

The handling editor finds that the authors' responses to reviewer comments are satisfactory and the manuscript should be accepted to publication in Biogeosciences after some minor revisions, which mainly include text changes, but also one issue with missing data in the Results chapter.

Here below is a list of the requested revisions:

Page x – line x.

Page 2 (Abstract) – line 12: ...of Iceland + Heimaey. ➔ ...of Iceland and the nearby island of Heimaey.

Page 2 (Abstract) – line 19: A generalized account of the colonization history of *H. peploides* is given. ➔ This sentence can be deleted without any loss of information.

Page 3 (Introd.) – line 4: ...to 1965. ➔ to 1967.

Page 3 – line 19: ...and how it responds ➔ ...and how it responded

Page 4 – line 1: The first individuals was ➔ The first individuals were

Page 4 – line 2: In 1968 103 individuals were observed, from 1968 to 1972 the number of recorded individuals was between 51 and 72 ➔ In 1968, 103 individuals were observed and during 1968 to 1972 the number of recorded individuals varied between 51 and 72.

WHERE DOES THIS AND THE FOLLOWING INFORMATION COME FROM?? – Fridriksson 1992?? If so, he should be quoted earlier so it is clear.

Page 4 – line 4: This indicates ➔ This indicated

Page 4 – line 6-7: and local dispersal already ➔ and local dispersal episode already (??)

Page 4 – line 7-8: from the coast to the top (app. 150 m) ➔ from the coast to the top of the two calderas (ca. 150 m a.s.l.)

Page 4 – line 10-11: On the east part of the island the individuals were marked with a number and the year of the first observation throughout the seventies. ➔ Throughout the seventies all colonizing individuals were marked with sticks marked with a number and the year of the first observation.

Page 4 – line 20-21: Through the process of colonization *H. peploides* has been through times with very few and scattered individuals ➔ During the initial colonization in 1967-1972 the *H. peploides* survived with very few and scattered individuals (??) [This statement is only true for this earliest phase of colonization].

Page 6 – line 17: two populations on Heimaey ➔ two populations on the largest island of the Vestmannaeyjar Archipelago, Heimaey,

Page 6 – line 17: of the mainland of Iceland. ➔ of the mainland of Iceland (Table 1).

Page 7 – line 3: In table 1 these population characteristics are summarized. ➔ These population characteristics are summarized in Table 1.

Page 8 – line 2-4: and are on Surtsey across the five populations studied significantly different from equality between pistillate and staminate plants (G-test, $p < 0.001$). ➔ and were significantly

different from equality between pistillate and staminate plants (G-test, $p < 0.001$) across the five studied populations on Surtsey.

Page 8 – lines 6-7: We did not find any influence on the morph ratios the younger and the more disturbed the populations were. ➔ [YOU NEED TO FINISH THIS SENTENCE, PLEASE].

Page 8 – line 18: (t-test, $p = 0.18$), Table 2. ➔ (t-test, $p = 0.18$; Table 2).

[PLEASE USE PARENTHESIS AROUND REFERENCES TO TABLES/FIGURES, WHERE THE TABLE- OR FIGURE NAME IS NOT A NORMAL PART OF THE SENTENCE...– CHANGE EVERYWHERE IN THE MANUSCRIPT]

Page 8 – line 19: plants is 11.3 ➔ plants was 11.3

Page 8 – line 21: Hermaphrodites have ➔ Hermaphrodites had

[PLEASE USE PAST TENSE WHEN YOU DESCRIBE AND DISCUSS YOUR OWN RESULTS – CHANGE EVERYWHERE IN THE MANUSCRIPT]

Page 10 – line 6: *Honckenya peploides* was on Surtsey in 1967 observed with 24 individuals, and ➔ *Honckenya peploides* was first observed on Surtsey with 24 individuals in 1967, and

Page 10 – line 12: size ten doubles ➔ size ten doubled ((ten-doubled??))

Page 10 – line 13: new tenfold increase from 1977 to 1979. ➔ new tenfold increase occurred from 1977 to 1979.

Page 10 – line 16: 70es ➔ 70s

Page 10 – line 17: (Árnason et al., 2014) reported ➔ Árnason et al. (2014) reported

Page 10 – line 20: other Vestmannaeyjar Archipelago ➔ other Vestmannaeyjar Archipelago islands

Page 10 – line 23: from south coast of Iceland + Heimaey and Surtsey. ➔ from south coast of Iceland or Heimaey and Surtsey.

Page 11 – line 5: (Eithun, 2003; Sánchez-Vilas et al., 2010), personal observation, 2010). ➔ (Eithun, 2003; Sánchez-Vilas et al., 2010; personal observation, 2010).

