

is designated in this final rule as paragraph (a)(12) and Columbia River chum salmon as paragraph (a)(13) of § 223.102. The regulatory text of the proposed rule remains unchanged in this final rule.

List of Subjects in 50 CFR Part 223

Endangered and threatened species, Exports, Imports, Marine mammals, Transportation.

Dated: March 15, 1999.

Andrew A. Rosenberg, Ph.D.,

Deputy Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set forth in the preamble, 50 CFR part 223 is amended as follows:

PART 223—THREATENED MARINE AND ANADROMOUS SPECIES

1. The authority citation for part 223 continues to read as follows:

Authority: 16 U.S.C. 1531 *et seq.*; 16 U.S.C. 742a *et seq.*; 31 U.S.C. 9701.

2. In § 223.102, paragraphs (a)(12) and (a)(13) are added to read as follows:

§ 223.102 Enumeration of threatened marine and anadromous species.

* * * * *

(a) * * *

(12) Hood Canal summer-run chum salmon (*Oncorhynchus keta*). Includes all naturally spawned populations of summer-run chum salmon in Hood Canal and its tributaries as well as populations in Olympic Peninsula rivers between Hood Canal and Dungeness Bay, Washington;

(13) Columbia River chum salmon (*Oncorhynchus keta*). Includes all naturally spawned populations of chum salmon in the Columbia River and its tributaries in Washington and Oregon.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 223

[Docket No. 980225046-9070-03; I.D. 021098B]

RIN 0648-AK54

Endangered and Threatened Species: Threatened Status for Two ESUs of Steelhead in Washington and Oregon

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule; notice of determination.

SUMMARY: Previously, NMFS completed a comprehensive status review of west coast steelhead (*Oncorhynchus mykiss*) populations in Washington, Oregon, Idaho, and California, and identified 15 Evolutionarily Significant Units (ESUs) within this range. NMFS now issues a final rule to list two ESUs as threatened under the Endangered Species Act (ESA). The listed ESUs include the Middle Columbia River ESU located in Washington and Oregon, and the Upper Willamette River ESU located in Oregon.

In both threatened ESUs, only naturally spawned populations of steelhead residing below impassable natural barriers (e.g., long-standing, natural waterfalls) are listed. NMFS examined the relationship between hatchery and natural populations of steelhead in these ESUs and determines none of the identified hatchery populations are essential for recovery at this time.

At this time, NMFS is listing only anadromous life forms of *O. mykiss*.

NMFS will issue any protective regulations deemed necessary under section 4(d) of the ESA for the listed ESUs in a separate rulemaking. Even though NMFS does not now issue protective regulations for these ESUs, Federal agencies are required under section 7 of the ESA to consult with NMFS if any activity they authorize, fund, or carry out may affect listed steelhead.

DATES: Effective May 24, 1999.

ADDRESSES: Branch Chief, Protected Resources Division, NMFS, Northwest Region, 525 NE Oregon Street, Suite 500, Portland, OR 97232-2737.

FOR FURTHER INFORMATION CONTACT: Garth Griffin, 503-231-2005, or Chris Mobley, 301-713-1401.

SUPPLEMENTARY INFORMATION:

Electronic Access

Reference materials regarding this listing determination can also be obtained from the internet at www.nwr.noaa.gov.

Species Background

Biological and life history information for steelhead can be found in NMFS' recent status assessments (Busby *et al.*, 1996; NMFS, 1999a and 1999b) and in the **Federal Register** notice announcing the listing proposal (63 FR 11797, March 10, 1998).

Previous Federal ESA Actions Related to West Coast Steelhead

The history of petitions received regarding west coast steelhead is

summarized in the proposed rule published on August 9, 1996 (61 FR 41541). The most comprehensive petition was submitted by Oregon Natural Resources Council and 15 co-petitioners on February 16, 1994. In response to this petition, NMFS assessed the best available scientific and commercial data, including technical information from Pacific Salmon Biological Technical Committees (PSBTCs) and interested parties in Washington and Oregon. The PSBTCs consisted primarily of scientists (from Federal, state, and local resource agencies, Indian tribes, industries, universities, professional societies, and public interest groups) possessing technical expertise relevant to steelhead and their habitats. NMFS also established a Biological Review Team (BRT), composed of staff from NMFS' Northwest and Southwest Fisheries Science Centers and Southwest Regional Office, as well as a representative of the U.S. Geological Survey Biological Resources Division (formerly the National Biological Service), which conducted a coastwide status review for west coast steelhead (Busby *et al.*, 1996).

Based on the results of the BRT report, and after considering other information and existing conservation measures, NMFS published a proposed listing determination (61 FR 41541, August 9, 1996) that identified 15 ESUs of steelhead in the states of Washington, Oregon, Idaho, and California. Ten of these ESUs were proposed for listing as threatened or endangered species, four were found not warranted for listing, and one was identified as a candidate for listing.

On August 18, 1997, NMFS published a final rule listing five ESUs as threatened or endangered under the ESA (62 FR 43937, August 18, 1997). In a separate notice published on the same day, NMFS determined substantial scientific disagreement remained for five proposed ESUs (62 FR 43974, August 18, 1997). In accordance with section 4(b)(6)(B)(i) of the ESA, NMFS deferred its decision on these remaining steelhead ESUs for 6 months, until February 9, 1998, for the purpose of soliciting additional data. On March 19, 1998, NMFS published a final rule listing two ESUs as threatened (63 FR 13347, March 19, 1998). In this notice NMFS also determined the remaining three ESUs (Oregon Coast, Klamath Mountains Province, and Northern California) did not warrant listing (*Id.*).

