UNITED STATES OF AMERICA
DEPARTMENT OF COMMERCE
NATIONAL OCEANOGRAPHIC AND ATMOSPHERIC ADMINISTRATION

In re:	)	Docket No. 19-NMFS-0001
	)	
Proposed Waiver and Regulations Governing the Taking of Eastern North Pacific Grey Whales by the Makah Tribe	)	RIN: 0648-BI58 and RIN: 0648-XG584

RECOMMENDED DECISION

Issued by: George J. Jordan, Administrative Law Judge

Issue date: September 23, 2021

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I. STATEMENT OF THE PROCEEDING

This proceeding concerns a request by the Makah Indian Tribe of Neah Bay, Washington (Makah Tribe), to hunt and kill Eastern North Pacific (ENP) gray whales in waters off the northwest coast of Washington State. These actions are generally forbidden under the Marine Mammal Protection Act (MMPA), 16 U.S.C. § 1361 *et seq.*, therefore, the Makah Tribe must seek and receive permission from the Secretary of Commerce (Secretary) in order to conduct the proposed hunt.[1]

Before the Secretary may authorize such a hunt, the MMPA requires the Department of Commerce (Department) to conduct a formal rulemaking proceeding. 16 U.S.C. § 1373(d). The statutory basis for this type of proceeding is found in the Administrative Procedure Act (APA). *See* 5 U.S.C. §§ 553, 557. Specifically, 50 C.F.R. Part 228 requires a public hearing on the record, after which the presiding officer must recommend: 1) whether the Secretary should grant the Makah Tribe's request to waive the MMPA's moratorium on taking marine mammals and allow the Makah Tribe to hunt and kill certain grey whales; and if allowable, 2) whether any changes should be made to the proposed regulations that will control the taking of such whales.

After conducting a hearing and considering all evidence in this matter, and upon review of applicable law, I recommend the Secretary **GRANT** the Makah Tribe's waiver request and promulgate the proposed regulations, incorporating the modifications described in section VII.C of this Recommended Decision.

[1] The Secretary has delegated this authority to the Assistant Administrator of the National Marine Fisheries Service (NMFS), a division of the National Oceanographic and Atmospheric Administration (NOAA), which is a component agency within the Department of Commerce. This Recommended Decision will refer to the Secretary when quoting statutory language, but will generally refer to actions taken on the waiver as being done by NMFS or the Assistant Administrator.

II. BACKGROUND AND PROCEDURAL HISTORY

Before turning to the substantive issues regarding the waiver and proposed regulations, I find it necessary to give a brief overview of the Makah Tribe's history of whaling, U.S. and international whaling laws, and the procedural history of the Makah Tribe's efforts to resume whaling under the current laws and regulations.

A. Background

The Makah Tribe has hunted gray whales and other marine mammals for over 2,700 years. (Tab 24 at 11).[2] In 1855, the Makah Tribe and the United States entered into the Treaty of Neah Bay (Treaty), which reserved the Makah Tribe's right to natural resources and cultural practices, including subsistence whale hunting. In exchange, the Makah Tribe ceded 469 square miles of Makah territory to the United States. (Tabs 26B, 90F). Over the following decades, commercial hunting greatly reduced the ENP gray whale population and as a result, the Makah Tribe voluntarily stopped whaling in the 1920s. At that time, no state or federal laws controlled the conservation of whales or prohibited the practice of whaling in the Makah Tribe's hunting grounds.

In the mid-20th century, the United States and other nations recognized that many animals, including gray whales, were at risk of depletion or extinction. In response, nations adopted numerous laws, international conventions, and treaties establishing conservation measures, which are still applicable today and affect this proceeding to varying degrees. *See Metcalf v. Daley*, 214 F.3d 1135, 1137 (9th Cir. 2000) (detailing the history of whaling laws).

[2] The citations in this Recommended Decision will be to the corresponding Tab numbers in the official docket record. **Appendix A** contains a full list of documents in the official record.

The United States became a signatory to the International Convention for the Regulation of Whaling (ICRW) in 1946. One provision of the ICRW established the International Whaling Commission (IWC), whose purpose is the conservation of whales through the management of whaling by various means, including setting catch limits for aboriginal subsistence whale hunting. Members of the IWC meet regularly to share scientific research, update recommended conservation measures, and consider requests for catch limits. The United States implemented its ICRW obligations domestically through the Whaling Convention Act of 1946, 16 U.S.C. § 916 - 916l.

Congress passed the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321, in 1970 as the "basic national charter for protection of the environment." 40 C.F.R. § 1500.1(a). NEPA ensures all federal agencies factor environmental considerations into decision-making and provide opportunities for public review and comment. 42 U.S.C. § 4333.[3] The primary requirement of NEPA is that the responsible agency official must prepare an environmental impact statement (EIS) or Environmental Assessment (EA) before the agency may engage in any major action "*significantly affecting* the quality of the human environment."[4] 42 U.S.C. § 4321 (emphasis added). Finally, Congress enacted two seminal laws for the protection and

[3] The regulations implementing NEPA are at 40 C.F.R. Parts 1500–1508 and are binding on all federal agencies, though agencies may also develop their own supplemental procedures. At NOAA, the Office of the General Counsel and the designated NOAA NEPA coordinator oversee NEPA compliance. The Undersecretary of Commerce issued NOAA Executive Order (NAO) 216-6A in 1999, and reissued it in 2016, to set out specific policies and procedures for NOAA to follow. NAO 216-6A also authorized development of a Companion Manual to provide additional, specific policies pursuant to NEPA and related authorities.

[4] Unlike other environmental laws, NEPA only prescribes procedures for considering environmental issues and does not mandate any particular result. *Humane Soc. Of U.S. v. Bryson*, 924 F.Supp.2d 1228, 1238–39 (D. Ore. 2013) (*quoting Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989)).

conservation of wild animals: the MMPA in 1972, and the Endangered Species Act (ESA), 16 U.S.C. § 1531 *et seq.*, in 1973.[5]

As a result of conservation efforts, the ENP gray whale population rebounded to healthy levels and, as of 1994, was no longer considered endangered. *See* 59 Fed.Reg. 31,094 (Jun. 16, 1994). After seventy years of voluntarily abstaining from whaling, the Makah Tribe desired to resume whaling off the coast of Washington State and in the Strait of Juan de Fuca. *Metcalf*, 214 F.3d at 1137. Consequently, in 1997, the Russian Federation and the United States submitted a joint proposal to the IWC for a whaling catch limit for ENP gray whales on behalf of the Chukotkan (or Chukchi) people, who are natives of the Chukchi Peninsula in Russia, and the Makah Tribe. At its 1997 plenary meeting, the IWC granted a joint catch limit which permitted the beneficiaries to hunt gray whales beginning in 1998, and has continued to grant catch limits upon request ever since. (*See* Tab 55 at 11–15). A bilateral agreement between the United States and Russia sets overall and annual limits for both counties, with the Makah Tribe entitled to 5 whales per year. The agreement also allows either country to transfer its unused quota to the other, and the United States has transferred its entire quota for use by Chukotkan hunters for the past several years. (*Id.).*

After the IWC granted a catch limit, the Makah Tribe sought and received the Department's permission to hunt ENP gray whales. In 1999, the Tribe conducted a hunt in which it successfully landed a gray whale. Thereafter, individuals and conservation groups sued the Department, alleging it violated federal law when it granted the Makah Tribe's request. *See Metcalf*, 214 F.3d 1135. Specifically, they asserted the Department did not adequately and timely

[5] The ESA contains the following provision: "Except as otherwise provided in this chapter, no provision of this chapter shall take precedence over any more restrictive conflicting provision of the Marine Mammal Protection Act of 1972." 16 U.S.C. § 1543.

assess the environmental impact of the hunt. *Id*. Ultimately, the Ninth Circuit agreed and ruled against the Department. *Id.*

In response to the *Metcalf* decision, the National Marine Fisheries Service (NMFS) prepared an EA pursuant to NEPA, and again decided to allow the Makah Tribe to hunt gray whales. Another lawsuit followed and the Ninth Circuit held: 1) the proposed hunt required a more detailed EIS, not just an EA, and 2) the MMPA, not the Tribe's treaty right to hunt whales, was the controlling law on whether a hunt could proceed. *See Anderson v. Evans*, 314 F.3d 1006 (9th Cir. 2002), opinion amended on denial of reh'g, 350 F.3d 815 (9th Cir. 2003), opinion amended and superseded on denial of reh'g, 371 F.3d 475 (9th Cir. 2004). The Ninth Circuit expressly did not decide whether NMFS should consider and give weight to the Makah Tribe's treaty rights when considering the request for a waiver of the MMPA. *Id.* at 499–500. Consequently, the Makah Tribe has been unable to legally hunt gray whales since the *Anderson* ruling.[6]

B. Procedural History

On February 14, 2005, to comply with the Ninth Circuit rulings, the Makah Tribe submitted a request for a waiver of the MMPA's moratorium on the taking of ENP gray whales to the Assistant Administrator of NMFS pursuant to 16 U.S.C. § 1371(a)(3)(A). Specifically, the Makah Tribe seeks to conduct a ceremonial and subsistence hunt for ENP gray whales within the coastal portion of its usual and accustomed fishing grounds (U&A), not including the Strait of Juan de Fuca; to consume whale meat and blubber; and to make and sell handicrafts from non-edible whale parts. (Tab 90F at 2-3 to 2-7; App. A).

[6] Several members of the Makah Tribe conducted a hunt in 2007 without authorization from either NOAA or the Tribal Council, and faced legal recourse for their actions.

NMFS proceeded to consider the Makah Tribe's waiver request. On August 25, 2005, NMFS published a notice of intent to conduct public scoping meetings in its preparation of the Draft Environmental Impact Statement (DEIS), and subsequently conducted those public scoping meetings in Neah Bay, Port Angeles and Seattle, Washington, and in Washington, D.C. *See* 70 Fed. Reg. 49911. On May 9, 2008, NMFS released the 2008 DEIS considering various alternatives to the Makah Tribe's proposed action and opened a 60-day public comment period. 73 Fed. Reg. 26375; Tab 1F. In 2012, NMFS terminated the 2008 DEIS because it was outdated. NMFS released a new DEIS in March 2015, which considered a different set of alternatives from those assessed in 2008 and sought public comment. 80 Fed. Reg. 13373; Tab 90F.

After considering the public comments and presenting hunt plans to the IWC for scientific review, NMFS proposed to grant the Makah's waiver request, and, on April 5, 2019, published the proposed waiver and regulations in the Federal Register. (Tab 90B). The announcement included a description of the public process for interested parties to participate in this formal rulemaking on NMFS's proposal. The proposed waiver authorizes enrolled members of the Makah Tribe to conduct limited hunts for ENP gray whales in the coastal portion of the Makah Tribe's U&A over a 10-year period. The accompanying regulations set parameters for training and hunting activities, allow for restricted consumption of whale meat and blubber, and set conditions for the making and sale of handicrafts. (*Id.*).

The April 5, 2019 Federal Register notices initiated the formal rulemaking proceeding in this matter. Pursuant to a memorandum of agreement between NMFS and the Coast Guard, I was assigned as the presiding officer, with the responsibility to conduct the hearing and issue a Recommended Decision. Numerous parties filed appearances in response to the hearing notice, including NMFS; the Makah Tribe; Ms. Innana McCarty; the Marine Mammal Commission

(MMC); Sea Shepherd Conservation Society and Sea Shepherd Legal (collectively, Sea Shepherd); the Animal Welfare Institute (AWI); and the Peninsula Citizens for the Protection of Whales (PCPW).

In accordance with 50 C.F.R. § 228.11, I held the initial, in-person prehearing conference on June 17, 2019, at the Jackson Federal Building in Seattle, Washington. The purpose of the prehearing conference was to determine the final agenda for the hearing on NMFS's proposed waiver and regulations. The parties identified one issue of fact not included in NMFS's Federal Register notice, which pertained to a recently declared Unusual Mortality Event (UME) affecting ENP gray whales. (Tab 90C). On June 26, 2019, I announced the final agenda. Although I initially set the hearing for September 2019, several parties sought a continuance and I rescheduled it to begin on November 14, 2019. (Tab 90D).[7]

In accordance with the rules governing this proceeding, the parties submitted written direct testimony and rebuttal testimony, along with supporting exhibits, in advance of the hearing. The hearing commenced in Seattle, Washington on November 14, 2019, and concluded on November 20, 2019. During this time, I heard testimony from 17 witnesses. The record in this matter is voluminous and includes six transcript volumes, over two dozen declarations, and hundreds of exhibits.[8]

As directed by the regulations, I set a public comment period which commenced after publication of the transcript. (Tab 107). All parties also had the opportunity to file proposed

[7] A number of party representatives and witnesses were participating in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Conference, which was originally scheduled for May 2019 but was moved to September 2019. As the CITES conference took place in Geneva, Switzerland, and the dates overlapped, it would not have been possible for participants to adequately prepare and fully engage in both events.

[8] All filings associated with the hearing, including a full transcript of the hearing, are available for public viewing on the United States Coast Guard Administrative Law Judge website reading room at https://www.uscg.mil/Resources/Administrative-Law-Judges/Decisions/ALJ-Decisions-2016/NOAA-Formal-Rulemaking-Makah-Tribe/.

findings of fact, conclusions of law, and argument in support of their positions. During the public comment period, NMFS announced its intention to draft a Draft Supplemental Environmental Impact Statement (DSEIS) relating to the current UME. 85 Fed. Reg. 11347 (Feb. 24, 2020). AWI, Sea Shepherd, and PCPW jointly submitted a Motion to Stay the Waiver Proceeding on March 3, 2020. I ultimately denied the motion, as I found sufficient evidence in the record for me to make a determination about whether the UME would preclude issuance of a waiver, and the arguments of harm to the moving parties were either speculative or premature. (Tab 108). During the comment period, NMFS received 178 comments, and all parties except Ms. McCarty made post-hearing filings. All comments and briefing on the substantive issues were filed by March 22, 2020, and a determination on the proposed waiver and regulations is now ripe for recommended decision.[9]

III. FINDINGS ON THE ISSUES OF FACT

The procedural regulations require the Recommended Decision to include "findings on the issues of fact with the reasons therefor" and "rulings on issues of law." 50 C.F.R. § 228.20(a)(2) and (3). The issues of fact were developed in consultation with the parties and published in the Federal Register as part of the updated Final Agenda for Hearing. (Tab 90E). The discussion on the waiver and regulations that follows includes the requisite findings and rulings. However, for ease of reference, I have also reprinted below the issues of fact in bold text, along with a brief summation of my findings where appropriate and citations to the sections of this Recommended Decision which discuss each item in detail.

[9] The official record being transmitted to the Assistant Administrator along with this Recommended Decision includes all filings made during this proceeding, including those regarding procedural matters which were filed after briefing on the substantive issues was complete.

I. Should a waiver be granted pursuant to 16 U.S.C. 1371(a)(3)(A)?

A. Did NMFS give due regard to the distribution, abundance, breeding habits, and times and lines of migratory movements of the stock subject to the waiver? Will the proposed waiver have a meaningful effect on the distribution, abundance, breeding habits, or migratory movements of the stock subject to the waiver? Yes, NMFS gave due regard to these factors and the best scientific evidence available shows the waiver will have no meaningful impact on the ENP stock. *See* discussion in Section VI.

1. Distribution and Abundance: *See* discussion in Section VI.A.1 and 2.

a. What numbers are appropriate to use for ENP, WNP, and PCFG:

i. Carrying capacity. The most recent estimate is that the ENP stock is at approximately 85% carrying capacity. (Tab 1H at 17; Tab 59B at 8). There is insufficient data to calculate carrying capacity for the WNP stock. (Tab 58 at ¶ 27, Tab 22A at M-0408). The PCFG are not a stock, and therefore do not have a separate carrying capacity.

ii. Current abundance estimates. The most recent abundance estimate for the ENP stock is 26,960. (Tab 59B at 4). The estimate for the WNP stock is 290 whales. (Tab 54H at 2). The estimate for the PCFG is 243. (Tab 59B at 4).

iii. Population stability and/or historical fluctuation. The ENP stock has steadily increased in abundance over the past several decades. (Tab 59B at 4). The PCFG population has had periods of increase and periods of stability. (Tab 59B at 4–5). The WNP stock has had slow, small increases.

iv. Optimum sustainable population (OSP) levels.[10] The most recent estimates show a 0.884 probability that the ENP stock is above its maximum net productivity level (MNPL) and is therefore within its OSP. (Tab 21C at M-0235; Tab 59B at 8). There is insufficient data to calculate the OSP for the WNP stock. (Tab 59 at ¶ 3, Tab 58 at ¶ 27). OSP is only calculated for stocks and the MMPA does not provide for OSP determinations for subgroupings below the stock level, thus an OSP would not be calculated for the PCFG. (Tab 58 at ¶ 8). However, scientists have determined a "theoretical OSP range" for the group. (Tab 1H at 25). Scientists have not been able to determine whether the PCFG is within this theoretical range, but the group has not exhibited signs of exceeding the carrying capacity of the summer feeding range. Based on the best available science, it appears that the proposed hunt and other human caused mortality are sustainable with respect to the PCFG. (Tab 1H at 30; Tab 59B at 8).

b. What are the maximum number of ENP and PCFG whale deaths and maximum percentage reduction in ENP and PCFG abundance expected to result from Makah hunting over the 10-year waiver period? The maximum number of whales that could be

[10] The optimum sustainable population (OSP) for a stock is "the number of animals which will result in the maximum net productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem in which they form a constituent element." 16 U.S.C. § 1362(9); *see also* 50 C.F.R. § 216.3; Tab 2 at ¶ 5; Tab 4 at ¶ 8; Tab 101 at 93:25–94:2). The population that results in maximum net productivity is known as the maximum net productivity level (MNPL) and represents the bottom of the OSP range, while the stock's carrying capacity represents the upper supportable population level. 50 C.F.R. § 216.3.

killed during this waiver's validity period is 25, with a maximum of 16 being PCFG whales. (Tab 90B).

i. Would this reduction have any impact on ENP or PCFG abundance? The removal of 25 whales from the ENP stock would have no detectible effect on ENP abundance, as the stock's Potential Biological Removal (PBR)[11] is 801 animals per year. (Tab 59B at 5). The removal of 16 PCFG whales could have somewhat more effect on the group's abundance, as uncertainties exist regarding internal versus external recruitment, but the PBR is 3.5 animals per year. (*Id.*; *see also* Tab 78F at 4-65) As the regulations limit the number of PCFGs the Makah Tribe may strike and land, the number of PCFGs removed from the population due to the hunt would be less than the PBR.

c. Is the ENP stock currently undergoing an Unusual Mortality Event (UME)? If so, does this merit further consideration before a waiver may be granted? Yes, a UME was declared in May 2019 and was still in effect at the close of the record in this matter. (Tab 53N). While I found the waiver could still be granted despite the UME, I recommend the Assistant Administrator consider the existing language in the proposed regulations to authorize reducing strike limits during the permitting process, thus making them more conservative during UMEs. *See* Sections VI.A.2.c, VII.C.4.iv.

d. Is the carrying capacity of ENP stock in the summer feeding areas being reduced and does this merit further consideration before a waiver may be granted? While some parties made this argument, the scientific evidence about whether the prey availability in the Arctic and Pacific summer feeding grounds is sufficient to sustain the ENP population at its current levels is inconclusive. (Tabs 3PP; 3UU; 21C at M-0026, M-0126, and M-0207; 32I; 32K; 32U; 32AA;62C; 62G). However, the proposed waiver and regulations contain provisions to reduce the number of takes allowed or prevent the hunt entirely, if the health of the stock warrants it, thus this issue should not prevent issuance of the waiver.

2. Facts pertaining to Breeding Habits: *See* Section VI.A.3.

a. Under the proposed waiver, will hunting or hunt training overlap with the breeding season? Will it likely occur in December-January? Yes, the waiver would allow hunting during the breeding season, which generally coincides with the onset of the southbound migration in late November and early December and continues until the whales reach the southern wintering grounds. (Tab 1 at ¶ 52; Tab 1H at 18; Tab 3 at ¶ 60).

i. What is the expected frequency of hunt activities during the relevant time period? Fewer training and hunting activities are expected at this time due to inclement weather. (Tab 1 at ¶ 52; Tab 90F at 3-354 to 3-357, 4-10).

ii. Will the boundaries set for the proposed hunt adversely affect mating whales or mothers and calves? Training and hunting activities could disrupt pairs of mating whales but would not have a discernible effect on the stock at large. (Tab 1 at ¶ 52; Tab 3 at ¶ 60). Mothers and calves travel slowly and close to shore, and hunters can be trained to recognize and avoid them. (Tab 103 at 190:20–191:18).

[11] This term is used to describe the number of animals that may be removed from a population, not counting naturally occurring deaths, while still allowing the population to achieve or maintain its OSP. (Tab 101 at 91:2–6).

3. Facts pertaining to Time and Lines of Migratory Movements: *See* Section VI.A.4.

a. Does the majority of the ENP stock range from the winter/spring breeding grounds in northern Mexico and southern California to the summer/fall feeding grounds in the Bering, Beaufort, and Chukchi seas? Should the Okhotsk Sea be included in the migratory range? Yes, the majority of the ENP stock is distributed throughout these areas. (Tab 1H at 4–13). Although there was initially a question about whether ENPs have expanded their summer range into the Okhotsk Sea, none of the parties presented significant evidence on this point and I no longer consider it relevant to the question of whether the waiver should be granted.

b. Does the ENP stock migrate between the breeding and feeding grounds between December and May? Yes. (Tab 1H at 21–23).

i. Is the timing of the southbound migration being altered due to a longer feeding season in the Arctic? There is reliable evidence showing that the onset of the southbound migration is now approximately one week later than it was in the early 2000s, likely due to favorable feeding conditions in the Arctic lasting into the autumn. (Tab 1H at 21).

c. Will migrating ENP whales generally be encountered only during even-year hunts? Migrating whales could be encountered during both even and odd years. Non-PCFG members of the ENP stock are present in the PCFG area throughout the summer, with observational data from 2002–2015 indicating that approximately 40% of the whales in the area are PCFG and approximately 60% are migrating ENPs. (Tab 4 at ¶ 14).

i. How long is it expected to take for a migrating ENP whale to pass through the proposed hunt boundary? Gray whales pass through the Makah U&A quickly, as they travel at a median speed of 147 km/day. (Tab 32C at 2-3). The U&A is approximately 51 km north-south at its widest, so the whales are able to transit in several hours. (Tab 3 at ¶ 51; Tab 3L).

ii. Proportionally, how much of the migratory range is included in the proposed hunt boundary? The coastal portion of the Makah U&A, in which hunt activities would be authorized, represents approximately 1% of the lineal distance of the ENP migratory range. (Tab 101at 17:17–21). It is less than 5% of the PCFG's summer feeding range. (Tab 1H at 31).

iii. What is the expected range and duration of hunting activities during the even-year hunts? The even-year hunts would be allowed anywhere in the coastal portion of the U&A, and the limits on training and hunting activities are set out in the proposed regulations. (Tab 90B).

iv. How many whales are likely to be subjected to hunt or training activities? Under the proposed regulations, a permit may authorize a maximum of 353 approaches per calendar year; 18 unsuccessful strike attempts and training harpoon throws in even-year hunts and 12 in odd-year hunts; three strikes in even-year hunts and two in odd-year hunts; three struck and lost whales in any calendar year; and three landings in an even-year hunt and one in an odd-year hunt. (Tab 90B).

d. Does the PCFG spend the summer and fall feeding season off the Pacific coast of North America from northern California to northern Vancouver Island? Are some

PCFG whales also present in the feeding area throughout the winter? Yes, the PCFG range spans from 41° North latitude to 52° North latitude, which includes the North American coast from Northern California to British Columbia. (Tab 1H at 5–6). There have been infrequent gray whales sightings in this area throughout the winter months. (*Id.*; *see also* Tab 3T; Tab 21C at M-0124; Tab 21C at M-0274).

i. Are PCFG whales expected to be encountered during both even-and odd-year hunts? Yes, PCFG whales could be encountered during both even and odd years, though less frequently during even-year hunts. (Tab 1H at 12; Tab 21C at M-0053; Tab 90F at 3-140).

ii. Is the PCFG further delineated into sub-groups with distinct feeding areas? The record contains no reliable scientific evidence to show that such sub-groups exist. There is anecdotal evidence that some individual whales favor certain feeding areas, but in general, PCFG whales travel widely throughout the area during the summer feeding season. (Tab 1H at 11–12; Tab 21C at M-0053, M-0055, M-0110, and M-0211).

iii. Do PCFG whales randomly choose feeding areas or are they internally or externally recruited into sub-groups? The best available scientific evidence is that PCFG whales travel throughout the range and feed in areas where prey is plentiful. (Tab 1H at 11–12; Tab 21C at M-0053, M-0055, M-0110, and M-0211).

iv. Will the proposed waiver have a disproportionate impact on PCFG whales in the Makah Tribe's Usual and Accustomed (U&A) hunting area? Particularly, will it have an impact on reproductive females? Given the best estimates regarding the proportion of PCFG and non-PCFG whales present in the U&A during the summer feeding season, the odd-year hunts will likely have a greater impact on the PCFG than on the ENP stock at large. (Tab 1H at 31). Even-year hunts are not expected to have a disproportionate impact on PCFGs. Both NMFS and the IWC have determined that the regulatory limits on the number of takes of PCFGs, and particularly of PCFG females, are appropriately precautionary.

e. Will non-lethal hunting activities result in a lasting effect on ENP/PCFG migratory movements? No, the best available scientific evidence shows that non-lethal activities associated with hunt training may cause temporary behavioral changes in individual whales but are unlikely to cause any lasting effects in those whales. These activities are not expected to cause any disruptions to the population as a whole. (Tab 2 at ¶ 65; Tab 21 at 95, 102; Tab 60 at ¶ 35; Tab 102 at 10–14; Tab 103 at 73).

B. Are NMFS's Determinations Consistent with the MMPA's Purposes and Policies?

1. Facts pertaining to the Health and Stability of the Marine Ecosystem and Functioning of Marine Mammals within their Ecosystems: *See* Section VI.B.

a. Is the northern California Current ecosystem the appropriate ecosystem to focus on for this proceeding? Should the focus instead be on a smaller biologically relevant scale such as the northern Washington coastal environment or an even more localized area such as the Makah U&A? Yes, the northern California Current ecosystem is the appropriate ecosystem to focus on. The best available scientific evidence shows that gray whales are highly mobile throughout the summer feeding range and are likely to remain so even if hunting commences. However, NMFS also evaluated the effects for all relevant

scales, from range-wide to the Makah U&A. (Tab 58 at ¶ 18–20; see also Tab 2 at ¶¶ 40, 59, 71–73).

b. What effect would the waiver have on the relevant ecosystem(s) or area(s)? The evidence shows that a limited removal of gray whales, as proposed in the waiver and regulations, would have little effect on the ecosystem. (Tab 90F at Section 4.3).

i. What role do gray whales play in structuring the relevant ecosystem? Does this differ in the various geographical areas in which gray whales are present? Gray whales are an important part of the ecosystem, as they feed on both benthic and epibenthic prey. There is some evidence that their movements bring prey to the surface for seabirds to feed on in Arctic areas, but no corresponding studies show this occurring in the Makah U&A. (Tab 1H at 23; Tab 90F at 3-69).

ii. In light of NMFS's assertion that ''most effects of the hunt would be temporary and localized,'' does the environmental role and impact of the small groups of whales feeding in the Makah U&A necessitate separate consideration under the MMPA? No, there is no reliable evidence that gray whales form sub-groups in the Makah U&A. (Tab 56 at 4). Rather, whales feed where they find abundant prey and travel throughout the summer range to find such areas. The limited hunting and training activities authorized under the proposed waiver and regulations are not expected to negatively impact the U&A, and NMFS evaluated the potential effects on the ecosystem at various scales including the Makah U&A. (Tab 58 at ¶ 18–20; see also Tab 2 at ¶¶ 40, 59, 71–73).

iii. Would the level of hunting proposed affect only a small fraction of the ENP stock and the stock's ecosystems? Should the effects on ENP stock as a whole be compared and contrasted to the effects on the PCFG subset? The limited hunting activities proposed would affect only a small number of whales. NMFS has adequately addressed the effects of the hunt on both the ENP stock as a whole and the PCFG. (Tab 1H; Tab 90F).

c. How do non-lethal activities such as training approaches and training harpoon throws affect whale health and behavior? These activities may cause temporary behavioral changes in the targeted whales. (Tab 1H at 35–36; Tab 102 at 10–14; Tab 103 at 73).

d. Consideration of waiver's collateral effects on WNP stock. *See* Sections VI.A.4.c and d; VII.B.1.

i. Do WNP whales occasionally migrate along with ENP whales to the North American breeding grounds, or are these whales in fact a Western Feeding Group (WFG) of the ENP stock? Yes, the evidence shows that whales included in the existing catalogs of WNP (or western breeding stock) whales occasionally migrate with the ENP stock. (Tab 90F at Subsection 3.4.3.2.1). Scientists debate the historical origins of such whales, but for purposes of the MMPA and insofar as it is relevant to this proceeding, they are classified as WNP stock.

ii. If WNP whales are present in the ENP migration, how many are expected? Is this number constant or does it fluctuate? The mixing proportions are still being studied, as WNPs have only recently been identified among migrating ENP whales, but the best

available information shows a mixing proportion of at least 0.37. (Tab 3 at ¶ 14; Tab 22A at M-0452).

iii. What is the appropriate calculation for the likelihood that a WNP whale will be approached, struck, or killed? Dr. Moore and Dr. Weller's calculations are appropriately based on the best available evidence, and no party presented any evidence to the contrary. (Tab 4; Tab 61). Nor did any party offer calculations from other scientists. Thus, Dr. Moore and Dr. Weller's calculations should be used in this proceeding.

iv. Should struck or struck-and-lost whales that cannot be identified as ENP stock be considered to be WNP whales rather than PCFG whales? The record contains evidence that nearly every WNP whale known to exist has been photographed and included in at least one of the two WNP catalogs. Thus, a whale that cannot be photo-identified is unlikely to be a WNP; it is more likely to be either an un-cataloged PCFG or a non-PCFG ENP whale. Consequently, it is reasonable for the regulations to require such whales be considered PCFGs. Moreover, WNPs are not known to be in the U&A during the summer months, so no WNPs would be affected by the odd-year hunt.

2. Facts pertaining to Stocks to Attaining or Maintaining Optimum Sustainable Population (OSP) Levels: *See* Section VI.C.

a. Is NMFS's conclusion that ENP stock are within OSP levels, at 85 percent carrying capacity, and with an 88 percent likelihood that the stock is above its maximum net productivity level scientifically valid? Yes, the best scientific evidence available supported NMFS's conclusion. *See* Section VI.C.

i. Does this account for the possibility of an Unusual Mortality Event as discussed in section I.A.1.c., above? NMFS accounted for a potential UME when making its calculations. (Tab 53 at ¶ 10).

ii. Will the removal of whales pursuant to this waiver affect these calculations? No, removing a maximum of 25 whales over ten years does not have an effect on the calculations. (Tab 58 at ¶ 23).

b. What are the effects on the OSP of WNP whales if a WNP whale is killed? NMFS has insufficient data to calculate an OSP for the WNP stock. (Tab 59 at ¶ 3, Tab 58 at ¶ 27). However, the WNP stock is listed as endangered under the Endangered Species Act, and is consequently considered "depleted" under the MMPA. (Tab 58 at ¶ 8). The best available scientific evidence shows that removal of a WNP whale would be detrimental to the stock.

II. Do NMFS's proposed regulations satisfy the regulatory requirements in 16 U.S.C. 1373?

A. Did NMFS Consider all Enumerated Factors in Prescribing Regulations? *See* Section VII.

1. Facts pertaining to the effect of regulations on existing and future levels of marine mammal species and population stocks (16 U.S.C. 1373(b)(1)): *See* Section VII.B.1.

a. Many issues related to this factor are discussed in Section I, pertaining to the Requirements for Waiver.

b. Are the protections in the waiver, such as reduced strike and landing limits, new strike limits for PCFG whales and PCFG females, minimum abundance threshold for PCFG whales, photographic and genetic matching, restrictions on additional strikes, restriction of the hunt to U&A waters, 10-year sunset provision sufficiently protective? Yes, the best scientific evidence available shows these protections are sufficient.

c. Are the protections for WNP whales sufficient and appropriate, including alternating hunt seasons, a limit of three strikes during even-year hunts, a ban on hunting during November and June, seasonal restriction on training harpoon throws in odd-numbered years, restriction on multiple strikes within 24 hours in even-year hunts, and the requirement that if a WNP is confirmed to be struck, the hunt will cease until steps are taken to ensure such an event will not recur? No, and I consequently recommended NMFS modify the regulations to prohibit issuance of even-year hunt permits unless and until the Makah Tribe obtains an incidental take permit for the take of WNP whales. I also recommended NMFS prohibit training activities during the migratory season, when WNP whales may be transiting through the U&A, unless and until the Makah Tribe obtains an incidental take permit for WNP whales. *See* Sections VII.B.1; VII.C.4.

