

Senate Committee on Environment and Natural Resources  
Oregon State Legislature  
900 Court St NE  
Salem, OR 97301

March 26, 2019

Chair: Senator Michael Dembrow  
Vice-Chair: Senator Alan Olsen  
Members: Senator Cliff Bentz, Senator Floyd Prozanski, Senator Arnie Roblan

Dear Chair Dembrow, Vice-Chair Olsen, and Committee members:

Whale and Dolphin Conservation (WDC) is the leading global charity dedicated to the conservation and protection of whales, dolphins, and their habitats. As the Jessica Rekos Fellow for Orca Conservation, my work focuses on the protection and recovery of the critically endangered Southern Resident orca population, a unique community of orcas that lives in the transboundary waters of the U.S. and Canada, and off the coasts of Washington, California, and Oregon. Based in Newport, Oregon, I also work to ensure our coastal waters are safe, protected, and free from threats for the many species of marine mammals who live off the Oregon Coast. Today I am writing in support of SB 853, which includes a provision to prohibit the sale, purchase, or use of the pesticide *chlorpyrifos* in Oregon.

This pesticide is not only dangerous for humans, but is also listed by the National Pesticide Information Center as “highly toxic” to fish and aquatic invertebrates, the base of the food web in the Pacific Northwest, and is considered to have a significant adverse impact on salmon, a key food source for Southern Resident orcas.

This unique population of orcas has been listed as endangered under the U.S. Endangered Species Act (ESA) since 2005 and Canada’s Species At Risk Act (SARA) since 2003<sup>1</sup>. Genetically distinct from all other orca populations, the Southern Residents do not interbreed and rarely interact with other orcas, and is the only ESA-listed orca population. They are part of the fish-obligate “Resident” ecotype of orcas, and rely almost exclusively on salmon as their primary source of food. They are the only Resident population to inhabit the California Current ecosystem and frequent the outer coasts of Washington, Oregon, and Northern California<sup>2</sup>. Despite the research and conservation efforts initiated after their ESA listing, the Southern Residents have continued to decline and now number just 75 individuals, their lowest population abundance in 30 years<sup>3</sup>. The National Marine Fisheries Service (NMFS) has recognized them as one of eight marine species most at risk of extinction, and considers them a recovery priority #1: “a species whose extinction is almost certain in the immediate future because of a rapid population decline or habitat destruction.”<sup>4</sup>

The top threats to the survival and recovery of Southern Resident orcas have been identified as prey depletion – particularly of their primary prey, Chinook salmon – toxic contamination, vessel effects, and increasing levels of ocean noise<sup>5</sup>. These orcas have survived on the Pacific Northwest’s abundant salmon for millennia, but as salmon have declined throughout the region, the orcas have suffered from a lack of available prey. Without adequate resources of food in their habitat, the Southern Residents are starving to death.

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<sup>1</sup> National Marine Fisheries Service, Endangered Status for Southern Resident killer whales. 70 FR 69903; DFO (Fisheries and Oceans Canada). 2011. Recovery Strategy for the Northern and Southern Resident Killer Whales (*Orcinus orca*) in Canada. Species at Risk Act Recovery Strategy Series, Fisheries & Oceans Canada, Ottawa, ix +80pp

<sup>2</sup> Krahn, M.M. et al. 2004. 2004 status review of southern resident killer whales (*Orcinus orca*) under the Endangered Species Act. NOAA Technical Memorandum NMFS-NWFSC-62, U.S. Department of Commerce, Seattle, Washington; Reynolds, J.E. H. Marsh & T.J. Ragen. 2009. Marine Mammal Conservation. Endangered Species Research. 7:23-28

<sup>3</sup> Population data from Center for Whale Research, [www.whaleresearch.com](http://www.whaleresearch.com)

<sup>4</sup> NOAA Fisheries. Species in the Spotlight: Southern Resident Killer Whale DPS

<sup>5</sup> DFO (Fisheries and Oceans Canada). 2011. Recovery Strategy for the Northern and Southern Resident Killer Whales (*Orcinus orca*) in Canada. Species at Risk Act Recovery Strategy Series, Fisheries & Oceans Canada, Ottawa, ix +80pp; National Marine Fisheries Service (NMFS) 2008. Recovery Plan for Southern Resident Killer Whales (*Orcinus orca*). NMFS, Northwest Region, Seattle, Washington; NMFS. 2014. Southern Resident Killer Whales: 10 Years of Research & Conservation

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Research has established that Chinook comprises the majority – up to 80% – of the Southern Residents' diet in the summer months<sup>6</sup>, when they usually inhabit the inland waters of the Salish Sea between Washington and British Columbia. Coho and chum salmon are seasonally important, and the orcas' diet appears to diversify and include larger amounts of these types of salmon during offshore coastal foraging periods in the winter and spring<sup>7</sup>. Mortality and birth rates are correlated with coast-wide salmon abundance<sup>8</sup>, and a high rate of pregnancy failure in the population has been linked to nutritional stress, with nearly 70% of detected pregnancies ultimately unsuccessful, severely impacting the recovery of the Southern Residents<sup>9</sup>.