On March 10, 1998, NMFS published a proposed listing determination for Middle Columbia River and Upper Willamette River steelhead ESUs (63 FR

11798). This proposed rule was based on an updated status review completed for previously deferred ESUs [Memorandum to William Stelle and William Hogarth from M. Schiewe, December 18, 1997, Status of Deferred and Candidate ESUs of West Coast Steelhead]. In response to the proposed rule, NMFS received comments and scientific information from affected states, tribes, and others which were recently considered by NMFS' BRT. NMFS has now completed an updated status review that analyzes this new information (NMFS, 1999a). Copies of this memorandum are available upon request (see ADDRESSES). Based on this updated review and other information, NMFS now lists the Upper Willamette River and Middle Columbia River steelhead ESUs as threatened species under the ESA.

Summary of Comments Received in Response to the Proposed Rule

NMFS held 21 public hearings in California, Oregon, Idaho, and Washington to solicit comments on this and other salmonid listing proposals (63 FR 16955, April 7, 1998; 63 FR 30455, June 4, 1998). During the 112-day public comment period, NMFS received 28 written comments on the proposed rule from Federal, state, and local government agencies, Indian tribes, non-governmental organizations, the scientific community, and other individuals. A number of comments addressed specific technical issues pertaining to a particular geographic region or *O. mykiss* population. These technical comments were considered by NMFS' BRT in its re-evaluation of ESU boundaries and status and are discussed in the updated Status Review document (NMFS, 1999a).

On July 1, 1994, NMFS, jointly with the U.S. Fish and Wildlife Service (FWS), published a series of policies regarding listings under the ESA, including a policy for peer review of scientific data (59 FR 34270). In accordance with this policy, NMFS solicited a total of 35 individuals to take part in a peer review of the current and previous west coast steelhead proposed rules. All individuals solicited are recognized experts in the field of steelhead biology, and represent a broad range of interests, including Federal, state, and tribal resource managers, private industry consultants, and academia. Eight individuals took part in the peer review of these findings; comments from peer reviewers were considered by NMFS' BRT and are summarized in the relevant Status Review documents (e.g., NMFS 1997a).

A summary of comments received in response to this proposed rule is presented here.

Issue 1: Sufficiency and Accuracy of Scientific Information and Analysis

Comment: Numerous commenters disputed the sufficiency and accuracy of data which NMFS employed in its proposed rule to list two steelhead ESUs as threatened under the ESA. Several commenters urged NMFS to delay any ESA listing decisions for steelhead until additional scientific information is available concerning this species.

Response: Section 4(b)(1)(A) of the ESA requires that NMFS make its listing determinations solely on the basis of the best available scientific and commercial data after reviewing the status of the species. NMFS believes that information contained in the agency's status review (Busby *et al.*, 1996), together with more recent information obtained in response to the proposed rule (NMFS, 1999a), represents the best scientific information presently available for the steelhead ESUs addressed in this final rule. NMFS has conducted an exhaustive review of all available information relevant to the status of this species. NMFS has also solicited information and opinion from all interested parties. If, in the future, new data become available to change these conclusions, NMFS will act accordingly.

Issue 2: Description and Status of Steelhead ESUs

Comment: Several commenters disputed NMFS' conclusions regarding the geographic boundaries for some of the ESUs and questioned NMFS' basis for determining these boundaries.

Response: NMFS has published a policy describing how it applies the ESA definition of "species" to anadromous salmonid species (56 FR 58612; November 20, 1991). More recently, NMFS and FWS published a joint policy, which is consistent with NMFS' policy, regarding the definition of "distinct population segments" (61 FR 4722, February 7, 1996). The earlier policy is more detailed and applies specifically to Pacific salmonids and, therefore, was used for this determination. This policy indicates that one or more naturally reproducing salmonid populations will be considered to be distinct and, hence, species under the ESA, if they represent an ESU of the biological species. To be considered an ESU, a population must satisfy two criteria: (1) It must be reproductively isolated from other population units of the same species, and (2) it must represent an important component in the evolutionary legacy of the biological species. The first

criterion, reproductive isolation, need not be absolute but must have been strong enough to permit evolutionarily important differences to occur in different population units. The second criterion is met if the population contributes substantially to the ecological or genetic diversity of the species as a whole. Guidance on applying this policy is contained in a NOAA Technical Memorandum entitled "Definition of 'Species' Under the Endangered Species Act: Application to Pacific Salmon" (Waples, 1991) and in a recent scientific paper by Waples (1995).

The National Research Council (NRC) has recently addressed the issue of defining species under the ESA (NRC, 1995). Their report found that protecting distinct population segments (DPS) is soundly based on scientific evidence, and recommends applying an "Evolutionary Unit" (EU) approach in describing these segments. The NRC report describes the high degree of similarity between the EU and ESU approaches (differences being largely a matter of application between salmon and other vertebrates), and concluded that either approach would lead to similar DPS descriptions most of the time.

Comment: Several commenters questioned NMFS' methodology for determining whether a given steelhead ESU warranted listing. In most cases, such commenters also expressed opinions regarding whether listing was warranted for a particular steelhead ESU. A few commenters provided substantive new information relevant to making risk assessments.

Response: Section 3 of the ESA defines the term "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range." The term "threatened species" is defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." NMFS has identified a number of factors that should be considered in evaluating the level of risk faced by an ESU, including: (1) absolute numbers of fish and their spatial and temporal distribution; (2) current abundance in relation to historical abundance and current carrying capacity of the habitat; (3) trends in abundance; (4) natural and human-influenced factors that cause variability in survival and abundance; (5) possible threats to genetic integrity (e.g., from strays or outplants from hatchery programs); and (6) recent events (e.g., a drought or changes in harvest management) that have

predictable short-term consequences for abundance of the ESU. A more detailed discussion of status of individual ESUs is provided in this document under "Summary of Conclusions Regarding Listed ESUs."

Issue 3: Factors Contributing to the Decline of West Coast Steelhead

Comment: Many commenters identified factors they believe have contributed to the decline of west coast steelhead. Factors identified include overharvest by recreational fisheries, predation by pinnipeds and piscivorous fish species, effects of artificial propagation, and the deterioration or loss of freshwater and marine habitats.

