



**North Pacific Fisheries Commission**

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## **Summary of research into the effects of oceanography on North Pacific Armorhead recruitment in the Emperor Seamounts**

The North Pacific Armorhead (NPA), *Pentaceros wheeleri*, is thought to exhibit an extended post-spawning epipelagic phase in which larvae disperse to the northeast Pacific Ocean. Current understanding of juvenile distribution, development and mechanisms that drive recruitment variation, however, remains largely incomplete. The objective of this study was to compare a time series of NPA recruitment to established climate indices and to environmental covariates to investigate drivers of the NPA life cycle. Additionally, this work investigates larval NPA transport pathways and their positional relationships to the proposed northeastern nursery grounds. Using Lagrangian particle tracking, trajectories of passive larvae were simulated at depths of 0 and 15 m for 18 years (2001-2018) from the Southern Emperor-Northern Hawaiian Ridge (SE-NHR) natal habitat. Dispersal distances and positions of particle end points were examined for their potential relationships with recruitment. Sea surface temperature and ocean color were evaluated as predictor variables using generalized additive modelling (GAM). Neither regression of particle end points characteristics nor GAMs resulted in significant correlations with recruitment, though a moderately significant relationship was found between recruitment and percentages of particles advected at 15 m depth that achieved the nursery zone. Significant seasonal correlations were found between the recruitment index and the Arctic Oscillation, Pacific Decadal Oscillation and North Pacific Gyre Oscillation, suggesting that NPA recruitment mechanisms appear to respond to interannual ocean-atmospheric climate oscillations. Better knowledge of the connections between recruitment and the environment would be valuable for stock management and improvements for advection predictions are discussed.