To survive and thrive, the Southern Resident orcas need reliable and abundant amounts of wild salmon throughout their range. The use of chlorpyrifos in Oregon puts already-struggling salmon populations even more at risk. A recent Biological Opinion from NMFS determined that the use of chlorpyrifos threatens the continued existence of Southern Resident orcas and many salmon populations within their range<sup>10</sup>. Specifically, the Opinion found jeopardy for fifteen ESA-listed environmentally significant units (ESUs) of chum, Coho, and Chinook salmon within the range of the orcas – including ESUs in Oregon.

The impacts of chlorpyrifos on salmon occur during both the adult and juvenile life stages, causing acute lethality, impairment of reproductive and ecologically significant behaviors, reductions in available prey (aquatic invertebrates), and impacts to the growth of juveniles<sup>11</sup>. The decreased survival of salmon caused by chlorpyrifos is also expected to adversely affect the Southern Resident orcas due to the decline of available prey, and the Biological Opinion determined that localized depletions of salmon would result in increased energy demands, nutritional stress, reduced body size and condition, and lower reproductive and survival rates for the endangered orcas<sup>12</sup>.

Chlorpyrifos kills the food that salmon rely on, alters their behavior and ability to smell and swim, reduces growth and reproductive success, and amplifies the effects of other pesticides. Among the most toxic and widely-used pesticides in the U.S. in both agricultural and household settings, chlorpyrifos is used without adequate safeguards and poses significant risk to human health, communities, and the environment. The impacts on salmon and Southern Resident orcas are an example of how wide-ranging the effects of this pesticide can be, not only polluting

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<sup>6</sup> Ford, M.J et al. 2016. Estimation of a Killer Whale (*Orcinus orca*) Population's Diet Using Sequencing Analysis of DNA from Feces. *PLoS ONE* 11(1): e0144956. doi:10.1371/journal.pone.0144956; Hanson, M.B. et al. 2010. Species and stock identification of prey consumed by endangered southern resident killer whales in their summer range." *Endangered Species Research*, 11(1):69-82

<sup>7</sup> NOAA Fisheries Northwest Fisheries Science Center. Distribution and Diet of Southern Resident Killer Whales. Presentation by Brad Hanson, July 2015 Program Review; NMFS. 2014. Southern Resident Killer Whales: 10 Years of Research & Conservation

<sup>8</sup> Ford, J.K.B, G.M. Ellis, and P.F. Olesiuk. 2005. Linking prey and population dynamics: Did food limitation cause recent declines of 'resident' killer whales (*Orcinus orca*) in British Columbia. *Fisheries and Oceans*; Ford J.K.B et al. 2010. Linking killer whale survival and prey abundance: food limitation in the oceans' apex predator? *Biology Letters* 6: 139–142; Ward E.J, E.E. Holmes, and K.C. Balcomb. 2009. Quantifying the effects of prey abundance on killer whale reproduction. *Journal of Applied Ecology*, 46: 632–640

<sup>9</sup> Wasser S.K. et al. 2017. Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (*Orcinus orca*). *PLoS ONE* 12(6): e0179824  
<https://doi.org/10.1371/journal.pone.0179824>

<sup>10</sup> NMFS Biological Opinion for Pesticides: Chlorpyrifos, Diazinon, and Malathion. 2017.

<https://www.fisheries.noaa.gov/resource/document/biological-opinion-pesticides-chlorpyrifos-diazinon-and-malathion>

<sup>11</sup> U.S. EPA. 2003. Chlorpyrifos Analysis of Risks to Endangered and Threatened Salmon and Steelhead. Office of Pesticide Programs; Sandahl, J. et al. 2004. Odor-evoked field potentials as indicators of sublethal neurotoxicity in juvenile coho salmon (*Oncorhynchus kisutch*) exposed to copper, chlorpyrifos, or esfenvalerate. *Canadian Journal of Fisheries Aquatic Sciences*, 64:404-413; Laetz, C. et al. 2009. The Synergistic Toxicity of Pesticide Mixtures: Implications for Risk Assessment and the Conservation of Endangered Pacific Salmon. *Environmental Health Perspectives*, 117:348-353; U.S. EPA. 2017. Biological Evaluation Chapters for Chlorpyrifos ESA Assessment. <https://www.epa.gov/endangered-species/biological-evaluation-chapters-chlorpyrifos-esa-assessment>; U.S. EPA. 2017. Biological Evaluation Chapters for Diazinon ESA Assessment. Appendix 4-1-4.

<https://www.epa.gov/endangered-species/biological-evaluation-chapters-diazinon-esa-assessment#append3>;

<sup>12</sup> NMFS Biological Opinion for Pesticides: Chlorpyrifos, Diazinon, and Malathion. 2017.

<https://www.fisheries.noaa.gov/resource/document/biological-opinion-pesticides-chlorpyrifos-diazinon-and-malathion>

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the environment surrounding areas of use, but also affecting the overall health of our watersheds, salmon, and coastal ecosystems.

To protect Southern Resident orcas, the salmon they rely on, and the health and safety of our shared watershed and marine habitats, I support SB 853, and I urge the Committee to pass this important legislation this session.

Thank you for your consideration.

Regards,



Colleen Weiler  
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