Response: NMFS agrees that many factors, past and present, have contributed to the decline of West Coast steelhead. NMFS also recognizes that natural environmental fluctuations have likely played a role in the species' recent declines. However, NMFS believes other human-induced impacts (e.g., incidental catch in certain fisheries, hatchery practices, and habitat modification) have played an equally significant role in this species' decline. Moreover, these human-induced impacts have likely reduced the species' resiliency to natural factors for decline such as drought and poor ocean conditions (NMFS, 1996a).

Since the time of this proposed listing, NMFS has published a report describing the impacts of California sea lions and Pacific harbor seals upon salmonids and on the coastal ecosystems of Washington, Oregon, and California (NMFS, 1999c). This report concludes that in certain cases where pinniped populations co-occur with depressed salmonid populations, salmon populations may experience severe impacts due to predation. An example of such a situation is Ballard Locks, Washington, where sea lions are known to consume significant numbers of adult winter steelhead. This study further concludes that data regarding pinniped predation are quite limited, and that substantial additional research is needed to fully address this issue. Existing information on the seriously depressed status of many salmonid stocks is sufficient to warrant actions to remove pinnipeds in areas of co-occurrence where pinnipeds prey on depressed salmonid populations (NMFS, 1997b). For additional information on this issue see the "Summary of Factors Affecting Steelhead" later in this document.

Comment: Several commenters stated that NMFS' assessment underestimated the significant influence of natural environmental fluctuations on salmonid populations. Several commenters stated

that ocean conditions are one of the primary factors for decline.

Response: Environmental changes in both marine and freshwater habitats can have important impacts on steelhead abundance. For example, a pattern of relatively high abundance in the mid-1980s followed by (often sharp) declines over the next decade occurred in steelhead populations from most geographic regions of the Pacific Northwest. This result is most plausibly explained by broad-scale changes in ocean productivity. Similarly, 6 to 8 years of drought in the late 1980s and early 1990s adversely affected many freshwater habitats for steelhead throughout the region. These natural phenomena put increasing pressure on natural populations already stressed by anthropogenic factors such as habitat degradation, blockage of migratory routes, and harvest (NMFS, 1996a).

Improvement of cyclic or episodic environmental conditions (for example, increases in ocean productivity or shifts from drought to wetter conditions) may help alleviate extinction risk to steelhead populations. However, NMFS cannot reliably predict future environmental conditions, making it unreasonable to assume improvements in abundance as a result of improvements in such conditions. Furthermore, steelhead and other species of Pacific salmon have evolved over the centuries with such cyclical environmental stresses. This species has persisted through time in the face of these conditions largely due to the presence of freshwater and estuarine refugia. As these refugia are altered and degraded, Pacific salmon species are more vulnerable to such episodic events as shifts in ocean productivity and drought cycles (NMFS, 1996a).

Issue 4: Consideration of Existing Conservation Measures

Comment: Several commenters argued that NMFS had not considered existing conservation programs designed to enhance steelhead stocks within a particular ESU. Some commenters provided specific information on some of these programs to NMFS concerning the efficacy of existing conservation plans.

Response: NMFS has reviewed existing conservation plans and measures relevant to the two ESUs addressed in this final rule and concludes that existing conservation efforts in some cases have helped ameliorate risks facing the species. These conservation efforts are discussed in detail later in this document under "Existing Conservation Efforts."

While several of the plans addressed in comments show promise for

ameliorating risks facing steelhead, some of the measures described in comments have not been implemented and are only recently proposed. Some of these measures are also geographically limited to individual river basins or political subdivisions, thereby improving conditions for only a small portion of the entire ESU.

Even though existing conservation efforts and plans in the listed ESUs are not sufficient to preclude the need for listings at this time, they are nevertheless valuable for improving watershed health and restoring fishery resources. In those cases where well-developed, reliable conservation plans exist, NMFS may choose to incorporate them into the recovery planning process. In the case of threatened species, NMFS also has flexibility under section 4(d) of the ESA to tailor the protective regulations based on the contents of available conservation measures. NMFS has already adopted 4(d) rules that except a limited range of activities from section 9 take prohibitions. For example, the interim 4(d) rule for Southern Oregon/Northern California coho salmon (62 FR 38479, July 18, 1997) excepts habitat restoration activities conducted in accordance with approved plans and fisheries conducted in accordance with an approved state management plan. In appropriate cases, 4(d) rules could contain limited take prohibitions applicable to such activities as forestry, agriculture, and road construction when such activities are conducted in accordance with NMFS approved state or tribal conservation plans.

These examples show that NMFS may apply modified ESA section 9 prohibitions where NMFS approved state or tribal conservation plans exist. There may be other circumstances as well in which NMFS would use the flexibility of section 4(d). For example, in some cases there may be a healthy population of salmon or steelhead within an overall ESU that is listed. In such a case, it may not be necessary to apply the full range of prohibitions available in section 9. NMFS intends to use the flexibility of the ESA to respond appropriately to the biological condition of each ESU and the populations within it, and to the strength of state and tribal conservation plans in place to protect them.

Issue 5: Steelhead Biology and Ecology

Comment: Several commenters asserted that resident rainbow trout should be included in listed steelhead ESUs. Several commenters also stated that NMFS and FWS should address how the presence of rainbow trout

populations may ameliorate risks facing anadromous populations within listed ESUs.

Response: In its August 9, 1996, proposed rule (61 FR 41541), NMFS stated that based on available genetic information, it was the consensus of NMFS scientists, as well as regional fishery biologists, that resident fish should generally be considered part of the steelhead ESUs. However, NMFS concluded that available data were inconclusive regarding the relationship of resident rainbow trout and steelhead. NMFS requested additional data in the proposed rule to clarify this relationship and determine if resident rainbow trout should be included in listed steelhead ESUs.

