

Interactive comment on “Discovering sounds in Patagonia, characterizing sei whale (*Balaenoptera borealis*) downsweeps in the south-eastern Pacific Ocean” by Sonia Español-Jiménez et al.

Sonia Español-Jiménez et al.

sonia.espanoljimenez@gmail.com

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After the comments from referee 2, we introduce some changes that also introduced more info to some of your questions:

Line 37-38: Kanda et al. 2006 investigated sei whale samples collected only in the Northern Hemisphere, so this is not the correct evidence for the statement that there is no clarified genetic separation between populations from different hemispheres. Responses: Sentence has change to: North Atlantic, North Pacific and Antarctic populations are separated and probably subdivided into geographic stocks (Horwood, 1987; Kanda et al., 2006; Huijser et al., 2018). International Whaling Commission in 1991

C1

divided the global sei whale population in “stocks” (based on the distribution of catches, sightings and mark-recapture data) for management purposes (Donovan, 1991). However, genetic studies provide a different population distribution.

P7, lines 121-123: There is a lot information missing here: How were these parameters measured? From the spectrogram? With which settings? Were these kept consistent, how? Were these done by hand or was the Raven tooling used? Why was the data first analysed with Audacity and the measurements done with Raven? What was the precision of the measurements (i.e. were the measurements repeated for a subset to see if the data could be reproduced and if so with which precision)? Response: the methodology was change as follow: Audio data were analyzed using Raven Pro 1.5 (Cornell University, Ithaca, NY). Low and high frequency (Hz), frequency range (Hz), peak frequencies (the frequency at which the maximum power occurred within a call) and duration (s) for all calls found and attributed to sei whales were analysed from spectrograms and waveform plots created in Raven Pro 1.5 (Hann window; 50% overlap; window size 14563 samples; DFT 16384 samples).

Discussion: P 12, Line 154-157: This is not a very strong argument given that the calls recorded are also not that typical in acoustic structure. Baleen whale downsweeps have been estimated to still have a detection range in the orders of tens of kilometers, so do not necessarily have to be sighted to be heard. Especially given that the ship was on station during recording, the area that was “acoustically surveyed” was not particularly large. I suggest a more elaborate explanation of why the recorded calls are not produced by fins, blues or minkes. This would be strongest if you also had downswept calls of these species in your recordings that you attributed to other species than seis. Also for the community to be able to use your data and information to identify Chilean sei whales in their recordings, the description of the calls needs to be much more elaborate. Response: the following sentence has been added: Given that recordings from this project were opportunistic and without digital acoustic recording tags (DTAG) deployed in sei whales we cannot prove the origin of the calls.

C2

However, we can confirm with reasonable certainty that vocalizations recorded off The Penas Gulf were produced by sei whales, due to the sightings of this species during the recordings and the expeditions. Blue whales (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*) or minke whales (*Balaenoptera acutorostrata*) produce down-sweep as well (Thompson et al., 1996; Schevill and Watkins, 1972; Watkins, 1981). Bryde whales (*Balaenoptera brydei*) has also several call types, included downsweep, but inhabit tropical and subtropical waters and we do not have any record in this area yet (Omura, 1959; Wade and Gerrodette, 1993; Oleson, et al., 2003). Generally, fin whales downsweep have initial frequencies below 35 Hz and final frequencies around 20-18 Hz (Watkins, 1981), similar than minke whales but with shorter durations (0.2-0.3 sec) and higher frequencies (130-60 Hz) (Schevill and Watkins, 1972). Minke whales in the North Atlantic produce long pulse trains (Mellinger et al., 2000), these were not recorded in this area, fin and minke whales downsweep are definitively different than our recordings. Only downsweeps from blue whales described in Chile, through the DTAG data, has a lower peak frequency and duration; low frequency is higher and downsweep had been accompanied in the recorders by the Southeast Pacific type 2 (SEP2) (Saddler et al., 2017), supporting our results, that these records are really from sei whales. Only downsweeps from blue whales described in Chile, through the DTAG data, has a lower peak frequency and duration; low frequency are higher and downsweep had been accompanied in the recorders by the Southeast Pacific type 2 (SEP2) (Saddler et al., 2017), supporting our results, that these records are really from sei whales.

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