh of the Hayward Regional Shoreline, located on the eastern shore of the San Francisco Bay, California.



Figure 3. During the summer of 2013, Sara Lockett and Cody Newell conducted California Least Tern nesting surveys on a weed free island. By D Riensche, Certified Wildlife Biologist ©

Methods

A partnership between East Bay Regional Park District, Caltrans, and Dow AgroSciences in 2012 helped inhibit the rapid vegetation growth and cultivate ideal nesting habitat for the least tern. Dow AgroSciences contributed a combination of Milestone®, Capstone®, Rodeo®, and Dimension® specialty herbicides to inhibit the growth of vegetation at the site. The combination of herbicides was used at the recommendation of local pest control advisors and has been proven to be "practically nontoxic" in dozens of laboratory tests and field studies. The herbicides were carefully applied by Caltrans specialists during the late winter, prior to the terns' arrival in the spring (Figure 2). The treatments resulted in a major decrease in vegetation. Results from a line intercept method revealed that vegetation cover in 2007 was 30% (height of 24 cm), but vegetation cover reached 90% (height of 30.25) in 2011. This three-fold increase in cover was curtailed after the application of herbicides, and in 2012 vegetation cover was less than 10% (height of 23 cm) (Figure 3).

In the two breeding seasons since the herbicide treatment was applied, the terns are reacting positively to the decrease in vegetation. During the 2012 breeding season, there were 189 incubated nests at the site, producing a total of 228 chicks (Figure 4). In the 2013 season, the colony experienced an amazing 95% hatching success rate and produced upwards of 118 fledglings (Figure 5). The site is now the second largest California Least Tern colony north of Ventura County. Thanks to the unique possibilities, and potentials reached through these partnerships to reduce Mayweed Chamomile, the Hayward Regional Shoreline is now a prime nesting site for this endangered species.



Figure 4. During the 2012 California Least Tern breeding season, there were 189 incubated nests, producing a total of 228 chicks at the Hayward Regional Shoreline. By D Riensche, Certified Wildlife Biologist ©

Acknowledgments

Since the start of this effort in 2001 more than 4,100 volunteers have devoted 16,800 hours of help so that these endangered birds might overcome the challenges they face. Special thanks goes to all those volunteers listed below who helped maintain and monitor the site in recent years: Patrick Alvarez, Juan Benjumea, Kay Bloom, George Bloom, Emily Brownlee, Joe Buckovic, Neysa Budzinski, Jaclyn Caldwell, Maggie Clark, Norman Chu, Rachel Crosby, Kara Crosby, Lien-Thi de la Pena, Ed de la Pena, Emily de la Pena, Joshua de la Pena, Teresa de la Pena, Megan de la Pena, Nancy Teruko Dodd, Janelle Dorcy, Sharon Dulava, Amanda Dwyer, Arthur Garibaldi, Tierra Groff, Lisa Henderson, Carin High, Howard High, Kate High, Sam High, Richard Kaufmann, Avery Kruger, Anne Krysiak, John Mena, Elliott Moon, Martha Morrow, Brian Pinomaki, Rita Pinomaki, Tyler Pinomaki, Brianna Pinomaki, Mary Riensche, Sarah Riensche, Daniel Riensche, Nathan Riensche, Rebekah Riensche, Mark Schynert, Kendra Schynert, Petra Shawen, Pete Thompson, Pam Thompson, Linda Valle, Steve Wiley, and David Wiley.



Figure 5. California Least Tern, a federally endangered species, feeding its fledgling a fish on a weed free island. By Juan Benjuama-Wildlife Volunteer.