2. Facts pertaining to existing international treaty and agreement obligations of the United States (16 U.S.C. 1373(b)(2)): *See* Section VII.B.2.

a. The United States is a signatory to the International Convention for the Regulation of Whaling (ICRW). The ICRW establishes the International Whaling Commission (IWC), which sets catch limits for aboriginal subsistence whaling.

i. Since 1997, the IWC has routinely approved an aboriginal subsistence catch limit for ENP gray whales for joint use by the United States and the Russian Federation.

ii. The United States and the Russian Federation have been routinely, and are currently, parties to a bilateral agreement that allocates the IWC catch limit between the two countries and allows either country to transfer to the other any unused allocation.

iii. The IWC gray whale catch limit is currently 140 per year, with 5 gray whales per year allocated to the United States.

iv. If the waiver at issue here is not approved, will the United States continue to transfer the unused portion of the gray whale catch limit to the Russian Federation for use by Chukotkan natives, as has been current practice? Yes, the United States is likely to continue this practice if the proposed waiver is not approved. (Tab 1 at ¶ 49; Tab 3 at ¶ 43).

v. Does the proposed hunt comply with the IWC conservation objectives for WNP, ENP, and PCFG whales? Yes, the IWC stated the proposed hunt complies with its conservation objectives. (Tab 23 at Section 1.2; Tab 23GG at 8).

vi. Is the proposed hunt an aboriginal subsistence hunt as defined by the IWC? The IWC has determined it is. Although some parties disagree with the IWC's determination, this is not an issue under my jurisdiction.

3. Facts pertaining to the marine ecosystem and related environmental considerations (16 U.S.C. 1373(b)(3)): *See* Section VII.B.3.

a. Is NMFS's risk analysis sufficiently conservative and based on the best available scientific evidence? Yes, the best scientific evidence available supports NMFS's risk analysis. *See* Section VII.B.3.

b. Is consideration of cumulative impacts, including those from military exercises, marine energy and coastal development, and climate change, necessary under the MMPA? If so, is there evidence these factors were considered? These factors are required under NEPA and are contained in the DEIS submitted into evidence during this proceeding, as required by the MMPA. (Tab 90F). However, the MMPA does not mandate separate consideration of these factors during the formal rulemaking proceeding.

c. Were all local impacts that must be considered under the MMPA adequately considered? Yes. *See* Sections VI and VII.

4. Facts pertaining to the conservation, development, and utilization of fishery resources (16 U.S.C. 1373(b)(4)): *See* Section VII.B.4.

a. NMFS asserts the proposed hunt will have no effect on the conservation, development, and utilization of fishery resources. NMFS's assertion is well-supported by the evidence in the record, and there is no contrary evidence. (Tab 1 at ¶ 60).

5. Facts pertaining to the economic and technological feasibility of implementation (16 U.S.C. 1373(b)(5)): *See* Section VII.B.5.

a. What are the specific costs to NMFS and to the Makah Tribe associated with regulating a hunt under the proposed regulations? Are these feasible? Although not specifically delineated, it appears the Makah Tribe will bear most of the costs. NMFS's costs are approximately $2,000 per day of hunting. (Tab 1 at ¶ 62; Tab 1J; Tab 1M; Tab 90B; Tab 90F at Section 4.6.2.5). No party submitted evidence of costs that would potentially be borne by other agencies, such as the U.S. Coast Guard, Washington State Patrol, National Park Service, or others. While the costs described in the evidence of record are feasible, they are likely incomplete.

b. What are the specific technological requirements associated with managing and carrying out a hunt? Are these feasible? The specific technological requirements involve, but are not limited to, photo-identification equipment and expertise, training and hunting equipment, and recordkeeping. These requirements are feasible. (Tab 58 at ¶ 24).

c. What are the costs of enforcing the various restrictions contained in the regulations? Are these feasible? Yes, the costs are feasible. NMFS estimates approximately $2,000 in additional costs per day of hunting, with an annual West Coast Region budget of over $700,000 for marine mammal management. (Tab 1 at ¶ 45; Tab 90B; Tab 90F at 4-155 to 4-156).

d. Who is specifically tasked with each type of enforcement (*i.e.* training restrictions, strike restrictions, use and sale restrictions on edible and nonedible whale parts) and do those persons/organizations have the necessary training and authority to carry out their obligations? NMFS does not normally specify enforcement procedures in its regulations, but represents that NOAA Office of Law Enforcement (OLE) agents, or

Washington Department of Fish and Wildlife enforcement officers deputized to enforce federal laws and regulations through a Joint Enforcement Agreement with NOAA OLE, would be the primary persons/organizations tasked with such enforcement. (Tab 58 at ¶ 39).

e. How will records be kept and shared amongst the necessary parties? How will any discrepancies in the records be resolved? NMFS's detailed hunt management protocol sets out the procedures for recordkeeping. (Tab 1M). The regulations also contain specific requirements. (Tab 90B). This includes all information that must be reported under Whaling Convention Act regulations (50 C.F.R. § 230.8(b)).

f. Is the use of photo-identification technology economically and technologically feasible? How quickly can identification be made? Is genetic identification more scientifically reliable and how does its economic and technological feasibility compare? Yes, photo-identification is feasible and can generally be accomplished within 24 hours. NMFS submitted a detailed protocol for identifying whales encountered in Makah hunts. (Tab 1J). Tissue sampling is useful for whales that have already been genetically identified, and may assist in identifying struck and lost whales. However, genetic identification is generally used to confirm photo-identification and is not alone a reliable method of identifying unknown whales. (*Id.*, *see also* Section IV.B.3.a and b).

6. Other factors not enumerated in 16 U.S.C. 1373(b), but raised by parties to this proceeding and meriting consideration:

a. What is the appropriate degree to which the analysis in *Anderson* v. *Evans,* 371 F.3d 475 (9th Cir. 2011) should be considered in this proceeding? *Anderson v. Evans* required compliance with the MMPA. I have conducted this proceeding in accordance with all statutory requirements and binding case law.

b. Are the definitions contained in the proposed regulations adequate or do they contain ambiguities, omissions, and/or inconsistencies? Certain definitions should be modified, as discussed in Section VII.A and VII.C.3.

B. Restrictions in the Proposed Regulations.

1. Issues pertaining to the proposed restrictions on the number of animals that may be taken in any calendar year (16 U.S.C. 1373(c)(1)): *See* Section VII.B.1 and VII.C.4.

a. Hunt permits may authorize no more than three gray whales to be landed in an even-year hunt and no more than one to be landed in an odd-year hunt. No more than three strikes are permitted during an even-year hunt and no more than two are permitted in an odd-year hunt. (Tab 90B).

b. Additional restrictions are placed on the taking of PCFG whales and WNP whales. (Tab 90B).

c. How were the low-abundance triggers for PCFG whales, which would cause hunting activity to cease, determined? Dr. Moore developed a PCFG population forecasting model, taking into account scientific data about the PCFG population size from 2002 to 2015. (Tab 4 at ¶¶ 19–25; Tab 58 at ¶ 9). The low abundance thresholds represent the lowest values observed during that time period. (*Id.* at ¶ 19).

2. Issues pertaining to the proposed restrictions on the age, size, sex, or any combination thereof of animals that may be taken (16 U.S.C. 1373(c)(2)):

a. Are the limits set on authorized strikes of PCFG females appropriate? Yes, both NMFS and the IWC relied on the best available scientific evidence in determining the number of authorized strikes on PCFG females is appropriate. (Tab 90F at 4-19 through 4-22; Tab 46H).

b. Are there, or should there be, limitations on approaches or strikes on calves or mother-and-calf pairs? The regulations prohibit hunting or making a training harpoon throw against a calf or an adult accompanying a calf. (Tab 90B). I recommend adding a prohibition on approaches. *See* Section VII.C.6.

3. Issues pertaining to the season or other period of time within which animals may be taken (16 U.S.C. 1373(c)(3)):

a. The hunting seasons are split into "even-year hunts," during which hunting would be authorized from December 1 of an odd-numbered year until May 31 of the following even-numbered year, and "odd-year hunts," during which hunting would be authorized from July 1 through October 31 of the odd-numbered year. The decision to separate hunting seasons in this manner is reasonable, as it separately considers migratory season hunts and feeding season hunts. However, as discussed in Sections VII.B.1 and VII.C.4, "even-year" hunts during the migratory season will require incidental take authorization because WNP whales may be present during those months.

4. Issues pertaining to the manner and locations in which animals may be taken (16 U.S.C. 1373(c)(4)):

a. The proposed waiver and regulations authorize training exercises, including approaches and training harpoon throws. A question has been raised as to whether the inclusion of training exercises is necessary and/or appropriate. Training activities are considered "takes" and therefore must be included in the waiver and regulations. NMFS's decision to create separate authorizations for training activities and hunting activities is reasonable. *See* Section VII.C.3.b.

b. Do the definitions of ''land'' and ''landing'' provide sufficient information about where the Makah Tribe would be permitted to land whales? Are consultations with other Federal and state agencies necessary (*see* 16 U.S.C. 1382)? The definitions are sufficient, as the hunt permit will contain additional, specific information. (Tab 90B). Consultation with other Federal and state agencies may be necessary during the permitting stage, but is not required prior to issuance of a waiver.

c. Are the definitions of ''strike'' and ''struck'' ambiguous? Specifically, issues have been raised regarding the single-strike limit within 24 hours (whether a harpoon strike followed by a firearm shot consist of a single ''strike'' or two separate strikes, and whether this will lead to unnecessary suffering on the part of a whale that is struck but not immediately killed); whether whales can be appropriately identified as belonging to WNP stock, ENP stock, or the PCFG during a 24-hour post-strike period; whether the use of crossbows or other devices to obtain genetic material from a struck whale should also be considered a strike; and whether the struck-and-lost limits proposed are inconsistent with the definition of ''strike.'' NMFS acknowledged

that the definition could cause confusion and proposed revisions (Tab 86), which I accepted. *See* Section VII.A.

d. Will independent observers be present at every hunt or only certain hunts? How are these observers selected and trained? The regulations require the Makah Tribe to designate a tribal hunt observer at every hunt, and to allow a hunt observer appointed by NMFS at any hunt. (Tab 90B). NMFS expects to have an NMFS hunt observer present at all or most hunts conducted under the initial hunt permit, and as necessary thereafter. (Tab 1M). The NMFS West Coast Regional Administrator must approve the Makah Tribe's training and certification procedures for tribal observers; NMFS observers will be NMFS employees or contractors with training and experience in identifying gray whales. (*Id.*)

e. Should the potential for an offshore hunt to result in the taking of more migratory ENP whales and fewer PCFG/Makah U&A whales be considered? Since taking migratory ENP whales would require an incidental take permit due to the intermixing with WNP whales, the possibility of an offshore hunt should not be pursued at the present time.

5. Issues pertaining to techniques which have been found to cause undue fatalities to any species of marine mammal (16 U.S.C. 1373(c)(5)):

a. None identified.

6. Issues related to other proposed restrictions not specifically enumerated in 16 U.S.C. 1373(c):

a. Restrictions on the use or sale of gray whale products:

i. Do the restrictions on utilization of edible products of ENP gray whales off-reservation unfairly burden enrolled Makah Tribe members living elsewhere? Are such members permitted to share ENP gray whale products with members of their immediate households who are not enrolled in the Makah Tribe? Yes, the Makah Tribe made this argument and NMFS concurred. NMFS offered proposed revisions to the regulations, clarifying that enrolled members of the Makah Tribe can share whale meat and other whale products for consumption with family members and guests at their private, off-reservation residences. (Tab 86). I recommend accepting the revisions. *See* Section VII.A.

ii. Are there any restrictions on the resale of handicrafts by persons who are not enrolled members of the Makah tribe, either on a small or large scale? The proposed regulations do not prohibit resale of properly certificated handicrafts. (Tab 90B).

iii. Are there restrictions on the international sale or transportation of handicrafts? Yes, NMFS clarified it always intended to prohibit the export of handicrafts and offered proposed revisions to that regulations that explicitly state this prohibition. (Tab 86). I recommended accepting the proposed revisions. *See* Section VII.A.

III. Other Issues for Consideration

A. What is the relevance in this proceeding of the Treaty of Neah Bay, between the Makah Tribe and the United States, which explicitly protects the Tribe's right to hunt whales? NMFS considered the Treaty when deciding to explore the possibility of granting a waiver, and would not have considered the Tribe's request in the absence of the Treaty and an IWC catch limit. (Tab 101 at 39:9–11). However, the MMPA does not make any explicit

provision for granting waivers on the basis of treaty rights, and does not exempt non-Native Alaskan tribes from the moratorium on take of marine mammals. NMFS did not rely on the treaty rights in evaluating the proposed waiver under the MMPA's standards. (*Id.* at 38:10–14).

1. Is the entire constellation of activities involved in hunting whales integral to the Makah Tribe? Yes, the Makah Tribe presented unrebutted evidence on this point. (Tabs 24, 26–29). *See* further discussion in Section VI.D.5.

2. How central is whaling to Makah Tribal identity? Does the Tribe have a continuing traditional dependence? The Makah Tribe presented unrebutted evidence on the centrality of whaling to tribal identity. (Tabs 24, 26–29). However, the term "continuing traditional dependence" is related to the IWC's grant of a catch limit for aboriginal subsistence whaling and is not relevant to the determinations I must make in this proceeding.

3. Does the Makah Tribe have a nutritional, subsistence, and cultural need for whaling? The Makah Tribe presented evidence on this point, but these needs relate to the IWC's grant of a catch limit for aboriginal subsistence whaling and are not relevant to the determinations I must make in this proceeding.

4. Is any traditional dependence on whaling obviated by the Makah Tribe's engagement in sealing starting in the latter half of the 19th century and the near-cessation of whale hunting after 1927? This issue was raised during the initial stages of the proceeding but is not relevant here, as it relates more to the IWC's aboriginal subsistence whaling determinations.

5. Is it possible for the Makah Tribe to substitute other, non-lethal activities and maintain their traditional ties to whaling? The Makah Tribe presented convincing evidence that hunting and consuming whales is an integral part of their culture. (Tabs 24, 26–29; 103 at 5:5–37:2). The MMPA does not require a showing that a take is culturally necessary before a waiver and regulations can be authorized. *See* further discussion in Section VI.D.5.

IV. THE MARINE MAMMAL PROTECTION ACT: OVERVIEW AND THRESHOLD ANALYSIS

The Marine Mammal Protection Act of 1972, 16 U.S.C. § 1361 *et seq.*, provides the substantive law for this proceeding. Congress enacted it "to prohibit the harassing, catching and killing of marine mammals by U.S. citizens or within the jurisdiction of the United States, unless taken under the authority of a permit issued by an agency of the Executive Branch." H.R. Rep. No. 92-707 at 12, 1972 U.S.C.C.A.N. at 4144. These actions, or any attempts to accomplish these actions, constitute a "take." 16 U.S.C. § 1362(13).[12]

[12] In general, a take may be categorized as directed or intentional, meaning the activity occurs for a specific purpose related to the protected species, or may be incidental, meaning an activity unrelated to the protected species but

To that end, the MMPA placed a moratorium on the taking of marine mammals and the importation of such mammals into the United States. 16 U.S.C. §§ 1362(8); 16 U.S.C § 1371(a); 16 U.S.C. § 1372. However, the moratorium is not absolute. Statutory exceptions authorize the issuance of permits for directed taking for the purpose of public display, scientific research, and photography, *see* 16 U.S.C. § 1371(a)(1), and incidental taking in the course of commercial fishing operations or other specified activities, *see* 16 U.S.C. §§ 1371(a)(2) and (5). Further, Alaska Natives are generally exempt from the moratorium. 16 U.S.C. § 1371(b). Congress also vested in the Secretary a general authority to waive the moratorium in certain circumstances:

> The Secretary, on the basis of the best scientific evidence available and in consultation with the Marine Mammal Commission, is authorized and directed, from time to time, having due regard to the distribution, abundance, breeding habits, and times and lines of migratory movements of such marine mammals, to determine when…to waive the requirements of this section so as to allow taking, or importing of any marine mammal, or any marine mammal product, and to adopt suitable regulations, issue permits, and make determinations in accordance of sections 1371, 1373, 1374 and 1381 of this title…

16 U.S.C. § 1371(a)(3)(A).

In addition to these requirements, the Secretary must be assured the taking is consistent with sound principles of resource protection and conservation of the MMPA. 16 U.S.C. § 1371(a)(3)(A). The primary objective of marine resource management under the MMPA is to maintain the health and stability of the marine ecosystem. 16 U.S.C. § 1361. To that end, the principal goal is for marine mammals to achieve and maintain their optimum sustainable population (OSP), meaning "the number of animals which will result in the maximum

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nevertheless results in harassment or harm to such animals. (Tab 101 at 57:6–7; *see also* NMFS, Understanding Permits and Authorizations for Protected Species (June 24, 2017), https://www.fisheries.noaa.gov/insight/understanding-permits-and-authorizations-protected-species). Incidental take is defined in the regulations to mean a taking which is infrequent, unavoidable, or accidental but not merely one that is unexpected. 50 C.F.R. § 216.103.

productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent part." 16 U.S.C. § 1362(9).

Whenever the Secretary grants a waiver, it must be accompanied by appropriate regulations promulgated on the basis of the best scientific evidence available and in consultation with the MMC. 16 U.S.C. § 1373(a). The MMPA requires full consideration be given to the following factors: (1) existing and future levels of marine mammal species and population stocks; (2) existing international treaty and agreement obligations of the United States; (3) the marine ecosystem and related environmental considerations; (4) the conservation, development, and utilization of fishery resources; and (5) the economic and technological feasibility of implementation. The regulations may impose restrictions, including but not limited to the number, age, size, and sex of the marine mammals taken and the season, manner, and location of the taking. 16 U.S.C. § 1373(c).

After the Secretary issues a waiver and promulgates regulations, persons may apply for permits which set out the specific parameters authorizing a take. *See* 16 C.F.R. §§ 1371(a)(3)(A); 1373; 1374; *see also Animal Welfare Institute v. Kreps*, 561 F.2d 1002, 1004 (D.C. Cir. 1977) ("Waiving the moratorium is a two-stage process. In the first stage, the agency must determine if there will be a waiver and promulgate regulations containing the terms of the waiver. In the second stage the agency may issue permits authorizing importation to particular applicants."). A permit to take marine mammals will only be granted when the taking will not be to the disadvantage of the stock and will be consistent with purposes and policies of the MMPA. 16 U.S.C. § 1373(a).

A. Scope of Jurisdiction

Applying the requirements set out above, it is clear that the question of whether the proposed waiver and regulations meet the requirements of the MMPA is within the scope of this proceeding. 16 U.S.C. §§ 1371(a)(3)(A); § 1373(d). However, parties have raised certain issues that are not within my jurisdiction to decide, either because they are premature at this stage or because they involve statutes other than the MMPA.

The first such issue involves hunt permits. Although most parties initially agreed they would not use these proceedings to address permitting issues (*see* Tab 32), some parties' arguments nevertheless call into question whether the Secretary may issue a hunt permit for the Makah Tribe after a waiver is granted and regulations are established. These arguments are premature, as the issuance of permits is the next stage in the process and is subject to its own procedural regulations. *See* 16 U.S.C. §§ 1374(b)(1) and (d)(3); *Comm. for Humane Legislation, Inc. v. Richardson*, 414 F. Supp. 297, 303 (D.D.C.), *aff'd*, 540 F.2d 1141 (D.C. Cir. 1976) ("Only after regulations are properly prescribed under section 1373 of the MMPA are defendants authorized to issue permits under section 1374 of the Act."). If and when a permit application is pending, interested persons will be able to participate using the procedures governing the permitting process.

However, I do have the authority to determine whether NMFS's proposed regulations governing the permitting process should be modified. To the extent parties have made arguments about the suitability of the proposed regulations, I will consider them and make appropriate recommendations.

Next, even recognizing that several other Federal statutes have relevance in this proceeding, I find I have no jurisdiction to consider whether NMFS complied with them when considering the waiver and developing the regulations. For instance, NEPA is relevant here

because the Ninth Circuit, in *Anderson v. Evans*, held that the agency erred in producing an EA rather than an EIS before approving the Tribe's gray whale hunt.[13] *See* 371 F.3d 475. Both the 2008 DEIS and 2015 DEIS have been entered into evidence and I will rely on information contained in them, as appropriate, but it is not for me to adjudicate disputes over their adequacy.

Likewise, the ESA is tangentially relevant in this proceeding. Although the proposed waiver applies to the ENP stock, which is no longer considered endangered, there is a possibility that an endangered WNP gray whale will be taken during authorized hunt activities. The ESA requires federal agencies, in consultation with the Secretary, to ensure their actions are "not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species." 16 U.S.C. § 1536(a)(2). By this, Congress contemplated actions "that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." 50 C.F.R. § 402.02. Consequently, NMFS must ensure that approving a waiver for the Makah Tribe to hunt ENP gray whales pursuant to the MMPA will not jeopardize the WNP stock. The interplay between the MMPA and the ESA is important in understanding the issues before me in this proceeding, but any specific issues arising from NMFS's compliance with the ESA are not at issue in this proceeding.

Having identified the proper scope of my jurisdiction in this case under the MMPA, I now turn to three threshold issues that preface my analysis of the waiver request and the

[13] An EIS "shall provide full and fair discussion of significant environmental impacts and shall inform decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment," and is used in conjunction with other information to plan actions and make decisions. 40 C.F.R. § 1502.1. They are generally prepared in two stages: first, a draft version (DEIS) "prepared in accordance with the scope decided upon in the scoping process" which nevertheless satisfies as nearly as possible the requirements of the final statement, and second, the final statement which responds to comments and discusses "any responsible opposing view which was not adequately discussed" in the DEIS. 40 C.F.R. § 1502.9.

proposed regulations. The first is the "best scientific evidence available" standard, which governs how I am to weigh the evidence submitted in favor of and against the proposed waiver and regulations. Included under this section is a brief discussion of the expert testimony, documents, and scientific research methods that appear in the evidentiary record. The second issue is NMFS's consultation with the MMC, which is a prerequisite for issuance of a waiver and regulations under the MMPA. Finally, I must resolve for purposes of this rulemaking the question of North Pacific gray whale stock structure, which has been the subject of some disagreement among the parties, as the entire proceeding is premised on a waiver being granted for the ENP stock alone.

B. "Best Scientific Evidence Available" Standard

The MMPA mandates use of the best scientific evidence available in both approving a waiver and promulgating regulations. *See* 16 U.S.C. §§ 1371(A)(1)(A) and 1373. The term "best scientific evidence available" is not defined in either the MMPA or the implementing regulations, thus I must determine how to interpret it when evaluating the evidence in this record to determine which is most credible. To that end, I looked for guidance at cases involving not only the MMPA, but also the ESA and the Magnuson-Stevens Fishery Conservation and Management Act of 1976, 16 U.S.C. §§ 1801-1848, both of which contain a similar requirement. I note, although none of the relevant cases defines "best scientific evidence available" as a term of art, many did consider individual components. As a result, I believe it is critical to first separately evaluate what courts have concluded about each word. These definitions may then be read together to inform my review of the evidence in the record.

In determining which scientific evidence is "best," agencies may not manipulate their conclusions by unreasonably relying on sources favorable to their own position and excluding

others or disregarding "scientifically superior evidence." They may, however, excuse minor flaws in otherwise reliable data. *See Southwest Center for Biological Diversity v. Norton*, No. 98-934, 2002 WL 1733618 at *8-*9 (D.D.C. July 29, 2002); *see also Las Vegas v. Lujan*, 891 F.2d 927, 933 (D.C. Cir. 1989); *Bldg. Indus. Ass'n of Superior California v. Norton*, 247 F.3d 1241, 1246-47 (D.C. Cir. 2001).

There is little case law interpreting the MMPA's use of the term "scientific," other than an implication the data an agency relies on should be unbiased. *See Greenpeace v. NMFS*, 237 F.Supp. 2d 1181, 1199 (W.D. Wash. 2002). In other contexts, courts have interpreted the word as implying "a grounding in the methods and procedures of science," *see Daubert v. Merrill Dow Pharma.*, 509 U.S. at 590, or referring to issues "beyond the ken of the average man," *see United States v. Shirey*, 359 U.S. 255, 261 (1959). A scientific inference or assertion does not have to be proven as an "absolute certainty," but it must be "derived by the scientific method" and "based on scientifically valid principles." *Daubert*, 509 U.S. at 590. Ways to assess this include whether the data and methodology: (1) is generally accepted in the scientific community; (2) was subject to peer review and publication; (3) can be and has been tested; and (4) has an acceptable known or potential error rate. *Id*. at 593–94.

Finally, courts have made clear that the word "available" is not synonymous with the word "possible" when it comes to the production of scientific evidence. *See Bldg. Indus.* at 1246. Thus, agencies are only required to evaluate existing data and need not speculate on whether their conclusions would change if new or different evidence was adduced. This is because, if agencies were required to continually develop new data to supplement the information presented in a proceeding, there would be no end to the decision-making process. *Id.*; *see also Natural Resources Defense Council v. Evans*, 254 F.Supp.2d 434, 440 (S.D.N.Y. 2003).

Thus, I will consider whether the evidence adduced in this proceeding adequately shows that NMFS relied on a broad factual basis, did not ignore any pertinent, reliable data or deficiencies in its data, and appropriately considered the most recent available data. *See Am. Tunaboat Ass'n* v. *Baldrige*, 738 F.2d 1013, 1016–17 (9th Cir.1984). I must also bear in mind that "[s]cientific findings in [the] marine mammal conservation area are often necessarily made from incomplete or imperfect information" and ongoing data collection is expected. *See Brower* v. *Evans*, 257 F.3d 1058, 1070 (9th Cir. 2001) ("*Brower II*"). Indeed, a federal court concluded the scientific data does not need to be complete or conclusive. *See Greenpeace v. NMFS*, 55 F.Supp.2d 1248, 1262 (W.D.W.A. 1999). The Ninth Circuit has adopted this reasoning when interpreting the MMPA's requirements. *See Brower II*, 257 F.3d at 1070.

Whether NMFS relied on the best scientific evidence available is a fact-specific inquiry, and I will thus consider it at every stage of this Recommended Decision. Specifically, I will analyze whether NMFS relied on a broad range of current, reliable scientific evidence, as opposed to only evidence supporting its position. I will consider whether NMFS demonstrated it considered the effect of the takes *authorized* under the waiver and regulations, not merely those it *anticipates* would occur. *See Conservation Council for Hawaii* v. *National Marine Fisheries Service*, 97 F. Supp. 3d 1210 (D. Haw. 2015). I will also evaluate whether NMFS considered the effect of the waiver and regulations on other protected marine mammals and the marine ecosystem as a whole. Taken together, these factors would reasonably establish that NMFS relied on the best scientific evidence available.

Having set out the criteria I will use in determining the best scientific evidence available, I find it important to note that "a recognized distinction [exists] in administrative law between proceedings for the purpose of promulgating policy-type rules or standards, on the one hand, and

proceedings designed to adjudicate disputed facts in particular cases on the other." *United States v. Fla. E. Coast Ry. Co.*, 410 U.S. 224, 245 (1973). Specifically, the evidentiary requirements in a rulemaking are relaxed: parties may be permitted or required to submit evidence in writing prior to the hearing, and such evidence is automatically considered admitted unless later excluded by the presiding officer. *See* 5 U.S.C. § 556(d) and 50 C.F.R. § 228.7. The Department's procedural regulations also limit the presiding officer's power to exclude evidence: such exclusions may be made only on the basis of relevancy, materiality, and cumulativeness. *See* 50 C.F.R. §§ 228.16(b), 228.17(a), and 228.18(a)(4). Consequently, the "best scientific evidence available" standard does not govern the *admissibility* of evidence in this proceeding, but instead goes to the *weight* that should be given to each piece of evidence.

I next turn to the specific types of evidence the parties presented in this proceeding: expert testimony; scientific studies and reports; and evidence regarding the underlying data collection methods. As the record consists of many thousands of pages, a brief summation is useful for understanding the analysis that follows. Furthermore, while I will evaluate individual pieces of evidence as relevant and appropriate throughout the decision, the sections below set out the general methodology and initial credibility determinations I will use in doing so.

1. Expert Testimony

The record contains two main forms of scientific evidence: written declarations and oral testimony from scientific experts,[14] and the underlying studies, reports, and data sets they relied on to form their opinions. Although the Federal Rules of Evidence and judicial opinions

[14] While Chris Yates, the Assistant Regional Administrator for Protected Resources for NMFS's West Coast Region, testified regarding several scientific conclusions upon which the agency based its waiver, he testified from the perspective of an administrator, not a scientist. Thus, I have not included a summary of his testimony. Likewise, I do not include here the testimony of several lay witnesses who spoke about the historic importance of whaling to the Makah Tribe and the Tribe's continued cultural and subsistence need for whaling, including the impact of the 1999 hunt on individuals and the Tribe generally.

interpreting these Rules, such as *Daubert*, do not apply to federal administrative agency proceedings, "the spirit of *Daubert* … does apply to administrative proceedings" and "[j]unk science has no more place in administrative proceedings than in judicial ones." *Niam v. Ashcroft*, 354 F.3d 652, 660 (7th Cir. 2004) (internal quotations omitted). Courts also recognize that "[t]estimony that grows naturally out of an expert's own independent research is generally more reliable than opinions an expert has developed for the sole purpose of testifying in court." *Jones v. United States*, 933 F. Supp. 894, 897 (N.D. Cal. 1996), aff'd, 127 F.3d 1154 (9th Cir. 1997) (*citing Daubert v. Merrell Dow Pharm., Inc.*, 43 F.3d 1311, 1317 (9th Cir. 1995)).

In evaluating the credibility of parties' expert witnesses, I note that courts are generally deferential to agency expertise on factual issues and methodology. *See, e.g., Arizona Cattle Growers' Ass'n v. Fish & Wildlife*, 273 F.3d 1229, 1236 (9th Cir.2001); *Brower II*, 257 F.3d at 1067; *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1066 (9th Cir. 2004). Similarly, the Supreme Court declared "an agency must have discretion to rely on the reasonable opinions of its own qualified experts." *Marsh v. Oregon Nat. Res. Council*, 490 U.S. 360, 378, 109 S. Ct. 1851, 1861 (1989). However, such deference is not unlimited and parties may rebut the presumption of agency expertise if the agency fails "to address some factor consideration of which was essential to [making an] informed decision." *Brower II* at 1067.

Here, while all testimony was admissible and is part of the record, I must nevertheless determine which experts' opinions are entitled to greater weight. In order to make this threshold determination on credibility, I find it necessary to briefly summarize the educational and professional background of the proffered witnesses, their views on the waiver and regulations, and the issues about which they testified.

a. Dr. David Weller

Dr. Weller is a wildlife research biologist with the Marine Mammal and Turtle Division of NMFS's Southwest Fisheries Science Center, where he conducts research as part of the Cetacean Health and Life History Program. (Tab 3 at ¶ 1; Tab 3B). Dr. Weller is trained in animal behavior and his research focuses on gray whale abundance, occurrence, distribution, migration, reproduction, survival, behavior, genetics, population structure, and interactions with human activities in the eastern and western North Pacific. (Tab 3 at ¶ 2; Tab 3B). He has studied gray whales since 1997 and written or co-authored over 60 papers or reports about gray whales. *Id.* In support of the proposed waiver and regulations, Dr. Weller submitted three written declarations and gave oral testimony on behalf of NMFS.

