



What does colony recovery look like for auklets on a catastrophically disturbed island?

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INTRODUCTION

When Kasatochi volcano, in the Central Aleutians, erupted in August 2008, there was concern that a major auklet nesting site was lost for the foreseeable future. Prior to the 2008 eruption Kasatochi supported breeding populations of Crested, Least and Parakeet auklets. We monitored these species and the processes affecting the development of their breeding habitats to understand the processes that affect their recovery following large-scale disturbances.



STUDY AREA/METHODS

Kasatochi - Small (5.94 km²) volcanic island in the central Aleutian chain (Fig. 1).

3 species of planktivorous auklet

- Crested Auklet (*Aethia cristatella*)
- Least Auklet (*Aethia pusilla*)
- Parakeet Auklet (*Aethia psittacula*)

Monitoring strategies

- Offshore surveys – Crested & Least Auklets
- Coastal surveys – Parakeet Auklets
- Terrestrial reconnaissance of nesting sites

2 distinct breeding habitat requirements

- Beach boulders/cliff cracks
- Talus Fields

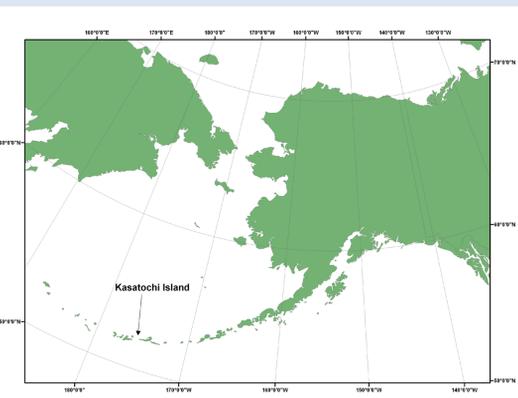


Figure 1. Location of Kasatochi Island in the Aleutian Island chain.



RESULTS

- Adult auklet abundance indices have not yet shown significant differences (Fig. 2 & 3).
- Wave erosion has exposed extensive fields of beach boulders, particularly along the northern shore of the island (Fig. 4).
- Reconnaissance of areas of beach boulder accumulation and coastal scarp face habitats revealed a low level of breeding effort among Parakeet Auklets beginning in 2011 (Fig. 4).
- Noticeable rock-fall 2010-2013 created approximately 1 Ha of new talus over in Whiskey Cove (Fig. 5).
- Reconnaissance of the “New” Whiskey Cove colony site in 2012-2013 provided evidence of extensive nesting by both Crested and Least Auklets throughout the new talus field (Fig 5).

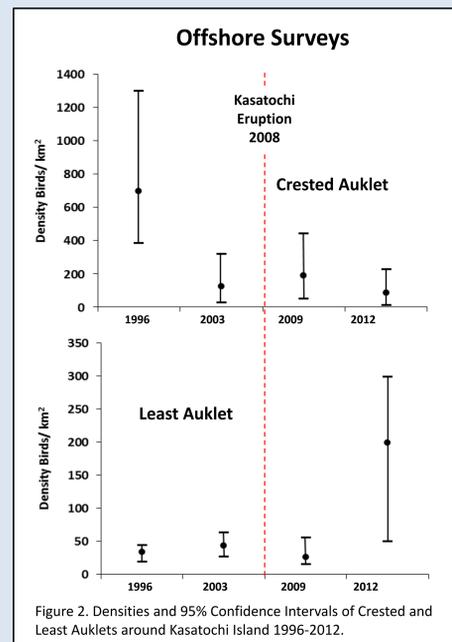


Figure 2. Densities and 95% Confidence Intervals of Crested and Least Auklets around Kasatochi Island 1996-2012.