In response to this request for additional information, many groups and individuals expressed opinions regarding this issue. In most cases these opinions were not supported by new information that resolves existing uncertainty. Two state fishery management agencies (Washington Department of Fish and Wildlife (WDFW) and Oregon Department of Fish and Wildlife (ODFW)) provided comments and information supporting the inclusion of resident rainbow trout in listed steelhead ESUs. In general, these parties also felt that rainbow trout may serve as an important reservoir of genetic material for at-risk steelhead stocks.

While conclusive evidence does not yet exist regarding the relationship of resident and anadromous *O. mykiss*, NMFS believes available evidence suggests that resident rainbow trout should be included in listed steelhead ESUs in certain cases. Such cases include (1) where resident *O. mykiss* have the opportunity to interbreed with anadromous fish below natural or man-made barriers, or (2) where resident fish of native lineage once had the ability to interbreed with anadromous fish but no longer do because they are currently above human-made barriers, and they are considered essential for recovery of the ESU. Whether resident fish that exist above any particular man-made barrier meet these criteria must be reviewed on a case-by-case basis by NMFS. Resident fish above long-standing natural barriers and those that are derived from the introduction of non-native rainbow trout would not be considered part of any salmonid ESU.

Several lines of evidence exist to support this conclusion. Under certain conditions, anadromous and resident *O. mykiss* are apparently capable not only of interbreeding, but also of having offspring that express the alternate life history form, that is, anadromous fish

can produce nonanadromous offspring, and vice versa (Shapovalov and Taft, 1954; Burgner *et al.*, 1992). Mullan *et al.* (1992) found evidence that in very cold streams, juvenile steelhead had difficulty attaining "mean threshold size for smoltification" and concluded that "Most fish here [Methow River, Washington] that do not emigrate downstream early in life are thermally-fated to a resident life history regardless of whether they were the progeny of anadromous or resident parents." Additionally, Shapovalov and Taft (1954) reported evidence of *O. mykiss* maturing in fresh water and spawning prior to their first ocean migration; this life history variation has also been found in cutthroat trout (*O. clarkii*) and Atlantic salmon (*Salmo salar*).

NMFS believes resident fish can help buffer extinction risks to an anadromous population by mitigating compensatory effects in spawning populations, by providing offspring that migrate to the ocean and enter the breeding population of steelhead, and by providing a "reserve" gene pool in freshwater that may persist through times of unfavorable conditions for anadromous fish. In spite of these potential benefits, the presence of resident populations is not a substitute for conservation of anadromous populations. A particular concern is isolation of resident populations by human-caused barriers to migration. This interrupts normal population dynamics and population genetic processes and can lead to loss of a genetically based trait (anadromy). As discussed in NMFS' "species identification" paper (Waples, 1991), the potential loss of anadromy in distinct population segments may, in and of itself, warrant listing the ESU as a whole.

On February 7, 1996, FWS and NMFS adopted a joint policy to clarify their interpretation of the phrase "distinct population segment of any species of vertebrate fish or wildlife" (DPS) for the purposes of listing, delisting, and reclassifying species under the ESA (61 FR 4722). DPSs are "species" pursuant to section 3(15) of the ESA. Previously, NMFS had developed a policy for stocks of Pacific salmon where an ESU of a biological species is considered to be a DPS if (1) it is substantially reproductively isolated from other conspecific population units, and (2) it represents an important component in the evolutionary legacy of the species (56 FR 58612, November 20, 1991). NMFS believes available data suggest that resident rainbow trout are, in many cases, part of steelhead ESUs. However, FWS, which has ESA authority for resident fish, maintains that behavioral

forms can be regarded as separate DPSs (e.g., as when the agency listed coastal, but not interior, populations of the western snowy plover).

In its review of West Coast steelhead, NMFS' BRT stated that rainbow trout and steelhead in the same area may share a common gene pool, at least over evolutionary time periods (NMFS, 1997a). The importance of any recovery action is measured in terms of its ability to recover the listed species in the foreseeable future. The FWS believes that steelhead recovery will not rely on the intermittent exchange of genetic material between resident and anadromous forms (FWS, 1997). As a result, without a clear demonstration of any risks to resident rainbow trout or the need to protect rainbow trout to recover steelhead in the foreseeable future, the FWS concludes that only the anadromous forms of *O. mykiss* should be included in the listed steelhead ESUs at this time (Department of the Interior, 1997; FWS, 1997).

Comment: Several commenters questioned NMFS' inclusion of both summer- and winter-run steelhead in the same ESU. These commenters suggested that summer- and winter-run steelhead be segregated into individual ESUs based on life history differences.

Response: While NMFS considers both life history forms (summer and winter steelhead) to be important components of diversity within the species, new genetic data reinforces previous conclusions that within a geographic area, summer and winter steelhead typically are more genetically similar to one another than either is to populations with similar run timing in different geographic areas. This indicates that an ESU that included summer-run populations from different geographic areas but excluded winter-run populations (or vice-versa) would be an inappropriate unit. The only biologically meaningful way to have summer and winter steelhead populations in separate ESUs would be to have a very large number of ESUs, most consisting of just one or a very few populations. This would be inconsistent with the approach NMFS has taken in defining ESUs in other anadromous Pacific salmonids. Taking these factors into consideration, NMFS concludes that summer and winter steelhead should be considered part of the same ESU in geographic areas where they co-occur.

Summary of Steelhead ESU Determinations

The following is a summary of NMFS' ESU determinations for the species. A more detailed discussion of ESU determinations is presented in the

“Status Review Update for Deferred and Candidate ESUs of West Coast Steelhead” (NMFS, 1997a) and “Updated Review of the Status of the Upper Willamette River and Middle Columbia River ESUs of Steelhead” (NMFS, 1999a). Copies of these documents are available upon request (see ADDRESSES).

