

Searching for pathogen-mediated selection by ectoparasites in MCH class II B genes of Leach's Storm Petrels

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This summer I investigated the ectoparasites living on the Leach's Storm Petrel population of Kent Island. Specifically, I was interested in two separate questions: whether mating pairs have similar ectoparasite loads, and whether the storm petrel's ectoparasite loads are correlated with the genotype of their major histocompatibility complex, a component of their immune system. I also spent much of the summer grubbing in the Shire to help gather data for the long-term data set. I was lucky enough to spend the whole summer joyfully discovering the beauty of Leach's storm petrels with the four other members of Team Petrel.

I measured the parasite loads of the birds by inspecting their flight feathers and recording the number of spots where ectoparasite damage was evident. After capturing and banding both adults in about half of my study burrows, I was able to determine that there is no significant correlation between the ectoparasite loads of mating pairs. This leads to further questions of where the petrels are getting their parasites, if not from their mates, and what role burrows play in parasite exchange between individual birds.

The immune response portion of my project focused on how the diversity of alleles of the major histocompatibility complex (MHC) class II genes relate to the parasite load of individual birds. The MHC allows the body to differentiate between foreign cells and its own cells, and MHC Class II genes comprise various elements that recognize pathogens. It contains a specific gene sequence, called the Peptide Binding Site (PBS), that binds to pathogens and displays them to the rest of the immune system to direct the immune response. In work from previous summers on the island, Donald Dearborn showed that Kent Island's storm petrels are under positive selection for heterozygosity at the PBS. I hope to figure out if any of those pathogens are related to the ectoparasites birds are exposed to. I haven't had the opportunity to process any blood samples yet, but I am hoping that what I find will shed light on the types of selection affecting Kent's storm petrels.

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