MARINE MAMMAL COMMISSION

5 October 2018

Ms. Stephanie Solien and Dr. Thomas (Les) Purce
Southern Resident Orca Task Force
Office of the Governor
P.O. Box 40002
Olympia, Washington 98504-0002

Dear Ms. Solien and Dr. Purce:

The Marine Mammal Commission (the Commission) is an independent federal agency charged by the Marine Mammal Protection Act of 1972 (MMPA) with furthering the conservation of marine mammals and their environment. Our mission is to provide independent, science-based oversight of domestic and international policies and actions of federal agencies addressing human impacts on marine mammals and their ecosystems. Our role is unique – we are the only government entity in the United States that provides comprehensive oversight of all science, policy, and management actions that affect, or could affect, marine mammals. The Commission consists of three Commissioners appointed by the President, a nine-member Committee of Scientific Advisors, and 14 full-time employees, and we have a long history of working in the Pacific Northwest. Recently, the Commission held its 2018 Annual Meeting in Seattle, Washington, where the threats facing Southern Resident killer whales (SRKWs) were discussed at length.

The Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Southern Resident Orca Task Force (Task Force) Draft Report and Potential Recommendations proposing possible actions to ensure an ecosystem healthy and resilient enough to support a thriving SRKW population. The following general and threat-specific comments are focused on the threats and issues with which the Commission has expertise and experience.[1]

General

Although the Commission's comments pertain to the individual potential recommendations, as drafted, the recommendations are clearly interdependent. As such, among its next steps, the Task Force should cross-reference its recommendations within and among threat categories to better describe an integrated program of activities that assists in identifying the most important actions and setting priorities for implementation. The Task Force should also specify the relative priority or sequencing of activities where appropriate. For example, the comments provided below on the contaminant recommendations illustrate how information obtained from certain actions informs subsequent actions. The Commission suggests that the Task Force consider using an integrative

[1] The Commission supports the elements of the Task Force's plan on the threats posed by climate change and habitat destruction, but has no specific comments on those sections.

approach to assist in organizing the actions that impact linked ecosystem components (e.g., efforts to restore spawning habitat, protect forage fish stocks, enhance hatchery output, and minimize losses of salmon).

While the potential recommendations in the prey section focus primarily on restoring or increasing the abundance of Chinook salmon, which the Commission believes should be a fundamental goal of the State's conservation efforts related to SRKWs, the Commission notes that SRKW health and survival are strongly influenced by the 'availability' of Chinook salmon to the whales and the quality of that prey (e.g., body size, fat content, and contaminant concentrations). Availability and quality of prey depend on a number of factors besides their overall abundance. These include:

- seasonal and regional abundance of Chinook salmon (are they sufficiently available when and where the whales need them?);
- disturbance of killer whales foraging activity (does the presence of vessels reduce their foraging efficiency?);
- removals of Chinook salmon by commercial and recreational fishing (do patterns of fishing effort limit the prey available to SRKWs at critical times and places?);
- availability of prey to Chinook salmon (are the stocks of forage fish inadequate to ensure salmon abundance and quality?);
- disruption of killer whale social behavior (does disturbance by vessels impede prey sharing?); and
- contaminants in Chinook salmon (do their tissues contain harmful concentrations of contaminants?).

These same factors may affect the availability and quality of other salmon species upon which SRKWs depend at various times of the year (e.g., chum and coho salmon). The Task Force should therefore expand its focus to include the availability and quality of important SRKW prey of all types, and not only Chinook salmon, and explain how the proposed actions would address those factors.

The Commission also notes that most of the potential recommendations do not include measures to monitor, or to assess the effectiveness of the proposed action(s). The state and federal agencies tasked with conserving SRKWs should be able to evaluate whether the actions are having the desired effects and whether those effects, in aggregate, are biologically significant (i.e., they are facilitating SRKW recovery). Therefore, where appropriate, the Commission encourages the Task Force to include in its recommendations mechanisms to establish baselines and targets (e.g., current and benchmark contaminant concentrations) and to implement monitoring programs or other means to document progress toward reaching those targets.

