

**DEPARTMENT OF COMMERCE****National Oceanic and Atmospheric Administration****50 CFR Part 216**

[Docket No. 031003245-3245-01;I.D. 122702A]

RIN 0648-AR14

**Designating the AT1 Group of Transient Killer Whales as a Depleted Stock Under the Marine Mammal Protection Act (MMPA)****AGENCY:** National Marine Fisheries Service (NMFS), NOAA, Commerce.**ACTION:** Proposed rule; request for comments.

**SUMMARY:** NMFS proposes to designate the AT1 group of transient killer whales as a depleted stock of marine mammals pursuant to the MMPA. This action is being taken pursuant to a status review conducted by NMFS in response to a petition to designate a group of transient killer whales in Alaska (known as the AT1 group). The biological evidence indicates that the group is a population stock as defined by the MMPA, and the stock is depleted as defined by the MMPA.

**DATES:** Comments and information must be received by January 22, 2004.**ADDRESSES:** Comments should be addressed to the Chief, Marine Mammal Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Silver Spring, MD 20910.**FOR FURTHER INFORMATION CONTACT:** Kaja Brix NOAA/NMFS, Alaska Region, (907) 586-7235.**SUPPLEMENTARY INFORMATION:****Electronic Access**

Information related to the petition and the status of the AT1 group of killer whales is available on the Internet at the following address: <http://www.fakr.noaa.gov/protectedresources/whales/default.htm>.

NMFS guidelines for preparing stock assessment reports, which contain guidance for identifying population stocks of marine mammals, may be found on the Internet at the following address: <http://nmml.afsc.noaa.gov/library/gammsrep/gammsrep.htm>.

**Background**

NMFS received a petition on November 13, 2002, from the National Wildlife Federation, on behalf of itself, Alaska Center for the Environment, Alaska Community Action on Toxics, Center for Biological Diversity, Coastal Coalition, Defenders of Wildlife, and

Eyak Preservation Council, to designate the AT1 group of transient killer whales as a depleted population stock under the MMPA. NMFS published a notice that the petition was available (67 FR 70407, November 22, 2002). After evaluating the petition, NMFS determined that the petition contained substantial information indicating that the petitioned action may be warranted (68 FR 3483, January 24, 2003). Following its determination that the petitioned action may be warranted, NMFS conducted a status review to evaluate whether the AT1 group is a population stock and, if so, whether that stock is depleted. This proposed rule is based upon that status review.

Killer whales in the Pacific Northwest and Alaska are classified into three distinct forms: "Residents,"

"transients," and "offshores." All three forms occur in Prince William Sound and the Kenai Fjords region of Alaska

The core of the resident killer whale social structure is the matrilineal group, or matriline. A matrilineal group, which may be as small as two animals, consists of a female and all her offspring of both sexes. Permanent associations of matrilineal groups are termed "pods". Resident pods of killer whales usually contain 3-52 individuals; emigration or immigration occurs only by birth or death (Saulitis, 2000; Matkin and Saulitis, 1994; Matkin *et al.*, 1999). Breeding by resident killer whales typically does not occur within pods but between whales from distantly related pods (Barrett-Lennard, 2001). A number of associating and potentially interbreeding resident pods may form a "population," the largest social division. A resident population may number in the hundreds and may be distinguished from other populations on the basis of genetic or acoustic analysis and association patterns.

The social structure of transient killer whales is not as well understood as that of resident killer whales. Some movement of individuals occurs between groups within a population and thus there is a lack of clearly defined pods. However, at the population level the same separations based on genetic and acoustic analysis and association patterns can be made for transients as for residents.

A definitive characteristic of transient killer whales is that they prey on other marine mammals, unlike resident killer whales which subsist on fish. Other documented differences between transient and resident killer whales include differences in morphology, group size (transient groups tend to have fewer whales), social organization, and acoustic calls. Transients and

residents avoid one another and do not interbreed, although rare interactions between transients and residents have been observed. Thus, a very small transient group may exist among a much larger resident population and remain demographically isolated.

