Western Snowy Plover Nest Site Characteristics and Use of Drone Imagery in Predicting Potential Nesting Habitat

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The purpose of my project is to determine specific nesting characteristics for the threatened shorebird species the Western Snowy Plover, and to see if imagery from a drone can predict potential nesting habitat. Based on literature review, drones have never been used to predict nesting habitat. In the field, I measured surface cover, soil, micro-topography, and surrounding feature characteristics at eleven nests and random control locations. There were significant differences between nests sites and the control points. Specifically, bare soil, raised topography, average highest point, and number of objects all were significantly different between nests and controls. Factors such as percent grass, litter, and woody debris; distance to water level, bank full and new ecosystem; and soil textures and colors were not significant. Drone imagery was obtained for Pond 46, where four known nests occurred. Using those nests, band width signatures were identified. The nest band width signatures were then extrapolated using ArcGIS to create an area of potential nesting habitat. The map of potential habitat was analyzed by a biologist and it appeared to be a reasonable representation of potential nesting areas. Multi-spectral data collected by the drone was used successfully to predict potential Snowy Plover habitat for this project therefore, drones may become a very useful tool in mapping plover habitat in the future. With the emerging technology of drone mapping, and by knowing what characteristics the birds prefer, biologists can hopefully protect those preferred habitats and possibly recreate them, to prevent the species from declining any more.

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