Dr. Weller's initial written declaration covered a wide range of issues, including the objectives of the IWC; the IWC's processes for identifying gray whale stocks and endorsing catch limits for aboriginal subsistence whaling; the range, migration, mating practices and feeding practices of ENP gray whales; stock identification issues related to the PCFG and the WNP; the methodology for estimating gray whale abundance and PCFG abundance and population trends; the 1999/2000 UME and its aftermath; current stock abundance estimates, OSP, and issues related to human-caused mortality; and the likely effects of the hunt on both stocks and on the marine ecosystem. (Tab 3). His overall conclusion for the ENP stock was that the hunt would have no discernible effect on the stock's abundance, and any changes in distribution and migratory movements resulting from the hunt—including on the PCFG—would be temporary and localized. Further, he said the limited hunt activities likely to occur during the mating season would not have an adverse effect on breeding habits or the ecosystems in which gray whales function. (Tab 3 at ¶¶ 38–71). With respect to the WNP, Dr. Weller discussed the

analysis he and his colleague, Dr. Jeffrey Moore, developed to determine the likelihood of approaches, training activities, and strikes on WNP gray whales. (*Id.* at ¶¶ 62–64).

Dr. Weller submitted a second declaration in which he responded to several issues included in the Final Agenda. (Tab 60). He also reviewed and rebutted the declarations from other parties' witnesses, particularly those from Mr. Donald J. (DJ) Schubert of AWI and Ms. Margaret Owens of PCPW. The topics he covered included a possible decline in prey availability; arguments related to climate change and a "domino effect" triggered by sustained warmer waters; the transfer of unused gray whale catch limits to the Russian Federation for use by Chukotkan natives; the use of photo identification and genetic samples for identifying whales; several issues related to migratory movements and the health and stability of the marine ecosystem; and issues related to the PCFG.

In his third declaration, Dr. Weller responded to other parties' direct testimony on the issue of the UME. He addressed the number of whales that died in the 1999/2000 UME; whale body condition; factors affecting the current UME; the lack of data on how the 1999/2000 UME affected WNP whales; NMFS's consideration of the possibility a UME would occur when drafting the proposed waiver and regulations; and the impacts of longer or shorter duration UMEs. (Tab 80 at ¶¶ 3–12).

At the hearing, Dr. Weller was subject to cross-examination and gave testimony consistent with his declarations. I assessed his overall credibility as a witness and find his testimony reliable. Dr. Weller uses accepted scientific methodology and testified based on both his own research experience—much of it peer-reviewed—and his familiarity with a broad range of studies and other data. His testimony is therefore entitled to great weight.

b. Dr. Jeffrey Moore

Dr. Moore is also a research biologist with NMFS's Southwest Fisheries Science Center. He leads the California Current Marine Mammal Assessment Program, which is responsible for providing input and publishing Stock Assessment Reports (SARs) for all marine mammal populations in the waters off the west coast of the United States. (Tab 4 at ¶ 1; Tab 4B). His expertise is in the areas of cetacean quantitative ecology, population dynamics, and risk assessment. (Tab 4 at ¶ 3; Tab 4B). He has authored more than 40 peer reviewed scientific journal articles and numerous technical reports, and has served on the IWC's Scientific Committee. (Tab 4 at ¶¶ 3–4; Tab 4B). Dr. Moore submitted two written declarations and testified on behalf of NMFS, and supports issuance of a waiver and the proposed regulations.

Dr. Moore's First Declaration was mainly devoted to describing in great detail the methodology he and Dr. Weller used to model the hunt's potential impact on WNP gray whales. (Tab 4 at ¶¶ 9–10, ¶ 12–18). Dr. Moore also discussed the methodology he used to model the effects of the hunt on PCFG whales. (*Id*. at ¶¶ 19–24).

In his Second Declaration, Dr. Moore rebutted testimony given by other parties' witnesses about the hunt's potential impact on WNP and PCFG whales. He discussed attempts to reach a theoretical OSP calculation for the PCFG and the difficulty in calculating OSP for most marine mammal stocks, and explained why, in his opinion, Mr. Schubert of AWI mischaracterized the meaning of minimum abundance estimate. (Tab 60 at ¶¶ 3–4, 6). Regarding WNP whales, Dr. Moore testified that he incorporated into his calculations uncertainty about the number of WNP migrating along the west coast of North America, their migration timing, and travel speeds, and further discussed his methodology. (*Id.* at ¶ 7).

Dr. Moore's testimony at the hearing was consistent with his Declarations, and I find Dr. Moore a credible witness. His testimony is within his area of expertise, and his methodology is

transparent and uses an appropriate degree of caution. Though the only way to truly test his conclusions is to allow the hunt to go forward, the modeling is robust and has been accepted by a committee of scientific experts at the IWC. Accordingly, I give his testimony and opinions a great deal of weight.

c. Dr. Shannon Bettridge

Dr. Bettridge currently serves as the Chief of the Marine Mammal and Sea Turtle Conservation Division in the NMFS Office of Protected Resources. (Tab 2 at ¶ 1; Tab 2B). Prior to assuming this role, she was responsible for compiling and overseeing the publication of annual SARs. (Tab 2 at ¶ 3). Dr. Bettridge submitted three declarations and gave testimony in support of NMFS's proposed waiver and regulations.

Dr. Bettridge's First Declaration focused mainly on the statutory basis for SARs and the process of developing them. (Tab 2 at ¶¶ 4–12). She also discussed NMFS's guidance document on the identification and assessment of stocks, the *Guidelines for Preparing Stock Assessment Reports Pursuant to the 1994 Amendments to the MMPA* (GAMMS). NMFS most recently revised the GAMMS in 2016 and made them available for public review and comment. (Tab 2 at ¶ 13). In her Second Declaration, Dr. Bettridge testified that new Final SARs were available for both the ENP and WNP stocks, and updated the estimates of abundance, PBR, and human-caused mortality and serious injury levels. (Tab 59 at ¶¶ 4–5, 7). She also provided updated informational estimates of abundance, minimum population estimates, and the informational PBR for the PCFG. (*Id*. at ¶ 6).

Dr. Bettridge's Third Declaration focused on the ENP stock UME that NMFS formally declared on May 29, 2019. She described the statutory definition of a UME; the composition and role of the Working Group in determining if a UME is occurring, assisting in directing response

and investigation, and determining when the UME is over; and the efforts of NMFS's domestic and international partners in analyzing data related to the UME. (Tab 53F at ¶¶ 3–11). Her testimony under cross-examination at the hearing was consistent with these Declarations.

I recognize Dr. Bettridge is not directly involved in gray whale research, but find her fully credible on the technical aspects of SAR development and the processes and protocols surrounding UMEs. (Tab 101 at 98:3–5, 101–103). She is well-qualified to testify about the statutory requirements, agency guidelines, and internal processes and deliberations, all of which are directly within her area of expertise, and I will weigh her testimony accordingly.

d. Dr. Michael Tillman

Dr. Tillman is a marine biologist who has served as one of the three presidentially-appointed members of the MMC since 2010. (Tab 55 at ¶ 1). He is trained as a fisheries biologist and marine mammal specialist, has participated in IWC meetings for over 45 years, and is a former NMFS employee. (*Id.* at ¶¶ 2, 4). Dr. Tillman testified on behalf of the MMC and is generally supportive of NMFS's proposed waiver and regulations.

In his declaration, Dr. Tillman testified about historical issues related to the IWC's regulation of aboriginal subsistence whaling. (Tab 55 at ¶ 5–7). He also testified about the history of the United States' efforts to secure an aboriginal subsistence whaling catch limit for the ENP stock of gray whales on behalf of the Makah Tribe. (*Id*. at ¶¶ 9–12). Dr. Tillman described the subsequent IWC actions on catch limits, including its 2004 deletion of the requirement that the catch limit applied only to aboriginal persons whose traditional aboriginal subsistence and needs have been recognized by the IWC. According to him, "[t]his action finally put to bed any remaining question as to whether the IWC had recognized the subsistence needs

of the Makah Tribe and whether it qualified for a share of the gray whale catch limit." (*Id*. at ¶ 14).

In response to AWI's assertion that the Makah Tribe does not have a continuing dependence on whaling and a nutritional, subsistence and cultural need for whales or whale products, Dr. Tillman pointed to the Tribe's expeditious attempts to resume whaling after the ENP stock was removed from the U.S. Endangered Species List, and its preservation of the cultural importance of whales and whaling even during the hunting hiatus. (Tab 55 at ¶ 15). He stated, "[i]n the end, it is irrelevant whether AWI believes the Makah satisfy the IWC's requirements. The IWC is the final arbiter on whether the Makah hunt meets those criteria and whether its adoption of U.S. proposals on behalf of the Tribe multiple times over the past two decades is valid or not." (*Id).*

Dr. Tillman's oral testimony was consistent with his declaration and mainly supported NMFS's position on the waiver. (*See generally* Tab 105 at 219–241). While I recognize Dr. Tillman is an acknowledged expert on marine mammals, including cetaceans, his testimony here was more related to technical issues affecting the waiver proceeding than the scientific data underpinning the waiver analysis. However, he is clearly qualified to give an opinion on issues such as the MMC's position in this matter and the level of scientific expertise present on the IWC Scientific Committee, and to interpret the data presented by other expert witnesses and researchers.

e. Jonathan Scordino

Mr. Scordino is a marine mammal biologist who has worked for the Makah Tribe since 2007. (Tab 21A at 1, 10). He has also been a member of the IWC's Scientific Committee since 2007. (*Id.* at 11). Mr. Scordino collaborates with other marine scientists and also conducts

independent, peer-reviewed research, which currently focuses on long-term monitoring of gray whale abundance, distribution, body condition, genetics, and contaminant loads; long-term monitoring of sea lion abundance, distribution, life history, and rates of entanglements; and monitoring of marine mammal strandings and cause of death. (*Id.* at 10–11).

Mr. Scordino testified on behalf of the Makah Tribe and supports issuance of a waiver and regulations. However, he viewed his role as being an expert on whales, particularly those in the area where the hunt would be held, rather than being an advocate for the Tribe. (Tab 103 at 110:12–25). He believed his analysis was fair and thorough, and did not rely on selective data. Mr. Scordino also pointed out that some of his research activities during the course of his employment have had the potential to produce data adverse to the Makah Tribe's interests. (*Id*. at 111:7–112:17).

Mr. Scordino's written testimony covered the Tribe's historical hunting methods and the development of its proposed hunt and training programs using data gathered from the 1999 and 2007 hunts. (Tab 21A at 13–22, 23–29). He focused on issues specific to the PCFG, including range, abundance, recruitment, movements and feeding behavior, research on PCFG genetics, mixing proportions of PCFG and ENP whales, and migratory and feeding behaviors. (*Id*. at 32–35, 52–53).

Mr. Scordino also discussed the plausible history and genetics of the WNP stock.[15] His position is that, given the genetic differences between these whales and the ENP stock, they "should be managed as a stock under the MMPA unless and until further genetic data indicates otherwise. However, that stock should not be recognized as an endangered species under the

[15] Mr. Scordino uses the IWC's naming conventions, referring to these whales as the Western Feeding Group.

ESA, because it is not the geographically isolated WNP population that retained an ESA listing when the ENP stock was de-listed in 1994." (*Id*. at 71).

Finally, Mr. Scordino evaluated a number of issues that could potentially cause cumulative impacts on gray whales, including non-hunting sources of mortality, climate change, ocean acidification, changes in predator abundance and behavior, military activities, industrial activities and habitat change, anthropogenic ocean noise, oil spills, contaminants, and other whale hunts. He opined that the DEIS accurately identified and evaluated the cumulative impact of factors other than the Makah Tribe's hunt on the gray whale population and found the hunt is not likely to cause conservation concerns. (*Id*. at 82–98).

In his written rebuttal testimony, Mr. Scordino addressed issues raised by Ms. Owens of PCPW, regarding the number and characteristics of gray whales that utilize the Makah U&A. He also made four main points in rebuttal of Mr. Schubert's testimony regarding definitions in the proposed regulation, carrying capacity issues, genetic identification, and selective or biased use of scientific data. (Tab 56 at 7–12).

I find Mr. Scordino to be a generally credible witness. Although employed by the Tribe, he is a researcher who, with the Tribal Council's backing, also receives funding from a variety of other sources that require public disclosure of data. (*See* Tab 103 at 84:14–16, 112:9–17, 115:2–117:3, 135:24–136:8); *see also Daubert*, 43 F.3d at 1317 ("independent research carries its own indicia of reliability, as it is conducted, so to speak, in the usual course of business and must normally satisfy a variety of standards to attract funding and institutional support."). His testimony relies on a broad range of sources, including those whose findings he disagrees with. His oral testimony on cross-examination was also consistent with his written declarations and

responsive to the testimony from other witnesses. I will therefore give his opinions substantial weight.

f. Dr. John Bickham

Dr. Bickham is a fish and wildlife genetic specialist who has studied the genetics of gray whale stocks and the degree of uncertainty that exists regarding the stock structure hypotheses related to the WNP[16] and PCFG. (Tab 22 at 4). He submitted a report intended to provide information about gray whale genetics and stock structure, but did not address the proposed hunt's impact on specific groups of gray whales such as the PCFG or WNP. (*Id*. at 4-5). Dr. Bickham's testimony, which I summarize in depth in my later discussion of gray whale stock structure, generally discussed the most plausible hypotheses about the WNP's structure, genome sequencing and analysis, and population modeling. (*Id*.at 5-19). He also discussed genetic issues relating to the PCFG. (*Id*. at 20-22).

Dr. Bickham testified on behalf of the Makah Tribe and did not explicitly support or oppose the waiver and regulations. Rather, he expressed his objective was to provide reliable scientific information for consideration in this proceeding. I find Dr. Bickham credible on the subject of gray whale genetics, a field in which he has extensive knowledge and experience, and accord his testimony considerable weight.

g. Dr. John Brandon

Dr. Brandon is a biometician specializing in population dynamics modeling, statistical analysis, management strategy evaluation, and survey design. (Tab 23 at ¶ 1). He submitted a report on the Tribe's behalf about historical and current approaches to populations dynamics

[16] Dr. Bickham refers to this group of whales as Western Gray Whales.

modeling and conservation risk assessments for the ENP stock, WNP stock, and PCFG. He also compared the conservation management objectives of the IWC and the MMPA, as well as compared the IWC's scientific approach to evaluating proposed aboriginal subsistence whaling hunt plans and the PBR management strategy under the MMPA. The report addressed the proposed hunt plans and some comments NMFS received in response to the 2015 DEIS. In general, Dr. Brandon's testimony supported the waiver and regulations.

Dr. Brandon is also a credible witness. As with Dr. Bettridge, his testimony is more technical in nature and does not involve conducting independent research on gray whales. However, the technical aspects he testified about are directly at issue in this proceeding and I find it appropriate to take his opinions into consideration in making a determination on the waiver and regulations.

h. Donald J. (DJ) Schubert

AWI offered testimony from Donald J. (DJ) Schubert, a wildlife biologist who has been on AWI's staff since 2005 and previously worked for other animal welfare organizations and the U.S. Fish and Wildlife Service. (Tab 32A at ¶ 1). Mr. Schubert's professional work is in the realm of international and domestic wildlife advocacy. (Tab 104 at 13:20–17:16; 36:20–37:1). He has not conducted or participated in any research regarding gray whales or the effects of climate change on the marine environment; rather, his knowledge of these issues comes from literature reviews. (*Id.*; see also Tab 32A at ¶¶ 3–5). Mr. Schubert contends NMFS failed to rely on the best available scientific evidence and cannot show that the waiver satisfies the criteria set out in the MMPA. (Tab 32A at ¶ 5). He opposes the issuance of a waiver and argues the proposed regulations are insufficient to protect the various whale stocks and groups affected.

Mr. Schubert does not contest the ENP abundance estimates, PBR, human-caused mortality estimates, or findings as to carrying capacity and OSP found in the 2015 DEIS. (Tab 32A at ¶ 7). However, he argues that NMFS did not adequately consider the potential effects of climate change on gray whales' prey and habitat and believes NMFS's decision to proceed with this rulemaking while a UME of unknown origin is occurring is "biologically reckless and antithetical to the precautionary principle of the MMPA." (*Id*. at ¶¶ 8–12). Other deficiencies Mr. Schubert alleges in the proposed waiver are that NMFS did not select the most appropriate ecosystem when evaluating the hunt's effects and failed to adequately consider gray whales' role in their ecosystem. (*Id*.at ¶¶ 14–16).

In his written declaration, Mr. Schubert contends that NMFS's decision to include the PCFG as a feeding aggregation in the ENP stock is not based on the best available science, thus NMFS should convene a new task force before moving forward with this waiver. (*Id*. at ¶¶ 18–40). However, he agrees with NMFS that the WNP are properly designated as a depleted stock and calls the uncertainty about its historical origins "irrelevant to the current proceedings." (*Id*. at ¶¶ 58–59). He also believes NMFS's calculations on risk to the WNP, produced by Dr. Moore and Dr. Weller, are out of date and incorrect, and the regulations are insufficiently protective of the WNP. (*Id*. at ¶¶ 60–63).

Mr. Schubert filed another declaration in which he provided background information on the current UME, calculated its severity, and proposed that the cause may be climate change-induced starvation. (Tab 54 at ¶¶ 8–10). He also called for greater transparency in NMFS's data on stranded whales and believes no waiver should be granted until the UME is over, or researchers determine the UME is not affecting WNP or PCFG whales. (*Id*. at ¶¶ 14, 15).

I find Mr. Schubert to be a less credible witness. His opinions are based solely on literature reviews, as he does not conduct any independent research or produce scientific publications, and he appears to have relied heavily on a subset of the available literature that best supports AWI's position in this matter. He presented various calculations on issues such as PCFG recruitment and the severity of the current UME, but has not provided evidence that those calculations use generally accepted scientific methodology or are otherwise more reliable than calculations from other experts. Furthermore, on cross-examination he admitted his written declarations contained errors and inconsistencies, or were insufficiently researched. (*See, e.g.*, Tab 104 at 43:4–44:16, 44:22–45:11, Tab 104 at 45–100). Mr. Schubert's arguments against the waiver still merit consideration, but I will generally defer to scientific experts whose testimony I found more credible when making such assessments.

i. Dr. Stella Villegas-Amtmann

Dr. Villegas-Amtmann is an expert in animal behavior, specifically in the physiology and ecology of marine mammals and in whale bioenergetics. (Tab 63 at ¶¶ 2–3; Tab 63A; Tab 105 at 111:2–12). She has published approximately 19 peer-reviewed scientific papers on marine mammals and currently studies foraging behavior, diving physiology, bioenergetics, and metabolic rate with pinniped sensitization. (Tab 63 at ¶ 5; Tab 105 at 112:2–4). She focused her declaration and live testimony on the effects of energy loss on female gray whales.

Dr. Villegas-Amtmann is a credible expert in her field and produced peer-reviewed studies using scientifically accepted methods. Thus, to the extent her findings are relevant here, I will give them appropriate consideration.

j. Carrie Newell

Ms. Newell is a retired professor of marine biology who currently runs a whale watching business and museum. (Tab 64 at ¶¶ 1–2; Tab 64C). She testified on behalf of Sea Shepherd in opposition to the waiver and regulations. Ms. Newell has collaborated with cetacean scientists on research projects involving orcas, blue whales, and gray whales. She focuses particularly on gray whale feeding behaviors and is experienced in photographic identification techniques. (Tab 64 at ¶ 2–3). Her observations off the Oregon coast and in the Mexican wintering grounds span more than 27 years. (*Id*. at ¶ 6). She also wrote a photo-identification book on PCFG whales titled "A Guide to Summer Resident Gray Whales along the Oregon Coast." (Tab 85).

Ms. Newell believes members of the public have as much right to use whales through non-consumptive activities, such as whale-watching, as the Makah Tribe has to hunt them under the treaty. She also believes the loss of whales will cause economic harm and impair research activities. (*Id*. at ¶¶ 9–15). She is concerned that the removal of PCFG whales is not ecologically sound, given the group's relatively small size. (*Id*.at ¶ 18). She disagrees with NMFS and the Makah Tribe on the effects of hunting and training approaches, using an anecdote about a particular whale who did not return to a previous favorite foraging site after a research vessel followed her to collect fecal samples. (*Id*. at ¶¶ 19–23). She also stated that biopsy and tagging efforts in Depoe Bay caused whales to disperse and some never returned to the area. (*Id*. at ¶ 24). Ms. Newell contests the findings from NMFS and the Makah Tribe on site fidelity, or the tendency of whales to return to particular feeding locations year after year. She testified that the whales in Depoe Bay are consistently present throughout the feeding season and are seen year after year, demonstrating strong fidelity to localized areas. (*Id*. at ¶¶ 30–41).

Regarding the UME, Ms. Newell believes hunting activities will further deplete the whales' energy reserves and exacerbate the die-off. (*Id*. at ¶ 26). She has observed increased

signs of orca predation on gray whales in recent years, another threat to the stock which she believes NMFS has not adequately accounted for. (*Id*. at ¶ 27–29). She also disagrees with the proposition that external recruitment will adequately replenish the PCFG if whales in the group are lost to hunting, particularly if females are killed. (*Id*. at ¶¶ 42–43). Ms. Newell expressed her opinion that "[t]he loss of PCFG whales will also have grave consequences for scientific research." (*Id*. at ¶ 43).

Ms. Newell's credibility as an expert witness is mixed. She has participated in independent research and observation and is undeniably familiar with the individual whales she regularly sees in Depoe Bay, Oregon. Her observations and interactions with those whales accounted for the majority of her testimony in this matter. However, many of her conclusions are based at least as much on anecdotal evidence as on rigorous scientific studies. It is unclear what methodology she used when drawing conclusions about gray whale behavior from her limited data set, whether that methodology is widely accepted in the scientific community, or whether she considered other studies that either support or refute her findings. I also find her testimony highly influenced by her sincerely held feelings about gray whales, particularly PCFGs, and her passion for whale watching. I will therefore give some weight to her testimony, but only where it is corroborated by other, more reliable scientific evidence.

2. Studies and Reports

The parties submitted hundreds of scientific studies and reports as exhibits in this proceeding. Many are peer-reviewed, though some are not. In general, I consider peer-reviewed studies to be more reliable scientific evidence than other studies. *See Daubert*, 509 U.S. at 593–94. I also generally give greater weight to more recent studies on issues such as abundance estimates, calf production, and feeding patterns, which fluctuate over time. Older studies on

these types of issues provide important context and historical background, but may not reflect the current state of the stock. However, I recognize there may be some issues for which an older study presents the best available scientific evidence on a particular topic.

I note that some of the studies and articles introduced into evidence concern other species, such as hippopotami and white-tailed deer. I find these to be of limited relevance to this proceeding. While parties are free to make arguments that the role gray whales play in their ecosystem is similar to that of another species in a different ecosystem, there was no credible scientific testimony showing that the specific findings in those papers are transferrable to gray whales.

The record also contains Stock Assessment Reports (SARs), which are highly relevant and reliable sources of information. In accordance with the MMPA, NMFS publishes SARs for each marine mammal stock found in U.S. waters. (Tab 1 at ¶ 23; Tab 2 at ¶¶ 6, 14). NMFS maintains guidance on the identification and assessment of stocks, the previously mentioned GAMMS, which it most recently revised in 2016 and made available for public review and comment. (Tab 2 at ¶ 13).

The MMPA requires SARs to include, among other things, population size estimates, a calculation of Potential Biological Removal (PBR) (discussed below), an assessment of whether incidental fishery takes exceed regulatory thresholds, and indication of the stock's management status under the MMPA (e.g., whether they are considered "strategic," which has implications for management actions taken under the Act). Each draft SAR is made available for public review and comment, and the MMC typically submits comments. 16 U.S.C. § 1386(b)(1); Tab 2 at ¶ 6. These assessments are used to guide policy and management by NMFS.

NMFS reviews the SARs for most stocks every three years, but annually for particular stocks, and only publishes revisions if the review shows there is significant new information about the stock's status. (Tab 2 at ¶ 7). Developing a SAR involves several entities, beginning with marine mammal research programs at each of the six regionally located NMFS Science Centers, where scientists gather, analyze, and interpret data. (*Id*. at ¶¶ 4–6). Each draft SAR is reviewed by Dr. Bettridge and her staff, NMFS Regional Office staff, NMFS Office of Science and Technology staff, NOAA General Counsel staff, and NMFS leadership. The SARs are then peer-reviewed within the Science Centers, as well as by the three regional scientific review groups (SRGs), which consist of individuals with marine mammal expertise who represent various viewpoints. (Tab 2 at ¶ 8, 9). Some SARs are also reviewed by editorial boards for scientific journals or by the IWC Scientific Committee. (*Id.* at ¶ 9).

NMFS then publishes draft SARs in the *Federal Register* for public review and comment, and responds to comments as appropriate. (*Id.* at ¶ 10). After final reviews by Dr. Bettridge, the scientific review group, general counsel, leadership, and the NMFS Assistant Administrator, NMFS publishes a notice of availability for the finalized SAR in the *Federal Register* and makes the draft and final version available on the NMFS website. (*Id.* at 11). Due to the lengthy process, a SAR is usually published at least one year after the report's reference year: for example, the 2016 SAR would be published in 2017. (*Id.* at 12). NMFS considers SARs to be the best available science regarding the respective stocks. (Tab 101, Tr. Vol. I at 90:9–11).

Dr. Bettridge testified that NMFS produced the first SAR for ENP gray whales in 1995 but did not produce a SAR for WNP gray whales prior to 2014 because WNPs were not previously known to travel in U.S. waters. (Tab 2 at ¶ 14). The first evidence WNPs migrated with ENPs became available in 2010, and in 2012 a task force reviewed the information and

advised that the WNP should be recognized as a population stock. (*Id.* at ¶ 17). The same task force, composed of agency experts, also recommended recognizing the PCFG as a feeding aggregation within the ENP stock but concluded that the evidence did not support recognizing it as a separate stock. (*Id.* at ¶¶ 15, 16). Dr. Bettridge summarized some key data points from the most recent SAR for WNP gray whales and discussed why the SAR for ENP gray whales includes population-level data for the PCFG despite it not being recognized as a stock. (*Id.* at ¶¶ 18–22). The most recent SARs on gray whales were finalized in June 2019 and incorporated information from 2018. (Tab 101 at 90:15–17).

The IWC Scientific Committee, composed of marine mammal researchers and experts from several countries who provide scientific advice to the IWC's member nations, is another source of relevant information. (Tab 101 at 32:15–18 (Yates)). NMFS requested the Scientific Committee's review of the Makah Tribe's hunt proposal, in order to ensure it met the IWC's aboriginal subsistence whaling objectives, and the IWC agreed it met the objectives for the ENP, the PCFG, and the WNP. (*Id*. at 32:24 – 33:6).

The Scientific Committee continues to investigate stock structures and has convened workshops to develop a series of range-wide stock structure hypotheses, using all available data sources (e.g. photo-ID, genetics, tagging), that can be tested within a modelling framework. (Tab 2K at 11). In 2018, the IWC Standing Work Group on Aboriginal Subsistence Whaling Management Procedures (AWMP) concluded the Makah Tribe's proposed hunt harvest levels meet the IWC's conservation objectives for aboriginal subsistence whaling. (Tab 3 at ¶ 42). After modelling the best available data, the AWMP agreed the proposed hunt meets the IWC's conservation objectives; there is no scientific evidence in the record to the contrary.

I consider the Scientific Committee's findings to be highly reliable. It is composed of an international body of experts and its members use the best available scientific data when drawing conclusions. No party presented any evidence showing that the Scientific Committee is biased, uninformed, or otherwise compromised. Thus, to the extent that NMFS's findings are consistent with those of the IWC, I will generally give them great deference.

The 2008 and 2015 DEIS documents in the record also contain extensive scientific data. (Tab 1F; Tab 90F). As discussed earlier, the adequacy of the DEIS is not at issue in the proceeding, but I nevertheless consider these documents important indicators of the information NMFS relied on when developing the waiver and regulations. In preparation for this hearing, NMFS also prepared a report detailing its analysis, titled *Biological Report on the Eastern North Pacific, Gray Whale Stock*, NMFS WCR (Mar. 2019) (hereafter *Biological Report*). (Tab 1H). Finally, I find it persuasive but not dispositive that the MMC reviewed the proposals and agreed that NMFS relied on the best available scientific evidence. (Tab 1 at ¶ 15; *see also* Tab 1I at 1).

3. Data Collection Methods

Finally, the parties offered a great deal of information about the data collection methods scientists use in the study of gray whales. These include, but are not limited to, photo-identification of gray whales; genetic studies of samples collected through biopsy or necropsy; tagging data showing whale movements; aerial and shore-based surveys that provide data on feeding, mating, and other behaviors, acoustic recording, and behavioral studies. (Tab 102 at 9:11–14). This data informs the research papers the IWC and NMFS relied on in developing their reports on stock status, and forms the basis for many of the parties' arguments for or against the waiver. All of these methods are considered scientifically valid, but some are easier to perform than others, and some yield more or less accurate data than others. A comprehensive review of

the data collection methods is important to the analysis of whether NMFS relied on the best available scientific evidence.

a. Photo-Identification

Since the 1970s, researchers have used photographs of gray whales' distinct body characteristics and markings to identify and catalog individual gray whales. (Tab 1J at 3; Tab 102 at 9:17–10:1). These characteristics include the shape of a whale's dorsal and lateral area, scars, and coloration patterns that are visible when whales surface. The photographs allow scientists to build data sets about an individual whale's movements, body condition, reproductive status, and other characteristics. Researchers generally take these photographs within 5-15 meters of the whales, and they attempt to capture both the right and left sides of the whale around the dorsal hump, as well as the ventral surface of the flukes. (*Id.).*

Cascadia Research Collective maintains a photographic catalog of the 232 PCFG whales identified to date, and also engages in other whale-related activities in the Pacific Northwest, such as stranding response and disentanglements.[17] (Tab 102 at 60:8–15; Tab 103 at 117:15–118:6). John Calambokidis, the head of Cascadia Research Collective, is an acknowledged expert on PCFG gray whales and frequently collaborates with other researchers in the region. (*Id.* at 118:7–17). There are also two catalogs of WNP whales, which together include nearly every WNP whale known to exist. (Tab 102 at 58:14–16, 60:21–61:4). Efforts are underway to combine the WNP catalogs and make them more widely available. (Tab 102 at 61:5–11, 62:22–63:9). NMFS expects these catalogs will be available for use in identifying whales struck during the Makah Tribe's hunt, and that photographic evidence will be the primary means of identifying

[17] This catalog is partially funded by grants from NMFS. (Tab 101 at 77:23–78:3).

whales. (*See* Tab 3 at ¶37). In the event the catalogs are not kept current and at an adequate standard, NMFS would not issue a hunt permit. (Tab 101 at 79:16–18).

Photographic identification is currently the best available method of identifying and cataloging whales, and researchers expend significant efforts to ensure the WNP and PCFG catalogs remain up to date. (Tab 56 at 10). The method is not infallible, however, as it depends heavily on the quality of the photographs. Moreover, whales with highly unique characteristics are easy to identify but some whales have similar markings, making it more difficult to positively identify them. Stranded whales may be difficult to identify because they often turn belly-up in the water and observers cannot photograph the dorsal surface. (Tab 103 at 100:2–15). Nevertheless, people trained in identifying and cataloging whales have a high success rate and researchers can obtain many photographs during a season without unduly disturbing the whales. The probability researchers will be able to successfully match photographs of a landed PCFG whale to those in the PCFG catalog during a Makah Tribal hunt is high because the hunters will be able to manipulate the whale after landing it to obtain high-quality photographs of its back.

b. Tissue Sampling

A second method of identifying gray whales is through tissue samples. Sampling can be accomplished through biopsies taken during research surveys or from a landed whale, as well as tissue remnants from a harpoon if a whale is struck and lost. Scientist may also purposely obtain tissue samples for biopsy. NMFS expects this method to corroborate the photographic identifications and anticipates only "rare cases where a landed or struck-and-lost animal did not yield suitable photographs but is identifiable based on tissue samples alone." (Tab 1J at 4).

Like photo-identification, genetic matching is a scientifically valid method of matching an observed whale to known whales in the WNP or PCFG catalogs. However, its usefulness is

somewhat limited because "it is not possible to use genetic material of an unknown whale to determine to which group it belongs (that is, to do an 'assignment test')." (Tab 60 at ¶ 23 at 10). Genetic material can complement photo-identification, but only where the genetic samples can be matched to a previously collected sample from a known whale. While scientists are making advances in genetic analysis, there are currently no known genetic markers that occur exclusively in one population or group. (*Id*. at 11). It is also an invasive method when used on living whales, requiring the researcher to pierce the whale's skin to obtain a sample.

c. Direct Observation

In addition to identifying whales, scientists also collect behavioral data about gray whales, mostly through direct observation. Researchers spend time in vessels, watching the whales, approaching them if authorized to do so, and documenting their findings. This data has long formed the core of our understanding about gray whales, and involves little to no disruption for the whales.