Prey – Hatcheries

The **potential hatchery recommendation 1C** appears to provide an effective combination of short- and medium-term actions that should increase prey availability. The Commission

commends the Task Force for emphasizing the importance of adjusting return timing and locations to match the prey needs of SRKWs.

Prey – Hydropower

Given the alarming decline in SRKW numbers in recent years, the Commission agrees with the Task Force on the immediate emphasis on short-term actions to reverse the current population trajectory, while recognizing the necessity of including medium- and long-term actions that will achieve a sustained recovery. The Commission therefore supports the Task Force's **potential hydropower recommendation 2**, which directs the Washington Department of Fish and Wildlife (WDFW) and other partners to identify those dams and other river barriers that, once removed, will lead to significantly improved availability of Chinook and other salmon to SRKWs.

Prey – Harvest

In discussing the threat to SRKWs posed by the harvest of Chinook salmon, the report states that "[h]arvest *may* reduce the number of adult fish available to Southern Residents" (emphasis added). The Commission believes this statement fails to acknowledge the scientific understanding of the impacts of salmon harvest. A recent review found that the elimination of ocean fishing would result in a 20 percent increase in the availability of Chinook salmon to SRKWs (Hilborn et al. 2012). While such elimination is impractical and, even if it were achieved the same review showed that it would be insufficient by itself to ensure the full recovery of SRKWs, this example illustrates the relationship between the removal of juvenile, and presumably adult, Chinook salmon by at-sea fisheries and the availability of this primary prey to SRKWs. Fishery harvest controls (e.g., lower catch quotas) should be part of a comprehensive and integrated approach to increasing the abundance of Chinook salmon. There is also reason to be concerned that short-term, local-area depletion of adult fish in key SRKW foraging areas could affect the availability of such fish to the whales. Although the Commission agrees with the Task Force's potential recommendations to reduce release mortality, avoid bycatch, and achieve increases in fish abundance through habitat restoration and improved hatchery production, the Commission believes that the Task Force also should consider actions to implement local commercial, and if necessary recreational, harvest controls specifically designed to increase the availability of Chinook salmon to the whales at critical times and locations. This could also be achieved through the use of "no-go" zones (**potential vessel recommendation 7A)**, or the "real-time" closures described in **potential harvest recommendation 4.** However, the implementation of such a dynamic system could be complex and expensive if it required both tracking the movements of the whales and informing fishermen in real time.

Prey – Predation

The discussion of predation in the key threats section of the draft report cites the work done by Chasco et al. (2017) to estimate consumption of Chinook salmon by pinnipeds using bioenergetics modeling. The Commission notes that the results of that analysis are based on

extrapolations of data from other areas, and other assumptions,[2] that may not give an accurate picture of predation rates in Washington State inland waters. More detailed information is needed, not only about the extent of such predation, but also about when and where it occurs and what sizes and age classes of salmonids are eaten. The Commission is hopeful that the new pinniped population and diet information referenced in the Task Force draft report, and updated models being developed by scientists in British Columbia and Washington, will provide the level of specificity needed by managers to assess the extent to which pinniped predation of Chinook salmon is contributing to limiting prey availability to SRKWs and to identify possible remedial actions.

One of the proposed actions within **predation recommendations 1A and 1B** would require the National Oceanic and Atmospheric Administration (NOAA) to complete an assessment expeditiously to determine the optimal sustainable populations (OSP) of Puget Sound harbor seal stocks. The Commission notes that the starting point for such a review should be the stock assessment reports published by NOAA's National Marine Fisheries Service (NMFS) under section 117 of the MMPA. The reports for the harbor seal stocks in Washington inland waters and the Oregon/Washington coast indicate that current abundance and population trend data are lacking. Without such data, it is impossible for NMFS to make an informed OSP determination for either stock. It is unclear whether more recent data have been collected but are yet to be analyzed, and whether newer information is available but has not been incorporated into the stock assessment reports. The discussion in the Task Force report should provide additional insight concerning what further information exists, who possesses that information, and when it is expected to become publicly available. If it appears that insufficient data are available on which to base OSP determinations for these stocks, the Task Force should make additional recommendations concerning actions to be taken by state and federal agencies and others to obtain and analyze the needed information on abundance and trends.

