UNITED STATES OF AMERICA
Department of Commerce
National Oceanic and Atmospheric Administration

In re: Proposed Waiver and Regulations Governing the Taking of Eastern North Pacific Gray Whales by the Makah Indian Tribe	Administrative Law Judge Hon. George J. Jordan Hearing Docket No. 19-NMFS-0001

DECLARATION OF CARRIE NEWELL

I, Carrie Newell, hereby declare as follows:

PROFESSIONAL BACKGROUND AND EXPERIENCE

1. I am a marine biologist and serve as the owner of Whale Research EcoExcursions (WREE), an ecotourism organization that I founded in 2005. WREE's mission is to educate whale watchers about the gray whales and other marine life plus teach each patron about the gray whales as individuals. My ongoing mission is to continue photo-identification of all the whales in the area along with their behaviors, location, body condition and any other unique characteristics.

2. I have been a professor for 36 years at Lane Community College, Oregon State University (OSU) and Yavapai College. I have four academic degrees: (1) a Master of Science in Biological Oceanography from Oregon State University; (2) a Master of Science in Invertebrate

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Zoology from Northern Arizona University; (3) a Bachelor of Science in Fisheries and Wildlife from the South Dakota State University; and (4) a Biological composite Bachelor of Science degree from the Southern Utah State University. In addition to teaching, I have worked as a Federal Observer, Setaqua instructor, and elderhostel instructor. I have also collaborated with noted cetacean scientist Ken Balcomb researching orcas in the San Juan Islands in the 1990's, conducted blue whale research off Oxnard California, participated in the NOAA Teacher at Sea Program, worked on the Wecoma (OSU's research ship), led trips to the San Ignacio breeding lagoon in Mexico and interacted with gray whale researchers, engaged in environmental impact studies, and been employed as a fisheries technician. A copy of my Curriculum Vitae is attached hereto as Exhibit CN-1.

3. I began studying whales in 1992 as a naturalist aboard a number of different whale watching boats in Newport and Depoe Bay, Oregon. In 1999, I began graduate work at Oregon State University. During the course of my graduate program, I made new discoveries about gray whales off the Oregon Coast, including (1) that they eat mysid shrimp; (2) the identification, sex, and number of gray whales present; (3) their feeding localities and time spent at those localities; (4) and how to determine body condition. My research was featured in a 2004 Jean Michel Cousteau film for PBS, called "Gray Whale Obstacle Course." My research was also filmed by Oregon Field Guide. In 2005, I purchased my first Zodiac in order to conduct my research more effectively and gather a better data set than would be possible with only weekly trips on the ocean. From 1992 to the present, I have photographed the Pacific Coast Feeding Group (PCFG) whales almost daily during the summer months. With the exception of John Calambokidis, I have developed the most extensive PCFG whale data available. On each of my multiple trips per day –

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which at times approached 12 hours per day – I photograph and log data regarding the gray whales off Depoe Bay. To identify individuals, I photo identify the dorsal hump and opportunistic flukes. To determine body condition, I photograph the area behind the blow hole. Every trip of every day, I also document the GPS location, water depth and temperature, time of observation, and speed of travel of the subject whales.

4. In one of my papers, I describe my technique for determining body condition. CN-2. (Newell and Cowles 2006). I also have written a 132-page photo-identification book on the PCFG whales, called "A Guide to Summer Resident Gray Whales along the Oregon Coast." This guidebook is now in its 5th edition, and I will be doing a new edition this winter. Notably, many of the whales in my book are associated with the Cascadia Research Collective (CRC) numbers assigned to the cataloged PCFG whales. If a whale identified in my book does not have a CRC number, that is because the CRC has not yet assigned a number to that particular whale (or it was assigned after publication of my book). I provide my data sets to the CRC, which then cross-confirms that the subject whale is a PCFG. In addition to my resident whale guide, I have also written a half dozen other books related to cetaceans and marine invertebrates.

5. During my field research trips, in addition to the parameters described in paragraph 3 above, I also document feeding behavior both above and below the surface. I scuba dive to observe and collect the mysid shrimp and also collect opportunistic fecal samples from the gray whales to determine prey items. I used this data to support my Master's thesis and also share my photographs and data with CRC and scientists from Vancouver, Washington to San Ignacio Lagoon. Makah Tribe fisheries biologists Jonathan Scordino and I have collaborated on research in Depoe Bay, and I have shared my photographs with him over the years. Whale expert Bruce

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Mate's Marine Mammal Institute has also used my guidebook and research. Because of my gray whale expertise, I have been asked to be one of the main educators for the Whale Watch Spoken Here Program since the early 2000's. I share my gray whale knowledge with volunteers from southern Oregon to Washington. I have also given talks or poster presentations at the American Cetacean Society, Hatfield Marine Science Center, and numerous whale watching facilities and educational institutions from Alaska to Baja California.

