

Use of remote sensing to identify suitable breeding habitat for the Kentish Plover and estimate population size along the western coast of Saudi Arabia

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The identification of the environmental parameters affecting species' habitat preferences is a key to understanding the relationships between habitat features and species' distributions. This understanding provides the evidence base upon which to formulate guidelines for managing populations. We used distribution modelling to quantify habitat relationships and to estimate the population size during the breeding season of the Kentish Plover *Charadrius alexandrinus*, a poorly known species on the western coast of Saudi Arabia. We used a Generalised Linear Model (GLM) with four habitat variables derived from satellite data: elevation, distance to settlements, vegetation cover and soil moisture to produce a habitat suitability model. Validation of this model using a receiver operating characteristic plot suggests that it is at least 80% accurate in predicting suitable sites. We then used our estimate of total area of suitable habitat above a critical suitability threshold and data on Kentish Plover density, to estimate the total population size to be 9,955±1,388 individuals. Based on our model we recommend sites for potential protected areas to be established. Finally, we believe that our modelling approach can provide inputs for conservation planning and long-term population monitoring of Kentish Plover and other shorebirds in the region. We argue that conservation of Kentish Plover habitat will not only protect this species, but will benefit other species, particularly those with similar habitat requirements.