The key difference between **proposed option 1A and 1B** is whether to recommend immediate action for a pilot program to remove or alter artificial pinniped haul-out sites in Puget Sound in places that may improve Chinook salmon survival. To the extent that the presence of pinnipeds in the vicinity of such areas and their ability to prey on Chinook salmon is being facilitated by the availability of such haul-out sites, efforts to reduce the availability or attractiveness of those areas to seals and sea lions make sense. As such, the Commission supports the inclusion of the pilot program. That said, the Commission suggests that implementation be cautious, careful, and adaptive, as those pinnipeds may simply be displaced to other haul-out locations and create unanticipated impacts on Chinook salmon in those areas.

The draft report also includes the **potential predation combination recommendation 2A** concerning reducing predation of Chinook salmon within the Columbia River drainage, including support for pending legislation to change the management options available under the MMPA. The Commission notes that such actions will be effective only if State, Tribal, and Federal managers are targeting those sea lions that are significant contributors to predation of Chinook salmon in those areas where predation is a serious problem. Moreover, reducing predation of salmon in the Columbia River and its tributaries by removing individual sea lions that meet certain criteria will be

[2] E.g., in how it evaluated impacts of predation of juvenile salmon by converting them into adult salmon "equivalents" and by assuming additive rather than compensatory predation.

effective in contributing to salmon conservation only if the fish they otherwise would have eaten are not taken in other ways before they spawn (e.g., by other sea lions that may occupy the sites vacated by the removed animals, by other predators, by fishermen, etc.). The situation is further complicated because Chinook salmon are semelparous and die after spawning. Thus, any salmon that are saved by reducing predation by pinnipeds as the fish migrate upstream to spawn will not be available to SRKWs. Rather, it is their offspring that may become available as prey to SRKWs years later, but only if those salmon survive and grow to edible size and are present at the right time and place to coincide with the whales' presence. In this regard, given the complexities of the relationship between removing sea lions and achieving recovery of salmon runs, the Commission welcomes the Task Force's proposed recommendation that funding be provided to monitor Chinook salmon survival from the Columbia River estuary to Bonneville Dam and to conduct complementary pinniped distribution surveys. The Commission further suggests that such studies be expanded to include assessment of pinniped abundance as well as their distribution and diet.

Vessels

The Commission commends the Task Force for developing vessel-specific recommendations that are broad in scope and yet detailed in their substance. Those recommendations are intended to minimize impacts on SRKWs, as well as minimize vessel-related sound in general. The Commission particularly underscores **potential vessel recommendation 4**, which would establish a limited-entry commercial whale-watch permit system. Such a system would give the state the ability to control the number of commercial whale-watching vessels and kayak groups that are present near SRKWs on a given day. Research and monitoring has shown that SRKWs in the Salish Sea are followed not only by substantial numbers of commercial whale-watching vessels, but also by large numbers of private whale-watching vessels. The Commission suggests that, if the Task Force retains **potential vessel recommendation 4**, it supplement the recommendation by conducting a feasibility study to extend the limited-entry, whale-watching permit system to include private vessels. The Commission recognizes that implementation of such a system would be challenging, but notes that many jurisdictions require permits for both commercial and recreational fishing.

In addition, the Commission agrees that it would be prudent for the Task Force to include a vessel recommendation specific to oil spills. Although an oil spill may be unlikely, it is essential that a response plan specific to SRKWs be implemented in the event that such a spill occurs. Thus, **potential vessel recommendation 13** should be expanded to include an oil spill response plan[3] specific to SRKWs for all types of oil, not just new types (e.g., diluted bitumen)[4]. NOAA has developed a Northwest Wildlife Response Plan[5] within its Northwest Area Contingency Plan[6], which specifically addresses oil spill response efforts with respect to killer whales. The state should facilitate coordination and implementation of the response plan with the U.S. Coast Guard and Canadian officials.

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[3] Including relevant oil containment and marine mammal hazing methods.
[4] As currently proposed in **potential vessel recommendation 13**.
[5] https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/resources/oil-spill-response-and-killer-whales.html and https://response.restoration.noaa.gov/sites/default/files/whale_response.pdf.
[6] https://www.rrt10nwac.com/NWACP/Default.aspx.