6. I have spent more than 27 years observing gray whales along the Oregon Coast as well as in the gray whale breeding lagoons in Mexico. I make an effort to document every individual whale I see, cataloguing characteristics that make each whale unique.

7. While studying gray whales, most of which are PCFG whales, I observe: (a) behavioral characteristics such as feeding locality and feeding behavior, dive cycle, companionship, courtship, mom-calf interactions like teaching feeding techniques, and movement patterns; and (b) physical attributes including sex, approximate size and age (if known), body condition, coloration changes, dorsal hump, knuckle and fluke patterns, changes in barnacle patterns, the number and pattern of tooth rakes (an increasing phenomenon indicative of attempted predation by orcas), and collect opportunistic food and fecal samples.

8. I maintain an extensive library of the foregoing characteristics about the whales I observe as well as photographs of each whale I have identified. In addition to publishing my guidebook, I also showcase a large number of my photographs, models, wooden displays, and identification tips in my Whale, Sealife, and Shark Museum in Depoe Bay, Oregon.

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THE NON-CONSUMPTIVE USE OF WHALES

9. I understand that the 1855 Treaty of Neah Bay grants the Makah Tribe a right to fish and hunt whales "in common with all citizens of the United States." The "in common" language has been interpreted to prevent the Makah from hunting whales without regard to the non-consumptive use of whales by non-tribal members of the public. Such uses include whale watching and scientific study.

10. The Makah have introduced substantial testimony about the importance of whaling to their culture and allege that the waiver of the MMPA is justified by their treaty right. What the Makah Tribe's witnesses fail to include in this discussion is the "in common" right for non-consumptive use of whales by non-tribal members of the public.

11. The "right in common" is an extremely important right for the thousands of people with whom my company and I communicate about whales on a daily basis. By directly witnessing the natural splendor exhibited by these amazing wild creatures, our whale watching clients quickly get to know and love each whale that they meet out on the ocean. Through my business, I interact with at least 100 whale watching clients each day, and I have a following of tens of thousands of fellow whale watchers. Many of my clients tell me that I have given them the best day of their lives. I share with my whale watchers not only the name of each whale, but also its history, including sex, age, number of calves, orca attacks, and feeding techniques. In addition, I am also showcasing specific individual whales on social media so that tens of thousands of people can learn about these specific individual gray whales.

12. Through my whale watching business and research activities, I have compiled an incredible data set for gray whales off the central Oregon coast. I am not only familiar with the

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individual whales based upon their markings, but I also know many other things about them, including their personalities, site preferences, approximate ages, sex, unique behaviors, calving history, body conditions, exposure to recent orca attacks, and companions. Taking even one individual out of this data set would result in a loss of much valuable information. There are many incredible gray whale researchers, but few have had the opportunity to study a population in as much depth as I have been (and continue to be) privileged to do. In fact, my research has been likened to that conducted by Jane Goodall in revealing the individual traits of the animals under observation. How devastating would it be for the loss of even a single chimpanzee with whom Jane has worked for years? I know our summer resident grays like Ken Balcomb knows his Southern Resident orcas. I know that at least some of the whales that I observe year after year in Depoe Bay travel to Neah Bay. For example, the female whale illegally killed in 2007 was an individual that I had photographed two weeks earlier in Depoe Bay. As discussed below, ecotourism is a multi-billion-dollar operation, and people love living whales! I have a major following of people from all over the world who anxiously await news of any new discoveries I make or how certain whales are faring.

13. Whale watching is, collectively, a multi-billion-dollar global business and a multi-million-dollar business in Oregon. At WREE, ocean conditions permitting, I conduct 3-7 daily whale watching trips from April-October and 2-3 daily trips from December-March. I am on the ocean observing gray whales approximately 188 to 285 days per year and have been maintaining this level of field activity for 14 years. Whale watching tour guest numbers fluctuate seasonally, with more guests in the summer, and fewer in the winter, spring and fall. In the summer, most of our whale watching tours are sold out, requiring us to maintain a waiting list. It is a significant

benefit to have whales within 50 feet of the shore – as we do in Depoe Bay – where people can truly enjoy what is for some a life-changing experience. I have seen many tears of joy at seeing a wild whale.