While this method yields highly reliable data, it is nevertheless constrained at times by factors including but not limited to funding, weather, and altered migratory patterns. Researchers may be unable to access certain areas of the coast, leading to geographical gaps in data, or may be unable to obtain high-quality photographs to use for identification and other research purposes.

d. GPS Tagging

In recent years, tagging studies have also collected important information on whale movements. Tags are temporarily implanted into whales' skin and transmit location data to scientists until their batteries fail or they fall off the whale. In this way, researchers have been able to collect data about whale movements in areas where observation is not possible. However,

like all research methods, tagging has its drawbacks. While tagging provides important information for scientists who seek to understand migration patterns, it does not provide data about whales' other activities, such as feeding or mating. Like biopsies, it is also an invasive technique because the tags must be implanted into the whale's body.

Having fully discussed the manner in which I will consider scientific evidence throughout this Recommended Decision, I now turn to the next requirement in the MMPA, consultation with the MMC.

C. Consultation with the MMC

The MMPA requires NMFS to consult the MMC about both the proposed waiver and proposed regulations. 16 U.S.C. §§ 1371(a)(3)(A), 1373(a). The MMC is an independent agency. Its members are appointed by the President from a list of qualified individuals, who must be unanimously agreed upon by heads of other specified Executive Branch agencies. 16 U.S.C. § 1401; (*see also* Tab 101 at 32:3–6). It functions as an advisory body and "a mechanism to ensure that individuals will provide their independent judgment and give environmental concerns their priority." *Kokechik Fishermen's Ass'n v. Sec'y of Commerce*, 839 F.2d 795, 808 (D.C. Cir. 1988). While the MMPA requires the MMC to "recommend to the Secretary [of Commerce] and to other Federal officials such steps as it deems necessary or desirable for the protection and conservation of marine mammals," 16 U.S.C. § 1402(a)(4), the statute does not define the extent of the requisite consultation, and there is scant case law on the issue. Thus, I consider any evidence that NMFS asked the advice or opinion of MMC, or personnel from NMFS and MMC deliberated together about the proposed waiver and regulations, to constitute adequate evidence that this requirement is satisfied.

There is ample evidence in the record that NMFS sought comments from the MMC and made its determination in consultation with the MMC. (Tabs 1I, 1K, 1L, 1O, 1P). Chris Yates, the NOAA Assistant Regional Administrator for Protected Resources for the West Coast Region, testified that the MMC reviewed the hunt proposal and concluded it was consistent with the best scientific information available and appropriately precautionary. The MMC supported NMFS's decision to initiate formal rulemaking proceedings regarding the waiver and regulations. (Tab 101 at 32:9–13).

Likewise, Dr. Michael Tillman, one of the presidentially-appointed MMC commissioners, testified that the MMC participated in the United States' effort to procure an aboriginal subsistence whaling catch limit for gray whales on behalf of the Makah Tribe. Dr. Tillman also explained that the MMC later issued a letter to NMFS stating the MMC's overall impression of the draft regulations was that they are based on the best available science, are appropriately precautionary, and lay out a prima facie case that the statutory requirements for waiver have been met. The MMC recommended NMFS proceed to a hearing on this matter. (*See generally* Tab 105 (Tr. Vol. 5) at 227–229; Tab 1I). Dr. Tillman testified that all three commissioners came to the same consensus and concurred in the recommendation. (Tab 105 at 229:16–231:21).

Considering the testimony on this issue, I find NMFS complied with its statutory obligation to consult with the MMC and took the MMC's position into account when deciding to go forward with this rulemaking proceeding.

D. Gray Whale Stock Structure

The next threshold issue I must address is the stock structure among gray whales. The language of 16 U.S.C. § 1371(a) implies that NMFS must appropriately determine the nature of

the stock when proposing to waive the moratorium. Under the MMPA, a marine mammal stock is "a group of marine mammals of the same species or smaller taxa in a common spatial arrangement, that interbreed when mature." 16 U.S.C. § 1362(11). As previously discussed, NMFS has developed guidelines for identifying stocks, known as the GAMMS. (Tab 2 at ¶ 13). The current GAMMS require stocks to be demographically independent, meaning "the population dynamics of the affected group is more a consequence of births and deaths within the group (internal dynamics) rather than immigration or emigration (external dynamics)." (Tab 2I). Demographic independence does not require genetic or morphological differences to establish different stocks, however, these differences may be present between stocks. (*Id.).*

This proceeding involves the proposed issuance of a waiver for a particular stock of gray whales, thus it is important at the outset to discuss the stocks that could potentially be affected. While some parties agreed of their own volition, early in the process, not to challenge NMFS's existing stock designations in this proceeding, they nevertheless retained the ability to submit information relating to gray whale stocks and groups. (*See* Tab 38). However, the MMC was not a party to the stipulation.

NMFS has argued throughout the proceeding that 16 U.S.C. § 1386 provides the exclusive mechanism for identifying stocks or reviewing the appropriateness of stock designations. (*See, e.g.*, Tab 2 at ¶ 3; Tab 66). The MMC disagrees with NMFS's position, asserting, "[t]he review processes under [16 U.S.C. §§ 1386 and 1373] are quite different, and the latter affords heightened procedural and substantive safeguards to the rulemaking parties," and the stock assessment process is "less rigorous than the scrutiny provided by formal rulemaking, which allows cross-examination of witnesses, applies a substantial evidence

standard, and requires the issuance of recommended determinations by an independent arbiter." (Tab 114 at 17).

I agree in part with the MMC, and discussed this issue at length in my Order Granting in Part and Denying in Part Motions in Limine and Requests to Modify the Final Agenda. (Tab 84). There, I expressly stated the parties would have the opportunity to present evidence and make arguments and counterarguments at the hearing about whether the SARs relied on the best available scientific evidence. (*Id.* at 10). This proceeding involved substantial discussion of gray whale stock structures: first, whether the PCFG warrants designation as its own stock, rather than a subgroup of the ENP stock, and second, whether the animals currently designated as WNP gray whales are a separate historical stock or a western-feeding group that interbreeds with ENP gray whales.

In order to make the requisite findings about the proposed waiver and regulations, I must make a threshold determination that the stock structure NMFS used is scientifically sound. While NMFS's existing stock determinations, as contained in the SARs, are entitled to substantial deference, other parties may attempt to show the SARs rely on outdated or inaccurate scientific evidence. (*See* Tab 84 at 10; *Brower II*, 257 F.3d at 1067). However, if I were to determine NMFS's current stock assessments are not based on the best available scientific evidence, this would not be the appropriate forum to make new assessments. Instead, the proper course of action would be to deny the waiver. NMFS would then have the opportunity to produce new stock assessments before deciding whether to propose a future waiver.

In the following sections, I will discuss the evidence regarding gray whale stock structure, including the designation of the PCFG as a feeding aggregation within the ENP stock

and the WNP as a separate stock. This evidence supports NMFS's current stock designations, which are based on the best available science and are appropriate to use in this proceeding.

1. The PCFG is a Feeding Aggregation in the ENP Stock

One key issue related to stock structure is whether the PCFG are properly considered a feeding aggregation within the ENP stock, or whether they should be designated as a separate stock. NMFS, the MMC, and the Makah Tribe all argue the PCFG is not a population stock under the MMPA, while Sea Shepherd, AWI, and PCPW argue it warrants a stock designation. AWI contends that NMFS's conclusion "rests on a highly selective reading of the available literature that runs counter to the sound principles of resource protection and conservation that must inform all management decisions under the MMPA, and ignores new evidence that has emerged" since NMFS last held a workshop on gray whale stock identification in 2012. (Tab 115 at 63). AWI believes under NMFS's own guidelines, the agency should have begun from the assumption that a small group such as the PCFG is a separate stock, not from the question of whether it should be removed from the ENP stock. (*Id.* at 64). Since stock structure is a complex issue, I will discuss the definition of the PCFG and methods of identifying such whales, as well as the various scientific viewpoints on the issue of whether they are independent from the ENP.

a. Definition and Identification of the PCFG

Scientists are uncertain about the extent of grey whales' historical presence off the coast of Washington, prior to commercial whaling. (Tab 21A at 44; Tab 21C at M-0174). However, it is undisputed that gray whales now feed along the west coast of North America. The IWC and NMFS define a subset of these whales as the PCFG, whose members are photo-identified within the region between northern California and northern Vancouver Island (41°N lat. to 52°N lat.)

during the summer feeding period of June 1 to November 30, in two or more years. (Tab 21C at M-0144, M-0145; Tab 3JJ; Tab 23O).

Not all whales seen in this area during the feeding season are PCFG, and some members of the PCFG spend considerable time outside the PCFG range. (Tab 54D; Tab 23Z). "Unlike other species, sub-species, or stock boundary definitions, the boundaries of the PCFG range were not determined by genetic differences among whales in different areas or by a hiatus in distribution between areas. Rather, the PCFG range was based on where genetic samples had been collected, where whales had been observed to move, and, most importantly, where surveys had been conducted on a regular basis to provide abundance estimates." (Tab 21A at 36).

Photo-identification forms the basis for a whale's inclusion in the PCFG catalog. (Tab 21A at 32). Many scientists collaborate on this research, but there is incomplete coverage throughout the PCFG range because the observers are concentrated around ports of entry where they live and work. (*Id.*) While the whales have been surveyed consistently since 1998, researchers may record their efforts differently and the number of days dedicated to observations vary from year to year. (*Id.*) Some whales have easily identifiable markings, while others are more difficult to differentiate; however, misidentifications are ultimately rare. (*Id.* at 33–35).

Studies are also underway to take genetic samples from many PCFG gray whales. These samples cannot be used to determine if an unknown whale is part of the PCFG, but can be used to confirm whether a whale from whom the sample was taken is a known PCFG member. (Tab 102 at 109:3–8; Tab 103 at 227:21–22). In one study, researchers had sampled 138 whales and in another, about 200. (Tab 103 at 227:25–228:4). Although some of those whales may overlap, researchers have now likely sampled a large proportion of the total PCFG. (*Id*. at 228:5–6). With

these identification principles in mind, I now turn to the scientific evidence used to determine whether the PCFG warrant designation as a separate stock or not.

b. Scientific Review of PCFG Structure

Over the past decade, the IWC and NMFS have conducted stock identification workshops to determine whether the PCFG are part of the ENP stock or are a separate stock. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has also separately considered the issue.[18] The IWC conducted five Rangewide Workshops between 2011 and 2019, and the Scientific Committee reviewed the report of those workshops. (Tabs 3NN; 4L; 4M; 21C at M-0145, M-0146, M-0150, M-0151, M-0152, M-0154, and M-0156; 22 at M-0435, M-0436, and M-0437; 23L; 23FF; 23UU, 52G). NMFS held a stock identification workshop in 2012. (Tabs 3C; 21C at M-0294; 22 at M-0473). Both the IWC and NMFS ultimately concluded that the evidence does not support designation as a separate stock or management unit; rather, it is currently a feeding aggregation but may eventually warrant consideration as a stock. (Tab54D; 62B; 81B).[19] COSEWIC, on the other hand, found the PCFG to be a putative "designatable unit," and recommended listing it as endangered under Canadian law.[20] (*See* Tab 62I). At present, NMFS has no plans to convene any new workshops to study the issue of whether the PCFG are a stock. (Tab 101 at 105:10–11 (Bettridge); Tab 102 at 56:3–7 (Weller)).

Under the MMPA, a determinative factor in making stock determinations is whether a population's members interbreed when mature. Scientists can analyze this using both

[18] COSEWIC is an independent advisory panel to the Minister of Environment and Climate Change Canada that meets twice a year to assess the status of wildlife species at risk of extinction. (See www.cosewic.ca). Members are wildlife biology experts from academia, government, non-governmental organizations and the private sector responsible for designating wildlife species in danger of disappearing from Canada (*Id.*). Canada is not a member of the IWC and consequently does not participate in IWC meetings or workshops.
[19] These exhibits all consist of the same document, the 2018 SAR for ENP gray whales. Going forward, I will cite only to Tab 54D, as it was the earliest submission of this document, but will avoid duplicative citations.
[20] At this point, the COSEWIC findings are a recommendation and do not carry the force of law. (Tab 62 at ¶ 49).

observational and genetic data. While populations typically diverge as a result of geographic isolation, the PCFG are not isolated from other ENP whales. (Tab 22 at 22). Scientists have long concluded that all members of the ENP stock, including PCFG whales, mate with one another, but a recent study has led to speculation that PCFG migrate together during the breeding season and therefore have greater opportunity to mate with other PCFGs. (*See* Tab 24C at M-0053; Tab 62 at ¶¶ 26–28; Tab 115 at 67).

The weight of the scientific evidence is against this theory. Research on how commonly PCFG whales migrate together is in early stages and there is little evidence about the biological implications of these groups. The authors themselves specifically state they do not know whether groups including multiple PCFGs "remained associated through the breeding season or became associated just for the migration." (Tab 23C at Ex. M-0057). Mr. Scordino also believes the methods used in the study may overstate the frequency of such events. (Tab 21A at 50). Moreover, Dr. Bickham declared that "strong pre-mating isolating mechanisms" such as PCFG females showing a mating preference for PCFG males, "is unlikely to be the case because it violates basic principles of evolutionary biology. Specifically, reproductive strategies evolve to maximize the fitness of one's offspring, which includes the avoidance of inbreeding." (Tab 22 at 22). COSEWIC also stated, "[t]he genetic data, particularly when combined with photoidentification data, are consistent with the hypothesis that the use of feeding grounds is influenced by internal recruitment but mating is random with respect to feeding ground affiliation." (Tab 62I at 33). Thus, the scientific evidence is still strong that PCFG gray whales have ample opportunity to mate with non-PCFG ENP whales, and in fact continue to do so.

It is undisputed that genetic variations have been found between PCFG gray whales and non-PCFG ENP gray whales. Testing shows "significant differences in [mitochondrial DNA]

haplotype distributions between PCFG and ENP gray whales," though there are no significant differences in nuclear DNA markers" between the PCFG and other ENP whales. (Tab 54D at 158). Mitochondrial DNA (mtDNA) is inherited only from mothers, while nuclear DNA is inherited from both parents. However, the parties reach different conclusions about the importance of these genetic variations.

Sea Shepherd asserts these genetic differences show demographic independence from the larger ENP population. (Tab 115 at 66). NMFS concluded the genetic differences "indicate that calves likely follow their mothers to feeding areas and to some extent return to those feeding areas in subsequent years" but are not reproductively isolated from whales feeding elsewhere and continue to mate with those whales. (Tab 90B at 4). Dr. Bickham agrees, opining that there are some whales who use the PCFG feeding range more than others and they are likely driving the differences in mtDNA haplotype frequency. (Tab 22 at 21). It is common for gray whales and other baleen whales[21] to show difference in mtDNA based on fidelity to different summer feeding grounds, and "the fate of a nascent feeding group can include several alternatives: remain a feeding group with different mtDNA frequencies but not biparentally inherited markers; become a discrete breeding stock if internal breeding is high enough; or become indistinguishable from the greater population if immigration into the feeding group is great enough to homogenize the mtDNA haplotype [sic] frequencies." (*Id*. at 20).

It is also important to note the PCFG is comprised of both internal recruits (calves born of PCFG mothers) and external recruits (other ENP whales that become assimilated into the group). The proportion of recruits is a matter of considerable dispute between the parties, as precise figures are still unknown and studies are ongoing. (Tab 21A at 44–45, 47–49). At present, NMFS

[21] Baleen whales are largely bottom-feeders who filter out small prey using baleen plates, while toothed whales such as dolphins and porpoises generally feed on larger prey in the water column.

considers recruitment to be approximately even, with about four internal and four external recruits per year, and "annual immigration of 4 animals/year produced results most consistent with empirical data." (Tab 54D at 2; *see also* Tab 102 at 22:16–23:7 (Weller)). The MMC also concurs that "the evidence currently available for both photo-identification and genetic analyses indicates that levels of external (immigration) and internal (interbreeding within the group) recruitment are comparable and therefore it would be wrong to conclude that the PCFG meets the MMPA definition of a 'stock.'" (Tab 114 at 14).

Other researchers believe internal recruitment accounts for a somewhat greater proportion of new PCFG whales. (*See* Tab 96 at 10-11). Sea Shepherd, AWI, and PCPW rely heavily on this conclusion. In contrast, Mr. Scordino analyzed PCFG recruitment data based on Calambokidis et al. (2019), looking back to 2002, and found a lower level of internal recruits with 59 of 203 whales (29%) being calves. (Tab 103 at 93:12–94:22). He limited the data set because the PCFG catalog was under major development before 2002, and concurrently many whales recruited into the PCFG during the 1999/2000 UME, both of which could skew the calculation of average recruitment. (*Id*. at 97:3–16). Similarly, a limited data set looking at the period from 2010 to 2015 captures a spike in calf production which occurred in the entire ENP population, not just in the PCFG, during which about 45% of the recruits to the PCFG were calves. (*Id*. at 95:3–19).

While the evidence on recruitment levels is not conclusive, it does convincingly show that external recruitment plays a major role in maintaining or increasing the size of the PCFG. This weighs strongly against demographic independence, a key assessment factor for stock status under the current stock assessment guidelines, or GAMMS. Overall, the evidence strongly supports NMFS's conclusion, and that of the IWC, the PCFG are a feeding aggregation and not a

separate stock or management unit. Dr. Weller acknowledged that there have been new studies on the behavior, distribution, and genetics of PCFG whales since the 2012 NMFS task force met, but in his opinion, none of the new information affects the task force's conclusion. (Tab 102 at 55:24–56:7).

Though COSEWIC recommended listing the PCFG as an endangered designated unit under Canadian law, its reasoning is not entirely clear. COSEWIC acknowledged the genetic differences were insufficient to confer designated unit status and said the PCFG's evolutionary significance hinged on one of two other criteria: "(1) it persists in an ecological setting unusual or unique to the species, such that it is likely or known to have given rise to local adaptations, or (2) its loss would result in an extensive disjunction in the range of the species in Canada that would not be recolonized by natural dispersal." (Tab 62I at 11). The report proceeds to give evidence for and against each of those criteria, with no explicit resolution as to which applies to the PCFG. However, it appears that fears of extirpation without recolonization may have been the ultimate factor leading to the recommendation. (*Id*. at 11–14).

I am not persuaded the COSEWIC report constitutes the best available scientific evidence. I find the IWC Rangewide Workshops and the 2018 ENP SAR to be more thorough and better reasoned, and give them significantly more weight than the COSEWIC report. I also find AWI's argument that stock status should be conclusively determined before the hunt is allowed to proceed contrary to settled case law. Under existing precedent, NMFS may make decisions based on incomplete or imperfect information, as long as it relies on the best data currently available. *See Brower II*, 257 F.3d at 1070; *Greenpeace*, 55 F.Supp.2d at 1262. Scientists are continually collecting more data about the PCFG, including breeding habits, recruitment into and emigration out of the group, and genetic data, but none of the available

evidence indicates the PCFG will warrant designation as a separate stock in the near term, if ever. NMFS cannot be expected to delay this proceeding indefinitely due to a possible—but by no means certain—future change in stock status.

Finally, Mr. Schubert alleged NMFS is refusing to designate the PCFG as a stock because if it did so, it would not be able to bring this waiver proceeding. I find no evidence of such an improper motive. The NMFS workshop on stock structure involved a task force of eight agency experts, as well as a number of other agency scientists and personnel. The participants reached a similar conclusion to that of the IWC. The record contains no indication that either the IWC or the workshop participants purposely skewed their recommendations to favor the Makah Tribe, and I consequently dismiss this argument.

2. Regardless of Origin, NMFS Appropriately Considers the WNP a Separate Stock

The Makah Tribe also raised stock identification issues relating to the WNP stock of gray whales. While the waiver request was pending, scientists discovered that WNP gray whales occasionally migrate south from the Arctic feeding grounds with the ENP stock, posing a potential risk of taking a WNP during the hunt. *See* (Tab 3 at ¶ 34). The Makah Tribe aimed to show:

> western gray whales that migrate from Sakhalin Island off Russia to North America and may be affected by the proposed hunt are different from the isolated historic western gray whales that remain listed under the ESA. Therefore, while the probability of a Makah hunt encountering a whale migrating from Sakhalin Island is extremely low, there is no risk of encountering a member of the historic western gray whale population, *i.e.*, the gray whales that remained listed as endangered under the ESA when the ENP stock was delisted in 1994, *see* 59 Fed. Reg. 31094 (June 16, 1994), because this population – if it still exists – migrates solely along the coast of Asia.

(Tab 112 at 62). The Tribe does not argue against the protective measures NMFS proposes to limit the risk to these whales, but rather says they are not part of a depleted population for purposes of the MMPA.

The 2018 Western North Pacific Stock Assessment Report, poses two hypotheses about the evolution of the WNP, which were developed using all available data sources including photo-identification, genetic sampling, and tagging studies. (Tab 59B; Tab 102 at 46:14–47:4 (Weller)). The first hypothesis is that the historic Western Breeding Stock is extinct, and the whales that currently feed off Sakhalin Island and the Chukchi Peninsula are a western feeding aggregation of the ENP stock. (*Id.* at 48:1–6). The second hypothesis is that the historic Western Breeding Stock is extant (i.e. has currently living members), and the whales feeding off Sakhalin and Chukotka are composed of both that stock and the Eastern Breeding Stock. (Tab 22 at 5-10). The IWC Scientific Committee has recognized each of these hypotheses as plausible. (*Id.*; Tab 80B at 41; *see also* Tab 102 at 46–53 (Weller)).

There are statistically significant genetic differences between eastern and western gray whales, which Dr. Bickham finds surprising given the degree of intermixing between the two populations during the migration and mating season. (Tab 22 at 14). The evidence is contradictory, with some indicating that western gray whales are a distinct population and other evidence suggesting gene flow with the eastern gray whale population. (*Id*. at 15). The differences in mtDNA haplotypes can also be explained either by the long-term isolation expected of distinct stocks, or by "a recent founder effect such as a small group of EGW colonizing a new habitat, or the result of genetic drift in a small, isolated population of EGWs."[22]

[22] Dr. Bickham refers to Eastern Gray Whales (EGWs) rather than using NMFS's terminology, ENPs.

(*Id*.). Dr. Bickham concluded the type of differences are more consistent with the latter explanation. (*Id*.).

He also discussed a population model by Cooke et al. (2017), which assumes there are two feeding populations of western gray whales in Sakhalin and Kamchatka, and two breeding populations, one which migrates to Mexico and the other which migrates to an unknown wintering area in Asia. (*Id*. at 15). These populations may or may not be genetically closed. (*Id*.) Based on this and other studies showing admixture of stocks in the Sakhalin population, Dr. Bickham finds it most plausible that the historical western gray whale population is extinct and the current western stock descended from the ENP population. (*Id*. at 17-19). However, under any of these scenarios, NOAA has the ability to designate a particular group as a population stock under the MMPA.

Dr. Bickham testified, both in the report accompanying his Declaration and also at the hearing, that he believes at least some interbreeding occurs between the eastern and western stocks, and the group's ancestry is a key factor in its evolutionary importance. However, while he made a convincing argument that there is uncertainty about the origins of the WNP stock, the best available scientific evidence is that these animals are distinct from the ENP stock as a whole. Dr. Bickham's evidence establishes the significant uncertainty about the composition of the group NMFS calls the WNP stock. As with the PCFG, I recognize researchers are constantly adding to the body of scientific evidence and may someday develop a fuller understanding of the WNP that could differ in important ways from the current science. Nevertheless, for purposes of this proceeding, I find NMFS's determination that the WNP are a discrete stock to be sufficiently supported by the scientific evidence, and will thus proceed with an analysis and recommendation on the waiver and regulations.

V. THE PARTIES' ARGUMENTS AND PUBLIC COMMENTS

I next turn to the various positions parties and commenters have put forth in this proceeding. Under the MMPA and the procedural regulations at 50 C.F.R. § 228.19(b), the parties were allowed to submit proposed findings of fact, proposed conclusions of law, and argument in support of their positions. All parties except Ms. McCarty filed closing briefs in accordance with the parameters agreed to at the end of the hearing. The procedural rules also required a public comment period, during which non-parties could submit their thoughts regarding the appropriateness of the proposed waiver and regulations. This occurred from January 29, 2020 through March 16, 2020, following publication of the hearing transcript in the electronic reading room.

Below is a brief summary of each party's major arguments for or against the proposed waiver and regulations. Each of these arguments will be addressed on its merits later in the decision, but a synopsis here provides important context for understanding the forthcoming analysis. I will also summarize the public comments received in this proceeding, and provide a brief response to certain substantive comments.

A. NMFS's Arguments

NMFS argues its proposed waiver, found at Tab 90B, meets all the applicable legal standards and should be granted. Further, NMFS states it consulted with the MMC as required, and "the world's leading experts on gray whales at NMFS, the IWC, and the Commission" all reviewed the proposal and determined it was based on the best available scientific evidence. (Tab 117 at 26). Throughout the waiver process, NMFS thoroughly evaluated the biological factors of distribution, abundance, breeding habits, and timing and lines of migratory movement and designed the regulations to minimize adverse impacts to the ENP stock, as required by the

MMPA. (*Id.* at 27–28.) NMFS also argues that the testimony of certain witnesses, including Carrie Newell, Dr. Stella Villegas-Amtmann, and DJ Schubert, is either not relevant to the questions at hand or does not reflect the best available scientific evidence.

Likewise, NMFS believes its proposed regulations properly consider all the aspects the MMPA requires. NMFS avers it considered existing and future levels of marine mammal species and population stocks, international treaty and agreement obligations, the marine ecosystem and related environmental considerations, fishery resources, the economic and technological feasibility of implementation, and the risks to WNP gray whales. (Tab 117 at 40–45). Thus, NMFS urges issuance of the proposed waiver and regulations.

B. The MMC's Arguments

The MMC believes the proposed rule largely satisfies the MMPA's requirements and "takes a balanced approach to accommodating the Makah Tribe's request while trying to avoid adverse impacts not only on the target population, but also on a depleted stock that occurs seasonally at low numbers in the hunting area, and a localized feeding group that spends much of its time in the waters between northern California and northern Vancouver Island." (Tab 114 at 2, 12). The MMC recommends, however, that NMFS make certain modifications to the proposed regulations to enhance protections for the WNP stock and the PCFG.

Specifically, the MMC proposes 1) adding a contingency provision that triggers suspension of whaling if the PCFG is determined to be a stock, until authorization to take PCFG whales is issued; 2) adding a "dimmer switch" provision that incrementally decreases the number of allowable strikes if there is evidence that PCFG abundance is decreasing, rather than continuing to allow hunting until the abundance estimate drops to 192 whales; 3) making the regulations, or any permit thereunder, contingent on the Makah Tribe securing authorization

under other provisions of the MMPA for incidental, non-lethal take of WNP gray whales; and 4) including a population floor below which hunting would be suspended, which would require NMFS to calculate a new estimate of the ENP's maximum net productivity level. (Tab 114 at 22, 26, 28–29).

The MMC also noted that restrictions on the Makah Tribe's use of whale products do not fall within the MMPA's waiver provisions. Instead, such restrictions are related to the IWC's definition of aboriginal subsistence whaling. Nevertheless, the "MMC supports adoption of regulations that accommodate to the greatest extent allowable the uses sought by the Tribe, provided that they are consistent with the IWC requirements." (Tab 114 at 29).

C. The Makah Tribe's Arguments

The Makah Tribe argues that whaling has significant cultural, spiritual, and historical significance, as evidenced by the whaling rights the Makah Tribe secured in the Treaty of Neah Bay. "Makah whaling includes a constellation of practices including ritual preparations and ceremonies, songs and dances, artistic representations, marriage practices, family titles, place names, potlatches and feasts, oral histories, authority and governance, and trade, among others." (Tab 112 at 5–6). The Makah Tribe argues that its voluntary cessation of whaling in the early 20th century was always intended to be temporary, and did not affect their relationship with whales and whaling. Furthermore, the Makah Tribe avers its treaty right "remains valid federal law because Congress has never abrogated it," and the treaty is a federal law of equal legal standing with the MMPA (*Id.* at 18–19). Thus, any conflicts between the Treaty of Neah Bay and the MMPA should be harmonized to the greatest extent possible. (*Id.* at 19).

The Makah Tribe also argues that the Ninth Circuit's holding in *Anderson* did not balance their hunting rights against the right of citizens to use whales for non-consumptive purposes such

as scientific research and whale watching, a so-called "co-tenancy." Such a reading would negate the Tribe's treaty rights entirely, which is contrary to the treaty signers' interpretation. (Tab 112 at 29).Rather, *Anderson* held that following the strictures of the MMPA in determining if whales were available for harvest and crafting a hunt plan would safeguard those non-consumptive uses. (*Id.* at 28).

Next, the Makah Tribe mainly agrees with NMFS's determinations regarding the waiver. It argues that the best available scientific evidence shows the PCFG is not a population stock, and disagrees with parties who believe the stock status should be conclusively determined before a waiver is approved. (*Id.* at 31).

Further, the Makah Tribe generally supports NMFS's methodology in drafting regulations, though it disagrees with some of the restrictions NMFS originally placed on the use of whale products. Consequently, the Tribe supports the modifications NMFS proposed in its Motion Requesting Revisions to Proposed Regulations. (Tab 112 at 66, 68–69; *see also* Tab 91 at 8).

D. AWI's Arguments

AWI's position is that the whaling rights the Makah Tribe secured in the Treaty of Neah Bay are secondary to conservation concerns, provided the restrictions placed on whaling are nondiscriminatory. (Tab 115 at 28–30). AWI believes here, the moratorium on whaling is necessary to preserve the species, and NMFS has not met the MMPA's criteria for issuing a waiver. AWI takes the position that, since there is some likelihood a WNP whale will be taken either through an approach, a training harpoon throw, or a successful or unsuccessful strike, NMFS is prohibited from issuing a waiver for the take of ENP gray whales.

AWI also takes issue with NMFS's interpretation of "take" under the MMPA, which by definition includes both lethal and non-lethal activities. NMFS determined that non-lethal activities do not comprise the "hunt," which it narrowly defines to include those activities which directly result in the killing, or attempt to kill, a gray whale. Thus, AWI contends NMFS does not consider approaches for training purposes to constitute "hunting," which contravenes the MMPA. AWI also argues that all approaches, training activities, pursuit and killing of a whale are a "take" and intentional, rather than accidental, actions. Thus, they "cannot be authorized pursuant to an incidental take authorization for any reason whatsoever. They have to be authorized, if at all, pursuant to a waiver of the moratorium." (Tab 115 at 35). Thus, AWI believes the likelihood of encountering or striking a WNP prohibits issuance of the waiver.

In addition to its arguments regarding WNP gray whales, AWI also contends that the best available scientific evidence shows the PCFG should be designated as a separate stock, and the waiver criteria has not been met for PCFG whales. AWI also argues that the IWC's criteria for identifying and managing stocks is different than NMFS's criteria under the MMPA, and therefore any reliance on the IWC's determinations is misplaced. (*Id.* at 68).

Finally, AWI argues that issuing a waiver for a species undergoing a UME would "violate the intent and spirit of the MMPA." (*Id.* at 71). AWI particularly focuses on the PCFG, saying the UME poses special danger because of the group's small size. AWI believes the waiver process should be delayed until more information about the UME is available, and because this process has already taken more than fifteen years, such delay "would constitute only a modest delay of the overall process" and would allow NMFS to make a fully informed decision on the basis of current information. (*Id.* at 72).

AWI spends a substantial part of its brief arguing against the issuance of a hunt permit, but as discussed later in this Recommended Decision, permitting is a separate phase of the MMPA process and is not before me at this time.

E. Sea Shepherd's Arguments

Sea Shepherd incorporated by reference AWI's proposed findings of fact and conclusions of law, but focused its own arguments largely on issues impacting the PCFG. Sea Shepherd argues that the loss of PCFG females is particularly deleterious because mothers teach calves feeding behaviors, techniques, and locations, and the aggregation is primarily maintained through internal recruitment. (Tab 116 at 1–2). Because PCFG whales are accustomed to boats in close proximity and spend substantial amounts of time close to shore, Sea Shepherd contends they are particularly at risk during the proposed hunts. Sea Shepherd believes that the loss of even a single PCFG female would result in a multi-generational impact on the aggregation, and there is a high likelihood that females will be taken because they cannot be positively identified prior to a strike.