Recent genetics analysis by Barrett-Lennard (2000) indicate that there are three distinct transient killer whale groups present in the eastern North Pacific: The West Coast (WC) transients, the Gulf of Alaska (GOA) transients and the AT1 transients. These three groups are genetically separate but their geographic ranges overlap (Barrett-Lennard, 2000). The GOA transient group and the AT1 transient group exclusively inhabit Alaskan waters. GOA transients are found in the waters west of Glacier Bay (as far as Kodiak Island), and occasionally enter Prince William Sound. The AT1 transients appear to have a more limited range and have only been seen year-round in Prince William Sound and the Kenai Fjords region of Alaska (Saulitis *et al.* 2000). Consequently, most members of the AT1 group are resighted every year or two. Interactions between members of the different transient killer whale groups have not been observed. Genetic evidence indicates they have been separate for thousands of years (Barrett-Lennard, 2000) although, given the small size of the AT1 group, observed genetic differences could have arisen within a few killer whale generations.

**The AT1 Group of Transient Killer Whales**

AT1 killer whales have been recognized in Prince William Sound since at least 1978 (Leatherwood *et al.* 1984a, Saulitis 1993). Three AT1 whales (AT7, AT15, AT16) were first photographed in 1978; other animals were likely not photographed due to the low level of research effort in Prince William Sound at that time. In the 1980s, the AT1 transient group was one of the most frequently encountered killer whale groups in Prince William Sound (Matkin *et al.* 1999). Once a major research effort began in Prince William Sound, 20 individuals were identified in 1984 (though 2 others were known to be present), 17 in 1985, and 21 in 1986. All individuals identified prior to 1984 (from 1978-1983) were seen alive in 1984.

The AT1 transient group has been sighted year-round in Prince William Sound, as well as in Resurrection and Aialik Bays of adjacent Kenai Fjords (Saulitis, 2000). While the group is known to have once had as many as 22 members, the number of AT1 transient killer whales has been reduced by more

than half since the 1989 *Exxon Valdez* oil spill (Matkin *et al.*, 1999). Only 11 members of the AT1 group have been seen since 1992 and the missing 11 members are either known or presumed to be dead (Matkin *et al.* 2000). Two additional males from this group have been confirmed dead within the past few summers. The deaths of these two whales reduced the known AT1 group to nine individuals. Of the remaining nine members, four are female. No new calves have been observed since the AT1 group was first recognized in 1984.

#### Identifying a "Population Stock" or "Stock" Under the MMPA

To designate the AT1 group of killer whales as a depleted stock under the MMPA, it must be a "population stock" or "stock". Section 3(11) of the MMPA defines "population stock" or "stock" as a group of marine mammals of the same species or smaller taxon, in a common spatial arrangement, that interbreeds when mature. Under the MMPA, population stocks must be identified and stock assessment reports must be prepared on the basis of the best scientific information available.

To interpret this definition fully, the objectives of the MMPA must be considered. Section 2(2) of the MMPA (16 U.S.C. 1361(2)(2)) states that species and population stocks of marine mammals "should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem in which they are a part, and, consistent with this major objective, they should not be permitted to diminish below their optimum sustainable population." Further, section 2(6) provides that "the primary objective of their management should be to maintain the health and stability of the marine ecosystem. 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." Stocks must be identified in such a way that is consistent with these goals.

In interpreting the MMPA's guidance to identify stocks of marine mammals, NMFS reviewed legislative guidance related to population stocks and consequences for making incorrect decisions in its guidelines for preparing marine mammal stock assessment reports (see Electronic Access). In these guidelines, NMFS states, "For the purposes of management under the MMPA, a stock is recognized as being a management unit that identifies a demographically isolated biological population. It is recognized that in practice, defined stocks may fall short of

this ideal because of a lack of information, or for other reasons." The guidelines further stated, "Many types of information can be used to identify stocks of a species: distribution and movements, population trends, morphological differences, genetic differences, contaminants and natural isotope loads, parasite differences, and oceanographic habitat differences. Evidence of morphological or genetic differences in animals from different geographic regions indicates that these populations are reproductively isolated. Reproductive isolation is proof of demographic isolation, and thus separate management is appropriate when such differences are found." NMFS considered the following lines of evidence regarding the AT1 group of killer whales in proposing this stock determination: association information, acoustic and dialect differences, and genetic differences between AT1 and other groups of transient killer whales.