14. On average, WREE accommodates 100 plus whale watching clients per day in the summer and 20 clients per day the rest of the year. At an average cost of $45 per client, whale watching is a profitable business. WREE is one of four whale watching tour businesses in the town of Depoe Bay alone – a municipality of less than 1,500 full-time residents. There are also numerous other whale watching companies along the Oregon coast. Thus, in addition to helping the public exercise their in-common right to appreciate whales, the whale watching industry provides a significant amount of economic benefit to Depoe Bay and other communities along the Pacific Coast.

15. In light of this tremendous economic potential, I would absolutely welcome the opportunity to assist the Makah in developing a profitable whale watching business. I would be willing to donate my valuable time and knowledge to help them launch this lucrative and personally fulfilling business. For a number of years, I had family members living on the Makah reservation and during that time I had the opportunity to teach some of the Makah children about individual whales, and they derived great enjoyment out of the experience. My gray whale guidebook was also sold in their Whale Museum. I totally love and respect the Makah and would really like to come to a compromise that does not involve killing whales.

16. In light of these tremendous benefits, I am particularly concerned about the susceptibility of the PCFG whales to a tribal hunt because, in my experience, gray whales – and particularly the PCFGs that frequent both Depoe Bay the Neah Bay area – are extremely curious.

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They are accustomed to the passive presence of whale watching vessels and, indeed, frequently approach within yards of my boats. Thus, in my opinion, PCFGs are "sitting ducks" – likely to be readily targeted during their consecutive feeding dives, or worse yet, killed while innocently swimming up to investigate a whaling vessel. Tragically, as mentioned above, I was intimately familiar with the gray whale that was illegally killed in Neah Bay in 2007. That whale was notoriously curious and, given that behavioral trait (held in common with the other PCFGs that I have directly observed), I am not surprised that she swam right up to the Makah tribal whale hunting vessel.

17. I also lead trips to San Ignacio Lagoon every February and various of the "friendly" whales come right up to the boat to interact with us humans. Why should they trust us in one place and then get killed in another place?

18. The thought that any PCFGs may be killed in the hunts NMFS seeks to authorize concerns me deeply from an ecological population management position. One of my degrees focused on wildlife management and taking one or two whales (maybe more if injured) out of a population of 243 is not ecologically sound, especially if the killed individual turns out to be a female, or worse yet, a pregnant female. I detail my concerns throughout my testimony below in response to specific testimony already submitted in this matter.

DISTRIBUTION AND ABUNDANCE OF PCFG WHALES

Disturbance: The impact of the hunt and associated training activities on the PCFG whales

19. The Makah Tribe and NMFS opine that the hunting and training approaches will not have a lasting effect on PCFG's gray whales but will only be temporary and localized. From my extensive experience over the last nearly three decades in the field observing gray whales and,

more particularly, observing their responses to anthropogenic sources of disturbance, I strongly disagree with this opinion.

20. The Makah Tribe presents the testimony of fisheries biologist Jonathan Scordino concerning the alleged minimal effect that the proposed hunt will have on PCFG gray whales. With regard to disturbance, Scordino testifies:

- *"Non-lethal impacts from training, approaches, and unsuccessful harpoon attempts are unlikely to cause changes in the behaviors of gray whales because the level of harassment and injury caused by those activities are similar to or even less than permitted scientific research that is not thought to negatively impact gray whale behaviors or to cause shifts in gray whale distributions."* Dkt No. 31 (Initial Direct Testimony of Jonathan Scordino) ("Scordino Direct"), at 102.

21. Also, with respect to the disturbance issue, NMFS provides the testimony of expert David Weller in support of the MMPA waiver for the Makah Tribe's proposed hunt. Weller makes the following statements concerning the effect of the hunt on the behavior of gray whales in the hunt area:

- *"[A]ccording to Calambokidis et al. (2017), between 1996 and 2015, researchers photographed 21,235 gray whales representing 1,638 unique individuals between southern California and Kodiak Island, an area that overlaps the PCFG range. NMFS Ex. 3-33. Obtaining a photograph of sufficient quality to make an identification requires a close approach. Notwithstanding these close approaches, ENP gray whales, including PCFG whales, continue to use these areas."* Dkt No. 5 (Direct Testimony of David Weller) ("Weller Direct"), ¶ 47.

