



Jameal Samhouri - NOAA Federal &lt;jameal.samhouri@noaa.gov&gt;

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## OCNMS MS Review Questions

3 messages

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Jessica Rhian Hale &lt;jrh33@uw.edu&gt;

Wed, Jan 31, 2018 at 4:49 PM

To: Ole Shelton &lt;ole.shelton@noaa.gov&gt;, Jameal Samhouri - NOAA Federal &lt;jameal.samhouri@noaa.gov&gt;

Cc: Kristin Laidre &lt;klaidre@uw.edu&gt;

Hi Ole and Jameal-

I am working on my review of your MS and was wondering what data you used to classify the main invert groups as either common, occasional, or rare in sea otter diet and how you used that data.

The prey frequencies on lines 244-247 are inconsistent with my data set, as well as with the results reported in Walker et al. 2008, that are both cited for providing the sea otter diet information leading to the classification of the prey groups.

For example, in the MS, scallops are listed as common sea otter prey items, occurring on >5% of successful sea otter foraging dives. However, scallops are not consumed by sea otters in my data set, ever, and I checked previous foraging data from the 1990s published in Laidre and Jameson (2006), and scallops were also not observed being consumed. Scallops are also not mentioned as sea otter prey items in Walker et al. 2008.

I am wondering if there was confusion about the general "unidentified bivalve" or "unknown bivalve" prey ID that is used in my foraging data and in Walker et al. 2008? I say this because on line 240 of the MS when discussing the invertebrates commonly surveyed it says "...bivalves (primarily rock scallops, *Crassadoma gigantea*)" and on line 246 when describing sea otter prey it says "scallops (bivalves)", so it seems that bivalves and scallops are being equated here, when they should not be.

It is standard protocol for sea otter foraging observations to ID the prey to the lowest taxonomic level possible. In some cases, we use the general "unidentified bivalve" or "unknown bivalve" prey ID when we cannot determine what kind of bivalve the prey item is. In my experience, it is used when the uncertainty is between mussel or clam, so we just record the prey item as "unknown bivalve" to be conservative. From my experience it seems unlikely that there would be a lot, or any, scallops included in the "unknown bivalve" prey category given their unique shape (very circular, large hinges and shell ridges, small shell depth) compared to other bivalves allowing for easier ID, and the rarity of a positively identified scallop in the foraging data outside of general prey groupings like "unknown bivalve".

There are similar inconsistencies between the prey frequencies reported in the MS and my data set, as well as those reported in Walker et al., for urchins and crabs. Crabs are reported as occasional in the MS, when they should be reported as common sea otter prey, and urchins are listed as common when they should be rare sea otter prey items. I am curious why my data set and the results reported in Walker et al. differ so much from the >5%, 1-5% and <1% frequencies used to categorize prey items as common, occasional, or rare.

I am not sure if I have the original prey frequency data that I sent you as I do not have access to my NOAA email anymore. Could you send me the data that you are using to classify the prey groups as common, occasional, or rare? Maybe I can figure out what is causing these inconsistencies.

Either way, the MS will need to be revised to accurately reflect sea otter diet information, from Walker et al. 2008 and/or my data set.

Jessie Hale

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Jessica Hale

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**Ole Shelton** <ole.shelton@noaa.gov>

Thu, Feb 1, 2018 at 2:05 PM

To: Jessica Rhian Hale <jrh33@uw.edu>

Cc: Jameal Samhouri - NOAA Federal <jameal.samhouri@noaa.gov>, Kristin Laidre <klaidre@uw.edu>

Hey Jessie. Thanks for taking the time to look through the paper. I'll dig up the data we have - which I think we got from you years ago - and see what might be going on. I'd bet it is something to do with the species getting aggregated in a weird way (i.e. the un-ided bivalves point you bring up). Big picture, I'll probably lean more heavily on the published literature than anything I have sitting on my computer anyway.

Some of the differences are certainly just imprecise language that are pretty easy to fix. For our purposes, the relevant quantity is not if a species is present in the diet we observe. Ideally we would want some sort of conditional measure of preference - if a given species was present would it be eaten. But this isn't really available, which is why we leaned on the observed diet. But that clearly has problems too. So I'll have to figure out a better way to talk about it. The urchins make this point clear. If urchins are present, it is amply documented that sea otters will eat a lot of them. For the time period of the Walker paper and your observations, there are essentially no sea urchins present... so the diet composition from your observations reflect that. So I think we'll just have to come up with a better way of talking about it. You rightly point out that the categories we currently talk about are a bit off from this idea... I think that is a simple sentence or two to clarify.

There are a whole variety of similar problems that arise when talking about other species too. Take clams and octopus. There are exactly zero clams in the habitats we are surveying - there are no clams on rocky reefs - so the fraction of clams in the diet for our purposes is pretty irrelevant. We don't see octopus because they are usually hiding and we don't think we can census them well. So then the question becomes should we exclude the clams and octopus (as examples) somehow for our work on rocky reefs? This seems to me to be a much bigger resource selection problem that we don't want to touch in this paper.

I think last time we talked you had paper in review or in press on your work. Is that available somewhere?

Thanks again.  
Ole

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**Jameal Samhouri - NOAA Federal** <jameal.samhouri@noaa.gov>

Thu, Feb 1, 2018 at 3:33 PM

To: Ole Shelton <ole.shelton@noaa.gov>

hmm. nice response.

in short, none of this matters too much. we could just plot each taxonomic group as "potential otter prey" and leave it there. but let's see what jessie writes back. happy to chat when you feel better too

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