

4006 Castilleja Place
Anacortes, WA 98221
21 December 2019

Seattle Branch Chief
Protected Resources Division, West Coast Region
National Marine Fisheries Service
7600 Sand Point Way NE, Building 1
Seattle, WA 98115

Attn: SRKW Vessel Regulation Revision.

Re: NOAA's Federal Register Notice (Vol. 84, No. 206, page 57015) regarding "Protective Regulations for Killer Whales in the Inland Waters of Washington State."

Dear Branch Chief:

Recommendation

I urge you to implement, maintain, and enforce a moratorium on whale-watching (by all vessels, including commercial and recreational) of southern resident killer whale (SRKWs) in U.S. waters until such time as the population no longer needs the protection of the Endangered Species Act (ESA). I do so because –

- the SRKW population is approaching a crisis;
- NOAA has limited tools for managing the existing and potential risk factors;
- the available science confirms that vessel noise and disturbance harm SRKWs;
- NOAA's management has been non-precautionary and insufficient under the ESA and the Marine Mammal Protection Act (MMPA); and
- NOAA has a moral responsibility to recover this population and the ecosystems of which it is a part.

The SRKW population is approaching a crisis

The SRKW population has declined from a recent peak of 98 individuals in 1995 to its current abundance of 73 individuals, an average loss of about one individual per year. The number of females is more indicative of the population's status and trend and, at present, there are 38 females, including 8 that are post-reproductive (down from 14 in 1998), 23 that are reproductively capable (down from 30 in 2011), and 7 that are immature (down from 15 in 1998).¹ In the past 10 years (i.e., from January 2010 to now), only five females have been born and are still alive. Since 2015 only two calves (total) have been born and are still alive, one a female and the other of unknown gender. Of the 61 calves born since 1998, 14 (23%) died before reaching 6 months of age. Even if all females were to survive the next 10 years, the number of reproductive females will not increase because, for every female becoming mature during that period, another will transition to a post-reproductive state. But some deaths are likely and the more likely scenario is that the number of females in each of these three groups will continue to decline as they have for the past several decades, further undermining population recovery.

¹ These numbers are based on data at https://www.orcanetwork.org/Main/index.php?categories_file=Births%20and%20Deaths and the assumption that females reproduce between the ages of 12 and 40 inclusive.

NOAA has limited tools for managing existing and future risk factors

If we had the knowledge, wisdom, opportunity, and commitment to turn this iconic population around no matter how far it declines, the situation might generate less concern and warrant less caution. Unfortunately, that is not the case. Prey availability (Chinook salmon), vessel noise and disturbance, and contaminants are generally highlighted as the main causes of the population's decline to date but, in the future, the population also faces risks related to (a) rare and random events (e.g., disease, oil spill) that are thought to be of low probability but also could have severe consequences; (b) small population problems (e.g., inbreeding, imbalanced sex ratios, social dysfunction), and (c) further ecosystem decline (e.g., via climate change, further development).

Prey availability – Decreased abundance of Chinook salmon appears to be the most severe problem for the SRKW population. Despite its critical management responsibilities, NOAA has not provided the leadership or instigated the measures needed to increase Chinook numbers or biomass to the extent needed to sustain SRKWs. Removal of certain dams, while controversial, would be helpful in facilitating Chinook movements between their spawning grounds and oceanic habitat, but the last several decades have seen little to no real progress in that direction. Reductions or eliminations of fisheries catch and bycatch also would increase prey availability, but even threatened and endangered runs are subject to fisheries take. Hatcheries may be a useful way to increase Chinook abundance, but a recovery approach based on hatchery-reared fish comes with its own risks, particularly to the wild salmon stocks. In addition, coastal and watershed development continues to compromise Chinook shore and riparian habitat. Without stronger leadership from NOAA, there is no basis for confidence that downward trends of Chinook salmon will be reversed in time or to the extent needed to sustain and recover the SRKW population.

Exposure to contaminants – Marine contaminants are notoriously difficult to manage and will continue to threaten SRKWs. We cannot reliably describe how and to what extent contaminants combine with insufficient prey and stress from noise and disturbance to exert cumulative, negative effects on the SRKWs. Our ability to clean the Salish Sea ecosystem of such contaminants is sorely limited because the contaminants are incorporated into both benthic and pelagic realms. Our best hope is to stop or at least vastly reduce the introduction of such contaminants into the marine environment, but that will take decades or even centuries given the ever-expanding size and complexity of the metropolitan area surrounding the Salish Sea.