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- *"Similarly, despite over a hundred gray whales being pursued and killed in native hunts off Chukotka each year (many of which are killed during the summer feeding months), there has not been a discernible change in the availability and location of hunted whales in that region. Id.*
- *"Based on the foregoing information and my firsthand observations, in my professional judgement 353 approaches of ENP gray whales per year, including up to 142 approaches per year of PCFG gray whales, would not have a lasting effect on the health or behavior of the affected whales." Id.*
- *"Based on the best available scientific information, it is my professional opinion that any changes in gray whale behavior due to an unsuccessful strike attempt or training harpoon throw would likely be short-term and not have more than temporary effect on the affected whale's health or behavior. Given these considerations, and the relatively small number of training harpoon throws and unsuccessful strike attempts allowed under the proposed regulations, it is reasonable to expect that whales exposed to these hunt-related activities would experience them as temporary and localized events." Id., ¶ 50.*
- *"Even-year hunts and training exercises conducted from December through May would encounter mostly migrating whales that pass through the ocean portion of the Makah U&A. Migrating whales would be able to transit the widest portion of the Makah U&A (approximately 32 miles or 51 km north-south) in several hours . . . [A]dverse weather conditions in the Makah U&A in winter and early spring coupled with shorter periods of daylight would keep most hunts and training exercises close to*

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shore and of shorter duration than during the summer. It is reasonable to expect that the relatively small number of migrating whales subjected to non-lethal hunt encounters, including hunting or training approaches, unsuccessful strike attempts, or training harpoon throws, during the migration season would experience the encounter as temporary and localized near-shore events that would otherwise not affect their migration." Id., ¶ 51.

22. Based upon my extensive observational experience and professional background, I disagree with the above-excerpted testimony of Scordino and Weller concerning disturbance. A prime example of the negative impacts of disturbance may be seen in the case of a gray whale I call "Ginger" and have been observing for more than 5 years. I have observed Ginger day-in, day-out, throughout the summer. During this time, Ginger had been feeding in a very specific location, making it easy for me to carefully catalogue Ginger's patterns, which were extremely predictable in terms of location and length of submersion between breaths. Ginger would stay every day for months on end within a 1 ½ mile feeding area. On every trip, for the last four years, I could take my whale watching clients to this specific location and see Ginger engaged in her specific feeding activity. In 2018, Ginger came in mid-March and did not leave until mid-November.

23. In 2019, Ginger returned on Memorial Day to the regular site. However, her behavior dramatically changed after a research vessel began following her to collect fecal samples. Unlike whale watching vessels that generally maintain a passive observation distance from the whales, the research vessel was following closely behind Ginger, causing her dive patterns to change – she swam faster (expending more critical energy needed for her migration) and stayed down

longer (8 minutes instead of 3.5 minutes). Since this incident, Ginger has not returned to the same location. I finally located her feeding off Lincoln City, Oregon – which is about 8 miles north of her regular location in Depoe Bay.

24. Johnathan Scordino and I worked together to get DNA samples from the Depoe Bay PCFGs. The whales did not like getting hit with the "arrow" from the crossbow and most left the area. A few of the whales returned days later, but some never returned. In the mid-2000s, another researcher came into the Depoe Bay area to satellite tag some of the PCFGs. Once again, most of the whales departed the area. The other whale watching companies were furious that these disturbances decreased the number of whale sightings for their patrons. These incidents involving research activities undercut any claim that even such more limited disturbances than those proposed for Makah whaling have only a temporary effect on the whales. Rather, they demonstrate that disturbance by hits or attempted hits will cause a whale to leave a preferred feeding area, which disturbance-induced reaction will be potentially detrimental to a whale's ability to effectively and efficiently feed.

25. While inappropriately discounting the negative impact of disturbance through the hunts and training exercises, NMFS and the Tribe further fail to account for the additive effect of such disturbance in conjunction with other environmental stressors. In this regard, I firmly believe that the ongoing Unusual Mortality Event (UME) of gray whales places them at an extremely high risk – particularly the very small population of PCFGs. NMFS notes on its website that 191 gray whales have washed ashore on the West Coast of North America since

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January 1, 2019.[1] Gray whales are what is known as "negatively buoyant" – meaning that they tend to sink when they die. By NMFS's own estimates, the 191 whales that washed ashore in 2019 alone represent only 3.9% to 13% of the total number of gray whales that have died so far in the ongoing UME.[2] Thus, between 1,469 and 4,897 gray whales have been lost in 2019. There is a possibility that some of those are PCFGs. Given that there are only approximately 243 PCFGs, if even only one of those lost was female, worse yet a pregnant or nursing female, the PCFG population would be critically impacted.

