(received June 15, 2012)

Dear Sir or Madam,

Please find below some comments on the Draft report of the independent science panel on the effects of salmon fisheries on southern resident killer whales.
Overall, this report represents a tremendous amount of work and is a welcome development. We believe that the scenarios that Ward was asked to model did not consider a sufficiently broad range of predictions of prey requirements, and it is therefore premature to conclude that more fish (up to 20%) would offer negligible benefit to the population. By using Noren (2011) as the only prediction of SRKW prey requirements, the analyses provide false confidence in our ability to predict how the SRKW population would respond to increased prey abundance given reduced fishery quotas. It strikes us as particularly important that an independent science panel should not take NOAA science documents (and DFO's replication of NOAA's estimates using the same model with the same assumptions) as the sole source of available information when the peer reviewed literature includes important updates. A key issue is the size of the salmon quota (i.e., scope to improve fish availability to whales) relative to requirements. Noren (2011) and Williams & Noren (2009) used metabolic approaches to estimate energetic requirements. Williams et al. (2011; attached) used prey intake data from captive killer whales and morphometric data from both wild and captive killer whales to refine and validate estimates of how much fish is required to support this population. The newer work should be referenced and considered in Ward's models, because it makes several important improvements on previous estimates (which in turn rely on Kriete 1995):
1. We validated mass-length relationships by ecotype, and reported variability in killer whale body size.
2. We quantify the prey required to feed captive animals of known mass, and report how this varies by age, sex & reproductive status. For example, we found that prey intake for a 32-year-old female during lactation was 42% higher than her intake when she was not lactating. Prey limitation at this crucial stage needs to be considered.
3. Noren (2011) suggested that the CVs on her point estimates of prey requirements were around 20%. In contrast, we showed (Williams et al. 2011) that point estimates under plausible scenarios varied by factors of 2-3. As we admit greater uncertainty around the point estimate of prey requirements, the more plausible it becomes for a reduction in fishery quota to improve recovery of killer whales. Our predictions of total SRKW prey requirements vary by a factor of 2.3, depending on the value used for body size, which lends support for prioritizing work on laser-metric and photogrammetric methods (e.g., Durban & Balcomb) to measure length (and our complementary mass at length analyses). Predictions vary by a factor of 2.9, depending on whether all or none of the SRKW winter diet is composed of Chinook salmon (a point that receives appropriate attention in the report). The predictions vary by a factor of 1.7, depending on the caloric value we use for a typical Chinook. Winter diet is obviously the most difficult and expensive of these 3 factors to address, but the other two could be addressed comparatively easily. Until then, the population models need to be explicit about the real uncertainty in our targets -- how much salmon we think the population needs to survive and to recover.
4. Point estimates of prey requirements need to start considering the demand of a recovered population (i.e., much larger than current population size) to allow the whales to recover, as well as some measure of foraging efficiency and anthropogenic factors (e.g., noise, disturbance) that may reduce foraging efficiency.

Thank you in advance for your consideration.

Sincerely,

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Competing Conservation Objectives for Predators and Prey- Estimating Killer Whale Prey Requirements for Chinook Salmon PLoS 2011.pdf
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