From:	Dan Grout
To:	Jaime Jahncke
Cc:	Russ Bradley; Nick Holmes; Gerry_McChesney@fws.gov; Jonathan_Shore@fws.gov
Subject:	RE: ARBOREAL SALAMANADER MONITORING (DRAFT)
Date:	07/26/2012 11:06 AM

Jaime/All:

Looking forward to this meeting. It would be great for us (IC&PRBO&FWS) to spend a little time before/after discussing the status of the vegetation and cricket monitoring design programs too, if possible.

Below is a link to a monitoring program designed for lizards and slender salamanders on Anacapa and other Channel Islands associated with the black rat eradication there in 2001-2, that might be of some use to this group in designing the methods for the Farallon salamander. Feel free to distribute to the larger group if you think it might be helpful:
http://science.nature.nps.gov/im/units/medn/reports/docs/chis_terrvert96.pdf

In regards to the statement in the Background info you sent that management activities "*could impact salamanders, particularly if chemicals are used extensively*": While it would be good for the salamander monitoring program to be able to detect any downward trends as well as upward trends, it hasn't been established that the anti-coagulant rodenticide compounds registered for U.S. island rodent eradications have had lethal impacts on reptile and amphibian circulatory systems. The NPS reports that the Anacapa salamanders (and side-blotched lizards) are thriving there post rat-eradication, and recent reports this week from USGS monitoring efforts on Palmyra Atoll report increases in detections of native/endemic geckos there one year post rat eradication. Numerous other examples of positive trends for amphibians following rodent eradications are documented world-wide.

Thanks for moving the monitoring discussions forward! See you soon –

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From: Jaime Jahncke [mailto:jjahncke@prbo.org]
Sent: Monday, July 23, 2012 3:42 PM
To: Jaime Jahncke
Subject: FW: ARBOREAL SALAMANADER MONITORING (DRAFT)

Hi all:

We are planning a meeting to gather advice on how to best expand existing arboreal salamander studies on the Farallon Islands to meet the following goals: 1) gain additional knowledge about the distribution and abundance of Farallon arboreal salamanders across island habitats, and 2) increase detect ability of juvenile salamanders, a key metric for assessing population impacts related to restoration efforts.

Please let us know your availability by selecting appropriate dates in the DOODLE link http://doodle.com/mhhh84v5g8x2v7u3

DESIGNING AN ISLAND WIDE ARBOREAL SALAMANADER MONITORING ON SOUTHEAST FARALLON ISLAND

PRBO will design methods to monitor the abundance and distribution of arboreal salamanders across habitat throughout Southeast Farallon Island. The design will likely include a stratified sampling design driven by an appropriate habitat proxy (i.e., vegetation, substrate, soil moisture, etc) that would involve establishing additional sets of paired cover boards (or other comparable methods) across habitat types, providing a broad survey area and effort above and beyond current methods. Monitoring would be paired with basic habitat assessments that would help identify drivers that determine differences in distribution and abundance of salamanders across the island (i.e., soil moisture, substrate, prey, vegetation). These new cover boards would likely be surveyed once every month throughout the rainy season (November through May) – documenting numbers of salamanders detected by size class and reproductive state.

BACKGROUND

The arboreal salamander, *Aneides lugubris*, is a California near-endemic, occurring from Humboldt County to northern Baja California. It is the only year-round native terrestrial vertebrate inhabiting the South Farallon Islands. Salamanders are active at the surface during the rainy season (approximately October-May yearly), but retreat into crevices, burrows and hibernacula during dry weather (approximately May-September yearly). Eggs are deposited in June/July in clusters of 12-18 with adult females standing guard over their eggs and recently hatched young for approximately 3 months. The young of each year can be first detected in the early fall. In 1974, Boekelheide area-searched along a transect from the marine terrace up to the lighthouse and found the greatest densities on the talus slope above PRBO house and on the cliff below the lighthouse. Beginning in

2005, a long term monitoring study utilizing biweekly surveys of cover boards (30cm x 30 cm) throughout the rainy season was initiated by PRBO Conservation Science to asses inter and intra annual trends in salamander populations, demography, and reproduction in a limited area of Southeast Farallon Island.

Localized management activities at the South Farallon Islands could impact salamanders, particularly if chemicals are used extensively. There may also be positive effects of mouse eradication due to removal of competitors for insect prey. Baseline data are critical to documenting effects of existing and future changes to salamander populations. While current monitoring methods for salamanders on Southeast Farallon have produced valuable data on metrics like adult survival, there are still data gaps relating to the distributional of animals across the entire refuge as well as low delectability of juveniles – a key bench mark for assessing changes in the salamander population.

Thanks,

Jaime Jahncke, PhD, *California Current Director*
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