Sea Shepherd also argues that non-lethal activities such as attempted strikes, training approaches, and training harpoon throws would have an adverse effect on gray whale health and behavior, and NMFS did not adequately consider these effects. Sea Shepherd contends these activities would have a particularly severe effect on reproduction levels, since gray whale females would be required to expend additional energy evading hunters during a short feeding season where they must acquire almost all the energy needed to migrate and reproduce.

Finally, Sea Shepherd advances the argument that the Ninth Circuit's *Anderson* decision created a "co-tenancy" in the use of gray whales, and allowing the hunt would deprive other citizens, such as researchers and whale watchers, of their right to use those animals. (Tab 93 at

10–12). In particular, Sea Shepherd asserts its witness, Ms. Newell, could suffer economic harm if her whale watching business is disrupted due to the hunt. (*Id.* at 11).

F. PCPW's Arguments

PCPW argues that allowing the Makah Tribe to hunt "into perpetuity . . . guarantees inevitable and cumulative harms to local whales and the local ecosystem." (Tab 113 at 1). PCPW posits the UME is being caused by climate change, and believes a low-abundance trigger is a better method of determining whether NMFS can issue a hunt permit because using carrying capacity to determine OSP will therefore always show the ENP as "robust" and "healthy" even if the population falls. (*Id.* at 3). In addition to its concern for the whales, PCPW also raises issues regarding the safety of hikers and campers in the Olympic National Park who might be present near the shore when hunts occur.

PCPW contends the genetic differences between the ENP and PCFG are more significant than NMFS has determined, and NMFS failed to properly consider the proposed hunt's likely effect on the "Salish Sea Ecosystem," particularly because "depletion of PCFG whales on the coast equals depletion in the Strait [of Juan de Fuca]." (*Id.* at 4). PCPW believes that considering the effects on the California Current ecosystem is insufficient under *Anderson*'*s* mandate to look at local effects. (*Id.* at 11). It urges a pause in these proceedings until research conclusively shows whether the PCFG is a separate stock. (*Id.* at 5).

Bystander safety is also a major concern for PCPW. It urges adoption of an offshore hunt, which would be safer for bystanders, and contends NMFS has not communicated to Olympic National Park administrators about the proposed hunt. (*Id.* at 5). PCPW believes the use of a .50 caliber firearm within 5 miles of shore presents unacceptable risks to human safety and the regulations do not adequately account for these risks. (*Id.* at 13–14).

PCPW also raises a number of issues that are not properly before me in this rulemaking proceeding, such as the adequacy of the DEIS and whether the IWC's decision to grant an aboriginal subsistence whaling quota was proper. (*Id.* at 2–3). PCPW clearly believes the Makah Tribe has been unduly influential over NMFS during the decision-making process.

G. Public Comments

Under the procedural rules for an MMPA formal rulemaking, parties and other interested persons are allowed to submit comments on the proposed rule. While the hearing official is required to consider these comments, they are not considered evidence. Further, the timing of the submission period meant the parties did not have the opportunity to respond to all comments in their closing briefs. Thus, to the extent public comments meaningfully contribute to the issues raised at the hearing, I will address those issues. However, I do not find it appropriate to adjudicate any new issues raised in the public comments that were not included on the final agenda for the hearing. (*See* Tab 90E).

We received 178 comments during the public comment period. (Tab 111A). Approximately 60 percent of the comments voiced opposition to the waiver, while 40 percent supported it. Most comments in favor of the waiver cited the Makah Tribe's traditions and treaty rights. Those opposed generally expressed concern for the health and well-being of gray whales and/or believe whale hunting is cruel and no longer relevant or necessary for the Makah people. However, only a few comments presented any substantive analysis of the legal requirements for granting a waiver or the adequacy of the regulations, and therefore warrant additional discussion.

The Marine Mammal Conservation Society of Mexico (COMARINO) submitted a comment in which it raised a number of issues. (Tab 111A at 197). First, it parsed the term "aboriginal subsistence whaling" and concluded the Makah Tribe's hunt should not qualify for

an aboriginal subsistence whaling exemption because its members have a relatively high standard of living and have largely assimilated into modern American society, have not continually depended on whale meat for sustenance, and have other available food sources. (*Id.* at 203–53). COMARINO also asserts that the Mexican Senate pronounced against the proposed Makah hunt. (*Id.* at 253–59). Next, COMARINO argues that whale watching in the gray whales' wintering grounds has important economic benefits for the Mexican people, which could be adversely affected by the hunt. (*Id.* at 259–60). Finally, COMARINO raises bioethical concerns including whales' cognitive ability and ability to feel pain and concludes, "[f]rom the bioethics point of view, it is wrong in all senses to kill whales in the situation of the request of Makah Tribe." (*Id*. at 260–63).

In response to this comment, I note that the MMPA does not require a proposed take to be an "aboriginal subsistence hunt" in order to qualify for a waiver under 16 U.S.C. § 1371(a)(3)(A). Rather, the issue of aboriginal subsistence hunting is one for the IWC. Thus, any arguments about the Makah's subsistence need for whales is properly directed to the IWC, not to NMFS. Though obtaining a catch limit for use by the Makah Tribe was a prerequisite to this proceeding, the IWC's deliberations and determinations on the propriety of such a catch limit are not at issue here.

Next, I acknowledge that granting the waiver may have diplomatic implications. The MMPA requires NMFS to consider the effect of its regulations on "existing international treaty and agreement obligations of the United States," and I will bear this in mind during my discussion of the proposed regulations. 16 U.S.C. § 1374(b)(2). Lastly, the MMPA does not require a separate contemplation of bioethical issues, but some of these issues may factor into the Secretary's assurance that the waiver and regulations comport with the goals of the MMPA as

they pertain to the functioning of marine mammals within their ecosystem. To the extent the issues COMARINO raised are relevant, they will form part of that discussion.

Next, Donald C. Baur submitted a comment requesting a stay in the proceeding until NMFS publishes a DSEIS. (Tab 111A at 349). As discussed above, I have already ruled on this issue. Mr. Baur's comment and attached letter does not present any substantive new arguments beyond those I already considered in my Order Denying Request for Stay. (Tab 118). I take note of his request, but decline to revisit the issue.

Tara Sweeney, Assistant Secretary – Indian Affairs for the Department of Interior, submitted a comment[23] strongly supporting the Tribe's treaty right to take whales and encouraging NMFS to grant the waiver. (Tab 111A at 369). Likewise, the Northwest Indian Fisheries Commission submitted a comment urging adoption of the proposed waiver and regulations on the basis of the Treaty. (*Id.* at 385). As discussed above, the Ninth Circuit held that the Makah Tribe's proposed hunt must comply with the MMPA, notwithstanding its treaty rights, and acknowledged the possibility that NMFS would weigh the treaty rights in deciding whether to bring a waiver proceeding. NMFS has done so. (Tab 101 at 39:9–11 (Yates) ("Absent [the Makah's] treaty right and absent that quota from the International Whaling Commission, we would not be moving forward with a MMPA waiver for gray whales."). The remaining issues for decision are prescribed by statute, and do not include consideration of the treaty rights.

Dr. Jim Darling, a biologist whose previous studies have been cited by parties in this proceeding, submitted a comment regarding his research experience, conclusions, and examples from a forthcoming study which he is currently compiling. (Tab 111A at 711). He did not intend his comment to be construed as advocacy for or against the proposed hunt, but rather as

[23] This duplicates an earlier ex parte comment, which is also included in the record. (Tab 83).

supplemental scientific information and interpretation. (*Id.* at 713). Most of his comments related to the PCFG (or, as he refers to them, the Pacific Coast Population or PCP).

Dr. Darling believed three things were missing from the testimony here. The first is a broader perspective on the species, which once existed worldwide but is now extant only in the Pacific. He does not believe the ENP population is as healthy and stable as NMFS concludes it is, and disputes that scientific understanding of gray whales is as "robust." (*Id*. at 714). Second, Dr. Darling is concerned that, despite the fact that the PCFG range crosses the international border between the United States and Canada, and PCFG whales spend the winter in Mexico, neither country appears to have been included in the process of developing the waiver and regulations. He also discusses the divergence between NMFS's interpretation of stock structure and that of COSEWIC, calling the Canadian proposal "thorough and robust" and characterizing NMFS as "continu[ing] to resist" designating the PCFG as a distinct management unit or stock. (*Id.* at 714–15). He fears that this will lead to international controversy. Third, Dr. Darling fears economic harm to the whale watch industry, which I consider as relating to the conservation, development, and utilization of fisheries resources.

To the extent they are relevant, I have taken these comments into account when considering whether the proposed waiver should be granted and whether the proposed regulations should be promulgated. I now turn to the substantive discussion of the merits of NMFS's proposed waiver.

VI. ANALYSIS AND DISCUSSION: THE PROPOSED WAIVER MEETS THE CRITERIA OF THE MMPA

Under Section 1731 of the MMPA, the decision to grant a waiver must be based on the best scientific evidence available, made in consultation with the MMC, and give due regard to the distribution, abundance, breeding habits, and times and lines of migratory movements of the

marine mammal stock subject to the waiver. 16 U.S.C. § 1371(a)(3)(A). NMFS must also be assured the taking is "in accord with sound principles of resource protection and conservation as provided in the purposes and policies" of the MMPA. *Id.* One principle of resource protection and conservation is that marine mammal species and stocks "should not be permitted to diminish beyond the point at which they cease to be a significant functioning element of the ecosystem of which they are a part" and therefore the numbers should not be allowed to drop below the OSP. 16 U.S.C. § 1361(2). The MMPA also provides that the primary objective should be to maintain the health and stability of the marine ecosystem, and "whenever consistent with this primary objective, it should be the goal to obtain an optimum sustainable population keeping in mind the carrying capacity of the habitat." 16 U.S.C. § 1361(6).

As discussed above, I determined the consultation requirement was met. I next turn to the remaining factors: the stock's distribution, abundance, breeding and migration habits, the health and stability of the marine ecosystem, and the resiliency of the stock. Each of these involves a fact-specific analysis to weigh whether the evidence NMFS relied on is more or less persuasive than contrary evidence, and to determine whether the waiver meets the goals and principles of the MMPA.

A. NMFS Gave Due Regard to the Statutorily Enumerated Biological Factors

The MMPA requires NMFS to consider four biological characteristics of the marine stock subject to the proposed waiver: the stock's distribution, abundance, breeding habits, and times and lines of migratory movement. 16 U.S.C. § 1731(a)(3)(A). As I noted in my Order Granting in Part and Denying in Part Motions in Limine and Requests to Modify the Final Agenda, the MMPA does not specifically require NMFS to consider these four factors as applied to any stock not subject to the waiver. However, it does mandate NMFS to separately consider

the health and stability of the marine ecosystem and the functioning of marine mammals within their ecosystem (see subsection E of this part). (*See* Tab 84). These other considerations may encompass the waiver's effect on other species and stocks.

In addition, the statute does not require consideration on the proposed waiver's effects on smaller groups within a stock. Here, all parties acknowledge that PCFG whales are somewhat more likely than non-PCFG whales to be hunted over the course of the waiver, due to the timing of the hunts and proximity to the Makah U&A throughout the feeding season. Though not mandated under the MMPA, NMFS has taken the additional step of considering the waiver's possible effect on the PCFG and including management strategies to mitigate some of those effects. Therefore, I will also discuss here any particular issues raised that affect the PCFG but not the ENP stock at large.

I consider the 2015 DEIS and the 2019 *Biological Report*, along with the declarations of agency officials, to be the primary documents explaining what scientific evidence NMFS relied on when developing the proposed waiver and regulations.[24] In the *Biological Report*, NMFS specifically discussed each of the statutorily-mandated biological factors, the underlying scientific literature, and the conclusions the agency drew from the available evidence. (Tab 1H). Likewise, the following sections will focus on these four factors in turn.

1. Distribution

The biological range of a species is the geographical area where a species can be found, and distribution is the general structure of the species' population within that range. Distribution

[24] I have also reviewed the dozens of supporting exhibits, including scientific studies and other scientific literature cited by the various witnesses, to ensure it corresponds to the testimony. Therefore, even if a particular study or article is not cited directly in this Recommended Decision, the reader should understand it to be incorporated through its use in a report, declaration, or testimony.

patterns may change for many reasons, including by season, in response to the availability of resources such as food and shelter, and in response to pressure by humans. For migratory species, such as gray whales, scientists often use terms to designate the range at particular points in the migration, such as summer range and winter range.

The following discussion is based on the best scientific evidence available regarding the distribution of the ENP stock as a whole; how PCFG distribution varies from the rest of the stock during the feeding season; and the potential effects of the hunt on both ENPs generally and on PCFGs.

a. ENP Generally

ENP gray whales' customary range is along the west coast of North America, between a summer range in the Chukchi and Bering Seas and a winter range in the Gulf of California and off the Baja California Peninsula in northwestern Mexico. (Tab 52C at 2; Tab 3 at ¶ 12; Tab 1H at 5, Tab 2K). Most of these whales forage for food north of the Aleutian Islands, though large numbers have been reported near Kodiak Island and elsewhere in southeast Alaska during the earlier part of the feeding season. (Tab 90F at 3-69; Tab 52C at 2–3; Tab 1H at 6). However, most ENP whales arrive in the Bering Strait by the end of May and proceed to feed in the Canadian Beaufort Sea, Eastern Siberian Sea, and Chukchi Sea, along the northern and southern coasts of Alaska and the Chukotkan Peninsula. (Tab 1H at 6–7).

Prey availability is a primary factor in the summer distribution of ENP gray whales, and the stock's population growth has potentially led to an expansion in the feeding grounds as more individuals forage for food. (Tab 1H at 7; Tab 21C at M-0217; Tab 105 at 74:14–75:14, 76:13–77:14, 195: 17-20). The northern range of ENP gray whales has shifted over time, from primarily the northern Bering and southern Chukchi Sea in the late 1970s and early 1980s to areas north of

the Bering Strait and St. Lawrence Island in more recent years. (*Id.*). Gray whales do not stay in one particular feeding area throughout the summer season, but instead move extensively throughout the range. (*Id.*).

In the winter, most ENP gray whales are found in waters near the Baja California Peninsula and the Gulf of California. (Tab 1H at 8). However, they range as far north as central California and as far south as Cabo San Lucas. (Tab 1H at 12). Pregnant females often use the interiors of lagoons, or lagoon nurseries, to produce calves, while single whales without calves tend to occupy lagoon inlets and coastal waters. (*Id.*). As during the summer, the whales do not remain static, but move between lagoons and along the coast. (*Id.*).

Although the ENP's general distribution throughout its migratory range is well-settled, the scientific evidence does show some flexibility in the extent of the range and the amount of time the whales spend in the feeding and wintering grounds. In particular, some whales have expanded their Arctic feeding grounds northward and the onset of the southbound migration appears to have shifted at least a week later than it was in previous decades. Also, some whales are sighted wintering off the California coast, around Carmel and the Channel Islands, rather than in Mexican waters. (Tab 1H at 7, 19). These shifts may merit further study by marine mammal scientists. Some researchers hypothesize these changes may stem, at least in part, from climate change and resultant changes in prey availability. (Tab 1H at 7). Nevertheless, NMFS's consideration of this factor with respect to the ENP population as a whole appears to be based on the best available scientific evidence at this time.

b. PCFG

PCFG gray whales spend the winter season in the same areas as the rest of the ENP stock, but do not make a full northward migration to the Aleutian Islands and Alaskan Peninsula in the

spring. Instead, they spend the summer feeding season along the coast of northern California, Oregon, Washington, and British Columbia. (Tab 1H at 5, 8). However, PCFG whales may also spend part of their time, or even entire feeding seasons, in Kodiak and Southeast Alaska. (Tab 96 at 8). While feeding, PCFG generally spend more time near the shore than other members of the ENP stock. (Tab 101 at 99:2–4).

In order for a whale to be designated as part of the PCFG, it must be identified as being in the PCFG range between April 1 and November 30 of two consecutive years. Since 1998, NMFS has, in collaboration with Cascadia Research Collective, the Makah Tribe, and other researchers, engaged in photo-identification of whales who spend the summer and autumn feeding season in the PCFG range. According to Cascadia Research Collective, two main groups of whales utilize the Pacific Northwest coast as their feeding grounds: one group that returns to the region in subsequent years and is likely to revisit preferred areas in the region, and another group that is transient and seen for shorter periods, in limited areas, and during only one season. (Tab 96 at 11; *see also* Tab 1H at 5). NMFS concluded from the data, "[t]he extensive inter-year movement of whales partially explains the gaps in the observations for some whales and the disappearance of others from the PCFG. It appears that many whales are only part of the PCFG temporarily." (Tab 1H at 9). Cascadia Research Collective recently published an update of their previous studies, which are considered among the best available scientific evidence regarding PCFG whales. Regarding seasonal sighting patterns, the update stated that whales have been seen in the PCFG area every month of the year, but very few sightings occur from December through February. (Tab 96 at 6). There is also an apparent gap between whales seen migrating north in May and whales seen in June, which are more likely to be PCFG. (*Id.*).

The parties discussed the issue of PCFG site fidelity extensively during this proceeding, specifically whether PCFG whales show fidelity to the summer feeding range in general or whether they also have fidelity to particular areas within that range. According to the witnesses who testified on behalf of NMFS and the Makah Tribe, while it is common for PCFG whales to feed in the same areas year after year, they also move throughout the entire summer range rather than remaining at one site for the entire season. (Tab 96 at 8; Tab 101 at 71:4–10 (Yates); Tab 102 at 75:17–23 (Weller); Tab 102 at 69:11–14 (Scordino)). Mr. Scordino wrote in his declaration, "it 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), and no scientist has suggested that the various gray whales found within the Makah U&A over time comprise a discrete stock or group." (Tab 21A at 42).

In contrast, Ms. Newell testified that the whales she observes have a strong fidelity to the Depoe Bay area, and Ms. Owens argued that certain whales also display fidelity to the small Makah U&A region. Ms. Newell testified extensively at the hearing about particular whales she observes for long periods of time each summer, and which return year after year. (*See generally* Tabs 104 at 116 through Tab 105 at 108; *see also* Tab 97). She believes some of their preferred feeding sites are as small as two square miles or as large as ten. (Tab 104 at 148:8–21). However, Ms. Newell's testimony does not constitute the best available scientific evidence. She relied mainly on her own observation but did not analyze the information using scientifically accepted methodologies. Even accepted at face value, it does not contradict the best evidence available, which is that some individual PCFGs may show stronger fidelity to certain sites than others, but most show range-wide fidelity.

Ms. Owens referred to the "33 whales of Clallam County," a group of whales she believes have fidelity to the Makah U&A. (*See* Tab 28 at 3; Tab 51 at 8; Tab 51A at 3). She also asserted that only five reproductive females use the Makah U&A each year. (Tab 28 at 10). However, these assertions are not based on scientific evidence, as the data show 33 is merely the average number of whales using the Makah U&A in a single year, and 77 living PCFG whales have actually been photographically identified feeding in the area. (Tab 60 at ¶ 20; Tab 56 at 3–4). Because not all the whales are identified, the best currently-available estimate is that approximately 105 PCFG whales use the area at one time or another. (Tab 56 at 3–4). The average Ms. Owens used is also out of date, as more recent studies show an average of 37 whales in the area each year from 1996-2015. (*Id.* at 4) These whales do not form a discrete group or pod, as the sighting history shows a mixture of different individuals in the area each year. (*Id*.). The basis for Ms. Owens' calculation of the number of reproductive females in the Makah U&A is also unclear, as at least 33 known reproductive PCFG females have been sighted in the U&A at various times. (*Id*. at 5–6; Tab 60 at ¶ 20).

The best scientific evidence available for review in this matter strongly supports NMFS's conclusion that PCFG gray whales display fidelity to their summer/fall range during the feeding season, while moving throughout the range and even outside it at will. This data, consisting of observations and tagging studies, shows most PCFG members travel throughout the range, and even beyond the bounds of the range, during the feeding season. Some individuals display a higher degree of localized site fidelity, but there are no scientifically rigorous studies showing this to be a common trait in the PCFG. I give less weight to anecdotal evidence about individual whales' preferences and more weight to the broad base of evidence showing PCFGs feed throughout the range in any given season.

c. Potential Effects of the Hunt on Distribution

Based on the evidence it considered, NMFS concluded the limited removal of 25 ENP whales over 10 years would have no detectable impact on the stock's long-term distribution patterns through the ENP range or its short-term distribution within the hunt area. (Tab 90B at 8–9; Tab 101 at 18:1–4 (Yates)). Dr. Weller testified about his decades of research activities, during which he noticed a highly variable reaction to research vessels, meaning some whales showed little to no response, some showed a middling response, and others had a direct response. (Tab 102 at 10:10–12). The response is often dependent on the manner in which the boat is operated, meaning scientists should approach any whale carefully and sensitively, closely monitoring any response. (*Id*. at 10:12–17). Biopsy and tagging activities, both of which involve piercing the whale's skin, also elicit responses ranging from a slight twitch to more dramatic actions such as breaching, chuffing, and moving away from the vessel. (*Id*. at 11:7–14). Dr. Moore also testified that certain types of disturbances would cause gray whales to respond by moving away from the source. (Tab 102 at 152:7–12).

In Dr. Weller's opinion, non-lethal hunt activities, particularly approaches, would not have a significantly different effect on whales than these research activities and would "be ephemeral and short-term in nature." (Tab 102 at 13:13–17; *see also* Tab 103 at 73:1–10 (Scordino)). This is because whales can easily move away from the disturbance. In his opinion, unsuccessful strikes are likely to elicit a greater response than approaches, including a startle response, chuffing, rapid ventilation, fast swimming away from the vessel, and possibly breaching. (*Id*.at 14:12–17). However, he believes any impacts on a whale's physical fitness would be small and easy to recover from. (*Id*. at 14:20–25). He also said the effects on the PCFG would be the same as on the ENP as a whole.

Mr. Scordino largely agreed with Dr. Weller's conclusions, based on his own observances of the unpermitted 2007 hunt by five Makah members and his experiences conducting biopsies of gray whales since 2003. (Tab 21A at 27–29; Tab 103 at 70:24–72:24). Ms. Newell also wrote in her declaration that many PCFG whales in the Depoe Bay area have become accustomed to commercial and recreational vessel traffic in and around their feeding grounds. (Tab 64 at ¶¶ 16-17). While she did not intend this argument to bolster NMFS's position—rather, she was pointing out how susceptible PCFGs are to being hunted—her observations tend to support the data showing that approaches on PCFG gray whales are unlikely to cause a shift in distribution.

Ms. Newell also testified about the strong responses she observed in some biopsied whales, who left the area where the biopsy occurred. (Tab 64 at ¶ 24). Mr. Scordino, who partnered with her on the biopsies, did not interpret the data the same way. He said the study occurred in October, when whales generally begin leaving the area anyway, and when he surveyed the area the following day without Ms. Newell, he did see many of the same whales they biopsied. (Tab 103 at 74:2–15). Ms. Newell also testified about an isolated incident in which a whale left the area after a research vessel collected fecal samples, as evidence of whale behavior after a disturbance. (Tab 64 at ¶ 23; Tab 104 at 180:18–181:5). In contrast, Mr. Scordino hypothesized the whale may have depleted the prey in its immediate feeding area and moved on to another feeding site, but said the true reason the whale left the area is still unknown. (Tab 103 at 74:18–75:10). Moreover, the researcher who collected the sample told Mr. Scordino that this was the only strong reactions she observed in more than 200 collections. (Tab 103 at 75:13–22).

Mr. Scordino also testified that the data on gray whales in the Chukchi Sea show no functional response to hunting, despite the fact the Chukotkans currently hunt there. While individual whales may respond to the disturbances, at a stock level there is no change in overall patterns of distribution. (Tab 103 at 90:9–23). Mr. Scordino does not expect any change in gray whale distribution in the Makah U&A as a result of the hunt. (Tab 103 at 48:21–24). Relying on studies of the Chukotkan hunt, where the native people have landed 100 or more whales per year for over two decades, Mr. Scordino concluded the whales did not move further from shore in response to hunting activities; rather, the distribution remained fairly constant. (Tab 21A at 23–24). While there were changes to whale abundance during some years, these appeared linked to environmental conditions rather than hunting activity or number of whales harvested that year. (*Id.* at 24–26).

Dr. Villegas-Amtmann, testifying on behalf of Sea Shepherd, disagreed with Mr. Scordino, saying the studies Mr. Scordino relied on were conducted to assess whether the Chukotkan hunts complied with IWC goals for aboriginal subsistence whaling and were not designed to track shifts in distribution or abundance. (Tab 63 at ¶ 7). Moreover, the studies did not analyze whale behavior in response to hunting activities and did not track whether the same whales were seen in the area year-to-year. (*Id.*). She concluded the variations in whale distribution and abundance in the study area possibly resulted from hunt-related disturbances. (*Id.* at ¶¶ 7, 8). In rebuttal, Mr. Scordino agreed the studies did not track individual whales, but said they clearly showed that at a population level, the whales are consistently utilizing the Chukotkan hunt area year after year and remain a functional element of the ecosystem. (Tab 103 at 90:–23).

Dr. Villegas-Amtmann also expressed concern about the effects of the hunt on gray whale bioenergetics. Based on her own research, she hypothesized that the lack of functional response to hunting and research activities may be "due to the fact that the whales are not able to energetically afford such shifts while migrating," because the need to conserve energy in order to migrate and reproduce outweighs the risk of being hunted. (Tab 63 at ¶ 9).

While her studies demonstrated that energy loss of only 4% could affect reproduction in a given year, she was unable to predict the energy loss expected as a result of hunting activities. Nor was she able to predict whether gray whales who relocated due to such disturbances would recoup the energy expended with increased foraging.

I have considered all the evidence in the record regarding the potential effects of a hunt on the distribution of the ENP stock, and find the best available scientific evidence indicates no overall effect. In particular, I note that the hunt area comprises a very small portion of the ENP range: the entire Makah U&A is approximately 1% of the lineal distance of the ENP range as a whole, and the proposed hunt area is about 4% lineal range of the designated PCFG range. (Tab 101 at 17:17–21, 24:18–20 (Yates)). There is no evidence the hunt activities in this limited area will prevent the ENP stock of gray whales from maintaining their normal distribution, including the use of the area during migration, and indeed the majority of ENP individuals may never encounter a Makah hunter.

NMFS recognizes the "PCFG are part of the Eastern North Pacific stock, and clearly the range of these animals during the summer compromise part of the distribution. Additionally, we included that as a precautionary measure in the event that PCFG might be designated as a stock in the future." (Tab 101 at 25:10–14). There is no evidence the PCFG response to approaches, training, and hunting activities will differ from that of ENP whales generally.

Carrie Newell testified about her observations of gray whales in Depoe Bay, Oregon, but admitted her experience was geographically limited. (Tab 105 at 15:14–15). She testified that one PCFG whale, nicknamed Ginger, did not return to her regular feeding location in Depoe Bay after an encounter with a research vessel collecting fecal samples. On the basis of these observations, she believes non-lethal hunt activities could have a lasting effect on gray whale behavior and distribution in the PCFG range, including the Makah U&A. (Tab 64 at ¶¶ 22–24).

Dr. Weller disagreed with Ms. Newell's conclusion, testifying that PCFG mothers and calves are also regularly seen around southeast Alaska and Kodiak Island, which indicated to him that they are "behaviorially flexible." By this, he meant the whales feed on the type of prey abundant in the PCFG range, but they are fully capable of feeding on other prey in other areas. He did not believe this behavior indicated a "multi-generational transfer of knowledge." (Tab 102 at 25:17–26:8).

I have weighed Ms. Newell's anecdotal information against the other testimony and scientific studies in the record and find it does not sufficiently rebut NMFS's conclusions that the hunt is unlikely to significantly affect PCFG distribution. The hunt will likely have a small but temporary effect on PCFG in the immediate hunt area, which may cause some whales to move away from the Makah U&A in response to approaches, training activities, attempted strikes, and kills. However, the data do not show that these activities will cause PCFG to leave the range entirely, nor will it deter whales who temporarily relocate to other areas from eventually resuming feeding in the Makah U&A. In particular, Ms. Newell's testimony is that gray whales continue to feed in areas such as Depoe Bay, where they regularly encounter research, fishing, and whale watching boats.

Based on the best available scientific evidence, I find the hunt will not affect the overall distribution of the ENP gray whale stock, nor will it have a significant, lasting, or detrimental effect on the distribution of PCFG whales. I now turn to a discussion on abundance.

2. Abundance

The term abundance can refer to the number of individuals within a stock, or if speaking of relative abundance, to the evenness of distribution of individuals within the community. Animal populations may be considered either closed, meaning population changes are solely or primarily due to births and deaths within the population, or open, meaning the population also experiences immigration and emigration. (Tab 1H at 16). Since 1967, NMFS has measured gray whale abundance by systematic shore-based surveys using peer-reviewed methods accepted by the IWC and the IWC Scientific Committee. (Tab 1H at 14; Tab 1 at ¶ 21; Tab 102 at 17:12–19 (Weller)).

Other terms important in understanding stock abundance are carrying capacity, maximum net productivity level (MNPL), and optimum sustainable population (OSP). Carrying capacity is the abundance of animals the resources of the ecosystem can support at any given time. Capacity normally fluctuates year over year, and "a population that has grown to its carrying capacity has, in practice met the goals of the MMPA." (Tab 60 at ¶¶ 9, 10). MNPL is the population where productivity from natural birth and death processes is expected to be maximized.[25] (Tab 1 at ¶ 4; Tab 101 at 16:7–9 (Yates)). A stock's OSP is an estimate based on the range in population size between carrying capacity at the high end and MNPL at the low end. 50 C.F.R. § 216.3; *see also* 16 U.S.C § 1362(9).

[25] MNPL, the term used by NMFS, is functionally equivalent to the maximum sustainable yield level, the term used by the IWC. (Tab 23 at 13–14).

It is not unusual for scientists to lack sufficient data to calculate the OPS for a marine mammal stock, as "OSP assessments are best informed when we have data showing that a population starts in a highly depleted state, grows at its maximum potential rate for some time, and then displays slowing growth due to density dependence." (Tab 52D at ¶ 4). The only large cetacean stock for which NMFS has been able to complete a formal OSP assessment is the ENP stock. (*Id.*; *see also* Tab 23 at 10–11).

MMPA management strategies are largely focused on whether a stock is achieving or maintaining its OSP. (Tab 23 at 10–11). Because there is insufficient data available to determine OSP for most marine mammal stocks, the 1994 amendments to the MMPA introduced the concept of potential biological removal (PBR). (*Id*. at 12). PBR refers to the number of animals that may be removed from a population, not counting naturally occurring deaths, while still allowing the population to achieve or maintain its OSP. (Tab 101 at 91:2–6). Human-caused mortalities include those from ship strikes, hunting activity, entanglement in fishing gear, or lethal encounters with other debris. (*Id.* at 91:13–18). NMFS considers it a management concern if the human-caused mortality levels for a stock are greater than its PBR, but if they are less, they will not affect the stock's ability to attain or maintain its OSP. (*Id.* at 93:6–13). The PBR concept allows NMFS "to assess whether the OSP conservation management objective would be expected to be achieved given estimates of incidental mortality in commercial fisheries." (Tab 23 at 12).

Mr. Schubert argued that if there is no PBR for a stock, the stock is necessarily below its OSP. (Tab 32A at ¶ 20). However, Dr. Bettridge refuted this, saying "the lack of a PBR calculation for a stock does not mean that PBR for that stock is zero and does not imply a status relative to OSP." (Tab 59 at ¶ 3). Rather, NMFS may not be able to calculate a PBR if abundance

estimates are too uncertain, outdated, or unavailable, or if the minimum population estimate is unknown. *Id*.

Taking into account all the information set out above, I will consider the evidence regarding the abundance of the ENP stock as a whole, the PCFG, and the WNP stock. I will also consider the effects of the current UME on gray whales, to the extent data on this issue exist. Finally, I will consider whether the best scientific evidence available indicates the proposed hunt will have a deleterious effect on ENP abundance, or whether the stock is sufficiently resilient to withstand the number of takes allowed under the waiver.

a. ENP Generally

The 2018 SAR estimated the population of ENP gray whales to be 26,960. (Tab 54D at 3; *see also* Tab 101 at 90:20–21; Tab 1H at 13). While the population estimates are subject to a certain level of uncertainty, researchers believe with 95% certainty that the true abundance in 2015/2016 was between 24,000 and 30,000 whales. Most recently, the ENP stock is estimated at 85% of carrying capacity, with an 88% likelihood that the stock is above its MNPL. (*Id.*). The PBR for the ENP stock is 801 animals, and in 2018 the number of human-caused mortalities among the stock was estimated at 139 animals.[26] (Tab 101 at 91:9–11).