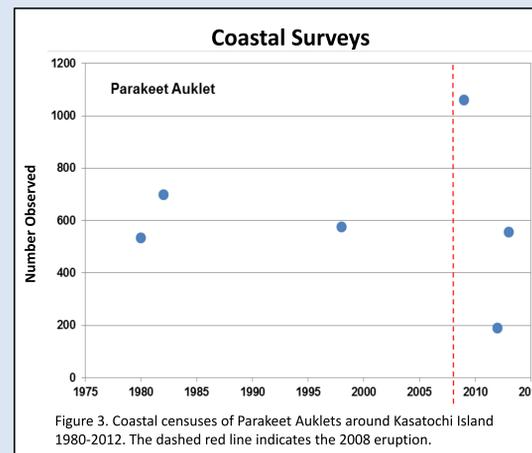


Figure 3. Coastal censuses of Parakeet Auklets around Kasatochi Island 1980-2012. The dashed red line indicates the 2008 eruption.



Figure 4. Searching among beach boulders along the Northeastern coast June 2010.



Figure 5. Large talus pile in Whiskey Cove on the Northwest side of the island.

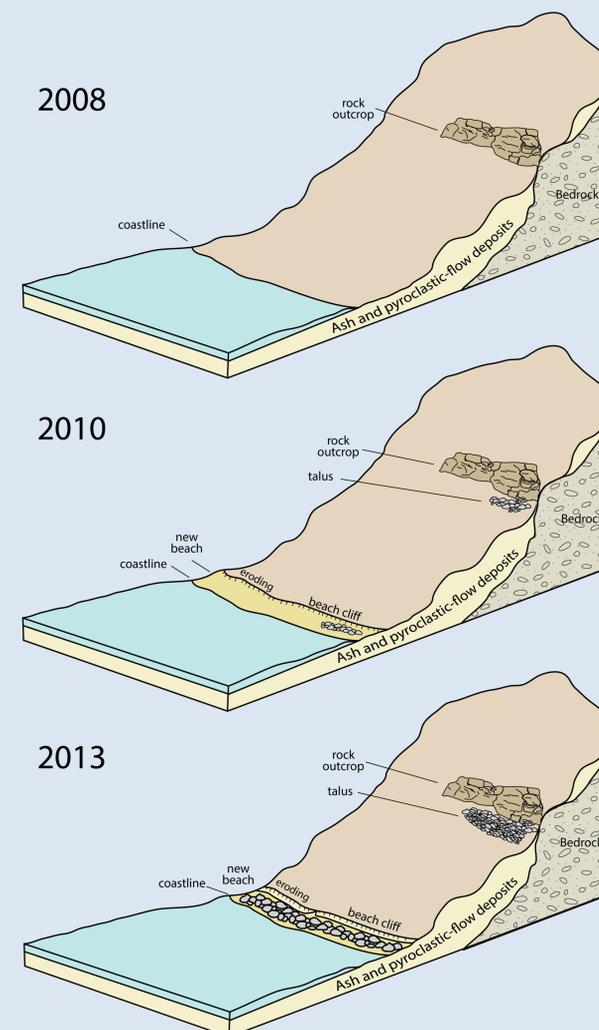


Figure 6. Schematic illustrating the development of coastal beach boulder habitats from wave erosion and talus piles from rockfalls.

DISCUSSION

- The recovery of auklet nesting habitat was much faster than unexpected.
- This habitat recovery has progressed through two different mechanisms, erosion and rock-falls (Fig. 6).
- Erosion processes have not uncovered pre-eruption upslope talus sites, but have led to an accumulation of beach boulders and exposed coastal scarp face habitat used by Parakeet Auklets.
- Extensive rock-falls in Whiskey Cove have provided crevice-nesting habitat used by Crested and Least Auklets.
- Whether the rock-fall was triggered by the eruption process remains unknown.
- The lack of evidence for population changes suggest that reproduction is compensating for mortality.

TAKE HOME MESSAGE

The nesting habitats of crested, least, and parakeet auklets are recovering rapidly at Kasatochi. The recovery of these habitats has been the result of 2 different mechanisms, erosion and rock-fall. Despite these results, we do not know if this is a typical recovery or unique to Kasatochi's geomorphic structure and environment. Future research will focus on continued documentation of the recovery process. By understanding the factors affecting habitat recovery, we will be able to determine the applicability of our results to other sites and predict future recovery trajectories.



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