NMFS also evaluated the relationship between hatchery and natural populations of steelhead in these ESUs (NMFS, 1999b). In examining this relationship, NMFS scientists consulted with hatchery managers to determine whether any hatchery populations are similar enough to native, naturally spawned fish to be considered part of the biological ESU.

(1) Upper Willamette River ESU

This steelhead ESU occupies the Willamette River and its tributaries, upstream from Willamette Falls to the Calapooia River, inclusive. This is a revision of the proposed ESU boundary in that NMFS now refines the range of this ESU to exclude rivers upstream of the Calapooia River.

The Willamette River Basin is zoogeographically complex. In addition to its connection to the Columbia River, the Willamette River historically has had connections with coastal basins through stream capture and headwater transfer events (Minckley *et al.*, 1986).

Steelhead from the upper Willamette River are genetically distinct from those in the lower river. Reproductive isolation from lower river populations may have been facilitated by Willamette Falls, which is known to be a migration barrier to some anadromous salmonids. For example, winter steelhead and spring chinook salmon (*O. tshawytscha*) occurred historically above the falls, but summer steelhead, fall chinook salmon, and coho salmon did not (PGE, 1994).

The native steelhead of this basin are late-migrating winter steelhead, entering fresh water primarily in March and April (Howell *et al.*, 1985), whereas most other populations of west coast winter steelhead enter fresh water beginning in November or December. As early as 1885, fish ladders were constructed at Willamette Falls to aid the passage of anadromous fish. The ladders have been modified and rebuilt, most recently in 1971, as technology has improved (Bennett, 1987; PGE, 1994). These fishways facilitated successful introduction of Skamania stock summer steelhead and early-migrating Big Creek stock winter steelhead to the upper basin. Another effort to expand the steelhead production in the upper Willamette River was the stocking of native steelhead in tributaries not historically used by that species. Native

steelhead primarily used tributaries on the east side of the basin, with cutthroat trout predominating in streams draining the west side of the basin.

Resident *O. mykiss* are known to occupy the Upper Willamette River Basin; however, most of these populations occur above natural and manmade barriers (Kostow, 1995). Historically, spawning by Upper Willamette River steelhead was concentrated in the North and Middle Santiam River Basins (Fulton, 1970). These areas are now largely blocked to fish passage by dams, and steelhead spawning is now distributed throughout more of the Upper Willamette River Basin than in the past (Fulton, 1970). Due to introductions of non-native steelhead stocks and transplantation of native stocks within the basin, it is difficult to formulate a clear picture of the present distribution of native Upper Willamette River steelhead, and their relationship to nonanadromous and possibly residualized *O. mykiss* within the basin.

Substantive comments from ODFW on this ESU addressed the boundaries of the ESU and the relationship between the native steelhead of the middle basin and the resident trout of the upper basin (i.e., McKenzie and Middle Fork Willamette Rivers) (Greer, 1998). Additionally, NMFS was able to evaluate new genetic information pertinent to this ESU.

Recently developed resident trout genetic data from the McKenzie and Middle Fork Willamette River Basins showed no genetic continuity with known hatchery trout (Cape Cod stock) or any Willamette River steelhead population. Additionally, ODFW has been unable to achieve success in their attempts to establish steelhead populations in these subbasins. These factors combine to give credence to the theory that, for some unidentified reason, the upper reaches of the Willamette River Basin are not suitable to support steelhead populations, although resident trout and chinook salmon have been successful there.

NMFS reviewed the steelhead distribution described by Fulton (1970); however, aside from this, little new information was added to that presented by Busby *et al.* (1996). NMFS concludes that this ESU was comprised of the native late-run winter steelhead and that the historic distribution of the ESU did not extend upstream of the Calapooia River. NMFS also concludes that steelhead had some historic distribution in westside tributaries to the Willamette River (e.g., Gales Creek in the Tualatin River Basin) but that current distribution of winter-run steelhead in

westside tributaries is somewhat unclear. Based on limited genetic analysis, the recent samples from westside tributaries do not appear to reflect populations derived from this ESU (NMFS, 1999a). However, information provided by the State of Oregon indicates that winter-run steelhead may in fact presently occur in several westside tributaries (Kostow, 1995; NMFS, 1999a).

Based on the best available scientific information, NMFS concludes that westside tributaries to the Willamette River warrant inclusion in this ESU at this time, although some uncertainty remains regarding this conclusion. While westside tributaries are included in the ESU, it is important to note that the listed ESU consists of naturally spawned, winter-run steelhead. Where distinguishable, naturally spawned, summer-run steelhead are not included in the listed ESU.

Hatchery Populations Pertaining to the ESU

NMFS identified three hatchery stocks associated with the Upper Willamette River ESU (NMFS, 1999b). After reviewing the best available information regarding the relationship between hatchery and natural populations in this ESU, NMFS concludes that the North Santiam River (ODFW Stock 21) hatchery stock should be considered part of the ESU. However, the Big Creek (ODFW Stock 13) and Skamania/Foster/McKenzie ODFW stocks are not considered part of the ESU. The listing status of these hatchery stocks is described later in this document under “Status of Steelhead ESUs.”

(2) Middle Columbia River ESU

This inland steelhead ESU occupies the Columbia River Basin and tributaries from above the Wind River in Washington and the Hood River in Oregon (exclusive), upstream to, and including, the Yakima River, in Washington. Steelhead of the Snake River Basin are excluded. Franklin and Dyrness (1973) placed the Yakima River Basin in the Columbia Basin Physiographic Province, along with the Deschutes, John Day, Walla Walla, and lower Snake River Basins. Geology within this province is dominated by the Columbia River Basalt formation, stemming from lava deposition in the Miocene epoch, overlain by plio-Pleistocene deposits of glaciolacustrine origin (Franklin & Dyrness, 1973). This intermontane region includes some of the driest areas of the Pacific Northwest, generally receiving less than 40 centimeters of rainfall annually (Jackson, 1993). Vegetation is of the

shrub-steppe province, reflecting the dry climate and harsh temperature extremes.