#### Association Information

The association data, which includes information on the movements and distribution of transient killer whales, support the conclusion that the AT1 group is discrete from other transient killer whales in Alaska. Although the distributions of AT1 killer whales and other transient killer whales have limited overlap, the AT1 group of transient killer whales does have never been seen moving in association with sympatric resident killer whale pods or with other transient groups that occasionally use Prince William Sound (Matkin *et al.* 1999a).

Matkin and Saulitis (1994) reported that seven different groups of GOA transients have been seen using Prince William Sound, that most of the whales in these seven groups were photographed only once, and that whales from the GOA transients were usually seen only once in a season. The AT1 group is regularly encountered in Prince William Sound and has been seen only in Prince William Sound and the Kenai Fjords. Matkin and Saulitis (1994) also reported that other transient whales were never seen mixing with the AT1 group.

#### Acoustic Differences

Acoustic analysis of the calls made by transient killer whales in Alaska provides further support for the discreteness of the AT1 group. Like many species of dolphins, killer whales have developed and depend on a complex system of communication and echolocation. Scientists have been able to distinguish different populations of killer whales by their vocal repertoire,

and dialects of some killer whale groups have remained constant for more than 25 years (Ford *et al.*, 2000).

The AT1 group has a vocal dialect distinct from that of any resident pod or other transient group in the eastern North Pacific (Saulitis *et al.*, 1993; Matkin *et al.*, 1999). Researchers have identified 14 discrete pulsed calls for the AT1 group in addition to echolocation clicks, and only one call produced by the AT1 group is similar to any other call used by transient groups between southeast Alaska and California (Saulitis, 1993). Under the assumption that the acoustic repertoire is learned at a young age and is thought to be relatively fixed for life, then the AT1 group has been separate for at least a period longer than the oldest individual in the group.

#### Genetic Relationships

At this time, NMFS recognizes one stock of transient killer whales, the eastern North Pacific stock. However, recent genetic analyses indicate that a finer structure exists and that the eastern North Pacific stock may consist of up to three stocks.

The population structure of transients in the North Pacific has been investigated by Barrett-Lennard (2000), who identified three groups of mammal-eating killer whales using genetics: WC transients, GOA transients, and the AT1 transients. Mitochondrial DNA (mtDNA) and nuclear DNA analyses indicate that the AT1 group is genetically isolated from the other killer whales within the currently defined eastern North Pacific transient stock (Barrett-Lennard, 2000; Matkin *et al.*, 1999).

*mtDNA*: Until recently, the mtDNA haplotype, which is inherited only from the mother, found in the AT1 whales has not been found in killer whales from other populations (Barrett-Lennard, 2000). The "AT1 haplotype" has recently been found in 4 whales from the Bering Sea area, which might suggest that there are individuals closely related to the AT1 group that frequent other parts of the North Pacific. However, mtDNA haplotypes are often of limited use in determining whether a particular individual is a member of a particular population. In contrast, mtDNA haplotype frequencies are very useful in describing population structure. Since all members of the AT1 group have the so-called AT1 haplotype, and only a few individuals in the Bering Sea have been found to have this haplotype, it is clear that the frequencies are quite different, which strongly suggests they are separate populations. Preliminary analysis of photographs of the Bering Sea whales

recently found to have the AT1 haplotype conclusively indicate that they are not the “missing” whales from the AT1 group.

*Nuclear DNA:* Barrett-Lennard (2000) found significant genetic differences in nuclear (microsatellite) DNA, which is inherited from both parents, among AT1s, GOA transients, and WC transients. In particular, the AT1 group sample was found to be the most divergent in its microsatellite allele frequencies because they were more divergent from the nearby GOA Transients and WC Transients than those groups were from each other. The differences between the AT1 group and the other groups would be considered “large” by most population geneticists.

