

**Using habitat modeling to assess the distribution and abundance of the Farallon arboreal salamanders on Southeast Farallon Island**

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**Objectives**:

* To identify physical and biological drivers of distribution and abundance of salamanders on the Southeast Farallon Island.
* To predict salamander habitat based on robust statistical models including the main physical and biological drivers of salamander abundance.
* To estimate salamander abundance in high use areas based on predicted densities.

**Background/Justification for study:**

A study on the Farallon arboreal salamander (*Aneides lugubris farallonensis*)population was initiated in 2006 to determine seasonal activity, relative abundance, population status and trends and reproductive behavior. This information was important to establish a baseline to measure potential impacts of the planned mouse eradication. Information drawn from this study is unfortunately limited to a small portion of Southeast Farallon Island and was not representative of the island-wide population size or density. In order to gain a more complete understanding of abundance and distribution of this species, a series of extensive island-wide surveys were conducted from the Fall of 2012 to the Spring of 2015. Current methods of reporting salamander distribution involve reporting the number of salamanders by area based on the cover boards sampled in particular transects around the island. We will use a combination of GIS and rapid assessments to characterize potential physical drivers including slope, aspect, substrate and distance to cover areas. In addition, we have detailed information on biological drivers including type and abundance of vegetation in areas where salamanders have been sampled. Vegetation may be a form of cover for salamanders and the prey they depend on. We will use this information to identify physical and biological drivers of distribution and abundance of salamanders on the Southeast Farallon Island. Specifically, we plan to use Generalized Linear Modeling (GLM), particularly Negative Binomial Regression, to develop predictive models of salamander counts based on the main physical and biological drivers controlling for inter-annual differences in environmental conditions that may have affected our sampling scheme. Having more insight into salamander distribution and abundances around the island will allow estimating minimum and maximum (± confidence interval) population sizes on Southeast Farallon Island.

**Budget**: $25,000