Genetic differences between inland and coastal steelhead are well established, although some uncertainty remains about the exact geographic boundaries of the two forms in the Columbia River. Electrophoretic and meristic data show consistent differences between several middle Columbia River steelhead populations and Snake River steelhead. No recent genetic data exist for natural steelhead populations in the upper Columbia River, but recent WDFW data show that the Wells Hatchery stock from the upper Columbia River does not have a close genetic affinity to sampled populations from the middle Columbia River.

All steelhead in the Columbia River Basin upstream from The Dalles Dam are summer-run, inland steelhead (Schreck *et al.*, 1986; Reisenbichler *et al.*, 1992; and Chapman *et al.*, 1994). Steelhead in Fifteenmile Creek, Oregon, are genetically allied with inland *O. mykiss*, but are winter-run. Winter steelhead are also found in the Klickitat and White Salmon Rivers, Washington.

Life history information for steelhead of this ESU indicates that most middle Columbia River steelhead smolt at 2 years and spend 1 to 2 years in salt water (i.e., 1-ocean and 2-ocean fish, respectively) prior to re-entering fresh water, where they may remain up to a year prior to spawning (Howell *et al.*, 1985; BPA, 1992). Within this ESU, the Klickitat River is unusual in that it produces both summer and winter steelhead, and the summer steelhead are dominated by 2-ocean steelhead, whereas most other rivers in this region produce about equal numbers of both 1- and 2-ocean steelhead.

The proposed listing of the Middle Columbia River ESU generated substantive comments from ODFW (Greer, 1998) and the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO) (Calica, 1998). These comments, while summarized here, are discussed in detail in the status review update (NMFS, 1999a).

NMFS previously concluded that native, resident *O. mykiss* populations that have the opportunity to interbreed with anadromous *O. mykiss* should be included in the steelhead ESUs (Busby *et al.*, 1996). While ODFW and CTWSRO presented anecdotal accounts of spawning interactions between resident trout and steelhead in the Deschutes River (i.e., Zimmerman and Reeves, 1996; 1997; and 1998), such studies did not provide much evidence of this. NMFS concludes that, given the opportunity for reproductive

interaction, co-occurring resident trout are included within this steelhead ESU.

In its comments, ODFW recommended that NMFS realign the proposed ESU to exclude winter steelhead from it; however, this recommendation is not supported by any new scientific data. Currently available data indicate that these are inland steelhead populations. An intensive genetic survey of these steelhead populations might provide useful information to further clarify the relationship between coastal and inland steelhead. NMFS concludes that no change in the ESU boundaries are warranted based solely on the presence of a winter-run life history.

Recently obtained genetic data raises some question about the boundaries of the Middle Columbia River ESU. However, NMFS concludes that this new information is too uncertain at this stage to warrant revising the proposed ESU boundaries. NMFS will revise these boundaries in the future when additional data support such a revision.

Hatchery Populations Pertaining to the ESU

NMFS identified two hatchery stocks associated with the Middle Columbia River ESU (NMFS, 1999b). After reviewing the best available information regarding the relationship between hatchery and natural populations in this ESU, NMFS concludes that both the Deschutes River (ODFW Stock 66) and Umatilla River (ODFW Stock 91) hatchery stocks should be considered part of the ESU. The listing status of these hatchery stocks is described later in this document under "Status of Steelhead ESUs."

Summary of Factors Affecting Steelhead

Section 4(a)(1) of the ESA and NMFS listing regulations (50 CFR part 424) set forth procedures for listing species. The Secretary of Commerce must determine, through the regulatory process, if a species is endangered or threatened based upon any one or a combination of the following factors: (1) The present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; or (5) other natural or human-made factors affecting its continued existence.

Several recent documents describe in more detail the impacts of various factors contributing to the decline of steelhead and other salmonids (e.g., 63 FR 11798; NMFS, 1999a). Relative to west coast steelhead, NMFS prepared a

supporting document that addresses the factors leading to the decline of this species entitled "Factors for Decline: A Supplement to the Notice of Determination for West Coast Steelhead" (NMFS, 1996b). This report, available upon request (see ADDRESSES), concludes that all of the factors identified in section 4(a)(1) of the ESA have played a role in the decline of the species. The report identifies destruction and modification of habitat, overutilization for recreational purposes, and natural and human-made factors as being the primary reasons for the decline of west coast steelhead.

Efforts Being Made to Protect West Coast Steelhead

Under section 4(b)(1)(A) of the ESA, the Secretary of Commerce is required to make listing determinations solely on the basis of the best scientific and commercial data available and after taking into account efforts being made to protect a species. During the status review for west coast steelhead and for other salmonids, NMFS reviewed protective efforts ranging in scope from regional strategies to local watershed initiatives; some of the major efforts are summarized in the March 10, 1998 proposed rule (63 FR 11798) as well as a document entitled "Steelhead Conservation Efforts: A Supplement to the Notice of Determination for West Coast Steelhead under the Endangered Species Act" (NMFS, 1996c). During the proposed rule period, NMFS identified additional conservation measures in the States of Washington and Oregon. These additional conservation measures are summarized here.

Two Federal planning efforts affect aquatic habitat on Federal lands within the range of these ESUs. These Federal efforts in some cases provide substantial protection for aquatic communities and are therefore considered in NMFS' listing determination. Federal forest lands in the Upper Willamette River ESU (and some areas of the Middle Columbia River ESU) are managed under U.S. Forest Service (USFS) and Bureau of Land Management (BLM) Land and Resource Management Plans or Land Use Plans which are amended by the Northwest Forest Plan (NFP). The NFP is a Federal interagency cooperative program that was implemented to provide a coordinated management direction for the lands administered by the USFS and BLM. A major part of the Plan, implementation of an Aquatic Conservation Strategy (ACS) on Federal land, is expected to reverse the trend of aquatic ecosystem degradation and contribute toward fish habitat recovery. Coordination among

the Federal land management agencies, NMFS, the U.S. Environmental Protection Agency (EPA), and the FWS should ensure that the ACS objectives are achieved.