In the case of the AT1 group, the high level of divergence from other transient killer whale groups might be related to the group’s very small size. The average level of heterozygosity in the AT1 group is approximately 60 percent that of the other transient groups, which is consistent with the AT1 group being a small population. For a small population the level of genetic difference seen between AT1 killer whales and other transient groups could occur relatively quickly (perhaps within a few generations; one killer whale generation is 50–100 years). Regardless of how many generations it took to generate, the degree of difference in microsatellite DNA is consistent with current demographic isolation between the AT1 group and GOA and WC transients.

*New genetic samples from the northern Gulf of Alaska:* Since the analyses documented in Barrett-Lennard (2000), the number of biopsy samples of transient killer whales from the Gulf of Alaska to the Bering Sea has increased substantially. A preliminary analysis of those new data (in combination with existing data) was undertaken to clarify the relationship between the AT1 group and other transient killer whales in Alaska, and these preliminary results were described in the report of NMFS’ status review on AT1 killer whales. The analysis indicated that the Umnak killer whale with the AT1 haplotype is not a member of the AT1 group nor a member of a closely-related population. Furthermore, there was no clear evidence that any of the other transient whales sampled in the Gulf of Alaska are closely related to the AT1 group.

#### *Alternatives to Explain the Genetic Differences*

The AT1 group is currently considered part of the eastern North Pacific transient killer whale stock, the only currently identified “stock” of

transient killer whales in the North Pacific. However, the new information described above indicates that the stock structure of transient killer whales should be reviewed, and that the AT1 group is genetically separate from other transient killer whales.

There are at least three possible scenarios that might lead to the genetic differences that are seen between AT1 and other transient groups, though the three scenarios are not necessarily equally plausible given the available information. An assumption that is made when speculating about these scenarios is that a very small population (circa 22 animals) could not persist as an independent population for a very long time.

The first scenario is that the AT1 group represents a remnant of a previously larger population. In this situation, there would have been two separate populations of transient killer whales in Alaska that were genetically and demographically isolated. One of these populations declined in population size, and its remainder is now known as the AT1 group.

The second scenario is that the AT1 group separated from another transient population relatively recently and has never been particularly large. Genetic drift may occur rapidly in a small population so the observed genetic differences could have arisen fairly recently. A small unit like the AT1 group would likely not have had a high probability of persisting as a separate population over a long time period. In other words, if the AT1 group arose from another transient population and was never large in size, it may have been doomed to extinction since its beginning. One problem with evaluating the importance of this possible scenario is that the terms “relatively recent” and “long time” are hard to define. A third scenario is that the AT1 group is part of a larger population of transient killer whales that have not yet been sampled for genetics analysis.

Although the population structure of transient killer whales in the Aleutians, Bering Sea, and in the western North Pacific is not yet fully understood, it is possible to eliminate some of the scenarios above from consideration. The data available are reasonably consistent with the first two scenarios and will be discussed below. However, at this time, there is no evidence to support the third scenario (that the AT1 group are part of a more widespread Alaska transient population that is largely sympatric with the GOA transients from Prince William Sound to the Bering Sea). Substantial sampling along the Alaska Peninsula, the Aleutian Islands, and in

the Bering Sea has failed to find killer whales that are closely-related, genetically, to the AT1 group. Although four individuals have been found with the same mtDNA haplotype as found in the AT1 group, the one individual for which a complete microsatellite analysis was available was strongly assigned to GOA transient whales, rather than the AT1 group.

As stated above, the available data are consistent with the scenario where the AT1 group may be a remnant of a much larger population that has been separate for a long time and are also consistent with the scenario where the AT1 group may consist of a very small number of animals that split off from a larger group in the recent past. Genetic data alone are insufficient to distinguish between these two scenarios. The AT1 group has less genetic diversity than other North Pacific transients, but more genetic diversity than would be expected if they had been at a very small population size for a long time.