The data clearly show the ENP stock is within its OSP, and that human-caused mortalities are significantly lower than the PBR level. The best available science indicates it is likely the ENP stock is close to carrying capacity, which will fluctuate with changing environmental conditions. While parties opposing the waiver argued about the reasons for

[26] The 2018 PBR for the ENP stock takes into account the 126 whales taken by Chukotkan hunters that year. (*Id.* at 91:18–25). Under the most recent IWC quota for aboriginal subsistence hunting, 980 gray whales may be taken by Russia and the United States over seven years, which equates to 140 whales per year. Either country may yield their share of the quota to the other if it is unused. (*Id.* at 92:18–24). Consequently, regardless of whether the Makah hunt goes forward, the overall number of ENP whales taken under the IWC catch allowance is unlikely to be significantly affected.

fluctuations in carrying capacity and the significance thereof, no party presented scientific evidence directly challenging the numbers from the 2018 SAR or showing a strong likelihood that the numbers are inaccurate. I therefore find that the 2018 SAR contained the best available scientific evidence of the ENP stock's abundance at the time of the hearing.

b. PCFG

Although the PCFG is not a stock, NMFS nevertheless calculates an abundance estimate, a PBR, and an estimate of human-caused mortality for the group. (Tab 101 at 94:18–22). This is partly because it may someday merit stock designation, and partly because the waiver request generated significant interest in this group. (*Id.* at 95:1–13). Prior to the hearing in this matter, the most recent abundance estimate for PCFG whales was 243 animals. (*Id.* at 24:23–24). This number had been stable and increasing since 2002. (*Id.* at 25:2–3). However, an updated study released just prior to the hearing gave an abundance estimate of 232, slightly lower than prior estimates. (Tab 96 at 33). The PBR for the PCFG was previously estimated to be 3.5 whales per year, or 3.3 whales per year under the updated data. (Tab 101 at 100:16–18; Tab 96 at 11).

Although NMFS does not have to calculate an OSP for the PCFG because it is not a stock, NMFS did make attempts to reach a theoretical calculation but was unsuccessful because of uncertainties in the population arising from emigration and immigration rates, bycatch mortality, and recruitment. (Tab 61 at ¶ 3; Tab 23 at 19–26). It is more difficult to reach abundance estimates for open populations than for closed populations. (Tab 1H at 14, 16). The presence of transient ENP whales in the PCFG range, combined with varying PCFG behaviors in which they may either use the ENP range year after year or return only intermittently, and transit in and out of the PCFG range over the course of the feeding season or spend significant time at certain sites during a season, all present problems in population modeling. (*Id.* at 14; *see also*

Tab 96 at 4). For example, of the 793 whales sighted feeding in the PCFG range since 1977, only 362 were sighted more than once and therefore are considered to be part of the PCFG. The other whales were only sighted once and are not considered PCFG, though it is possible they were present in the area in other years but never observed. (Tab 21A at 32-35).

Additionally, the PCFG range is large and contains rugged, inaccessible coastline. Moreover, the quality of photographs varies and certain whales with less-distinctive markings may be difficult to match to whales included in the PCFG catalog. (*Id*. at 32–35). PCFG whales may also be undercounted because some feed north and south of the 41°N to 52°N boundaries. Some of those whales display behavioral patterns that are similar to known PCFG whales, but have not been observed in the PCFG range in two or more years and are therefore not cataloged as PCFG. (Tab 21A at 37). On the other hand, the surge in PCFG population during the 1999/2000 UME may have resulted from larger numbers of non-PCFG whales feeding in the PCFG range where they were not normally encountered. (Tab 52A at 6). Despite these difficulties, the photographic identification process is generally very accurate, and Cascadia Research Collective's catalog of PCFG gray whales is considered the best available scientific evidence regarding the individual members of the group and the basis for calculating PCFG abundance.

In addition to recruiting into the PCFG, whales also emigrate from the group. It is more common for whales to not return to the PCFG after one season than to permanently emigrate after spending more than one year in the group. (Tab 96 at 4; *see also* Tab 103 at 82:12–17 (Scordino)). The PCFG population has fluctuated but overall increased since 2004, likely connected to prey availability and varying distribution through the range. (Tab 103 at 37–41). Dr. Weller did not find the slight population drop in the most recent Calambokidis et al. estimate

significant, opining the difference "could be an artifact of sampling effort or variance within the estimate itself." (Tab 102 at 19:9–10). Likewise, the study's authors concluded, "recruitment appears to be offset by losses (either mortality or permanent emigration) as the abundance estimates have been fairly stable since 2002." (Tab 96 at 11).

Particularly with respect to PCFG abundance, it is clear the best available scientific evidence is "incomplete or imperfect." *See Brower II*, 257 F.3d at 1070. Currently, observation is the best data collection method available to scientists, but this method means there is significant and continuing uncertainty about abundance estimates, recruitment, and emigration from the group. Nevertheless, it is apparent NMFS relied on a wide range of credible scientific evidence when calculating PCFG abundance, and the contrary data do not rise to a level of scientific certainty that would be sufficient to rebut NMFS's conclusions about PCFG abundance.

c. 2019 UME

The MMPA defines a UME as "a stranding that—(A) is unexpected; (B) involves a significant die-off of any marine mammal population; and (C) demands immediate response." 16 U.S.C. § 1421h(6).[27] Such events can be important indicators of ocean health and larger environmental issues. (Tab 53F at ¶ 3). NMFS formally declares UMEs at the recommendation of the Working Group on Marine Mammal Unusual Mortality Events (Working Group). The Working Group is composed of experts in marine science, marine mammal science, marine mammal veterinary and husbandry practices, marine conservation, and medical science. 16 U.S.C. § 421c; Tab 53F at ¶ 4.

[27] The concept of a UME was introduced in the 1992 amendments to the MMPA. Although scientific data points to other gray whale die-offs prior to 1992 which could have been designated as UMEs, the only events that can formally be labeled as gray whale UMEs occurred in 1999/2000 and 2019 through the current date. (Tab 101 at 110:1–7).

NMFS requested a formal consultation with the Working Group on May 5, 2019, after elevated numbers of gray whales stranded along the west coast of North America. (Tab 53F at ¶ 9). The Working Group reviewed the request and, on its recommendation, NMFS formally declared a UME on May 26, 2019. (Tab 53F at ¶ 10 Tabs 53L, 53M, 53N). NMFS is working with partners in Canada and Mexico to review data, sample stranded whales, and determine what the next steps will be, a process likely to take months or even years. (*Id*. at ¶ 11). NMFS's research partners collect and analyze specimen samples; NMFS does not generally participate directly in this. (*Id*. at 106:13–107:1; 117:–118:25). NMFS automatically receives certain data from these partners but asks directly when it requires more detailed data. (*Id*. at 107:8–18).

Scientists do not know what is causing this UME. (Tab 101 at 20:18–19; Tab 53F; Tab 53N; Tab 60 at ¶ 5).While research is ongoing, they may never determine the cause, as was the case in the 1999-2000 UME. (*Id.* at 21:15–24). In other species, some UMEs have been linked to biotoxins, infectious diseases, ecological factors, and human interactions, but no cause was found for about half of all UMEs. (Tab 52A at 1). While some scientists hypothesized that the prior ENP UME resulted from prey declines in the Arctic feeding region, the die-off was sudden rather than gradual, which Dr. Moore described as "perplexing." (*Id.* at 6). A subsequent study of benthic prey showed a loss of biomass, but concluded it may have been due to gray whale foraging rather than other environmental factors. (Tab 52C at M-0563). Another study found "indications . . . that the population is approaching, or possibly exceeding, its carrying capacity and may have become food limited (large decreases in amphipod biomass have been linked to increased predator pressure for gray whales and to detrimental effects of global warming in the Arctic)." (Tab 3L at 535).

Mr. Schubert, relying on a study of gray whale body condition in the Mexican wintering grounds, posits that starvation may be a factor and it may be "due to a carrying capacity issue, as was possible in the past, or potentially linked to the direct and indirect impact of climate change …" (Tab 54 at ¶ 11). There is evidence that between January and March 2019, researchers in Mexico noted a higher percentage of whales in "poor" body condition and fewer whales in "good" condition than in previous years. (Tab 54G). The majority of the whales fell into the category of "fair" body condition. While no mother-calf pairs were noted in poor condition, there was a notable shift from the majority of such whales being in good condition previously, to fair condition in 2019. (*Id.* at 3). There were also fewer mother-calf pairs than researchers observed in prior years. (*Id.).*

Dr. Weller agreed with the study's authors that the cause was probably whales not feeding as well as they normally would or feeding in areas with little prey, and believed the feeding issues could be linked to the current UME. (Tab 102 at 80:4–12). As of the hearing, there were no known studies focusing on the status and trends of benthic prey resources. (*Id.* at 96:6–12). Dr. Weller also testified about many of the factors possibly contributing to the UME, such as starvation, changes in carrying capacity, and the influence of climate change, which "are nested concepts and can all be at play at once (or not at all)." (Tab 80 at ¶ 6). Since the onset of the die-off was sudden, and whales previously appeared to have sufficient prey, he concluded "it is premature to speculate on the severity, duration, or causes of the current gray whale UME." (*Id.*). Moreover, a longer UME (more than one year) is not necessarily indicative of a long-term ecological shift, as it may not be related to permanent changes in habitat or prey availability. (Tab 80 at ¶ 12).

Based on the available literature, NMFS estimates that for each whale that dies, somewhere between 3.9 and 13% are observed. (Tab 101 at 20:9–12). NMFS extrapolated that between 1700 and 5500 whales may have died during the current UME at the time the hearing took place, which would reduce the population from approximately 27,000 to an abundance of 21,000 to 25,000. (Tab 101 at 20:12–17). More precise estimates will be given in future SARs. (*Id*. at 119:11–19). Of the stranded whales that were observed, NMFS confirmed one to be a PCFG whale. (*Id.* at 27:3–8). However, as the full extent of the UME is unknown, it is possible the low abundance trigger for PCFG has already been met or exceeded if the current UME is affecting the PCFG. (Tab 101 at 112:3–11). Even so, better funding allocations for stranding networks and increased public awareness in recent years may generate more widespread and accurate reporting of stranded whales during the current UME, with a corresponding increase in data collection. (Tab 103 at 89:10–90:1).

During the previous UME in 1999/2000, the population estimates fell from approximately 21,000 whales to 16,000, or approximately 25%, but analyses confirmed that the population still remained above its OSP. (Tab 101 at 21:8–10). Those deaths, and the deaths occurring during the current UME, are reflected in the abundance estimates contained in the following year's SAR. (Tab 80 at ¶ 3). However, following the 1999/2000 UME, the ENP's abundance rebounded to historically high levels. (Tab 101 at 22:2–4). Mr. Yates testified that the PCFG appeared to be relatively unaffected by the 1999/2000 UME, during which time their numbers increased. (*Id.* at 27:10–11). Studies on the 1999/2000 UME did not assess the impact of that UME on the WNP stock, as no one yet knew WNPs migrated with ENPs, but available data indicate the WNP stock was not affected in any detectable way. (Tab 80 at ¶¶ 7–9).

NMFS considered the possible occurrence of a UME when developing the waiver and regulations, as the DEIS, SARs, and biological report all anticipated periodic die-offs in the ENP stock. (Tab 101 at 34:10–17; Tab 80 at ¶ 10). Mr. Yates testified, "it's a foundational principle of ecological understanding that when you have a population that is perhaps near or exceeding carrying capacity that temporary fluctuations in the environment changing the carrying capacity would lead to die offs of these animals." (Tab 101 at 34:21–25). For this reason, the proposed waiver is limited to ten years and NMFS can issue permits for durations as short as one year. (Tab 101 at 35:4–7). Dr. Brandon agreed, writing, "as population density increases towards carrying capacity, the effects of density independent factors, like variations in the environment affecting food availability, are expected to have magnified effects on population dynamics." (Tab 52A at 10).

Some parties questioned whether NMFS is able to issue a waiver for the ENP stock while a UME is occurring, or argued that such a decision would be unwise. In a normal year, about three stranded whales are observed in Washington and Oregon, based on data from 2000 to 2018, but not all of these whales are PCFG. (Tab 103 at 88:3–7).[28] The IWC's catch limits were evaluated using modeling that assumed UMEs would occur with up to a 20% population reduction, and the IWC determined the 140 whale per year cap (or total cap of 980 whales over seven years) was appropriate under those estimates. (Tab 52A at 11–12). Dr. Weller said it would be inadvisable for NMFS to assign the deaths of unidentifiable whales to the WNP and PCFG in some proportion because "the data are lacking on which to inform the underlying assumptions used in this type of calculation," and forthcoming data on the effects of the UME will allow NMFS to adjust hunt permit conditions accordingly, at the appropriate time. (Tab 80

[28] Mr. Scordino cited here a forthcoming study by Amanda Warlick et al, on which he was a co-author.

at ¶ 11). Thus, NMFS's position is that it is possible to issue a waiver despite the UME, provided NMFS continues to carefully evaluate the UME's impacts on the stock throughout the permitting phase. (Tab 101 at 66:1–7).

While AWI and Sea Shepherd argued that the UME should halt these proceedings, the scientific experts largely agreed the limited take authorized under the waiver would not have any effect on the ENP population as a whole. Based on the record, I conclude the best available scientific evidence is the UME should not preclude issuance of a waiver, but also find the regulations may warrant modification to further limit hunting activities during an active UME or if the stock does not rapidly recover from a UME. *See* Section VII.C.4.iv.

d. Potential Effects of the Hunt on Abundance

A successful hunt will inevitably reduce the number of living gray whales. However, at a population level, the removal of approximately 2.5 whales per year (assuming the Makah Tribe takes the full number of whales allowed) would not significantly affect the ENP stock. As proposed, the hunt would be held at different times of year in even and odd years, with a goal of targeting different whale populations in alternate years. Odd-year hunts, conducted during the summer and fall months, would likely result in more takes of PCFG whales, though non-PCFG whales also feed in the Makah U&A. In contrast, even-year hunts during the winter and early spring are more likely to target non-PCFG ENP whales, though PCFGs may also be present during the migration.

The best available scientific evidence shows that allowing hunting of populations at or above their carrying capacity is a conservative management strategy consistent with the purposes and policies of the MMPA. When a population is near carrying capacity, competition for food and resources reduces the production of the average individual in the population, thus calf

production will be greatest when the population is at approximately one-half its carrying capacity. (Tab 56 at 8–9). Here, the limited number of whales that would be killed in the hunt would still be less than the number of calves born, and the ENP stock has continued to grow despite the Chukotkan hunt. (*Id*. at 9–10).

Next, I note the proposed hunt's effect on the PCFG may appear disproportionate, as they are present in large numbers during the summer and fall, and "[a] hunt conducted in spring (March-May) potentially could take whales from the PCFG although those chances are less in [the Northern Washington coastal survey area] than in [the Strait of San Juan de Fuca]." (Tab 96 at 7). The impact may be blunted by restricting a hunt to the coastal waters of the U&A, as a higher proportion of PCFG whales are present in the Strait of Juan de Fuca during the migration season. (*Id*.; *see also* Tab 1 at ¶ 30). Dr. Moore modeled the likely effects, considering the two threshold levels which would cause the hunt to cease: first, if the estimated or forecast abundance of the PCFG falls below 192 and second, if the minimum (20th percentile) estimate of abundance falls below 171 whales. (Tab 4 at ¶ 19). Using widely-used statistical computing software and population size estimates from 2002 to 2015, Dr. Moore generated "thousands of plausible population trajectories," and found the projected PCFG population would be expected to number 281 after the 10 years of the hunt, or 298 animals after 10 years if the hunt did not occur. (*Id.* at ¶ 23–24). In either scenario, the population is not expected to fall below the minimum abundance triggers. However, the management of the hunt would be based on updated survey data and estimates throughout the 10 years. (*Id.*).[29]

There is also evidence that "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

[29] Mr. Schubert initially argued that NMFS was not transparent about its calculations, but acknowledged this as an oversight during the hearing. (Tab 104 at 41:3–4).

environmental variables that are dynamic. The loss of whales in the area due to hunting may allow prey to flourish and lead to more whales recruiting into the group thus compensating for losses due to whaling." (Tab 21A at 63).

After thoroughly considering the evidence in the record, I find NMFS considered the best available scientific evidence in determining that the hunt is unlikely to have a negative effect on the ENP stock as a whole, and that any effect on the PCFG is commensurate with the MMPA's conservation goals.

3. Breeding Habits

The third biological factor the MMPA mandates NMFS to consider is breeding habits. Here, the main questions are how the ENP stock's breeding habits affect the stock's abundance, and whether those breeding habits will be disrupted by the proposed hunt.

a. Conception and Calf Production

Gray whales reach sexual maturity between 6 and 12 years of age, and females experience a reproductive cycle (copulation, pregnancy, lactation, and resting period after reproduction) lasting approximately 2 years. (Tab 90F at 3-7). The reproductive cycle is closely aligned with migration, with conception primarily occurring during the southward migration in late November and December. (*Id*.). A few females may breed as late as the end of January, after the whales have reached the winter grounds. (*Id*.). The gestation period is approximately 13.5 months, allowing pregnant females to give birth the following winter. (*Id*. at 3-72).

Calving usually occurs between the end of December and the beginning of March. Many females give birth in shallow, protected lagoons along the Baja California peninsula, though there is also strong evidence that calving occurs near Carmel, California and points northward. Whales that give birth along the California coast may remain there, near the Channel Islands, for

the rest of the winter season rather than journeying further south with newborn calves. (Tab 90F at 3-72). Approximately equal numbers of male and female calves are born.[30] Weaning occurs when calves are six to eight months old, but young whales continue to learn feeding behaviors after they wean and separate from their mothers. (Tab 103 at 78:8–79:6).

The best available scientific evidence shows that PCFG breeding habits are largely the same as the ENP as a whole. As discussed earlier in this Recommended Decision, there is some evidence that mixed-sex groups including multiple PCFG whales migrate south together, but there is no data on what effects, if any, this has on mating behavior. Rather, the fact that there are no significant differences in nuclear DNA between PCFG and non-PCFG ENP whales indicates the PCFG do not discriminate against other ENPs when mating.

b. Potential Impact of the Hunt on Breeding Habits

There is no evidence that the hunt will prevent whales from breeding. Even though some hunt activities will take place during the southbound migration, there is no scientific evidence showing approaches or training harpoon throws would prevent whales from mating. Moreover, the Makah U&A comprises a very small portion of the range in which gray whales breed, so any disruptions would be limited in scope. (Tab 1H at 5–6, 18; Tab 90B at 10). While a strike on a whale of reproductive age would obviously remove the struck whale from the breeding population, this removal relates more to the stock's abundance than to the breeding habits of its members.

The hunt's potential to kill pregnant whales or mothers with calves is a serious concern. Another particular area of concern for Dr. Villegas-Amtmann was the energetic effect of the hunt

[30] This statistic is important to the hunt allowances in the proposed regulations, which assume roughly equal proportions of male and female whales exist in the ENP population and, therefore, males and females have a roughly equal chance of being hunted.

on pregnant whales and mother-calf pairs. She testified that nursing females must use energy both to feed their calves and to reach the foraging grounds, which makes them particularly vulnerable. Early weaning also decreases the likelihood of calf survival. (Tab 63 at ¶¶ 17, 18, 25). However, Mr. Scordino also testified that hunters can be trained to identify and avoid mother-calf pairs. (Tab 103 at 190:20–191:18). There also remains the risk of striking a pregnant female, as there is no way to determine a whale's sex or whale gestation status by sight alone. Indeed, the regulation proposed to become 50 C.F.R. § 216.117(a)(6)(2)(B) expressly contemplates that a pregnant whale may be struck, requiring the Makah Tribe to record "the length and sex of any fetus in the landed whale" if this occurs. (*See* Tab 90B at 13623).

Limiting the hunt to the months of December through May for even-year hunts and July through October for odd-year hunts may provide some degree of protection, as near-term pregnant females transit the area early in the southbound migration and calf-cow pairs usually pass through in April and May when traveling north. I see no other feasible way to mitigate this risk, but I have weighed the scientific evidence presented and find it is nevertheless in accordance with the purposes and policies of the MMPA. NMFS fully considered the impact of the loss of pregnant females on the stock, as well as the stock's other breeding habits. The IWC reviewed the hunt proposal and found it met the IWC's conservation goals.

4. Times and Lines of Migratory Movement

Now, I will address the stock's times and lines of migratory movement, and whether these will be affected by the proposed hunt.

a. Southward Migration (Autumn/Winter)

As discussed in the section on distribution, ENP gray whales are migratory, traveling long distances between their Arctic feeding grounds in the summer and the warmer, more

sheltered waters in which they spend the winter. The onset of the southward migration may vary, likely depending on environmental factors such as the extent of ice coverage, availability of prey, and distribution of whales during foraging. (Tab 1H at 21). Some whales have been observed starting the southward migration as early as mid-August or as late as mid-December, but the majority of ENP gray whales generally begin migrating in mid-October or November. (*Id.*). Consequently, most whales transit the waters off northern Washington State from early to mid-November until early January. (*Id.*).

Near-term pregnant females are among the first to begin the southward migration, followed by non-pregnant females and mature males. Immature whales of both sexes constitute a second phase of the migration. Gray whales start arriving at the wintering areas in late December or early January and reach maximum density in February, and the southward migration ends in mid-February. The delayed onset of the migration over the past several years appears to have contributed to pregnant whales giving birth before reaching the Baja lagoons, and calf sightings in central and southern California have increased. Moreover, not all whales appear to migrate south, as observers have sighted gray whales off the coasts of northern California and Oregon during the winter months.

NMFS cites evidence that whales travel further from shore when migrating south than when migrating north. (Tab 90F at 3-104). One study documented southbound whales in the range of 5-43 km from shore, with the mean being 14.3 km, and also found the migratory path further from shore in Washington than in Oregon. (*Id.*; Tab 3M). Mr. Scordino, though, testified that in his own experience observing and researching gray whales in the Makah U&A, they usually travel closer to shore. (Tab 103 at 189:4–19). He rarely sees any gray whales outside five

miles (8 km) from shore except in February, which is during the northbound migration rather than the southbound migration. (*Id*. at 190:6–11).

b. Northward Migration (Spring)

As with the southward migration, the northward migration occurs in phases. Phase one consists of newly pregnant females, followed approximately two weeks later by adult males and non-pregnant females, then another week later by immature whales of both sexes. (Tab 1H at 22). Calf-cow pairs constitute the second phase, leaving seven to nine weeks later and traveling more slowly. (*Id.*). The first phase passes the central Washington coast during February, March, and April and begins arriving in Alaska at the end of April. Calf-cow pairs generally pass through the Pacific Northwest in late April and May, and reach Alaska in May through mid-June. (*Id.*).

While the precise timing of the migration through the Makah U&A is not established, the data shows "northbound whales of all ages and both sexes are present off the Washington coast from late February through June" and NMFS found it "reasonable to estimate that the migrants in the first phase of the northward migration would be in the [U&A] from March through early May, and migrants in the second phase would be in the [U&A] from roughly early May until June." (Tab 1H at 22).

There is evidence that gray whales travel closer to shore during the northward migration than they do going southbound. In the Makah U&A, the best available evidence shows northbound whales stay within 23 miles (37 km) of shore, with the average being five to seven miles (eight to 11 km) offshore. (Tab 90F at 3-104–3-108). Calf-cow pairs stay very close to the shoreline. (*Id*.; Tab 21A at 50). However, single whales most frequently travel in waters 80-140 feet deep during the month of May. (*Id*.).

Tagging studies of PCFG whales showed significant movement beyond the PCFG boundaries, with some of these whales moving north into Alaskan waters and then sometimes returning to the PCFG range later in the season. Other PCFG whales remained within the boundaries for the entire feeding season. (Tab 21A at 50–51).

c. Intermixing with WNP

After the 2008 DEIS was issued, scientists discovered that WNP gray whales occasionally migrate south from the Arctic feeding grounds with the ENP stock, rather than migrating in the waters of the Western Pacific. (Tab 3 at ¶ 34). As of the hearing date, approximately 30 individual whales had been seen in the ranges of both the WNP and ENP, including two inferred to have migrated through the Makah U&A.[31] (*Id.*, *see also* Tab 1H at 84–85). It is possible scientists have not positively identified every WNP gray whale that migrates with the ENP stock, thus more WNPs than are currently known could be intermixed. (Tab 102 at 57:5–8). However, there have been no recorded sightings of known WNP whales in the ENP range during the months of June through November. (Tab 3 at ¶¶ 34, 63).

Scientists determined at least three tagged ENP whales, as well as several others identified through observation, were included in the WNP catalog. One hypothesis for this is that these whales could be members of the ENP who expanded their foraging grounds into areas traditionally utilized by the WNP and were consequently cataloged. (Tab 3JJJ). However, no definitive research on this issue is currently available.

In 2011, Dr. Weller and Dr. Moore analyzed the potential for a WNP whale to be subjected to a strike, unsuccessful strike attempt, or an approach. (Tab 4 at ¶ 12). They updated

[31] Mr. Scordino testified that these whales were not tagged but were sighted both north and south of the U&A. Thus, NMFS inferred that the whales must have swum through the U&A, but their precise track is not known. (Tab 103 at 119:19–120:2).

the results in 2018, based on newly available scientific evidence, and published them in a paper titled "Updated estimates of the probability of striking a western North Pacific gray whale during the proposed Makah hunt." (*Id.* at ¶ 13, *see also* Tab 4I). Dr. Moore and Dr. Weller used conservative assumptions that likely over-estimate the risk to WNP whales and assumed migrating WNP and ENP whales are evenly mixed, meaning a hunter is just as likely to approach any individual WNP whale as it is any individual ENP whale. (Tab 4 at ¶ 14). They also assumed all approaches would occur during the migration season, when WNP whales might be present, and none during the summer/fall feeding season, when no WNP whales have been observed anywhere in the PCFG range. (Tab 61 at ¶ 7).

The most current models developed by Dr. Moore and Dr. Weller predict that during even year hunts, there is a 0.5% chance of a strike on a WNP whale. The modeling suggests, if the Makah Tribe utilizes every available strike during the 10-year waiver period, there is a 5.8% chance of striking at least one WNP whale and a 30% chance of an unsuccessful strike attempt on a WNP whale. If the hunt continued into perpetuity, using the existing hunt management scheme and other variables, a WNP whale would be struck approximately once every 135 years. (Tab 61 at ¶ 8).

d. Effect of the Hunt on Migratory Movement

NMFS concluded the hunt will not have an effect on migratory movement, and I concur. The evidence shows that during the southbound migration, gray whales travel at a median speed of 147 km/day, meaning they spend little time in the Makah U&A. (Tab 3 at ¶ 51; Tab 3L; Tab 32C at 2–3). Consequently, only a few migrating whales would encounter Makah hunters on any given day, and they would not be subjected to repeated hunts. Furthermore, there is no credible

evidence that the whales encountered during a hunt will cease migration or change their migratory path in future years to avoid the hunt. (Tab 1H at 31).

Northbound whales may be more likely to encounter Makah hunters for several reasons: they travel somewhat closer to shore, the weather may be more conducive to hunting, and some evidence indicates they transit the PCFG range more slowly because they make brief feeding stops. Nevertheless, the evidence does not show that the hunt will cause northbound non-PCFG ENP whales to slow, halt, or otherwise vary their migration. (Tab 1H at 31).

Finally, the evidence does not show this would cause whales to cease feeding in the PCFG range; rather, they are likely to resume foraging once away from the hunt site. There is also no evidence gray whales will desert the Makah U&A entirely as a result of the hunt, particularly bearing in mind that it will only occur during the feeding season in alternate years. As long as prey availability remains strong in the area, gray whales are likely to continue using the U&A regardless of hunting activity.

5. Conclusion

As discussed above, NMFS relied on the best scientific evidence available when considering the proposed hunt's effect on the ENP stock's distribution, abundance, breeding habits, and times and lines of migratory movement. Based on that evidence, NMFS concluded there would be minimal impact on the stock for all four factors. I find NMFS complied with its duties under the MMPA with respect to these particular considerations. Next, I must consider whether NMFS also met its burden regarding the next MMPA requirement: the consistency of the waiver with the purposes and policies of the MMPA.

B. NMFS Considered the Health and Stability of the Marine Ecosystem and Functioning of Marine Mammals within their Ecosystem

The primary purpose of the MMPA is to protect the health and stability of the marine ecosystem and the function of marine mammals within their ecosystem. This is a broad mandate and requires NMFS to examine not only the effect of the waiver on the health and stability of the stock subject to the waiver, but also on other animal and plant species that co-exist with such stock. NMFS evaluated the effect of removing 25 gray whales over 10 years on the marine environment at varying scales, and concluded that there was no scientific information available that would lead NMFS to believe it would have any detectable impact on the marine environment. (Tab 101 at 18:9–14). This is borne out by the evidence.

According to Dr. Weller, "the range of the ENP gray whale stock is vast and crosses many large marine ecosystems, including the Pacific Central American Coast, California Current, Gulf of Alaska, and Bering and Chukchi Seas." (Tab 3 at ¶ 1; Tab 3J; Tab 3K). Gray whales play an important role in their ecosystems, particularly due to their feeding behaviors. They feed on a wide variety of prey, using both suction feeding (also known as benthic feeding or bottom feeding) and engulfing or skimming prey from the water column and along the water's surface. (Tab 3 at ¶ 15; Tab 1H at 23–24, 27–28; Tab 90F at 3-68 – 3-71). When bottom feeding, they sweep aside layers of sediment, leaving sizable depressions or pits in the ocean floor that can be re-colonized or otherwise utilized by the prey community. (Tab 3L at 529). There is some evidence that benthic feeding in Arctic areas stirs up prey for surface-feeding seabirds, but no corresponding evidence specific to the Makah U&A. (Tab 1H at 23; Tab 90F at 3-69). "In this way, gray whales are an integral part of the coastal community and participate in a dynamic feedback loop ... whereby their feeding activities function to shape their ecological nice through alteration of the benthos." (Tab 3L at 529).

Benthic feeding may maintain the substrate or affect benthic productivity, though it is not clear precisely how important a role gray whales play. (Tab 1H at 23). It is also unclear whether the population increase has negatively affected the benthic ecosystem, though there was some evidence after the 1999/2000 UME that increased foraging reduced the biomass of benthic prey. (Tab 90F at 3-99).

Mr. Schubert raised concerns about a decline in prey availability, citing a paper by Ronzón-Contreras et al. (2019). (Tab 54 at ¶ 11; Tab 54G). Mr. Schubert argues that a shift from a benthic-driven ecosystem to a pelagic-driven ecosystem is causing a decline in the food sources grey whales traditionally rely on, and they expanded their northern range not only because reductions in sea ice presented them an opportunity to do so, but out of necessity to find sufficient food. (*Id*. at ¶ 9–10). Mr. Schubert believes a consequent decline in ENP abundance and/or shift in distribution is possible, acknowledging research is ongoing but saying the data is currently insufficient to understand or evaluate such impacts. (*Id*. at ¶ 11). Dr. Weller testified that in his opinion, this paper reached a premature conclusion that food availability for ENP gray whales in the summer feeding grounds is "becoming a problem," and said the evidence as a whole supports a cyclic pattern of prey decline and recovery. (*Id.* at ¶ 6).

Dr. Weller responded to a number of climate-related arguments in Mr. Schubert's initial direct testimony, particularly the potential effects of "the blob," a large warm water mass in the Pacific. He believes Mr. Schubert's fears of a "domino effect" triggered by the blob are speculative, and sustained warm water temperatures could result in plants and animals adapting. (Tab 60 at ¶ 8).

There is a question whether the loss of gray whales in the Makah U&A, and specifically the loss of PCFG whales, would damage the local marine ecosystem. In particular, Mr. Schubert

alleges, "Given the vast uncertainty on this issue, in the absence of any pertinent research on this question, at a bare minimum NMFS and the ALJ must give the benefit of the doubt to the legally protected species (i.e., the gray whale)—rather than to the Makah Tribe's interest in hunting and otherwise exploiting the species—in light of the conservation purposes of the MMPA and the precautionary approach contained therein." (Tab 62 at ¶ 15).