Prior to implementing the Record of Decision for the President's Forest Plan, little or no riparian protection was afforded for the fish and their habitat. One of the most important substantive protective measures implemented through the Plan are riparian reserves. These are buffered strips of land that, depending on stream class and type of watershed, range from 300 ft (91m) on perennial streams to 50 ft (15 m) on ephemeral streams.

Some Federal lands in the Middle Columbia River ESU are managed under USFS and BLM Land and Resource Management Plans or Land Use Plans which are amended by PACFISH. PACFISH provides objectives, standards and guidelines that are applied to all Federal land management activities such as timber harvest, road construction, mining, grazing and recreation. The USFS and BLM implemented PACFISH in 1995 and intended it to provide interim protection to anadromous fish habitat while a longer term, basin scale aquatic conservation strategy was developed in the Interior Columbia Basin, Ecosystem Management Project (ICBEMP). It is intended that ICBEMP will have a Final Environmental Impact Statement and Record of Decision by early 2000.

For other ESUs already listed in the Interior Columbia Basin (Snake River chinook, Snake River steelhead, and Upper Columbia River steelhead), NMFS has required in section 7 consultation, several components that are in addition to the PACFISH strategy (NMFS 1995; NMFS 1998). NMFS, USFS, and BLM intend these additional components to bridge the gap between interim PACFISH direction and the longterm strategy envisioned for ICBEMP. NMFS anticipates that these components will also be carried forward in the ICBEMP direction. These components include (but are not limited to) implementation monitoring and accountability, a system of watersheds that are prioritized for protection and restoration, improved and monitored grazing systems, road system evaluation and planning requirements, mapping and analysis of unroaded areas, multi-year restoration strategies, and batching and analyzing projects at the watershed scale. Given the timeframe for ICBEMP, NMFS will likely conduct similar additional section 7 consultations for the Land and Resource Management plans within the Middle Columbia River

ESU and will then consult on ICBEMP when it is complete.

In the range of both the Middle Columbia River and Upper Willamette River ESUs, several notable efforts have recently been initiated. Harvest, hatchery, and habitat protections under state control are evolving under the Oregon Plan for Salmon and Watersheds (OPSW). The OPSW is a long-term effort to protect all at-risk wild salmonids through cooperation between state, local and Federal agencies, tribal governments, industry, private organizations, and individuals. Parts of the OPSW are already providing benefits, including an aggressive program by the Oregon Department of Transportation to inventory, repair, and replace road culverts that block fish from reaching important spawning and rearing areas. The OPSW also encourages efforts to improve conditions for salmon through non-regulatory means, including significant efforts by local watershed councils. An Independent Multi-disciplinary Science Team provides scientific oversight to OPSW components and outcomes. A recent Executive Order from Governor Kitzhaber reinforced his expectation that all state agencies will make improved environmental health and salmon recovery part of their mission.

Protecting and restoring fish and wildlife habitat and population levels in the Willamette River Basin, promoting proper floodplain management, and enhancing water quality is the focus of the recently formed Willamette Restoration Initiative (WRI). The WRI creates a mechanism through which residents of the basin are mounting a concerted, collaborative effort to restore watershed health. In addition, habitat protection and improved water quality in the Portland/Vancouver metropolitan areas are getting unprecedented attention from local jurisdictions. The regional government, Metro, recently adopted an aggressive stream and floodplain protection ordinance designed to protect functions and values of floodplains, and natural stream and adjacent vegetated corridors. All jurisdictions in the region must amend their land use plans and implementing ordinances to comply with the Metro ordinance within 18 months. Metro also has a green spaces acquisition program that addresses regional biodiversity, and is giving protection to significant amounts of land, some of it on the Sandy River or on tributaries to the Willamette River. The City of Portland has identified those activities which impact salmonids and is now using that information to reduce impacts of existing programs and to identify

potential enhancement actions. The City will shortly be making significant improvements in its storm water management program, a key to reducing impacts on salmonid habitat.

In the lower Columbia River, salmonid populations were seriously depleted long before increasing predator populations posed any significant threat to their long-term survival. Various development and management actions have interrupted the natural balance between predator and prey populations, and this situation now poses a risk to struggling salmonid populations. For example, steps have already been taken this year by the U.S. Army Corps of Engineers (COE), FWS, ODFW, and NMFS to relocate at least 90 percent of a Caspian tern colony away from areas in the lower Columbia where their primary food is juvenile salmonids.

The State of Washington is currently in the process of developing a statewide strategy to protect and restore wild steelhead and other salmon and trout species. In May of 1997, Governor Gary Locke and other state officials signed a Memorandum of Agreement creating the Joint Natural Resources Cabinet (Joint Cabinet). This body is comprised of state agency directors or their equivalents from a wide variety of agencies whose activities and constituents influence Washington's natural resources. The goal of the Joint Cabinet is to restore salmon, steelhead, and trout populations by improving those habitats on which the fish rely. The Joint Cabinet's current activities include development of the Lower Columbia Steelhead Conservation Initiative (LCSCI), which is intended to comprehensively address protection and recovery of steelhead in the lower Columbia River area.

NMFS intends to continue working with the State of Washington and stakeholders involved in the formulation of the LCSCI. Ultimately, when completed, this conservation effort may help to ameliorate risks facing many salmonid species in this region. In the near term, for steelhead and other listed species, individual components of the conservation effort may be recognized through section 4(d) of the ESA. In this way activities conducted in accordance with full, matured, and implemented conservation efforts may be excepted from take under section 9 of the ESA.