In its status review of AT1 killer whales, NMFS included literature on genetic relationships in other species of mammals that live in highly structured societies (e.g., monkeys, lions, wild dogs). Results from the review of 17 studies indicated that strong genetic differentiation between social groups of terrestrial mammals appears relatively rare, occurring in only one of the 17 studies reviewed. The status review cautioned against making strong conclusions based on these other studies because these terrestrial mammals and resident and transient killer whales do not exhibit identical social behavior.

#### **The Depleted Determination**

##### *The AT1 Group as a Stock*

As discussed above, NMFS’ guidelines for identifying population stocks of marine mammals state that many different types of information can be used to identify stocks, reproductive isolation is proof of demographic isolation, and demographically isolated groups of marine mammals should be identified as separate stocks. These guidelines were based upon the MMPA’s definition of population stock and with the purposes and polices of the MMPA. The biological information discussed above, particularly molecular genetics and associations (distribution and movements), supports a determination that AT1 killer whales are demographically isolated from other groups of killer whales. Therefore, based upon the best available scientific information, NMFS proposes to determine that the AT1 group of

transient killer whales is a population stock.

#### *Status of the Stock*

Section 3(1)(A) of the MMPA (16 U.S.C. 1362(1)(A)) defines the term, "depletion" or "depleted", as any case in which "the Secretary, after consultation with the Marine Mammal Commission and the Committee of Scientific Advisors on Marine Mammals \* \* \* determines that a species or population stock is below its optimum sustainable population [(OSP)]." Section 3(9) of the MMPA defines OSP " \* \* \* with respect to any population stock, [as] the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the carrying capacity [(K)] of the habitat and the health of the ecosystem of which they form a constituent element." NMFS' regulations at 50 CFR 216.3 clarify the definition of OSP as a population size which falls within a range from the population level of a given species or stock that is the largest supportable within the ecosystem (carrying capacity [K]) to the population level that results in the maximum net productivity level (MNPL). MNPL is the greatest net annual increment (increase) in population numbers resulting from additions due to reproduction less losses due to natural mortality.

A population stock below its MNPL is, by definition, below OSP and, thus, would be considered depleted under the MMPA. Historically, the estimated MNPL has been expressed as a range of values, generally 50 to 70 percent of K (42 FR 12010, March 1, 1977). In 1977, the midpoint of this range (60 percent of K) was used to determine whether dolphin stocks in the eastern tropical Pacific Ocean were depleted under the MMPA (42 FR 64548, December 27, 1977). The 60-percent-of-K value was used in the final rule governing the taking of marine mammals incidental to commercial tuna purse seine fishing in the eastern tropical Pacific Ocean (45 FR 72178, October 31, 1980) and has been used since that time for other status reviews under the MMPA. For stocks of marine mammals, including killer whales, K is generally unknown. NMFS, therefore, has used the best estimate available of maximum historical abundance as a proxy for K.

As required by the MMPA, NMFS initiated consultation with the Marine Mammal Commission related to the petition to designate the AT1 group of killer whales as a depleted population stock. In a letter dated December 23, 2002, the Commission noted that there were uncertainties regarding the

relationships of the AT1 group to other killer whales in the North Pacific. The Commission recommended as a precautionary approach that, until these uncertainties are resolved, NMFS should designate the AT1 group of transient killer whales as a depleted stock.

There is no information on population trends or historical abundance of the Eastern North Pacific transient stock of killer whales, which is the population stock in which the AT1 group is currently recognized. Similarly there is insufficient historical data on Alaska transients to provide information on trends in abundance in Alaska. The AT1 group is the only group of transient whales whose recent history is known.

As discussed above, the available information supports the conclusion that the AT1 group is a population stock of marine mammals. The genetics data suggest that the group size was larger than 22 animals prior to 1984. However, the abundance of this group prior to 1984 is unknown. Consequently, there is no estimate for the maximum historical abundance. In 1984, the group had 22 members, and its current abundance has been reduced to nine or fewer whales. The current abundance is less than 60 percent of the known abundance in 1984; therefore, the group is below its MNPL or the lower limit of its OSP. Consequently, the group meets the statutory definition of a depleted stock. Based on the best scientific information available, NMFS proposes to designate the AT1 group of transient killer whales in Alaska as a depleted population stock under the MMPA.

