



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Amaya Bechler	Project Number S0903
Project Title How Is Bird Abundance and Diversity Affected by Invasive Dense-flowered Cordgrass in Humboldt Bay Marshes?	
<p style="text-align: center;">Abstract</p> <p>Objectives The purpose of this project was to determine differences in bird use between salt marsh dominated by the invasive cordgrass <i>Spartina densiflora</i>, and marshes which have undergone different stages of restoration. This study focused on the low elevation salt marshes of Humboldt Bay.</p> <p>Methods To take data on bird abundance, species, and habitat use, I used point-counts. In the three locations, distinct areas representing each restoration type, I surveyed from two points. I recorded birds for five minutes at each point. The count of each species was recorded in three different categories: on-area, for birds interacting with habitat; off-area, for birds outside of habitat or flying over; and within fifty meters for birds interacting with habitat within fifty meters of the point.</p> <p>Results The average count of birds for the fully restored marsh showed a 54 percent increase over the intermittently restored marsh, and an 86 percent increase over the unrestored marsh. The unrestored marsh had the highest frequency of the guild of seed-eating species, but the lowest counts and frequencies for shorebirds and waterfowl. There was no clear difference in diversity of species between sites.</p> <p>Conclusions The area where <i>Spartina densiflora</i> had been completely removed showed significantly higher numbers of birds, especially shorebirds. This result is supported by another study conducted on the same subject. This is likely due to the decrease in native plant species where <i>Spartina</i> is present, and the adverse effects of <i>Spartina</i> on invertebrate assemblages and marsh physiognomy. These results support the conclusion that removal of <i>Spartina densiflora</i> is essential to maintaining high numbers of waterbirds in Humboldt Bay.</p>	
Summary Statement This study showed how an invasive species of cordgrass affects bird abundance, diversity, and habitat use.	
Help Received I received information about the Humboldt Bay Wildlife Refuge from Brendan Leigh, Andrea Pickart, and Greg Gray, all from the U.S. Fish and Wildlife Service.	