26. In discussing the current UME, NMFS claims that many of the dead gray whales found have been emaciated.[3] I am not surprised. I have seen more skinny whales this year than any other. What does surprise me, however, is the fact that NMFS does not seem to realize that the gray whales the Makah will target in training hunts or in actual hunts cannot afford to lose additional energy reserves. As noted, they are already emaciated. It is my firm belief that any further disturbance will exacerbate the issue.

27. I also note that emaciation is not the only concern for gray whales. As mentioned above, one of the characteristics that I watch for during my research tours is the number of orca tooth rakes seen on gray whales. I am finding that orca predation is definitely increasing, and I

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[1] *See* NOAA Fisheries, "2019 Gray Whale Unusual Mortality Event along the West Coast," at https://www.fisheries.noaa.gov/national/marine-life-distress/2019-gray-whale-unusual-mortality-event-along-west-coast (last visited on August 6, 2019).

[2] *Id.*, "Frequent Questions: 2019 Gray Whale Unusual Mortality Event along the West Coast," at https://www.fisheries.noaa.gov/national/marine-life-distress/frequent-questions-2019-gray-whale-unusual-mortality-event-along-west (last visited on August 6, 2019).

[3] *Id.*

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am certainly seeing much more evidence of orca predation attempts this year than I have seen in the past.

28. In my opinion, the increased orca predation that I have observed is at least partially driven by a large increase in the transient orca population. In fact, the West Coast Transient (WCT) orca population has more than doubled in size since 1990 and is currently growing at least 3% per year. CN-3 (Towers *et al.* 2018). On May 15 of this year, while conducting a whale watching excursion in Depoe Bay, I came across and photographed a pod of seven WCT orcas, which featured five females, one male, and a calf. Josh McInnes, a Canadian researcher from the University of Victoria and California-based Marine Life Studies who focuses his studies on WCT orcas, concluded from my photographs that one of the orcas was an individual known to be present in the San Juan Islands. I understand that there are two separate groups of transient killer whales that call the entire west coast of the continent home. One of these groups, known as the "inter-coast group," occupies the near-shore habitat and consists of at least 400 WCT orcas. These orcas are known to hunt gray whale calves in April and May. I am concerned about the negative effect of this predation on the PCFG whales that return to Depoe Bay as I have personally observed an increase in the numbers of WCT orcas on the central Oregon coast and observed an attack on a gray whale. Notably, NMFS has publicly recognized the negative impact of the increasing transient orca population on gray whales – observing on the website for its Southwest Fisheries Science Center that "it is clear that if the 'transient' killer whale population

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continues to increase in the eastern Pacific (Ford et al. 2007), the potential for impact on gray whales will also increase."[4]

29. With all of these risks collectively threatening the PCFG gray whale population, it would be irresponsible and unconscionable for NMFS to grant a waiver.

PCFG Site Fidelity

30. The Makah Tribe and NMFS further express the opinion that that PCFG gray whales are driven primarily by prey availability in selecting feeding areas. While this statement is true, I believe that they take this proposition too far by further claiming that PCFG distribution is highly variable – with the apparent goal of proving that PCFG gray whales will not necessarily be found in large numbers in the proposed Makah near shore hunt area. Through my extensive field work, I have found that certain areas are predictable feeding areas from year-to-year. I have observed that the "resident" whales in the Depoe Bay area travel to the same locality to feed on the same prey each year. The prey is also consistently present in these locations throughout the summer.

31. In my Master's thesis, I acknowledge the importance of prey availability to gray whale distribution, but I also note that several other factors may be involved. In particular, with regard to PCFGs, I observe:

- *There may be a number of reasons why this small population of gray whales have truncated their northward migration. The foremost reason is food. Over the years, a sufficiently dense and calorically efficient food source, mysids, was found along the*

[4] *Id.*, "Evaluating killer whale predation on eastern North Pacific gray whales," at https://swfsc.noaa.gov/textblock.aspx?Division=PRD&ParentMenuId=211&id=16064 (last visited on August 6, 2019).

coastal areas of the Pacific Northwest. Besides an ample food source, other advantages may include having a shorter round-trip migration with less energy expended from traveling, a longer foraging period and less heat energy lost in the warmer temperate waters versus the Arctic waters. In fin whales, the heat loss in the subtropics is 50% that of the Antarctic (Brodie 1975). Gray whales remaining off the Oregon coast may satisfy their lipid cache and pay less overhead for maintaining their body temperature since Oregon waters average 12.8°C in early summer whereas early summer in the Arctic only averages 2.1°C. CN-4, at 12 – 13.