Oil spills – The risk of a Salish Sea oil spill will almost certainly increase because of the ongoing business of oil refineries in northwestern Washington state and the projected increase in Canadian oil and gas transport through the Salish Sea. The history of oil spills in U.S. and Canadian waters (and elsewhere) clearly reveals that we are incapable of protecting marine mammals when such spills occur. That is clearly the case with SRKWs; there is simply no basis to assume otherwise.

Disease – The fact that this population includes numerous individuals in poor condition and that its ecosystems are experiencing climate-related changes indicates that it is increasingly vulnerable to disease. We may be able to capture and treat one or two affected killer whales, or at least we can try, but we are not capable of addressing an epidemic.

Small population risks – These include such things as sex ratio imbalances, social dysfunction, and inbreeding depression of vital rates. Such risks are likely operative now. For example, the population presently includes 20 males of age 15 or less, but only 10 females of the same age. Such imbalances have occurred in other endangered marine mammal populations, and

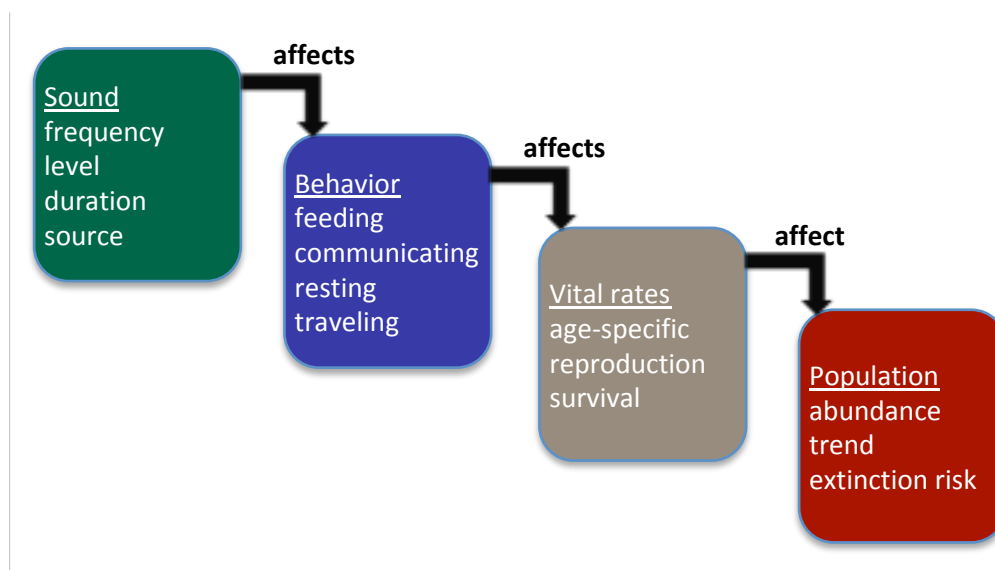
they can strongly compromise a population's reproductive potential. Similarly, since 1998 the population has lost 20 individuals age 5 or less, an indication of poor juvenile survival.

Ecosystem decline – For the purpose of SRKW recovery, there are simply no cogent arguments that we, collectively, will reverse the adverse effects of climate change and development of marine, coastal, and watershed ecosystems in the foreseeable future. The State of Washington has allocated funding to improve Chinook salmon habitat, but it remains to be seen if the resulting activities significantly improve Chinook salmon populations. The State of Oregon has undertaken a number of habitat-related measures to recover its Chinook salmon populations, but those efforts have not proven sufficient to reverse the decline of its most endangered Chinook populations.

Given all of the above concerns, NOAA simply cannot be confident that it has recovery of the SRKW population under control or that selective and limited management of some subset of risk factors will be sufficient for that purpose.

The available science confirms that vessel noise and disturbance harm SRKWs

Vessel-caused noise and disturbance also belong in the above list of risk factors. In 2005 the National Research Council published a report describing how sound affects marine mammal populations. A simplified version of their model is as follows.



The existing scientific data provide evidence of these cascading effects on SRKWs caused by vessels, including –

- decreased time foraging (Lusseau et al. 2009, Tollitt et al. 2017)² and increased time traveling, including increased speed of travel (Williams et al. 2009);
- more frequent changes in behavior and more erratic and evasive movements (Williams et al 2002, Williams and Ashe 2007, Noren et al. 2009);

² All cited references will be provided upon request; these and related references are well known by NOAA scientists familiar with SRKWs.

- increased call length (Foote et al. 2004) and amplitude (Holt et al. 2008) to overcome masking caused by vessel noise; and
- more surface-active display behaviors such as spy hopping and breaching (Noren et al. 2009).