Another argument some parties made against the waiver is that NMFS failed to consider the correct ecosystem(s) because it focused on the Northern California Current and northern Washington coast, when the effects of a hunt will be concentrated in the Makah U&A or the Salish Sea. (Tab 62 at ¶ 13–14; Tab 57A at 5–7). Mr. Schubert further alleges NMFS did not properly consider gray whales' role in their ecosystem when concluding that a limited removal would have no effect because "no one has adequately studied the role played by, and full suite of benefits provided by gray whales in the Makah U&A." (*Id*.at ¶ 15). He specifically says NMFS did not adequately assess gray whales' role as host to barnacles and other endoparasites and exoparasites, and the manner in which the whales move benthic prey to the top of the water column for seabirds to feed on. (*Id*. at ¶ 16).

NMFS asserts it gave due diligence to these concerns. Specifically, NMFS considered several different ecosystems including the California Current ecosystem, which covers the primary range of the ENP stock, and the Northern California Current ecosystem, which encompasses the PCFG range. It also looked at potential impacts on local areas such as the hunt-specific area, even though it is not necessarily considered an ecosystem. (Tab 102 at 27:12–25). In spite of these considerations, NMFS concluded that the ecosystems were too dynamic and responsive to oceanographic and weather events between years and seasons to adequately account for such a limited removal of whales over the course of the waiver. (*Id*. at 28:1–12).

Moreover, there is evidence that the number of whales using the Makah U&A varies from year to year, and even within a single feeding season. Specific to the PCFG range, which includes the Makah U&A, NMFS relied on sound scientific evidence in determining that removing a limited number of individual gray whales would not translate to an overall reduction in whales using the area as a foraging ground. Instead, the evidence shows that the PCFG population is a "leaky bucket" with significant recruitment into and emigration from the group. The abundance estimates have remained fairly stable for the past two decades. (Tab 90F at 3-128; *see also* Tab 103 at 98:1-10). While the ecosystems themselves are different, there is persuasive evidence from the Chukotkan hunt that gray whales remain a functioning part of their ecosystem despite far more drastic removals. Thus, there is no reason to believe the opposite would be true in the PCFG range. (Tab 105 at 90:9–23).

After reviewing the evidence, I find it reasonable for NMFS to conclude that the health and stability of the ecosystems in which gray whales function will not be adversely affected by the proposed waiver and regulations.

C. NMFS Considered the Ability of Stocks to Attain and Maintain OSP

The MMPA requires the Secretary to consider the ability of marine mammal "species and population stocks" to attain and maintain OSP, when doing so is consistent with the Act's primary objective of preserving the health of the marine ecosystem. 16 U.S.C. § 1361. This is an overarching principle and does not focus solely on the stock that is the subject of the waiver. Thus, in this proceeding NMFS must show it considered not only the ENP stock's ability to attain and maintain its OSP, but also the WNP stock's ability to do so.

As previously discussed, the ENP have attained OSP and are likely to maintain it even if a limited number of whales are removed due to the Makah Tribe's hunt. However, even though

the Makah Tribe has not sought a waiver to hunt WNP gray whales, the waiver analysis must consider the potential effects of an incidental take on WNP whales. This is because there is reliable evidence to show WNP whales occasionally join the ENP stock for its southward migration, rather than migrating through the Western Pacific. As animals from the two stocks are generally indistinguishable by sight alone, it is reasonable to assume WNPs could be approached during training activities and struck during a hunt.

The best scientific evidence available suggests the WNP population is approximately 290 animals, increasing at an annual rate of around two to five percent. (Tab 59B at 13; Tab 101 at 28:2–7). The stock is considered "depleted" under the MMPA and is listed as endangered under the Endangered Species Act. (Tab 1 ¶ 7). Based on this alone, any take of a WNP would necessarily disadvantage the stock. *See, e.g.*, *Richardson*, 540 F.2d at 1150 (holding that the MMPA does not give the Secretary discretion to determine that a take will not disadvantage a stock unless the Secretary also publishes findings on the estimated existing levels of the stock and the expected impact of taking on the stock's OSP). Experts have determined that the PBR for the WNP stock is 0.12 per year, or one whale every eight years. (Tab 59B at 13).

As part of its waiver analysis, NMFS produced a scientifically sound calculation of the risks posed to WNP whales by a Makah Tribal hunt. Dr. Moore and Dr. Weller first undertook a study in 2011 to estimate the probability of a WNP being subject to a strike, strike attempt, or approach. (Tab 1 at ¶ 12). After NMFS revised the hunt proposal in 2018, they updated the original analysis using updated data from the 2017 and 2018 IWC Scientific Committee range-wide workshops. (*Id.* at ¶ 13). Prior to the hearing, Dr. Moore updated the analysis to use newly available abundance estimates for the WNP. He testified that the analysis NMFS relies on in this

waiver proceeding uses the best available data and science and the most appropriate methodology. (*Id.* at ¶ 18).

When calculating the mixing proportions of ENP and WNP whales during the migration, Dr. Moore and Dr. Weller adopted a conservative analysis that likely overstates the number of WNP whales likely to be present in the area. (Tab 1 at ¶¶ 14, 15). They assumed there was no probability of striking a WNP gray whale during the summer months (odd-year hunts) but that training approaches could occur in both odd and even years. They calculated the risk assuming all authorized strikes and approaches are used during the 10-year waiver period, though it is unlikely that many training activities would occur during the winter months when ocean conditions are unfavorable. (*Id.* at ¶ 15).

Dr. Moore and Dr. Weller initially explored several models of risk to WNP whales. Dr. Moore opined their Model 2A "makes the best use of all available information relevant to WNP risk … and that it used more conservative assumptions" as opposed to a similar model. (Tab 4 at ¶ 16). The first iteration of Model 2A predicted the likelihood of any individual whale encountered during a hunt or training activities being a WNP as 0.4%, with a 5.8% chance of striking at least one WNP whale if all available strikes are made during the even-year hunts. This is the equivalent of one whale every 170 years if all variables remain constant. They calculated a 30% chance of an unsuccessful strike attempt on a WNP whale if all authorized attempts are made, which equates to one every 33 years if all variables remained constant. Further, approximately 14 WNP whales would be approached over 10 years if all available approaches are used (essentially 100% probability). (*Id.* at ¶ 17).

Dr. Moore later updated the risk estimates to WNP whales based on the higher WNP abundance estimate in the 2018 SAR, which is newer than the estimate available at the time of

the earlier simulation and is now the best available scientific evidence. (Tab 61 at ¶ 8). He also used a more precise mixing estimate based on a new study by Cooke et al. (2019), but the methodology remained the same as described in his first Declaration. (*Id.*). The revised analysis showed a 0.5% chance of striking a WNP on any given strike; an expected probability of striking a WNP in an even-year hunt as 1.5%, and a probability over the entire hunt period of 7.4%. This equates to a probability of striking one WNP every 135 years. (*Id.*).

Dr. Moore also discussed the methodology he used to model the effects of the hunt on PCFG whales. The two threshold levels which would cause the hunt to cease are if the estimated or forecast abundance of the PCFG falls below 192, or if the minimum (20th percentile) estimate of abundance falls below 171 whales. (Tab 4 at ¶ 19). Using widely-used statistical computing software and population size estimates from 2002 to 2015, Dr. Moore generated "thousands of plausible population trajectories" and found the projected PCFG population would be expected to number 281 after 10 years of the hunting, or 298 animals after 10 years if the hunt did not occur. (*Id.* at ¶ 23-24). In neither case is the population expected to fall below the minimum abundance triggers. However, the management of the hunt would be based on updated survey data and estimates throughout the 10 years. (*Id.*).

The regulations accompanying the proposal provide that if the NMFS Regional Administrator determines a WNP gray whale was struck during a hunt, the Makah Tribe must "cease hunting for the duration of the permit, unless and until the Regional Administrator determines that measures have been taken to ensure no additional WNP gray whales are struck during the duration of the permit." (Tab 90B at 17). Furthermore, NMFS cannot issue any further permits unless and until measures are taken to prevent any additional strikes on WNP gray

whales. *Id.* The ultimate question is whether the possibility that one WNP could be struck during the ten-year waiver means the waiver must be denied.

AWI argues the near-certainty of at least one WNP whale being approached at some point during the ten-year validity period of this waiver, and the minimal chance of one being struck, prevents NMFS from issuing the waiver. I disagree. A mere approach on a WNP gray whale, which is the most likely scenario under the proposed waiver and regulations, is not expected to have any effect on the stock's ability to attain and maintain its OSP. Researchers and others may obtain permits to approach depleted species such as the WNP, and whale watching vessels are likely to cause similar disturbances. On the other hand, loss of a WNP whale due to a hunt-related strike would certainly have a deleterious effect on the stock due to its low abundance. Unless new technologies make it possible to identify what stock a whale belongs to before hunters attempt a strike, any strike on a WNP whale will effectively end the hunt for the remaining time covered by the waiver.

D. Other Concerns

Finally, I will address the remaining concerns raised by the parties. These issues are not specifically enumerated in the MMPA, but are nevertheless relevant to whether a waiver should be granted. They involve the novel nature of this proceeding, the time limitations placed on the proposed waiver, NMFS's consideration of climate change when developing the proposed waiver and regulations, and other arguments about the potential implications of allowing the hunt to proceed.

1. This Proceeding Involves an Issue of First Impression

NMFS rarely proposes to waive the MMPA's take moratorium, and the West Coast Region has never before proposed a waiver to authorize hunting of marine mammals. (Tab 101 at

36:20-24). While NMFS did attempt to permit the incidental take or marine mammals pursuant to commercial fishing operations many years ago, this was prior to the 1994 MMPA amendments. *See, e.g.*, *Richardson*, 540 F.2d 1141. Moreover, though NMFS has held formal rulemakings under the MMPA before, the issues were distinguishable from this proceeding.[32] Thus, the proposal to allow takings by a non-commercial entity other than an Alaska Native tribe under 16 U.S.C. 1371(a)(3)(A) appears to be an issue of first impression.

Parties have raised the question of how relevant the aforementioned line of cases is to the current proceeding. Relying on *Kokechik Fishermen's Ass'n v. Sec'y of Commerce*, 839 F.2d 795 (D.C. Cir. 1988), AWI strenuously argues there is a risk of an endangered WNP being taken because the two stocks are not easily distinguishable on sight. Further AWI asserts "it is well-established that NMFS cannot issue an MMPA authorization that only covers *some* of the species that are likely to be taken." (Tab 115 at 39). Finally, AWI argues that any take of WNPs, whether by approach, training harpoon throw, or strike, can never be "incidental" because it occurs during the act of hunting and hunting is necessarily an intentional activity. (*Id.* at 44–54). The MMC disagrees, stating "the record supports the issuance of regulations and a permit for ENP gray whales. However, no authorization for the WNP stock, which is depleted, can be issued." (Tab 114 at 24).

While *Kokechik* is clearly relevant to this proceeding, it nevertheless has important factual differences that limit its applicability. Primary among these is that *Kokechik* involved incidental take of marine mammals by Japanese fishing boats during the course of commercial fishing operations, not during an aboriginal subsistence whale hunt. Since 1994, incidental taking by commercial fishing entities has been specifically controlled by a separate section of the

[32] For example, in the late 1990s and early 2000s, NMFS sought to determine the appropriate allocation of beluga whales to certain Alaska Native tribes.

MMPA, 16 U.S.C. § 1387, which addresses many of the concerns the court expressed in *Kokechik*. However, the precise application of *Kokechik* to a proceeding brought by a non-commercial entity under 16 U.S.C. 1371(a)(3)(A) has yet to be examined.

Next, the *Kokechik* court held the Secretary erred in issuing a permit for commercial take of salmon using a gillnetting method because NMFS did not make the required OSP finding regarding all species expected to be taken, including fur seal stocks which NMFS was in the process of designating as depleted. Here, NMFS has engaged in a thorough and detailed analysis of the potential impact on the hunt to WNP gray whales, so the issue would not be whether NMFS made the required findings; rather, it would be whether those findings and conclusions are adequate under the MMPA. Moreover, the court held the Secretary could not issue a permit "allowing … taking of one protected marine mammal species knowing that other protected marine mammal species will be taken as well." 839 F.2d at 801. Yet, as the court recognized, "the [MMPA] may not prohibit issuance of a permit where there is only a very remote possibility that marine mammals for which an optimum sustainable population has not been determined may be taken incidental to commercial fishing." *Id.* However, *Kokechik* involved a factual scenario where the killing of depleted marine mammals was "not merely a remote possibility but a certainty," and the court did not address other specific situations where a permit could possibly be issued. *Id.*

The MMC notes *Kokechik* allows for the possibility that, even if a taking could not be authorized under section 103 of the MMPA (16 U.S.C. § 1371), it could be authorized under other provisions of the MMPA. This is because certain provisions are only available to United States citizens and *Kokechik* involved Japanese fishermen. (Tab 114 at 25). Specifically, 16 U.S.C. § 1371(a)(5) "allows NMFS to authorize the incidental, but not intentional, taking of

small numbers of marine mammals from both non-depleted and depleted marine mammal species and stocks, provided that the taking would have only a negligible impact on the affected species and stocks." (*Id*. at 26).

Mr. Yates also testified that "taking of a stock that has been designated as depleted may not be to the disadvantage of the stock. . . . A perfect example would be that the agency certainly does issue research permits which take depleted marine mammal stocks." (Tab 101 at 85:5–12). Neither approaches nor training harpoon throws are lethal, nor are they likely to cause more disturbance than approaches or biopsy sampling for research purposes. These scenarios are far more likely than a strike on a WNP, though a strike remains a low but real possibility.

Finally, my reading of *Kokechik* indicates it applies to the permitting process rather than the issuance of a waiver. While at the waiver stage, NMFS must comply with the MMPA by giving due regard to the distribution, abundance, breeding habits, and migratory patterns of the stock that is the subject of the waiver, and must also "be assured" the taking will not adversely affect the health and stability of the marine ecosystem. 16 U.S.C. §§ 1361; 1371(a)(3(A). A secondary goal, when consistent with this primary goal, is "to obtain an optimum sustainable population keeping in mind the carrying capacity of the habitat." 16 U.S.C. § 1361. NMFS satisfied these criteria.[33] This is not the appropriate time and place to parse the meaning of "incidental take," as permitting issues are not within my jurisdiction during this proceeding.

2. The Waiver is Time-Limited

PCPW characterized the waiver as a plan to permit whaling "into perpetuity." (Tab 113 at 1 and 6). However, NMFS determined the waiver should be limited to 10 years as a

[33] If the PCFG were designated a stock, it "could present an impediment" to the proposed hunt. (Tab 102 at 24). However, as discussed in Section IV.D.1, the evidence does not support a stock designation for the PCFG.

precautionary measure meant to allow NMFS to gather information about the conduct and impacts of the hunt. (Tab 101 at 22:12–17). Thus, it is clear the waiver is not open-ended. Rather, NMFS intends to use this initial ten-year period to gather concrete scientific evidence of the hunt's impact, as well as additional data about gray whales, to determine whether any subsequent waiver requests would also meet the requirements of the MMPA.

It is also possible, based on updated information made available during the ten-year waiver period, NMFS will decline to issue a hunt permit at times, or suspend a permit after issuance. The maximum duration of a hunt permit under the proposed regulations is five years, but a permit may be issued for as little as one year. Thus, scientific evidence of the hunt's impact on whales from the early years of the waiver period will also inform whether additional hunts will be permitted in later years.

3. NMFS Considered the Effects of Climate Change

Another area of concern for AWI and Sea Shepherd is the effect of climate change on the gray whale populations. While there is abundant literature analyzing current and potential future effects of climate change, the best available science has not yet demonstrated that it is having any significant deleterious effect on gray whales. This is evidenced by the fact that all gray whale populations—ENP, PCFG, and WNP—have exhibited sustained growth over time. One hypotheses is that gray whales, being generalist feeders who can subsist on many different types of prey, are better able to adapt to changing conditions than some other cetacean species and are thus less affected by shifts in prey availability.

NMFS is closely tracking certain indicia of climate change, such as the reduction of sea ice in the Arctic. (Tab 102 at 28:21–25). At this time, however, the phenomenon is poorly understood and has been causing changes to the gray whales' habitat for several decades. (*Id*. at

28:18–19; 29:1–17). At the same time, the ENP stock's abundance has increased and there is no evidence of an overall reduction in carrying capacity. (*Id*.at 29:18–30:17). Calf production was also very high during the time of "the blob," a marine heat wave that lasted from 2013 to 2015. (*Id*. at 31:15–25).

After reviewing the evidence, I conclude NMFS gave due regard to the effects of climate change on gray whales and their ecosystem. However, the data does not give a clear picture of what the future holds in this regard. While the general assumption is that the future is bleak, the ENP stock has been thriving in recent years and may adapt well to changing conditions. The best available science's inability to predict climate change's impact on the marine environment and the flora and fauna that live there does not equate to an arbitrary or capricious decision on NMFS's part.

4. This Proceeding is not a "Slippery Slope"

Sea Shepherd and AWI have expressed concern that granting a waiver to allow the Makah Tribe to hunt is a slippery slope, and will result in other individuals or groups seeking to hunt whales in the future. I find this concern to be speculative, as no party identified any individuals, tribes, or other groups or organizations who have expressed such an interest. There is no evidence that the issuance of a waiver here would spark a rush among the general public to hunt whales.

I recognize the *Anderson* court expressed concern about this issue, but I also note that, as a signatory of the ICRW, the United States is not able to unilaterally grant any person, group, or organization the right to take whales. Rather, NMFS will only consider a waiver request if the IWC has already granted a quota for such take. (*See* Tab 101 at 39:9–11). Each request would

have to be evaluated on its particular facts and circumstances, and the public would have the opportunity to participate in the process just as it has here.

5. The MMPA does not Discuss Co-Tenancy

The parties disagree about whether the Ninth Circuit's holding in *Anderson* created so-called "co-tenancy" rights, balancing the rights of tribal hunters with the right of citizens to use whales for non-consumptive purposes such as scientific research and whale watching. The Makah Tribe argues that the procedures in the MMPA are designed to determine whether whales are available for harvest, and the approved hunt plan is sufficient to safeguard non-consumptive uses. (Tab 112 at 28). Sea Shepherd, on the other hand, argues that any lethal take of a gray whale during a tribal hunt would impermissibly deprive scientists, whale enthusiasts, and other citizens of the use of that whale. (Tab 93 at 11–13).

The Makah Tribe's lay witnesses described the centrality of whales and whaling to their culture, including ceremonial practices that take place before, during, and after the hunt. They explained why whale watching or mock hunts are insufficient to satisfy these cultural needs, and the effects the long hiatus from hunting have had on their tribal identify and culture. (Tabs 24, 26–29; 103 at 5:5–37:2). While Ms. Newell expressed interest in helping the Makah Tribe create a whale watching business, there is no guarantee such a venture would be successful and it would not incorporate the cultural practices and ceremonies involved in a hunt. None of the evidence in the record negated the testimony from the lay witnesses.

Even so, I am mindful that my review is limited to whether the proposed waiver and regulations comply with the requirements of the MMPA. The co-tenancy issue stems from the Ninth Circuit's ruling in *Anderson*, where the court stated in dicta that "to the extent there is a 'fair share' of marine mammal takes by the Tribe, the proper scope of such a share must be

considered in light of the MMPA through its permit or waiver process. The MMPA will properly allow the taking of marine mammals only when it will not diminish the sustainability and optimum level of the resource for all citizens." 371 F.3d at 501. Sea Shepherd interprets this to mean the Makah Tribe cannot "diminish" the number of whales likely to be spotted during a whale watching excursion. (Tab 93 at 13). However, such a reading would render the Secretary's authority to grant waivers of the MMPA meaningless if the waiver resulted in any lethal activity whatsoever, which is an absurd result.

After thorough review of the MMPA, I do not find any legal basis for denying a waiver based on co-tenancy arguments. Nor does 16 U.S.C. § 1371(a)(3)(A) require the Secretary to grant or deny waivers based on cultural or subsistence needs. By processing the Makah Tribe's request to hunt whales under 16 U.S.C. § 1371(a)(3)(A), NMFS has determined the proper scope of the hunt and ensured the number of takes will not diminish the stock's sustainability and OSP levels. This complies with the plain language of *Anderson*. I cannot require NMFS to exceed the MMPA's mandates by considering any additional co-tenancy issues.

6. Transfer of IWC Aboriginal Subsistence Catch Limit to Russian Federation

Sea Shepherd and Mr. Schubert also raised concerns about the transfer of unused gray whale catch limits to the Russian Federation for use by the Chukotkan natives. Their arguments stem from NMFS's assumption that the Chukotkan natives will use the full catch limit allocated to the United States and the Russian Federation if the Makah Tribe is unable to hunt.[34]

[34] Mr. Schubert testified that AWI does not believe the Makah Tribe qualifies for an aboriginal subsistence whaling quota from the IWC. (Tab 26A at ¶ 82; Tab 104 at 18:12–14). This issue is not under my jurisdiction here. The fact remains that the IWC has granted the quota and made it available for the Makah Tribe to use, and NMFS is merely following through on the domestic legal processes necessary for them to do so.

Mr. Schubert contends the Chukotkan natives have not used the full catch limit allocation over the past ten years, as the average take is 122.6 whales per year while the quota is 135, and they only exceeded the quota in a single year. (Tab 26A at ¶ 83). Dr. Weller acknowledged the number of whales the Chukotkan natives take each year varies as a result of hunt management practices and their ability to successfully strike and land whales in a given year, so they do not always use the full quota allotted to them. Conversely, they have also exceeded the quota in some years. (Tab 60 at ¶¶ 11, 12). Mr. Scordino expanded on this at the hearing, testifying about changes the IWC recently made to the catch limits, which include allowing unused strikes to carry over to subsequent years. (Tab 103 at 153:1–16). He hypothesized that, in the past, the Chukotkan natives were more conservative in managing hunts to avoid going over their annual quota, as communication between villages is difficult. (*Id.* at 153:16–21, 173:8–19). However, as they have taken an increasing number of whales in recent years and expressed a need for greater catch limits, Mr. Scordino expects the Chukotkan natives to utilize the carryover strikes efficiently in the future, resulting in taking up to 100% of their catch limit. (*Id.* at 153:22–154:8, 20–22; 154:20–22). Thus, the historical patterns may not hold true for the duration of the 2019-2025 catch limit allocation period. (*Id.* at 153:1–6, 156:9–14).

Sea Shepherd focused its argument mainly on the hunt's effects on PCFG whales, contending the Chukotkan hunt has no effect on PCFGs because no PCFG whales have been observed in their hunting area. However, the Makah Tribe's hunt would almost certainly take several PCFGs over the course of the waiver. (Tab 102 at 69:11–13). While this may be true, PCFG whales are part of the ENP stock, and therefore quota transfers (or lack thereof) would have little to no effect on the stock as a whole.

Regardless, I find it most important to look at the *possible* take rather than any *forecasted* take over the course of the catch limit allocation. Doing so aligns with the holding of *Conservation Council for Hawaii* v. *National Marine Fisheries Service*, 97 F. Supp. 3d 1210 (D. Haw. 2015), which requires me to consider the effect authorized takes rather than anticipated takes. *See* discussion at Part IV.B. The pertinent fact is that the five whales allocated to the United States for use by the Makah Tribe are *available* to be hunted and killed, regardless of whether the full quota is reached. I therefore do not find merit to this argument.

7. Implications for Scientific Research

Ms. Newell expressed concern that the loss of any PCFG whales would adversely impact scientific research. Dr. Weller agreed this could pose a concern, but felt it was more theoretical than tangible. In reviewing the record, I found no evidence showing the proposed hunt would have any seriously adverse implications for scientific research. I also note that, while thought-provoking, this is not a consideration mandated by the MMPA. I therefore do not see any reason to reevaluate the proposed waiver in light of Ms. Newell's concerns.

E. Recommendation: The Waiver Should be Granted

Congress clearly and unambiguously gave the Secretary the discretion to issue waivers of the MMPA's moratorium from time to time. The MMPA also contemplates that individual members of endangered species or depleted stocks will be taken on occasion, and seeks to minimize that risk. In developing the waiver proposal, NMFS relied on the best available scientific evidence, comprised of a broad range of reliable, mostly peer-reviewed studies and data sets. NMFS used current data and updated its evidence throughout the hearing when newer information became available. Its risk calculations are also appropriately based on the total

number of takes allowed under the waiver and regulations. Finally, NMFS demonstrated that it considered the ecosystem as a whole, including the hunt's impact on other stocks or species.

NMFS has determined that the risk of a WNP whale actually being killed during the hunt is very low, even when using conservative estimates that likely overstate the true risk to the WNP. There is also evidence that the PCFG may be more affected than the ENP stock at large. However, the evidence does not indicate that the hunt will be sufficiently detrimental to the marine ecosystem to warrant denial of a waiver, and the MMPA does not mandate separate consideration of subgroups within a stock when analyzing a waiver's impact on the stock's distribution, abundance, breeding habits, or migratory movements. If the MMPA was intended to be applied to feeding aggregations like the PCFG, Congress surely would have said so.

The IWC evaluated the Makah Tribe's hunt proposal in 2013 and concluded it was acceptable and met the Commissions conservation objectives, as long as it included "a photo identification programme to monitor the relative probability of harvesting PCFG whales which is undertaken each year and the results presented to the Scientific Committee for evaluation." (Tab 21C at Ex. M-0149). The hunt proposed in NMFS's regulations has additional protections beyond the measures the IWC initially considered, and the IWC concluded in 2018 that the proposed hunt met its conservation objectives and would not cause harm to the Western Feeding Group (or WNP). (Tab 21A at 82).

While other parties may disagree as to NMFS's conclusions on particular issues, as well as the overall decision to propose a waiver, it is nevertheless clear that NMFS expended considerable time and effort in its analysis. I find the arguments against the waiver less credible. Both AWI's interpretation of the *Kokechik* holding and Sea Shepherd's reliance on the co-tenancy language in *Anderson* would, in essence, have the absurd result of prohibiting the

Secretary from exercising Congressionally-granted authority. *See, e.g., John v. City of Salamanca*, 845 F.2d 37, 41 (2nd Cir. 1988) (when a party suggests a statute establishes the *authority* to govern while denying the *ability* to do so, the court "cannot adopt this tortured reading of Congress' language.").

Likewise, AWI's scientific evidence against the waiver was not convincing. At the hearing, NMFS asked Mr. Schubert whether he disagreed with the IWC Scientific Committee's conclusion that the proposed hunt management plan met its objectives for ENP, PCFG, and WNP gray whales. While he did not directly answer the question, Mr. Schubert stated he had never been to a Scientific Committee meeting, he would require more time to fully understand the modeling, and some of the elements of the model were not clear to him because he had not delved into it. (Tab 104 at 43:4–44:16). When asked whether he disagrees with the MMC's opinion that the proposed waiver is based on the best available scientific evidence and is appropriately precautionary, he stated the issue is "more complicated than anybody makes it out to be" and he would have to review the MMC's letters again. (Tab 104 at 44:22–45:11). Mr. Schubert's responses to cross-examination by the Makah Tribe also make clear that he did not conduct a thorough, broad-based literature review, but instead relied heavily on data supporting AWI's position. (*See generally* Tab 104 at 45–100).

Sea Shepherd's expert witnesses were more credible, but still did not present sufficient evidence to show that granting the waiver would be contrary to law. Dr. Villegas-Amtmann is clearly an expert in marine mammal bioenergetics, but the research done thus far in her field does not prove that the proposed waiver would be harmful to gray whales. Ms. Newell has extensive observational experience and has participated in gray whale research, but much of her testimony was anecdotal and not based on the entire body of available scientific evidence. She

also made clear that, while she is concerned about gray whales as a whole, her main goal is to protect PCFG whales from being hunted. (*See* Tab 104 at 165:12–167:25).

Finally, 16 U.S.C. § 1371(a)(3)(A) requires the Secretary to "be assured" the taking is in accordance with the policies and principles of the MMPA, a term normally understood to mean "characterized by certainty or security," or "very confident." *See, e.g.*, https://www.merriam-webster.com/dictionary/assured. It does not require the Secretary to conclusively rule out any possibility that an animal from a depleted stock could be taken. If Congress had intended such a result, it could have used more precise language rather than giving the Secretary discretion over such issues. After reviewing this Recommended Decision under the authority delegated by the Secretary, the NMFS Assistant Administrator will exercise such discretion if he or she is very confident that the waiver meets all the statutory criteria.

As the MMC pointed out, there are ways for Makah Tribe to potentially obtain authorization for the incidental take of a WNP whale. Specifically, 16 U.S.C § 1371(a)(5)(A)(i) allows the Secretary to allow, for United States citizens "who engage in a specified activity (other than commercial fishing) within a specified geographical region," the incidental take of small numbers of marine mammals. Such a determination would require a separate rulemaking, but if the Secretary made the necessary findings set out in that provision, it could provide a path for members of the Makah Tribe to hunt when WNPs might be present in the U&A.

As discussed above, NMFS has presented ample evidence, which the other parties have not rebutted, to show that the ENP stock of gray whales will not be disadvantaged by the issuance of a waiver here. The authorized take will not affect the ENP stock's ability to maintain its OSP, and will not meaningfully affect its distribution, breeding, or migratory habits. I therefore recommend that the Secretary **GRANT** the proposed waiver.

VII. ANALYSIS AND DISCUSSION: THE PROPOSED REGULATIONS SHOULD BE ADOPTED IN PART AND MODIFIED IN PART

Having found that the Secretary can issue this proposed waiver, I must now analyze the accompanying regulations to determine whether they are appropriate under the circumstances. The MMPA requires NMFS to publish draft regulations governing the taking of any marine mammal potentially subject to a waiver. 16 U.S.C. § 1371(a)(3)(A). These regulations must be based on the best scientific evidence available and be prescribed in consultation with the MMC, and ensure the taking "will not be to the disadvantage of those species and population stocks and will be consistent with the purposes and policies" of the MMPA. 16 U.S.C. § 1373(a). NMFS has interpreted "disadvantage" to refer to a stock's ability to attain and maintain OSP. (Tab 1 at ¶ 56; *see also* 45 Fed. Reg. 72,178, 72,185 (1980)).

In prescribing regulations, the Secretary shall fully consider all factors that may affect the extent of the take, including but not limited to the effect of such regulations on—

> (1) existing and future levels of marine mammal species and population stocks;
> (2) existing international treaty and agreement obligations of the United States;
> (3) the marine ecosystem and related environmental considerations;
> (4) the conservation, development, and utilization of fishery resources; and
> (5) the economic and technological feasibility of implementation.

16 U.S.C. § 1373(b). The regulations may also restrict the number of animals allowed to be taken each year; the age, size, and/or sex of the animals which may be taken; the season during which the animals may be taken; the manner and location in which the animals may be taken; and fishing techniques which have been found to cause undue fatalities to any marine mammal species. 16 U.S.C. § 1373(c).

NMFS's proposed regulations set the parameters for a limited hunt over a 10-year period, as well as for the use of whale meat and other whale products. In the Federal Register notice publishing the proposed regulations, NMFS stated, "Two key management goals shaped many of

the provisions in the proposed regulations: (1) Limiting the likelihood that tribal hunters would strike or otherwise harm a WNP gray whale and (2) ensuring that hunting does not reduce PCFG abundance below recent stable levels." 84 Fed. Reg. 13608.

To balance these management goals, NMFS proposes alternating hunt seasons. Even-year hunts would occur during the migration season (December 1 of an odd-numbered year through May 31 of the subsequent even-numbered year) to reduce risk to PCFG whales. Odd-year hunts would occur during the feeding season (July 1 through October 30 of odd-numbered years) to reduce risk to WNP whales. NMFS also proposes overall strike limits of three strikes during even-year hunts and two strikes during odd-year hunts, and a limit of 16 strikes on PCFG whales over 10 years. Further the Makah Tribe would be permitted to land up to three whales in even-year hunts and one whale in odd-year hunts.

NMFS also included a low-abundance threshold for PCFG whales, meaning the hunt would cease if this group's abundance falls below 192 whales or its minimum abundance estimate falls below 171 whales. Moreover, the hunt would cease if any struck whale is determined to be from the WNP stock. Other sections of the proposed regulations set out requirements for hunt participants; set limits on approaches, unsuccessful strike attempts, and training activities; regulate the use and consumption of whale meat and other whale products; require humane killing; provide for NMFS oversight; govern the methods of identifying individual gray whales approached or struck pursuant to activities conducted under the waiver and regulations; and govern impacts to other species other than ENP gray whales.