Accordingly, in my opinion, the Makah Tribe and NMFS present an overly simplistic picture of the factors that influence PCFG distribution.

32. In support of the Tribe's position concerning distribution and abundance of PCFG gray whales, Scordino offers the following testimony:

- *"[I]t is important to note that gray whales lack strong fidelity to the Makah U&A (that is, the same subset of whales do not return consistently to the Makah U&A) (Scordino et al. 2017b) (Ex. M-0262), and no scientist has suggested that the various gray whales found within the Makah U&A over time comprise a discrete stock or group. The lack of fidelity to the feeding area causes abundance estimates for the sub-areas to not accurately reflect the number of whales that use the sub-areas in any given year; this point is especially true for the Makah U&A given there is only 39 linear kilometers of shoreline from the southern boundary of the U&A to Cape Flattery and Calambokidis et al. (2017) (Ex. M-0053) found that PCFG whales do not show fidelity to areas less than 60 km and Scordino et al. (2017b) (Ex. M-0262)*

did not find patterns of strong fidelity of observed whales." Scordino Direct, at 42 - 43.

- *"Some gray whales are consistently observed in the Makah U&A from year to year, but most show little to no fidelity to the area within and between feeding seasons (Ex. M-0262 ((Scordino et al. 2017b)). These findings are consistent with the PCFG range-wide photo-identification results (Calambokidis et al. 2017) (Ex. M-0053) and satellite telemetry results (Lagerquist et al. 2019) (Ex. M-0171) showing that PCFG whales are commonly observed using a range of sites that exceeds 60 nautical miles (on a north-south gradient), a distance greater than the north to south extent of the Makah U&A."* *Id.* at 57.
- *"Based on my extensive observation of gray whale movements and feeding behaviors off the coast of Washington, it is my opinion that foraging conditions were a key factor in these atypical observations of whales in the PCFG range."* *Id.* at 58.
- *"Prey availability and quality is a significant factor in the feeding behaviors and resulting movements of gray whales. I expect fluctuations in numbers and distribution of whales in the PCFG range and on northern feeding grounds to continue whether or not the Makah Tribe is whaling due to changes in the availability and quality of prey."* *Id.* at 59.
- *"The abundance of PCFG whales will likely fluctuate annually whether or not the Makah Tribe is whaling because the abundance of their prey responds to environmental variables that are dynamic. The loss of whales in the area due to*

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hunting may allow prey to flourish and lead to more whales recruiting into the group thus compensating for losses due to whaling." Id. at 63.

- *"The large collaborative study of gray whales in the PCFG range has found that gray whales use large portions of the PCFG area and generally do not show strong fidelity to areas of coastline of less than 60 kilometers. These results were confirmed by a satellite telemetry study and a study that focused on the Makah hunt area. Given that the whales move substantial distances while feeding in the PCFG range (and outside that area), it is most likely that the removals of hunted whales will not be observable based on changes in abundance estimates or observations of whales within the portion of the PCFG range comprising the Makah U&A or areas adjacent to it. My studies of gray whales in the Makah U&A show that PCFG whale use of the area is extremely variable by month and year even in the absence of a hunt. This variability is likely driven by prey availability. In years when the area is productive for gray whale prey we observe an increase in gray whales and in years when prey has low abundance we observe a decrease. I am confident that this trend of gray whale abundance and distribution as a function of available prey will also be the pattern observed in the future when the Makah are once again hunting whales." Id.* at 101-102.

33. Based upon my gray whale expertise and extensive field experience, I disagree with Scordino's above-quoted testimony. In reaching his conclusions about PCFG distribution, Scordino fails to use the best available science to predict the amount of time that gray whales have a near-shore presence along the coast. I do agree with Scordino that whales are found where

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the food is located based on type and density of food. However, I disagree that whales do not have site preferences. As a general matter, gray whales exhibit a strong preference for near-shore foraging. In this regard, during my research at OSU through scuba diving, I have observed most of the mysid shrimp food to be within half a mile of shore and many times only 30 feet from shore. More specifically, I observe PCFGs arriving in the Depoe Bay area as early as March and staying as long as November before continuing on their southerly migratory journeys, with most returning in May and departing in mid-October. Thus, they are present consistently and for a far greater amount of time in a single location than Scordino describes in his testimony. As detailed below, I am personally familiar with PCFG whales exhibiting site fidelity to Depoe Bay and the immediate vicinity.