Williams et al. (2006) estimated that when disturbed, SRKWs expend 3-4% more energy and acquire (through foraging) 18% less energy, for a net energy loss of 21-22%. Tollitt et al. (2017) estimated that masking by whale-watching vessels reduced SRKW foraging range by 5 to 34% and foraging time by three or more hours per day. Combined with the effects of commercial vessels, the whales lost as much as 5.5 hours of foraging per day.

Others, including NOAA scientists, have demonstrated that SRKWs are in declining physical condition (e.g., Fearnbach et al. 2018) and are experiencing declining vital rates (reproduction and survival). In 1998, the population included 8 females aged 50 or older; currently there is only one. These older females appear to be a critical factor in promoting juvenile survival, as recently described by Natrass et al. (2019). A closed population like that of SRKWs changes only as a function of reproduction and survival rates, and the collapse of this population over the past two decades clearly indicates that those rates will lead to extinction if they are not improved soon.

The above cited studies – a large portion of which are by NOAA scientists – are just a sample of the irrefutable evidence that vessel noise and disturbance are harming SRKWs.

NOAA's management to date has been non-precautionary and inconsistent with the ESA and MMPA

The ESA and the MMPA both prohibit “taking” of SRKWs. The ESA defines a “take” to mean “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Whale-watching, whether commercial or recreational, involves pursuit and harassment of SRKWs, and – as clearly evident from the science just described – causes them harm.

Similarly, the MMPA defines a “take” to mean “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal” and it defines “harassment” as “any act of pursuit, torment, or annoyance which –

- (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or
- (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].”

Again, such effects, potential and real, have been confirmed by the existing science. Purely and simply, under these definitions, vessel-based whale-watching violates both the ESA and the MMPA.

The MMPA gives responsibility and authority for implementing its mandates to the “Secretary,” by which it means “the Secretary of the department in which the National Oceanic and Atmospheric Administration is operating, as to all responsibility, authority, funding, and duties under this Act with respect to members of the order Cetacea...” The ESA similarly assigns responsibility for implementing its mandates to the Secretary of Commerce, who oversees NOAA.

In passing the ESA, Congress assigned responsibility to the Secretary of Commerce to conserve endangered species and threatened species. That Act defines the terms “conserve,” “conserving,” and “conservation” to mean “to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary.” To date, NOAA’s management of the SRKW population under the ESA and MMPA has fallen well short of that mandate.

NOAA's management also is entirely inconsistent with the concept of pre-cautionary management, which must be implemented if ESA and MMPA goals are to be met. Where there are uncertainties regarding the effects of whale-watching on SRKWs, priority should be given to the whales first and the burden of proof should be placed on advocates for whale-watching to prove that they are not harming the whales (which, I contend, is simply not possible under current conditions). This essential principle, recognized and advocated world-wide because of its importance in conservation, is being ignored in this case.

NOAA is failing to implement its ESA and MMPA mandates and, as a result, this population's status is worse, and its risk of extinction greater, than should be.

NOAA has a moral obligation to recover this population and the ecosystems of which it is a part

When the evidence is so clear, why has NOAA been so reluctant to fulfill its responsibilities and use its authorities to protect, recover, and conserve this iconic population? Does it not believe it has a morale responsibility to do so?

We have abused or used this population to its detriment for at least 1/2 century, and probably much longer. And it has been almost 1/2 century since the ESA and MMPA were passed. Those Acts were supposed to be turning points in our history, when we formally assumed an obligation to conserve other forms of life. We also recognized that to do so, we must be willing to constrain ourselves. That's what conservation is, a willingness to adapt or alter our behavior so that other species may exist. The ESA and MMPA were useful in reducing the direct, intentional killing of marine mammals and other threatened or endangered species, but they have been less so in preventing indirect, unintentional – but still manageable – forms of mortality.

Whale-watching is one such activity that harms this population and its habitat. Yes, there are other activities, some of which may have more severe effects. But we do not have the luxury of being selective in deciding which adverse effects to address. We need to address all of them, including the harmful effects of whale-watching. This industry can focus on multiple other species in the Salish Sea (e.g., transient killer whales, humpback whales, gray whales, minke whales, harbor porpoises, Steller sea lions, California sea lions, harbor seals). It has proven its resilience this year by sustaining itself despite the long, unexpected absences of SRKWs.

Recommendation Repeated

Based on all of the above, I urge NOAA to implement, maintain, and enforce a moratorium on whale-watching (by all vessels, including commercial and recreational) of SRKWs in U.S. waters until such time as the population no longer needs the protection of the ESA. The central question here is whether NOAA, on our country's behalf, is willing to take the steps needed to save the SRKW population, not merely for ourselves, but for our children, grandchildren, and generations to come.

Sincerely,



Timothy J. Ragen, Ph.D.