NMFS published the proposed regulations in the Federal Register on April 5, 2019. However, during the course of the waiver proceeding, NMFS filed a motion asking me to consider certain changes to the proposed regulations. I held the motion in abeyance, as it was

premature at the time, but permitted the other parties to address the issues NMFS raised so I could consider them at the appropriate time. Consequently, I am taking the motion and responses into consideration as I address the appropriateness of the proposed regulations and make recommendations to the NMFS Assistant Administrator.

A. NMFS Met the Requirements of 16 U.S.C. § 1374(b)

The MMPA requires NMFS to satisfy certain criteria when promulgating regulations to govern a hunt pursuant to a waiver. These requirements are intended to ensure that a permitted hunt: 1) would not adversely affect the stock subject to the waiver; 2) would not cause the United States to violate other, existing treaties or laws; 3) would not harm the marine ecosystem; 4) would not adversely affect the conservation, development, and utilization of fisheries resources; and 5) would be technologically and economically feasible. For the following reasons, I find NMFS met its burden when drafting the proposed regulations.

1. Existing and Future Levels of Marine Mammal Species and Population Stocks

As discussed in detail with respect to the waiver, NMFS thoroughly considered both existing and future abundance levels for the ENP and WNP stocks and the PCFG. I also note that NMFS has taken additional precautions in proposing to restrict the hunt area to the coastal portion of the Makah U&A, as more known PCFG are sighted in the Strait of Juan de Fuca while a higher proportion of non-cataloged whales are seen in the coastal areas. (Tab 90B at 5; Tab 96 at 7). NMFS's methodology is robust and none of the parties presented credible evidence that it relies on incorrect assumptions or reaches implausible results.

However, the issue of whether the regulations would sufficiently protect WNP whales under a *Kokechik* analysis still remains. Factually, the scenario here is distinguishable from *Kokechik* because the probability of a lethal strike on a WNP gray whale is quite low, while there

was a near-certainty that the commercial tuna fishing operations would kill members of a depleted stock of fur seals. Dr. Weller and Dr. Moore, using a conservative methodology, estimated the risk of a WNP being killed in the hunt as 5.8% over ten years, or one whale every 135 years. (Tab 4 at ¶ 11). As their methodology envisions a worst-case scenario and the true risk to WNP is likely lower, it is possible the concerns in *Kokechik* would not apply here.

The same is not true of approaches, however, which are nearly certain to occur if every available approach is used over ten years. Whether the number of approaches expected under Dr. Moore and Dr. Weller's calculations—fourteen over the course of the waiver—qualifies as "a very remote possibility" under the *Kokechik* analysis is not clear. Although these approaches are unlikely to harm any WNP whales, or even cause any lasting behavioral effects, *Kokechik* did not specifically distinguish between lethal and non-lethal takes. Nevertheless, the court gave significant consideration to activities causing mortalities and morbidities among depleted stocks, and it is also clear that not all takes of depleted stocks necessarily disadvantage those stocks.

Given the distinguishing factors between the takes at issue in *Kokechik* and the scenario proposed here, it is possible this hunt could proceed without running afoul of legal precedent. However, NMFS acknowledges the Makah Tribe may need a permit in order to take WNP whales, regardless of whether those takes involve approaches, training strikes, or a lethal strike. Moreover, the MMC recommends an additional provision in the regulation making issuance of a hunt permit for ENP whales contingent on the Makah Tribe obtaining an incidental take permit for WNP whales.

After thoroughly considering this issue, I agree with the MMC that the Makah Tribe should be required to obtain an incidental take permit for WNP whales during the even-year hunts, when WNPs are expected to be present in the Makah U&A, and find the regulations

should be modified to specify this requirement. Doing so will help assure any court that may review this rulemaking in the future that NMFS has fully considered the existing and future levels of the WNP stock and has drafted its regulations accordingly. However, I do not find it necessary to require an incidental take permit for WNPs during the odd-year hunts, which take place during seasons when WNPs are not expected to be present in the hunt area.

2. Existing International Treaty and Agreement Obligations of the United States

The main international agreement relevant to this proceeding is the International Convention for the Regulation of Whaling, to which the United States is a signatory. While some parties believe the IWC erred in granting a catch limit for gray whales that could be used by the United States on behalf of the Makah Tribe, this is not the appropriate forum to consider such arguments. NMFS is not proposing to exceed the agreed-upon catch limits or to otherwise violate the terms of the agreement, and the IWC Scientific Committee's Standing Work Group on Aboriginal Subsistence Whaling Management Procedures evaluated the proposed hunt and determined it would meet the IWC's conservation objectives for ENP, WNP, and PCFG Whales. I therefore find NMFS satisfied this requirement.

Although NMFS does not regard the Treaty of Neah Bay as an "international treaty," it is nevertheless a key foundational aspect of the waiver proceeding, as NMFS would not have considered the Makah Tribe's waiver request in the absence of the Treaty. The application of the Treaty was a major point of contention between certain parties, particularly the Makah Tribe, Sea Shepherd, and AWI, but their arguments are largely academic in this forum. The Ninth Circuit declined to decide how much importance NMFS could or should give the Treaty when deciding whether to bring a waiver proceeding, and it has no bearing on the specific statutory and regulatory issues I am tasked with deciding here.

Lastly, some individuals and groups who submitted public comments believe the decision to grant a waiver and allow the proposed hunt will cause diplomatic strife with Canada and Mexico, which also encompass part of the gray whales' range. However, none of the commenters or parties pointed to any particular treaty or agreement which the waiver and regulations may violate. Thus, whether NMFS acted prudently in soliciting or failing to solicit input from neighboring countries is well outside the scope of my decision here.

3. The Marine Ecosystem and Related Environmental Considerations

This issue is largely covered in the waiver analysis. In addition, the DEIS contains ample evidence that NMFS considered other factors related to the marine ecosystem such as potential effects to water quality, pelagic and benthic habitats, other species of fish and wildlife, and marine noise levels. (Tab 1 at ¶ 61; Tab 90F at Sections 2, 4.3, 4.5, 4.11). I therefore find NMFS met its burden as to this prong.

4. The Conservation, Development, and Utilization of Fishery Resources

NMFS considered this factor and determined the proposed regulations would not have any effect on the conservation, development, and utilization of fishery resources. (Tab 1 at ¶ 60). Sea Shepherd's witness, Ms. Newell, and commenter Dr. Jim Darling both expressed fears that the proposed hunt would cause economic harm to the whale watching industry. Ms. Newell stated whale watching is "a multi-billion-dollar global business and a multi-million-dollar business in Oregon," with gross revenues to her business of approximately $4,500 per day at the height of the season. (Tab 64 at ¶ 13, 14). However, there is evidence that little commercial whale watching activity presently occurs in the Makah U&A because other whale watching areas are far easier to access. (Tab 103 at 229:9–23).

The degree to which a limited hunt in northern Washington State would impact such operations in other geographic areas, such as Depoe Bay, Oregon, is speculative at best. I therefore find this factor satisfied.

5. The Economic and Technological Feasibility of Implementation

Implementing the hunt is not likely to be economically or technologically prohibitive. Although not specifically stated, it appears the Makah Tribe will bear many of these costs, such as procuring and maintaining vessels and other equipment used in the hunt. NMFS's costs associated with the proposed regulations would primarily involve the continuation of longstanding gray whale surveys and photo-identification work, with additional funding of approximately $2,000 per day of hunting needed to support NMFS monitoring and enforcement personnel. (Tab 1 at ¶ 62; Tab 1J; Tab 1M; Tab 90B; Tab 90F at Section 4.6.2.5). The annual NMFS budget for marine mammal management in the West Coast Region is over $700,000. (Tab 90B).

No party submitted evidence of costs that would potentially be borne by other agencies, including but not limited to the U.S. Coast Guard, Washington State Patrol, and National Park Service. In any event, those costs would be incidental to the costs of implementing the actual hunt. Any estimates of such costs at this stage would be merely speculative, but would be appropriate for consideration during the permitting process.

The record also shows the hunt plan is technologically feasible, though there may be minor difficulties in obtaining clear or usable photographs for every whale approached. Another potential issue is whether it is possible to obtain official photo-identification for all whales within 24 hours, which appears likely but not certain. However, these potential setbacks are insufficient

to override the overall feasibility of the hunt plan. After reviewing the factors, I find the regulations are generally acceptable.

B. Motion to Amend the Proposed Rules

Prior to the hearing, NMFS filed a motion to amend certain proposed rules. Some amendments would address ambiguities AWI raised, including how to account for multiple strikes on the same whale. (Tab 32A at ¶¶ 61, 63-65). The amendments would also loosen some restrictions on the Makah Tribe's use of edible whale products such as meat and blubber. The other parties had an opportunity to express their opinion on the proposed amendments, and those who weighed in were generally in favor. No party expressed opposition.

One of the requested revisions is to the definition of the term "strike" or "struck," found at proposed regulation § 216.113(a)(4)(iii). NMFS wishes to clarify, in response to AWI's argument that the definition was ambiguous, that multiple strikes on the same whale would count as a single strike. (Tab 32A at ¶¶ 58, 61, 63–65; Tab 86 at 2; Tab 86A at 5, 7-8). *See also* 84 Fed. Reg. at 13,608 ("Our proposed regulations . . . presume that any struck whale will die."). Thus, the regulatory limitation to one strike per 24-hour period would not preclude the Makah Tribe from firing additional shots to rapidly kill a whale that had been harpooned. This is consistent with the IWC definition of "strike," in which all harpoon throws or shots from a firearm on a single whale are collectively considered a single strike.

NMFS's argument for the amendment is that, because its Proposed Regulations and supporting analyses presume a struck whale will die, NMFS did not intend to count against the limits any approaches, strikes, or unsuccessful strike attempts on a whale that has already been struck. (Tab 86A at 5, 7–8; Tab 32A at ¶ 58). Accordingly, NOAA proposes to amend the definition of the term "strike or struck" in § 216.112 Definitions, as follows:

> *Strike or struck* means to cause a harpoon, darting gun, or other weapon~~device~~, or a projectile from a rifle or other weapon, to penetrate a gray whale's skin or an instance in which a gray whale's skin is penetrated by such a weapon or projectile ~~a harpoon or other device~~ during ~~while~~ hunting.

While scientists familiar with aboriginal subsistence hunting are likely familiar with the IWC, I find NMFS's revised language more understandable for lay readers, and thus more appropriate for inclusion in the regulations. However, the revised definition of "strike" NMFS offered still does not explicitly state that multiple strikes on the same whale are considered a single strike. Thus, I recommend adding a sentence to the end of the definition stating, "Once a whale is struck, subsequent penetrations of the same whale's skin during the hunt for the purpose of killing or landing that whale are considered to be part of the initial strike."

Relatedly, NMFS proposes that § 216.113(a)(4)(iii) Strike be amended to read:

> A hunt permit may authorize no more than three gray whales to be struck~~strikes~~ in an even-year hunt and no more than two gray whales to be struck~~strikes~~ in an odd-year hunt. Multiple strikes on the same whale will count as a single struck whale. In an even-year hunt, a hunt permit may authorize no more than one gray whale to be struck ~~strike may be authorized~~ within the 24-hour period commencing at the time of the first strike on a whale. The Regional Administrator may authorize the full number of gray whales to be struck~~strikes~~ in the initial hunt permit and will adjust strikes downward in subsequent permits if necessary to ensure that no more than 16 ~~strikes on~~ PCFG whales are struck ~~do not exceed 16~~ over the waiver period, of which no more than 8 struck whales ~~strikes~~ may be ~~on~~ PCFG females.

The revisions shown in the attachments to NMFS's motion (Tabs 86A and 86B) clarify that multiple strikes on the same whale would count as one strike toward the applicable strike limits. (Tab 86A at 7–8). This is in accordance with the definition of "strike or struck" and is an appropriate revision.

Also in keeping with the above changes, NMFS proposes to amend the section on approaches, § 216.113(a)(4). NMFS would add to § 216.113(a)(4)(i): "Any hunting approach on a gray whale that has already been struck will not count against these limits" and to § 216.113(a)(4)(ii): "Any unsuccessful strike attempt on a gray whale that has already been struck will not count against these limits." These amendments further clarify that, once a whale has been initially struck, the Makah Tribe may take further actions as necessary to dispatch that whale without violating the limitations on approaches.

In addition to amending the definition and limitations on strikes, NMFS also seeks to make certain changes to the restrictions on use of whale meat and other whale parts. This is in response to the Makah Tribe's argument that the requirements in the Proposed Regulations regarding the sharing of edible whale products were too restrictive. The original proposed rule required most consumption of edible whale products to take place on the reservation, but significant numbers of enrolled members do not live on the reservation. Therefore, they would be prevented from sharing such products with non-enrolled family members and guests at their residences. (Tab 26 at ¶ 20; Tab 31 at 9; Tab 101 at 42–44).

NMFS agrees tribal members should be able to share edible whale products with non-members for consumption at a member's residence, whether that is within or outside of the boundaries of the reservation. (Tab 86A at 11, 16-17). NMFS asserts this proposed modification will further the objectives to balance the Makah Tribe's ability to fully utilize landed whales with feasible and reasonable management and enforcement of authorized hunt activities.

The final proposed amendment regards handicrafts and is in response to AWI's assertion that the Proposed Regulations are unclear about whether Makah Indian handicrafts could be exported internationally. (Tab 32A at ¶ 71). The Proposed Regulations provide that handicrafts

can be possessed, transported, shared, bartered, or sold "in the United States," but also contain some ambiguities. As NMFS clarified, the Makah Tribe's waiver request did not seek authorization to export handicrafts, and NMFS did not intend to authorize international export in the Proposed Regulations. (Tab 90F at App. B at 15 (Makah Tribe)). In order to correct these issues, NFMS has proposed to amend § 216.115 by clearly prohibiting export of grey whale product by deleting the term export from § 216.115(a)(12) and by adding as a prohibited act in subparagraph (a)(13) "Export any gray whale products."

Upon review I find each of the proposed amendments appropriate. None of the parties expressed any significant objection, and the only meaningful expansion from the original drafting is to allow non-members of the Tribe to consume edible whale products in enrolled tribal members' off-reservation residences. With the exception of the additional modification I recommended to the definition of "strike or struck," I will use NMFS's unredacted update to the proposed rule, which includes the above amendments, for the remainder of this analysis. (Tab 86B). Accordingly, the motion to amend is **GRANTED**.

C. Specific Recommended Modifications

In addition to NMFS's proposed amendments to the regulations, as discussed above, I am also recommending certain other modifications to improve the clarity and comprehensiveness of the regulations. A complete copy of my recommended revisions to the regulations is attached to this Recommended Decision as **Appendix B**, and the reason for each recommended modification is discussed below. However, all citations to the proposed regulations in this section are to the version NMFS published in the Federal Register on April 5, 2019 (Tab 90B), in the event the Assistant Administrator decides not to accept all or some of the recommended revisions here.

1. 216.110 Purpose

This section adequately sets out the purpose of the regulations, and I recommend it be adopted as proposed.

2. 216.111 Scope

This section adequately sets out the scope of the regulations, and I recommend it be adopted as proposed.

3. 216.112 Definitions

During this proceeding, it became apparent some of the proposed definitions caused confusion. To that end, NMFS filed a motion seeking to amend certain definitions. As none of the parties challenged these amendments, I recommend adopting NMFS's proposed changes. If a definition is not specifically discussed below, I recommend that it be adopted as currently worded in the Federal Register notice.

a. "Strike or struck"

As previously discussed, I recommend the definition of "strike or struck" included in the final regulations be modified to state:

> *Strike or struck* means to cause a harpoon, darting gun, or other weapon, or a projectile from a rifle or other weapon, to penetrate a gray whale's skin or an instance in which a gray whale's skin is penetrated by such a weapon or projectile during hunting. Once a whale is struck, subsequent penetrations of the same whale's skin during the hunt for the purpose of killing or landing that whale are considered to be part of the initial strike.

b. "Hunt" and Related Definitions

AWI took issue with NMFS's definition of the term "hunt," arguing NMFS erred in distinguishing between lethal and non-lethal activities and "carving out an exception for the so-called 'non-lethal hunt activities' . . . such that 'hunt' only encompasses the killing of the whale."

(Tab 115 at 34). Since the MMPA defines "take" to include both hunting and killing, but does not further define either of those terms, AWI argues they should be given their ordinary, contemporary meanings. AWI proposes a "hunt" would encompass any pursuit of whales for food or in sport, including all training activities as well as those in furtherance of killing and landing a whale. *Id.*

NMFS argues they intentionally separated training and hunting activities in the regulations, recognizing "hunt activities that do not result in a strike could nevertheless cause sub-lethal effects that may constitute 'take' under the MMPA. Our proposed regulations include limits on non-lethal encounters, specifically, unsuccessful strike attempts, training harpoon throws, and approaches, to limit impacts to gray whales in general and in particular to limit the extent to which WNP and PCFG whales could be encountered and possibly disturbed in the hunt area."

None of the parties disagree that training activities may constitute takes, and therefore must be strictly regulated. I find it reasonable for NMFS to distinguish between training and hunting activities. Though AWI cited one dictionary definition for "hunt," which is "to pursue for food or in sport," other definitions make clear that the ultimate goal of a hunt is to catch or kill. *See, e.g.*, https://www.dictionary.com/browse/hunt?s=t; https://www.learnersdictionary.com/definition/hunt; and https://dictionary.cambridge.org/us/dictionary/english/hunt. Here, there is a clear difference in intent between training activities, which are not intended to harm whales, and hunting, where the goal is to kill and land a whale for use and consumption. Moreover, the Makah Tribe's whaling activities are not for sport, but are instead for sustenance and involve sacred cultural rites and rituals.

Consequently, training activities are more likely to be construed as "harassment" than "hunting." The MMPA 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 . . . ; 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." 16 U.S.C. § 1362(18)(A), (C), (D). I find AWI's reading of the regulations overly formalistic. Moreover, it would likely cause confusion, as it is unclear what other terminology NMFS could use to convey the different limitations on non-lethal training activities and potentially lethal hunting activities. Therefore, I see no need to amend the definition of "hunt" or of the related training activities.

4. 216.113 Take authorizations

This section is extremely broad in its scope and structurally complex, encompassing NMFS's authorization to issue permits; permit duration; hunting seasons; strike limitations; and usage of whale products. I find the current structure unnecessarily complicated, and note that the section heading does not accurately describe all the functions included in the text. Accordingly, I recommend dividing it into three separate sections, which will also necessitate renumbering the proposed regulations: one concerning the issuance and duration of permits (recommended to become § 216.113); the second concerning hunt requirements and restrictions (recommended to become § 216.114); and the third concerning usage of whale products (recommended to become § 216.116). These modifications would make the purpose of each section clearer to both the Makah Tribe and the general public. My detailed recommendations for each of these three areas are discussed below.

a. Issuance and Duration of Permits

NMFS proposes to limit the duration of an initial hunt permit to no more than three years, and the duration of any subsequent permit to no more than five years. § 216.113(a)(1). However, a permit can be granted for as little as one year. This will allow for adaptive hunt management, since NMFS would take into account the results of previous hunts when determining whether to issue subsequent permits. This proposal is reasonable and clearly in accordance with the conservation objectives of the MMPA.

If the Assistant Administrator decides to implement my recommendation to reorganize the regulations, I recommend moving certain other provisions into this section. These are the contents of the hunt permit, currently found at proposed section 216.113(a)(6), and the required determinations found at proposed section 216.113(a)(7). Placing all regulatory provisions that cover the issuance and duration of permits into a single section, rather than spreading them piecemeal through several sections, would help ensure the requirements are clear and accessible by eliminating unnecessary cross-referencing.

b. Hunt Requirements and Restrictions

My next recommendation is to place all regulatory provisions governing hunt requirements and restrictions in a single section. However, aside from simple reorganization, I also recommend substantive modifications to this area.

i. ALTERNATE YEAR HUNT

Under the proposed regulations, the Makah Tribe would be permitted to land no more than three whales during an even-year hunt, which targets migrating whales, and no more than one during an odd-year hunt, which occurs during the summer/autumn feeding season. I find the even-year hunts, as currently proposed, to be problematic in the absence of an incidental take

permit for WNP whales. The Secretary has no authority under 16 U.S.C. § 1371 to allow even a "de minimis" taking of a stock which is not at its OSP. *See Baldridge*, 679 F. Supp. at 47. Yet, the proposed even-year hunt risks doing exactly that. As there is no evidence WNPs are present during the summer months, the odd-year hunt does not carry any known risks to WNPs.

I recommend that odd-year hunts be allowed to commence at the soonest appropriate time, but concur with the MMC's recommendation to require incidental take authorization under 16 U.S.C. § 1371(a)(5) or any other relevant section of the MMPA prior to permitting an even-year hunt. I recognize this creates a possibility that the Makah Tribe may only be allowed to hunt every other year during this waiver's validity, but I find this approach most adequately minimizes the risks to both PCFG whales—which will still be hunted only in odd years—and WNP whales, which may not be taken without separate authorization.

ii. TAKE AUTHORIZATIONS

The take authorizations contained in the regulations are generally acceptable. However, I recommend adding language clarifying that the authorized training periods are limited to those months in which WNPs are not expected to be present in the U&A, unless the Makah Tribe secures an incidental take permit allowing approaches and training strikes on WNP whales. This modification would be consistent with my finding that there can be no takes—whether lethal or non-lethal—of WNP whales without an incidental take permit.

iii. LIMITS ON NUMBER OF TAKES

I also recommend a number of modifications to the section on accounting and identification of whales. Subparagraph (a)(4) of that section sets limits on the number of gray whales approached, subjected to unsuccessful strike attempts, struck, struck and lost, and landed. Currently, training approaches are allowed at any time of year but hunting approaches are

restricted to certain months, depending on whether it is an odd or even year. The regulations would allow the Makah Tribe to make 353 approaches per calendar year, including both hunting and training approaches, of which 142 may be on PCFG whales. In keeping with my above recommendations, in the absence of an incidental take permit for WNP gray whales, training activities should not be permitted to occur during migratory periods when WNPs may be present in the Makah U&A.

The proposed regulations presume that the proportion of hunting and training approaches on PCFG whales will be in accordance with the proportions specified in § 216.114(a)(2). *See* § 216.114(b)(3). Whaling crews who approach whales must also attempt to take digital photographs for identification purposes, so the whales can be matched to existing catalogs to determine whether they are PCFG or WNP whales. *See* § 216.117(a)(1). This is a prudent approach.

In addition, the regulations require the Makah Tribe to determine the sex of all whales struck, whenever possible. PCPW argued at the hearing that female PCFG whales should be considered more valuable than males, since they bear calves and teach feeding behavior. (Tab 101 at 72:20–73:14). Thus, PCPW believes the regulations should permit fewer strikes on PCFG females than on males; currently the regulations permit a maximum of 8 strikes on PCFG females over ten years and a maximum of 16 total strikes on PCFG whales. Sea Shepherd advances a similar argument. (Tab 116 at 4–7).

The IWC's review of the potential impacts of the hunt assumed the Makah Tribe would take equal proportions of male and female whales, but showed no sign that the removal of females would cause a conservation impact to the PCFG over a 100-year period. (Tab 103 at 77:4–13). Some scenarios even modeled the effects of a higher proportion of strikes on females

without changing the overall conclusions. The regulations are also inherently more protective of females, as the Makah Tribe could take the full 16 PCFG whales allowed under the regulations if all were male but would be forced to cease hunting after landing only eight whales if all are female.

iv. ABUNDANCE THRESHOLDS

The MMC has recommended that, rather than an "on-off switch," which would cancel the hunt if PCFG levels fall below the levels set in the regulations, NMFS implement a "dimmer switch," in which the take allowances would decrease if the PCFG population shows signs of decreasing. Mr. Yates testified at the hearing that NMFS considered this recommendation, but because the allowances were "already such a conservative level that we were intending and committed to attain that we decided to stick with just kind of the on/off level of population thresholds for PCFG." (Tab 101 at 80:22–25). However, proposed section 216.114(a) can be read to authorize a "dimmer switch," as it requires the Regional Administrator to "notify the Makah Indian Tribe in writing of the maximum number of PCFG whales, including females that may be struck during the upcoming hunting season." The regulations do not require the Regional Administrator to authorize the full number of strikes otherwise allowed under the regulations. Thus, NOAA has already contemplated allowing the Regional Administrator to reduce the take allowances if PCFG abundance and other factors justify such a determination.

Considering the existing language to constitute a "dimmer switch," which would be determined as part of the permitting process, accords with the MMPA's conservation principles. The record does not contain clear evidence about the ability of the PCFG to recuperate from various levels of decline, and specifically what the outlook for the group would be if levels do reach the minimum threshold set in the regulations. Reducing the number of strikes authorized in

a permit, based on the most current evidence available at the time, would allow NMFS to slow the hunt if there are early signs of decline, rather than wait for a more extensive decline to cease it entirely.

Mr. Yates also testified that NMFS considered setting an overall abundance threshold for the ENP population, but deemed it unnecessary because the population is sufficiently large and robust, and the permitting process allows year-by-year management of the hunt. (Tab 101 at 81:10–23). However, I find the scientific evidence weighs in favor of an overall abundance threshold and recommend the Secretary consider setting one in the final regulations. Particularly in light of the current UME, this would provide additional assurance that the hunt will not continue if the ENP population begins to decline at rates that spark alarm in the scientific community. While year-by-year management by permit may in fact be a scientifically sound method, it nevertheless risks the appearance of being arbitrary. Setting clear lower limits on ENP abundance, below which the hunt could not be permitted, removes much of that risk.

v. HUNT SAFETY

PCPW raised the issue of safety during the hunt, arguing the use of a .50 caliber weapon poses unacceptable risks to bystanders, including recreational users of the Olympic National Park. PCPW asserts NMFS has not properly consulted with park officials to adequately address the safety concerns. NMFS sought to limit this testimony, as it views the selection of weapon and associated safety issues as part of the permitting process. (Tab 90B at 3).

The MMPA states that the regulations accompanying the waiver *may* restrict "the manner and location in which the animals may be taken." 16 U.S.C. § 1373(c). However, the statute also requires that any permit issued *must* specify "the location and manner… in which the animals will be taken."16 U.S.C. § 1374. The manner in which the hunt will be carried out includes

safety issues, such as those raised by PCPW. Thus, NMFS could have addressed safety issues as part of this proceeding but has chosen to defer these considerations until the permitting process. Most of the parties agreed with NMFS's decision, and no party other than PCPW presented specific, substantive evidence regarding hunt safety.[35] (Tab 66 at 2–3).

I recognize that PCPW raises legitimate concerns about the safety of hunt participants and bystanders, and the degree of coordination required between NMFS, the Makah Tribe, officials at the Olympic National Park, and other entities. However, the statute does not require NMFS to consider all these issues at the waiver stage, the way it does at the permitting stage. Thus, I cannot require the waiver and regulations to cover the manner of the hunt as part of this proceeding.

c. Use and Consumption of Whale Products

Restrictions on the use of whale products are currently proposed as 216.113(b). As the MMC pointed out, the MMPA does not require NMFS to place restrictions on the use of marine mammal products if a waiver is granted. However, NMFS is allowed to include additional restrictions in the regulation and permit, as it deems necessary. Here, NMFS determined it is advisable to restrict the Makah Tribe's ability to use whale meat, blubber, and other parts in order to mitigate any risk of commercial exploitation.

The Makah Tribe indicated it was generally willing to operate within these restrictions, with a notable exception regarding the sharing of edible whale products with non-members at their off-reservation residences. NMFS then sought to relax that restriction, and the Makah Tribe

[35] Mr. Scordino did cover some safety-related issues in his initial direct testimony and on cross-examination, but this information was presented in a general manner and did not cover all the topics that will be required for NMFS to issue hunt permits.

is satisfied with the revisions. NMFS also sought to clarify that the Makah Tribe may not export handicrafts made from whale parts. I found both modifications reasonable and granted them.

One further issue AWI raised in its prehearing filings in regards to this section is enforcement. Specifically, Mr. Schubert questioned who will enforce the limitations on consumption of edible whale products and the sale of handicrafts and the mechanisms by which they will do so. (Tab 26 at ¶¶ 70-72). NMFS responded,

> NOAA Office of Law Enforcement (OLE) agents, or Washington Department of Fish and Wildlife enforcement officers deputized to enforce federal laws and regulations through a Joint Enforcement Agreement with NOAA OLE, would enforce provisions regarding the use of edible and inedible whale parts, as they do generally for possession of marine mammal parts. They would also enforce the section of the regulations regarding prohibited acts, as they do for other marine mammal regulations. We do not normally specify enforcement strategies in regulations.

(Tab 52B at ¶ 39). AWI did not question any of NMFS's witnesses about this topic during the hearing and did not meaningfully pursue the argument in its subsequent filings.

I find NMFS's explanation adequately satisfies the concerns Mr. Schubert raised in his Declaration, and see no reason for the regulations to be amended in response. Although NMFS does not normally include specific details in its regulations, NMFS has clearly developed a reasonable plan for enforcement. I therefore recommend this section be adopted with the modifications described above.

5. 216.114 Accounting and identification of gray whales

Under the changes I recommend, this section would be renumbered as 216.115. (*See* **Appendix B**). Otherwise, I recommend this section be adopted as proposed.

6. 216.115 Prohibited acts.

If my recommendations are accepted, this section would be renumbered as 216.117. (*See* **Appendix B**). The amended language NMFS proposed in Tab 86B should be substituted for the originally proposed language in 216.115(a)(14), as reflected in the recommended regulations at **Appendix B**.

I also recommend prohibiting approaches on gray whale calves or adult gray whales accompanying calves, in addition to the existing prohibitions on strikes and training harpoon throws. There is no legitimate reason for training approaches to occur on calves or adult whales accompanying calves, as these whales cannot be hunted under the proposed regulations. If approaches are conducted for other reasons such as research, they should be separately authorized. Otherwise, I recommend adopting this section as proposed.

7. 216.116 Applications for hunt permits

As previously discussed, I recommend moving this section earlier in the regulations, retitling it as "Issuance and Duration of Permits," and renumbering it as 216.113. (See **Appendix B**). I also recommend including all requirements for permit applications as subsection (a) and all requirement for issuance of permits as subsection (b). As currently drafted, provisions regarding permitting are contained in multiple sections, and I find it would enhance the clarity and comprehensibility of the regulations if all aspects of the permitting process are contained in a single section.

8. 216.117 Requirements for monitoring, reporting, and recordkeeping

I recommend adopting this section as proposed, but renumbering it as 216.118 for consistency if my structural revisions are accepted. (*See* **Appendix B**).

9. 216.118 Expiration and amendment

I recommend this section be adopted as proposed, but renumbering it as 216.119 for consistency if my structural revisions are accepted. (*See* **Appendix B**).

VIII. CONCLUSION

Having considered the evidence presented at the hearing and the briefs and comments received, I find that the best scientific evidence available supports a waiver of the MMPA's moratorium of the take of marine mammals to allow the Makah Tribe to engage in a limited hunt for ENP gray whales. The takings authorized under the waiver will have only a negligible effect on the stock and will therefore not disadvantage the stock. In developing the proposed waiver, NMFS followed the dictates of the MMPA by considering the "distribution, abundance, breeding habits, and times and lines of migratory movements of such marine mammals," the potential effects on the ecosystem, and the ability of stocks to attain and maintain their OSP. 16 U.S.C. § 1371(a)(3)(A); *see also Anderson v. Evans*, 350 F.3d at 841. I also conclude that NMFS's determination that PCFG whales do not constitute a separate stock is supported by best scientific evidence currently available and that NMFS included adequate protections for PCFG whales in the proposed regulations. Accordingly, my recommendation to the Assistant Administrator is that the waiver for the Makah Tribe should be approved.

I also conclude that NMFS has considered adequately the consider the distribution, abundance, breeding habits, and times and lines of migratory movements of WNP gray whales in making this determination, and the regulations include adequate protections for the WNP stock. However, the waiver of the moratorium does not extend to WNP grey whales. Thus, hunting and training activities during periods when WNP whales might migrate through the Makah hunting area should not be permitted in the absence of an incidental take permit.

Finally, I find the proposed regulations as amended herein are adequate to implement the waiver. I therefore recommend that the Assistant Administrator promulgate the regulations as contained in **Appendix B**.

IT IS SO ORDERED.
Dated: September 23, 2021

George J. Jordan
Administrative Law Judge