#### **Public Comments Solicited**

NMFS is soliciting comments on this proposed rule for the designation of this stock as depleted under the MMPA from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party.

#### **References**

References are available upon request (*See FOR FURTHER INFORMATION CONTACT*).

#### **Classification**

This proposed rule has been determined to be not significant for the purposes of Executive Order 12866. Depletion designations under the MMPA are similar to ESA listing decisions, which are exempt from the requirement to prepare an environmental assessment or environmental impact statement under the National Environmental Policy Act. See NOAA Administrative Order 216–

6.03(e)(1). Thus, NMFS has determined that the proposed depletion designation of this stock under the MMPA is exempt from the requirements of the National Environmental Policy Act of 1969, and an Environmental Assessment or Environmental Impact Statement is not required.

The Chief Counsel for Regulation of the Department of Commerce certified to the Chief Counsel for Advocacy of the Small Business Administration that this proposed rule, if adopted, would not have a significant economic impact on a substantial number of small entities as follows: The MMPA imposes a general moratorium on the taking of marine mammals. This proposed rule would designate a group of transient killer whales in Alaska (known as the AT1 group) as depleted; however, this designation would not, by itself, place any additional restrictions on the public. A stock that is designated as depleted meets the definition of a strategic stock under the MMPA. Under provisions of the MMPA, a take reduction team must be established and a take reduction plan developed and implemented within certain time frames if a strategic stock of marine mammals interacts with a Category I or II commercial fishery. However, NMFS has not identified any interactions between commercial fisheries and this group of killer whales that would result in such a requirement. In addition, under the MMPA, if NMFS determines that impacts on areas of ecological significance to marine mammals may be causing the decline or impeding the recovery of a strategic stock, it may develop and implement conservation or management measures to alleviate those impacts. However, NMFS has not identified information sufficient to make any such determination for this group of killer whales. Finally, the MMPA requires NMFS to prepare a conservation plan to conserve and restore any stock designated as depleted to its optimum sustainable population, unless NMFS determines that such a plan would not promote the conservation of the stock. However, NMFS has not prepared any such plan, and the plan is not self-executing. Any measures identified in the plan to conserve and restore the stock would require separate action before the action could be implemented. Any subsequent restrictions placed on the public to protect these whales would be included in separate regulations, and appropriate analyses under the Regulatory Flexibility Act would be conducted during those rulemaking procedures. Hence, implementation of this proposed

rule would not have a significant economic impact on a substantial number of small entities. As a result, no regulatory flexibility analysis for this proposed rule has been prepared.

This proposed rule does not contain a collection-of-information requirement for purposes of the Paperwork Reduction Act of 1980. This proposed rule does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order 13132.

#### List of Subjects in 50 CFR Part 216

Administrative practice and procedure, Exports, Imports, Marine mammals, Transportation.

Dated: October 20, 2003.

**William T. Hogarth,**

*Assistant Administrator for Fisheries,  
National Marine Fisheries Service.*

For the reasons set out in the preamble, 50 CFR part 216 is proposed to be amended as follows:

#### **PART 216—REGULATIONS GOVERNING THE TAKING AND IMPORTING OF MARINE MAMMALS**

1. The authority citation for part 216 continues to read as follows:

**Authority:** 16 U.S.C. 1361 *et seq.* unless otherwise noted.

2. In § 216.15, a new paragraph (i) is added to read as follows:

#### **§ 216.15 Depleted species.**

\* \* \* \* \*

(i) AT1 stock of killer whales (*Orcinus orca*). The stock includes all killer whales belonging to the AT1 group of transient killer whales occurring primarily in waters of Prince William Sound, Resurrection Bay and the Kenai Fjords region of Alaska.

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