Contaminants

The Task Force developed numerous potential recommendations for near-term action to reduce SRKW exposure to contaminants, specifically polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs), polycyclic aromatic hydrocarbons (PAHs), and contaminants of emerging concern[7] (CECs). However, re-ordering and clarification of some of those recommendations may be helpful in establishing priorities for immediate versus longer-term actions and for determining what management actions have the greatest potential to reduce exposure of SRKWs to harmful contaminants. The Commission therefore encourages the Task Force to—

1) compile existing data, or initiate/expand environmental monitoring where data are inadequate, to determine baseline concentrations of each of the priority contaminants[8] in the Salish Sea relative to the various sources (e.g., water column, sediment, stormwater, wastewater). This is similar to **potential contaminant recommendation 9**, but with a specific focus on environmental monitoring of baseline contaminant concentrations by source. Determining baseline concentrations of the various contaminants of concern could help to generate a "contaminants map" of the Salish Sea that would provide spatial context for management actions.
2) ensure that all priority contaminants have been or are being measured in SRKWs, their prey, and lower trophic level species.
3) identify thresholds of toxicity for each priority contaminant, based on an assessment of contaminant-related health risks for SRKWs .
4) determine source benchmarks for specific priority contaminants to provide performance targets for management actions (e.g., Alava et al. (2016) determined that PBDE concentrations of approximately 1.0 μg/kg dry weight in sediments can produce concentrations in killer whales that are below the toxicity threshold for 95 percent of the population).
5) develop a prioritized list of contaminants that would have the greatest benefit for SRKWs and their prey if action were to be taken[9]. This is similar to **potential contaminant recommendation 2**, but expanded to include a ranking of all contaminants known and suspected to be harmful to SRKWs, including PCBs, PBDEs, and PAHs, as well as CECs.
6) evaluate the costs and benefits of implementing various clean-up activities (e.g., sediment removal and remediation), which may release contaminants into the water column making them more volatile[10], thereby increasing their bioavailability and potentially increasing negative impacts on SRKWs.

With respect to accelerating the implementation of the ban on PCBs in state-purchased products (**potential contaminant recommendation 1**), the Task Force should require the state to

[7] CECs, per the Task Force, include flame retardants, per- and polyfluoroalkyl substances (PFAs), phthalates, bisphenols, nonylphenols, medications, pesticides, and chemicals in tires.
[8] Including PCBs, PBDEs, PAHs, and CECs.
[9] e.g., phasing out or banning certain contaminants, controlling the source or limiting the release of certain contaminants, removing certain contaminants (particularly from wastewater), etc,
[10] In terms of (1) alteration of the chemical constituents increasing biouptake capabilities and (2) evaporation into the air.

clarify what is meant by "cost effective or technically feasible" in its 2014 procurement law (Revised Code of Washington 39.26.280) to limit exceptions under which state agencies "may knowingly purchase products or products in packaging containing PCBs above the practical quantification limit."

Conclusion

The Commission appreciates the opportunity to comment on the draft report and commends the Task Force for its efforts to identify those actions that are most likely to support the recovery of Southern Resident killer whales. The Commission stands ready to provide expertise to assist the Task Force. This could be through participation in groups such as the management panel of state, tribal, and federal agency decision-makers to review the state of the science on predation in the Salish Sea and the outer coast and potential management options; providing advice on the long-standing issue of managing Columbia River pinniped predation; and/or lending expertise to discussions of killer whale–prey interactions or vessel disturbance and anthropogenic sound in general. Although not a federal decision-maker *per se*, the Commission has considerable expertise to bring to these discussions. At the same time, the Commission, which is expected to review proposed management actions under the MMPA, needs to maintain its independence to enable it to conduct those reviews. Nevertheless, the Commission would welcome any opportunity to assist the Task Force in an advisory or observer capacity.

The Commission hopes you find its comments useful. Please contact me if you would like to discuss any of the issues raised in further detail.

Sincerely,

Peter O Thomas

Peter O. Thomas, Ph.D.,
Executive Director

References

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