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Abstract

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The Effects of El Nino Southern Oscillation Events on Hatching Time of Wedge-Tailed Shearwaters

The Wedge-Tailed Shearwater (WTSH) is a slow developing, long lived seabird species found mostly in tropic and subtropic regions in the Pacific and Indian Ocean (D. Smith et al 2002). The age of sexual maturity is later in life relative to other species and therefore reproductive success is important to maintain and grow the population. It is critical to understand oceanic characteristics that lead to variability in chick hatch time to determine environmental conditions that effect reproductive success. Chick hatch date in Julian days has been collected at the Freeman Seabird Preserve annually from 2009-2016 and this data was sorted into bins of “early”, “average”, and “late” based on average hatch date per year. Oceanic properties that can affect hatching success include properties that characterize El Nino events such as sea surface temperature, surface winds, and sea level pressure. These variables are used together to create the Multivariate ENSO Index (MEI), a monthly monitoring tool for ENSO. MEI was used to determine that El Nino events correspond to “late” hatching times and La Nina events suggest “early” hatching times within the year following the Southern Oscillation event. This further suggests that ENSO oceanic conditions can promote or delay the hatch date of WTSH and can therefore have effects on chick survival and overall reproductive success. Further research should be conducted on the future climate predictions and strength of ENSO events in connection with WTSH populations patterns.