34. In addition to Ginger, I have directly observed a number of other PCFG whales that exhibit strong site fidelity to specific locations in the Depoe Bay area. One example is a whale named "Comet," who fed in a small area, 1 mile from Depoe Bay, for months at a time. Every trip, every day, we found Comet in this one locality for months at a time. Another example is a whale named "Yogi" who returned this year to the same area that he occupied last year – the north part of the bay in Depoe Bay. A third example is Morisa, whom I have observed over 20 years. Her preferred location is a 2 square mile area near Whale Cove.

35. "Scarback," our most famous summer resident (PCFG), also has site preferences. She is found within a 10-mile area most of the summer. While I do understand that whales travel to where their food is located, I have also seen many whales that exhibit site preferences.

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36. Presently these whales (Ginger, Yogi, Morisa, and Scarback) have been foraging in the same areas for over two months. There are other whales that show site fidelity since these areas are reliably consistent for food resources.

37. The Makah Tribe partially bases its claim that PCFG distribution is highly variable on Lagerquist *et al.* (2019). However, the Tribe's position is based on an overly broad interpretation of this study and is contrary to Calambokidis *et al.* (2015) concerning Biologically Important Areas (BIAs) for cetaceans, including PCFGs. With regard to BIAs, such areas include Depoe Bay – where I conduct my whale watching and scientific research activities – and the area near the Makah Tribe's proposed hunt.

38. While briefly noting the temporal restrictions of Lagerquist *et al.* (2019), Scordino fails to fully describe the limitations of the study. As admitted by the authors, "[t]agging dates ranged from 2 September to 3 December of each year, and most whales were tagged off northern California from October to December. Consequently, the results were weighted toward fall- and winter-feeding area movements. Spring and summer movements could only be described for whales whose tags lasted beyond their return migration into the study area." Thus, given these admitted limitations, the study is woefully inadequate because most PCFG whales do their active feeding from the end of May through mid-September. The Lagerquist *et al.* (2019) study lacked most of this feeding time. Additionally, based upon my observations of the same whales in Depoe Bay and San Ignacio Lagoon, I understand that PCFGs start traveling to the lagoon from about mid-September to mid-October. Accordingly, Lagerquist *et al.* (2019) targeted whales that were already on the move south. Overall, in my expert opinion, the study bases its conclusions upon only a temporally and spatially-limited snapshot of the distribution of PCFGs. The study is

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further biased by the fact that the whales had already begun their southward migration during this temporal snapshot. Thus, the Lagerquist study does not, in fact, support the Makah's assertions regarding gray whale distribution.

39. My direct observations also support the possibility that PCFG whales stage in Depoe Bay from northern feeding areas in September to take advantage of the last good foraging area. I have always seen the largest number of whales in the first few weeks of September. The whales probably continue to feed on their way south until food supplies disappear. This hypothesis is confirmed by my diving experience. In particular, during my dives in Depoe Bay, I have observed the most abundant mysid shrimp swarms in September. Thus, the PCFG whales have even more reason to have high site fidelity to the Depoe Bay area – a fact contrary to the conclusions of Lagerquist *et al.* (2019) concerning allegedly mostly transient PCFG distribution.

40. Lagerquist *et al.* (2019) further acknowledged that, while the study appeared to depict an absence "of overlapping core areas in other places in the PNW where gray whales congregate, such as the west coast of Vancouver Island," this result did "not suggest these areas are unimportant." Instead, such absences were "most likely the result of when and where whales were tagged (the majority were tagged off northern CA in fall) and the small sample of tagged whales that were tracked into the following spring and summer." The authors concluded that the "[t]agging of gray whales earlier in the feeding season and in more areas would provide a more complete picture of gray whale use of the PNW." In short, the Lagerquist data set is too limited to support the Makah's assertions regarding distribution.

41. Scordino also places great reliance on Lagerquist *et al.* (2019) for the proposition that "PCFG whales are commonly observed using a range of sites that exceeds 60 nautical miles (on a

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north-south gradient), a distance greater than the north to south extent of the Makah U&A." Nevertheless, the observed inner quantile range could be due to a number of factors, including the different temporal focus than photo-identification studies and, again the "small sample of tagged whales that were tracked into the following spring and summer." Additionally, even if the estimated inner quantile range is accurate (given the study's acknowledged limitations), this estimate should not be extrapolated to apply to all PCFG gray whales. As detailed above, my field experience has clearly demonstrated that a large percentage of PCFG whales exhibit strong site fidelity to areas well under 60 nautical miles. Here again, Scordino has made broad and unsupported assertions about whale distribution based on data that Lagerquist herself admits is not sufficiently robust to reach a conclusion. My research makes it clear that PCFGs do, in fact, exhibit high site fidelity.