Page 11 – line 7: An ecophysiological study... ➔ [HERE YOU ARE APPARENTLY REFERRING TO ONE STUDY; PLEASE GIVE THE REFERENCE AT THE END OF THE SENTENCE – OR CHANGE THE WORDING SO IT IS CLEAR THAT YOUR ARE REFERRING TO THE TWO REFERENCES YOU GIVE LATER...]

Page 11 – line 11-12: *H. peploides* possesses an extensive network of roots well adapted to exploit the limited nutrients and water that percolate easily in the gravely substratum. ➔ If you like you can make a reference to Leblans et al. (2014) to support the claim about the extensive network of roots.

Leblans, N. I. W., B. D. Sigurdsson, P. Roefs, R. Thuys, B. Magnússon, and I. A. Janssens. Effects of seabird nitrogen input on biomass and carbon accumulation after 50 years of primary succession on a young volcanic island, Surtsey. *Biogeosciences Discuss.*, 11, 6269-6302, 2014.

IMPORTANT

Page 11 – lines 14-17: To check whether below ground intraspecific competition could be active the dispersion of individuals in the Surtsey populations was assessed. It turned out to be regular to random, except for one population where the substratum was a semi-circular belt beneath a slope. → THIS IS RESULTS AND SHOULD FIRST BE REPORTED AND DISPLAYED IN THE RESULTS CHAPTER – BEFORE IT IS DISCUSSED IN THE DISCUSSION!

Page 12: lines 1-2: In the only population where we measured the areas of each 1 individual the pistillate plants were significantly larger than the staminate ones (t-test, $p < 0.001$). → SAME COMMENT AS ABOVE – ADD A PARAGRAPH ON THESE MEASUREMENTS IN THE RESULTS CHAPTER.

Page 12: lines 3-4: We calculated for all the populations the mean minimum distance from each individual to one of the same or different morph but found no coherent pattern. → SAME COMMENT! => How does this relate to the “mean min distance” shown in Table 1??

Page 12: line 15: have → had

Page 12: line 16: This is → This was

[PLEASE DISCUSS ALL YOUR FINDINGS IN PAST TENSE]

Page 13 – line 19: around 70 species was found. → around 70 species were found on Surtsey.

Page 14 – line 6-8: ...and we observed numerous seedlings around dried rain pits and streams sometimes even forming green lines in the landscape. → ... and we observed numerous seedlings around dried rain pits and streams sometimes even forming green lines in the landscape (personal observation, 2010).

Page 15 – line 9: found on Surtsey → found there

Page 16 – line 3-4: capsules in hermaphrodites on Surtsey → capsules in hermaphrodites.

Page 16 – line 9: than in those at the south coast of Iceland + Heimaey → than in those at the south coast of Iceland or Heimaey

Page 17 – line 1-2: ...over the years. No competition active. Pollen and pollinator restriction. Selection for hermaphrodites. → [This is too much “telegraph-style” – please extend a little – and remember past tense]

Page 17 – line 4: No limitation of resources → Really?? You claimed in the Introduction that the initial environment was difficult, with e.g. very low N availability and you have stated earlier that lack of water was the reason for possibly higher initial hermaphrodite survivals... Did those resource limitations then disappear in this phase?? I suggest that you limit this statement with “space”??? Or maybe you need to add a sentence to better explain your thinking here...

Page 17 – line 16: (Magnusson et al 2009). → (Magnusson et al., 2009; 2014).

Page 17 – line 19: Here the total plant species number stabilizes → Here the total plant species number stabilizes on Surtsey

Page 18 – line 5: change so rapidly that → change so rapidly on a young volcanic island as Surtsey that

Page 18 – line 7: Vestmannaeyjar Archipelago. Here *H. peploides* only occurs on a few sandy beaches on Heimaey, → Vestmannaeyjar Archipelago islands, where *H. peploides* only occurs on a few sandy beaches on the largest island, Heimaey.

Page 18 – line 8:, so it will probably go extinct also on Surtsey, → It will therefore probably go extinct on Surtsey,

Page 23 – line 4-5: You need to explain the “shadow area” shown on the diagrams in the legend and the difference between that and the island map shown.

Page 23 – line 8: (with error bars) → What do these error bars indicate? Sd or SE??

Page 19 – line 7: Biogeosciences Discuss., (in press, 2014) → Biogeosciences Discuss., 11, 10045-10082, 2014

Page 21 – line 1-2: K., Baldurson and S., Petersen, A. E.: → K., Baldursson, S. and Petersen, Ae.:

Page 22 – line 2: Evol Ecol Res → Evol. Ecol. Res.

Pages 19-23 (Reference list) → Please double check if all references quoted in the text are found in the Reference list and vice versa.