Reviewer: 1  
  
Comments to the Author  
This manuscript presents an analysis of length and age sampling for a suite of species monitored with fishery-independent trawl surveys in the North Pacific. The authors find that lengths are generally being sampled above, and ages below levels that would provide optimal effective sample sizes. The methods follow similar approaches applied elsewhere and appear appropriate for this type of data. I think that the results of this study will be of interest to others considering optimization of survey designs and/or unplanned reductions due to unique circumstances as well as for refinement of data collection targets for the specific surveys evaluated.  I suggest that some additional information on the sampling targets/properties for these surveys, as well as more detail on the specific approach used for the age-length keys would be helpful. The manuscript is well written, and I have only a few minor editorial suggestions.  
  
General comments  
1. The details of how the age-length keys are constructed (mentioned on lines 155-156) seem critically important to this analysis and the application of similar methods for other surveys. I think it would be worth summarizing some of the key information in this manuscript, even with the reference to Hulson et al. (2023). Specifically, do the keys for all species use 1 cm length bins regardless of the range in fish size (implied by the notation in Hulson et al. 2023)? If 2 cm bins, or whatever bin structure is used in the respective stock assessments, were used would this have implications for the calculation of effective sample size? How are sizes that are not represented in the length samples propagated in the age-length keys (an issue noted in Siskey et al. (2023)? Are age-length keys ever found to differ among strata within a survey potentially necessitating more length and age samples for sub-strata? Some of this may be beyond the scope of the manuscript to test specifically, but worth including in the discussion if deemed important.  
2. Lines 269-271 and bottom panels of Figure 2: Was the age composition ISS considered at the full age sample only? Were those results tested for length frequency sampling of 100 fish/haul? If this is the recommendation for the paper, it could be helpful to report that the same relationship held at those sampling levels as well (unless I am misunderstanding something).  
3. The manuscript notes (lines 99-101) that it is important to consider optimizing the samples per haul as well as the number of hauls with samples. It would be helpful to provide additional information on this, perhaps as part of Table 1, where the average number of hauls sampled for age and length as well as the number of total fish captured, and total hauls made could be added. This would allow an easier evaluation of how much subsampling has occurred and how many additional hauls could potentially be sampled, per the recommendations on lines 404-407.  
  
Specific comments  
1. Lines 53-69: Suggest also referencing Thorson et al. (2023) in this paragraph.  
2. Lines 86-88 and line 452: Suggest referencing Link et al. (2008) here.  
3. Lines 94-97: This manuscript does not evaluate the costs of otolith reading. I suggest omitting this topic, as there could be subsampling of otoliths to be prepared and read that would achieve the same cost reduction in that process as achieved for reducing the collection of otoliths in the field.  
4. Line 121: consider rephrasing since the analysis considers decreasing not increasing the number of length and age samples.  
5. Line 130-131: Do you mean species-specific exceptions for ‘maximum’ length subsample size? I understand the protocol to be collecting up to the target sample size depending on the catch.  
6. Lines 139-140: For sampling protocol #2 are the lengths for fish sampled for otoliths also included with the length samples when analyzed (do the 2-20 fish count toward the 100 for both sampling and input sample size calculations)?  
7. Lines 234-237: It is worth noting here that the ISS is analogous to the term “effective sample size” as used in the introduction.  
8. Lines 294-296 and Table 2: I think the text and caption are backwards here and should be 150 to 100 rather than 100 to 150, since the reductions are smaller to larger.  
9. Line 350: ‘greater’  
10. Lines 367-381: I’ not convinced it is very complicated to have species specific sampling rates for a subset of species where it may be warranted by real differences in ISS for a given rate of sampling and where the value of that information may be much higher than other species (e.g., walleye pollock).  
11. Lines 398-400: This seems speculative and was not tested by this study. I suggest omitting this statement.  
12. Lines 401-407: With no evidence that the sampling asymptote is being approached, perhaps the recommendation should be to retain ‘at least’ historical levels of sampling and consider additional research (e.g., sampling one or more species’ ages at a higher rate for a short time) into whether collection of additional samples would improve information quality via ISS?  
13. Lines 452-465: The discussion of age reading cost doesn’t seem necessary for this manuscript since it wasn’t investigated specifically.  
14. Lines 463-465: See general comment above on reporting the number of hauls sampled and made; without this information it is impossible to know how much change could be made by adjusting the number of fish per haul and number of hauls.  
  
References  
Hulson, P.-J.F., Williams, B.C., Siskey, M.R., Bryan, M.D., and Conner, J. 2023. Bottom trawl survey age and length composition input sample sizes for stocks assessed with statistical catch-at-age assessment models at the Alaska Fisheries Science Center. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-470. 38 p.  
Link, J., Burnett, J., Kostovick, P., and Galbraith, J. 2008. Value-added sampling for fishery independent surveys: Don't stop after you're done counting and measuring. Fisheries Research 93: 229-233.  
Siskey, M.R., Punt, A.E., Hulson, P.-J.F., Bryan, M.D., Ianelli, J.N., and Thorson, J.T. 2023. The estimated impact of changes to otolith field-sampling and ageing effort on stock assessment inputs, outputs, and catch advice. Canadian Journal of Fisheries and Aquatic Sciences 80(1): 115-131. doi:10.1139/cjfas-2022-0050.  
Thorson, J.T., Monnahan, C.C., and Hulson, P.-J.F. 2023. Data weighting: An iterative process linking surveys, data synthesis, and population models to evaluate mis-specification. Fisheries Research 266. doi:10.1016/j.fishres.2023.106762.