The consequences of the loss of PCFG whales

42. The Makah, and particularly Scordino, claim that external recruitment will continually replenish the PCFGs, such that the hunt will not have a significant or lasting effect on PCFGs. I completely disagree with this contention.

43. The loss of gray whales to the PCFG "community" will not just result in the loss of a fungible component of that community, but rather the loss of important community knowledge, which includes knowledge of specific feeding areas and techniques that are taught to other whales. I have seen Scarback and other females teaching their calves how to feed on mysid shrimp. In succeeding years, I have observed the calves of Scarback and other local PCFG females returning to Depoe Bay where the females taught them to feed. The killing of even a single female could result in a multi-generational impact, as future whale generations would not

be able to benefit from the knowledge passed along from mother to calf of the location of high-protein food sources – such as the mysid shrimp swarms in the kelp forests. Similarly, in the Depoe Bay area, I have seen one PCFG whale apparently trying to teach another whale a new feeding technique similar to bubble net feeding by humpback whales. All such foraging knowledge is particularly valuable during this critical time when other gray whale food sources are becoming increasingly scarce. We cannot take for granted knowledge that is passed on from one whale to another – particularly from a female to her calves. For this reason (among others), it is especially critical for the Makah hunt to avoid PCFG females. Yet, as detailed below, such avoidance will be nearly impossible.

44. One of the reasons that I published *A Guide to Summer Resident Gray Whales Along the Oregon Coast* is to help provide identification tools to the many thousands of laypersons who watch gray whales along their Pacific Coast migration route. While my guidebook has numerous identification tips and photos, it remains difficult for members of the public to readily identify specific whales with certainty unless they have multiple opportunities to see the same whale repeatedly at a very short distance. In fact, even some of my own tour captains who routinely go out on tours need my help confirming the identify of whales. The Makah could never achieve the requisite level of identification expertise to avoid harassing or killing a PCFG – especially during the heat of a hunt or practice hunt.

45. Given what I know about the complexities involved with identifying whales, I believe that it would be impossible for someone hunting or practicing to hunt a whale to identify with certainty whether a particular gray whale was a PCFG female whale. Accordingly, there is an

extremely high risk that a PCFG female would be targeted in a hunt or in one of the hundreds of highly stress-inducing and energetically-taxing practice hunts that NMFS seeks to allow.

46. The loss of PCFG whales will also have grave consequences for scientific research concerning these unique whales. As noted above, the right to conduct such research is one that I hold in common with the Makah under the Treaty of Neah Bay. A primary motivation for publishing my guidebook and sharing my research through my museum was to impart knowledge about the comprehensive body of work that exists about PCFGs. Given their high site fidelity, curious personalities, and near-shore distribution, PCFGs have represented an extremely unique opportunity for whale scientists to intimately study details about large cetaceans not readily obtainable with other whale populations. From the fine idiosyncrasies of feeding dynamics to progressive body condition changes that have been catalogued – this is absolutely critical information that we cannot afford to lose, particularly during this era of rapid changes to climate and prey abundance. If the individual PCFG whales that we have had the benefit of studying so closely are lost to a hunt, this collective body of work will remain unfinished and incomplete. As a result, our ability to properly manage cetaceans and the every-growing threats that they face will be significantly compromised.

I declare under penalty of perjury under the laws of Oregon and the United States that the foregoing is true and correct.

DATED this 6th day of August 2019

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Exhibit List

Exhibit No.	Short Form Reference	Full Citation
CN-1		Curriculum vitae for Carrie Newell
CN-2	Newell and Cowles 2006	Newell, C. L., & Cowles, T. J. (2006). Unusual gray whale (*Eschrichtius robustus*) feeding in the summer of 2005 off the central Oregon Coast. *Geophysical Research Letters, 33*(22).
CN-3	Towers *et al.* 2018	Towers, J. R., Hallé, M. J., Symonds, H. K., Sutton, G. J., Morton, A. B., Spong, P., . . . Ford, J. K. (2018). Infanticide in a mammal-eating killer whale population. *Scientific Reports, 8*(1).
CN-4	Newell 2009	Ecological Interrelationships Between Summer Resident Gray Whales (*Eschrichtius robustus*) and Their Prey, Mysid Shrimp (*Holmesimysis sculpta* and *Neomysis rayi*) along the Central Oregon Coast. Carrie Newell for the degree of Master of Science in Oceanography presented on June 15, 2009.