Reviewers' comments:  
  
  
Reviewer #3: Review of FISH9898: Comparing age and growth estimates from Bayesian and integrative data approaches for the deepwater snapper Pristipomoides filamentosus in the Hawaiian Islands  
  
Recommendation:  
Scherrer et al. describe Bayesian and integrative approaches to modelling growth in P. filamentosus and recommend an integrated model due to its ability to include multiple sources of data, as well as incorporate individual variability in growth. Overall, I found this to be a sound and well-presented study, and thus I recommend it for publication in Fisheries Research after minor revisions.   
  
General comments:  
When comparing model 11 with models 1-5, the authors show that the inclusion of additional growth data improved the predictive capacity of growth models compared to tagging data alone (Lines 356 - 359), likely due to the "omission of the largest individuals from models 1-5" (line 410). Along those lines, my main suggestion for the authors is to conduct a sensitivity analysis for the influence of the distribution of samples in their data (i.e. varied representation of samples by age class).  
  
Since this approach assumes individual variability, it is important to have sampled the entire distribution of length at age for results to be accurate. The authors' integrated approach addresses this, but not completely. Assuming that sampling was sufficient to describe the true mean and standard deviation of length at age, simulating observations from a distribution such that each age class is equally represented and then re-fitting the growth model could provide a metric to compare the results of the model fit to the raw data with for detecting this influence. Samples in the oldest age classes are unlikely to represent the full distribution of lengths at age, as large and old fish are naturally scarce. This, and general underrepresentation of older age classes compared to younger ones can bias the estimation of L∞ in some cases. This was suggested by the authors as a possible reason for differences in their results when compared to those of O'Malley et al. (2015) (line  
380) and in discussing differences between model 11 and models 1-5 (lines 408 - 411). Indeed, this has also been suggested in publications providing recommendations for age and growth studies and describing their fundamentals (e.g. Cailliet and Tanaka 1990), but is not frequently examined quantitatively (e.g. Bolser et al. 2018). It is possible that model 11 included enough data such that this effect is negligible, but we do not know for sure unless a sensitivity analysis is conducted. Examining differences between models fit to the raw data and models fit to a dataset with equal representation of samples at age would allow the authors to identify if the distribution of samples has influenced their results.   
  
Differences in sample distribution can also confound comparisons between studies and sexes, such as the ones made in the discussion of the present study (paragraphs beginning on lines 381 & 425). In my opinion, it would be worth reviewing the sample distribution of the datasets associated with the studies being compared, if they are available, to identify differences in sample distribution that could confound comparisons (e.g. a disparity in samples at older ages).   
  
The authors did an excellent job of acknowledging the influence of sample distribution - particularly where estimation of L∞ is concerned - in the portions of text mentioned thus far, but an explicit analysis would greatly enhance this paper and strengthen their conclusions.   
  
Specific comments:   
Introduction:  
- Line 57: typo in marked  
Methods:  
- Line 117 - 120: Zhang et al. (2009) used a normal distribution instead of a gaussian distribution for drawing values of k and L∞, as well as in the uninformative prior assignment step. It would be beneficial if the authors briefly explained why they chose to deviate from Zhang et al. (2009) here.   
-  
Results:  
- Line 334: 'excessive' implies larger than they should be, which is not known a priori. I suggest just leaving it at 'large'  
- Line 346: this underestimation could be the result of underrepresentation of large fish in the datasets, as mentioned in general comments.   
Discussion:  
- Line 381: if not because of sample distribution, it would be beneficial for the authors to elaborate on why P. filamentosus growth parameters may vary between regions in this paragraph.  
  
Tables and Figures:  
- I recommend the inclusion of a figure showing the length and age structure of the entire integrated dataset, instead of just for the OTP data (Fig. 2).  
  
References:  
Bolser, D. G., Grüss, A., Lopez, M. A., Reed, E. M., Mascareñas-Osorio, I., & Erisman, B. E. (2018). The influence of sample distribution on growth model output for a highly-exploited marine fish, the Gulf Corvina (Cynoscion othonopterus). PeerJ, 6, e5582.  
Cailliet, G. M., & Tanaka, S. (1990). Recommendations for research needed to better understand the age and growth of elasmobranchs. Elasmobranchs as Living Resources: Advances in the Biology, Ecology, Systematics, and the Status of the Fisheries, WS Pratt, Jr., SH Gruber, and T. Taniuchi, Eds., NOAA Tech. Rep, 90, 505-507.  
O'Malley, J., 2015. A Review of the Cooperative Hawaiian Bottomfish Tagging Program of the 573 Pacific Islands Fisheries Science Center and the Pacific Islands Fisheries Group. Honolulu, 574 HI. <https://doi.org/10.7289/V59W0CF7>  
  
From the Editor (Andre Punt)  
The two reviewers see value in the paper but both reviewers raise major concerns with the methodology. I believe that the concerns can be addressed with revisions. However, I expect to see a fair different paper. As such, any revision would need to be re-reviewed.