



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Ryan S. Terrill</b>	<b>Project Number</b> <b>S1913</b>
<b>Project Title</b> <b>Potential Effects of Conversion of Salt Ponds to Tidal Wetlands on Wintering Birds</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Recently, the Federal and State Governments purchased thousands of acres of salt ponds. These salt ponds had been established a century ago through reclamation of tidal wetlands when tens of thousands of acres of tidal wetlands were converted to a massive system of salt evaporator ponds. This substantial alteration of the natural bay estuarine system has had devastating effects on the San Francisco Bay ecosystem and has resulted in some of the San Francisco Bay endemic species being listed under the Endangered Species Act. In an effort to restore the habitats that support these species, as well as a large number of species dependant upon these habitats, the salt ponds were purchased in order to convert them back to their original tidal habitats. While this restoration will undoubtedly benefit these endemic species dependant on San Francisco Bay tidal habitats, a large number of migratory birds use these salt ponds. The potential impact of restoration on these species is largely unknown.</p> <p><b>Methods/Materials</b> Therefore, I attempted to obtain data that would enable one to generate predictions regarding the potential effects of such a massive project on a large number of migratory birds. The null hypothesis was that conversion of salt ponds to tidal wetlands would have no effect on these populations. To do this, I collected data from fourteen sites (6 salt pond and 8 tidal wetland sites). I made direct counts of all birds using these sites within a thirty minute period. The area surveyed was determined using Global Information System (GIS) Arcinfo software. Numbers of birds in each habitat were converted to densities (birds/acre) for each site surveyed. These densities were used to determine the potential effects of conversion of nine thousand acres of salt ponds to tidal wetlands in the South San Francisco Bay on important wintering bird populations</p> <p><b>Results</b> Although a few species would suffer from salt pond conversion to tidal wetlands (e.g., Eared Grebe, California Gull), the majority of migratory birds that winter in the South San Francisco Bay would benefit from the conversion. The conversion of salt ponds back to tidal habitat would result in a net increase of over 100,000 wintering, migratory birds supported by the restored tidal habitats.</p> <p><b>Conclusions/Discussion</b> Restoration of the salt ponds to tidal habitats would be strongly beneficial to endemic species and migrants dependent on the Pacific Flyway.</p>	
<b>Summary Statement</b> Attempting to forecast the effects of wetland conversion on wintering birds	
<b>Help Received</b> Mother helped design board. Father helped with establishing data collection procedures, with data collection, and with editing the paper	