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Interactive comment on "Recolonization of the intertidal and shallow subtidal community following the 2008 eruption of Alaska's Kasatochi Volcano" *by* S. C. Jewett and G. S. Drew

Anonymous Referee #3

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General comments.

This contribution aims to describe the impact of the volcanic eruption of Kasatochi Island in Alaska on marine fauna and fauna. This 2008 eruption virtually wiped out all terrestrial and subtidal plants and animals of the island. In order to assess recolonization following this event, the authors used observations obtained through different sources and different sampling methods from fixed sites along radial transects around the island.

Initial pre-eruption data were almost non-existent for Kasatochi Island. In an attempt to describe the impacts of the eruption on the marine flora and fauna around the island,

the authors were required to assume that the state of the island's marine communities would have been similar to other islands nearby. Thus, they compare post-eruption data from Kasatochi for the years 2009, 2012 and 2013 with pre-eruption data for 2006 and 2007 coming from other regional islands.

This paper highlights recovery processes from extreme disturbances such as a volcanic eruption. Such studies are, like the eruption events themselves, relatively rare, yet offer much insight as natural laboratories. One of the key messages that the authors should emphasize in their concluding remarks is the usefulness of multiple sites for monitoring using standardized methods. In this case, nearby monitoring was indeed useful. The authors were also able to gather information from similar events (e.g. links with the eruption and emergence of Surtsey in 1963) so as to project future recolonization patterns at Kasatochi.

My main concerns from this study regard information related to the sampling and the poor quality of data reporting (see suggestions below). Even if data were collected in an opportunistic way (this being in itself very understandable), they are from standardized samples and yet too few statistical comparisons are presented by the authors. Also, the paper is difficult to read and the information should be presented in a more concise manner. Throughout the paper, some facts are often reported in too great of detail. In other cases, the reader is unsure if the data being discussed comes from Kasatochi, other volcanic islands or from the published literature.

I was also very interested by the dynamic aspects of the erosion-accretion that would play a major role in the future recolonization around the island.

Specific comments.

Fig. 1: Indicate that the dotted area represents the extent of ash fall.

(page 3804, lines 1-10) The authors used 3 types of quadrat nested in each other: 1X1m, 0.5X0.5m and 0.25X0.25m. The 1X1m was for algal and macroinvertebrate %

cover, the 0.25X0.25m was used with an airlift sampler for invertebrates. However it is unclear how the algae in the 0.5X0.5m were sampled and how the data (both for % cover and count of algae and invertebrates) were contrasted/used from the same site.

(P3804, L15). So, only one video was taken? Line 20: Are the data from the two transects of 25m pooled (total surface of 50m2)? May the data from the latter sampling be used to report abundance per square-meter?

The sampling layout showed at Fig. 3 is unclear and the caption needs more explanation for each type of sampling and the symbols showed. It is not immediately clear whether this figure represents a view from the air or if it represents a profile.

Data analyses: it is unclear as to which data were compared. Why were data from algae and invertebrates not compared statistically among sites and years?

I understand that results were scarce, but I strongly suggest that the authors present all averages (with SE error) in standard graphs. When the availability of data is difficult, I would suggest pooling transects in order to better compare with other islands or between years (nonparametric stats may help if needed). Even if qualitative sampling is done, comparison of community composition may be possible (e.g. multivariate analyses of species presence/absence). It is very difficult to visualize differences among transects and years for the reported results in Table A1.

P3808 L22: Provide both df for the F ratio. This will provide information regarding the number of samples used.

P3809L23: Unclear if the data were from this study or from Jewett et al. (2010). If from this study, I would suggest presenting a graph. How many species in total? It is unclear what was compared on line 29: Total abundance of amphipods among 3 sites? What is meant by “distinct families”?

P3810 L5: Such comparison would be better using simple graphs.

Fig. 6 and 7: None of the bird data provides direct evidence of the negative effects of

the eruption. Do we have any idea regarding the variability of these results (e.g. variation in numbers from different site on the island.)? At page 3818 line 19, it is explained why high number of pigeon guillemots in 2009 was seen. Even if it is speculation, this statement may already be given in the results section.

All descriptive results that are included in the discussion section (e.g. p3813 starting at line 1, p3814 starting at line 4 and part of page 3815, etc.) should be removed and placed within the results section. This will simplify the text for the reader.

Interactive comment on Biogeosciences Discuss., 11, 3799, 2014.