NMFS and FWS are also engaged in an ongoing effort to assist in the development of multiple species Habitat Conservation Plans (HCPs) for state and privately owned lands in Oregon and Washington. While section 7 of the ESA addresses species protection associated

with Federal actions and lands, Habitat Conservation Planning under section 10 of the ESA addresses species protection on private (non-Federal) lands. HCPs are particularly important since significant portions of habitat in the range of both steelhead ESUs is in non-Federal ownership. The intent of the HCP process is to ensure that any incidental taking of listed species will not appreciably reduce the likelihood of survival of the species, reduce conflicts between listed species and economic development activities, and to provide a framework that would encourage "creative partnerships" between the public and private sectors and state, municipal, and Federal agencies in the interests of endangered and threatened species and habitat conservation.

NMFS will continue to evaluate state, tribal, and non-Federal efforts to develop and implement measures to protect and begin the recovery of steelhead populations within these ESUs. Because a substantial portion of land in these ESUs is in state or private ownership, conservation measures on these lands will be key to protecting and recovering steelhead populations in these ESUs. NMFS recognizes that strong conservation benefits will accrue from specific components of many non-Federal conservation efforts.

While NMFS acknowledges that many of the ongoing protective efforts are likely to promote the conservation of steelhead and other salmonids, some are very recent and few address steelhead conservation at a scale that is adequate to protect and conserve entire ESUs. NMFS concludes that existing protective efforts are inadequate to preclude a listing for these ESUs. However, NMFS will continue to encourage these and future protective efforts and will work with Federal, state, and tribal fisheries managers to evaluate, promote, and improve efforts to conserve steelhead populations.

Status of Steelhead ESUs

Section 3 of the ESA defines the term "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range." The term "threatened species" is defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Thompson (1991) suggested that conventional rules of thumb, analytical approaches, and simulations may all be useful in making this determination. In previous status reviews (e.g., Weitkamp *et al.*, 1995), NMFS has identified a number of factors that should be

considered in evaluating the level of risk faced by an ESU, including: (1) absolute numbers of fish and their spatial and temporal distribution; (2) current abundance in relation to historical abundance and current carrying capacity of the habitat; (3) trends in abundance; (4) natural and human-influenced factors that cause variability in survival and abundance; (5) possible threats to genetic integrity (e.g., from strays or outplants from hatchery programs); and (6) recent events (e.g., a drought or changes in harvest management) that have predictable short-term consequences for abundance of the ESU.

During the coastwide status review for steelhead, NMFS evaluated both quantitative and qualitative information to determine whether any proposed ESU is threatened or endangered according to the ESA. The types of information used in these assessments are described in the proposed rule, published August 9, 1996 (61 FR 41541). The assessments also considered whether any of the hatchery populations identified in "Summary of Steelhead ESU Determinations" should be considered essential for the recovery of a listed ESU. The following summaries draw on these quantitative and qualitative assessments to describe NMFS' conclusions regarding the status of each steelhead ESU. A more detailed discussion of the status of these steelhead ESUs is presented in the "Status Review Update for Deferred and Candidate ESUs of West Coast Steelhead" (NMFS, 1997a) and "Updated Review of the Status of the Upper Willamette River and Middle Columbia River ESUs of Steelhead" (NMFS, 1999a). Copies of these documents are available upon request (see ADDRESSES).

(1) Upper Willamette River ESU

Steelhead in the Upper Willamette River ESU are distributed in a few, relatively small, natural populations. Over the past several decades, total abundance of natural late-migrating winter steelhead ascending the Willamette Falls fish ladder has fluctuated several times over a range of approximately 5,000 to 20,000 spawners. However, the last peak occurred in 1988, and this peak has been followed by a steep and continuing decline. Abundance in each of the last 5 years has been below 4,300 fish, and the run in 1995 was the lowest in 30 years. Declines also have been observed in almost all natural populations, including those with and without a substantial component of naturally spawning hatchery fish. NMFS notes

with concern the results from ODFW's extinction assessment, which estimates that the Molalla River population had a greater than 20 percent extinction probability in the next 60 years, and that the upper South Santiam River population had a greater than 5 percent extinction risk within the next 100 years (Chilcote, 1997).

Steelhead native to the Upper Willamette River ESU are late-run winter steelhead, but introduced hatchery stocks of summer and early-run winter steelhead also occur in the upper Willamette River. Estimates of the proportion of hatchery fish in natural spawning escapements range from 5 to 25 percent. NMFS is concerned about the potential risks associated with interactions between non-native summer and wild winter steelhead, whose spawning areas are sympatric in some rivers (especially in the Molalla and North and South Santiam Rivers). The percentage of hatchery fish in natural spawning escapements is considered relatively low in most rivers in the Upper Willamette River Basin. Declines in winter steelhead runs, regardless of degree of hatchery influence, suggest that causes other than artificial propagation are primarily responsible for reduced abundances.

NMFS remains concerned about the lack of historical abundance estimates for winter steelhead in the Upper Willamette River ESU. It may be possible that population sizes were never large above Willamette Falls, and that the winter steelhead in this ESU are capable of persisting at relatively low abundance. Although not as extreme as is the case for spring chinook salmon, the proportion and total amount of historical steelhead spawning habitat that has been blocked by dams and water diversions is high in the Upper Willamette River ESU. It is possible that several consecutive years of poor ocean conditions and recent harvest pressure in the lower Columbia River have pushed the winter steelhead populations in the Upper Willamette River drainage to the limit of their resiliency.

Listing Determination

Based on new information submitted by ODFW and others, NMFS concludes Upper Willamette River steelhead warrant listing as a threatened species. NMFS is concerned about the universally declining trends in abundance in the relatively small-to-moderate sized runs of winter steelhead in this ESU. Recent abundance trends indicate naturally spawned steelhead have declined to historically low levels in areas above Willamette Falls. This

low abundance, coupled with potential risks associated with interactions between naturally spawned steelhead and hatchery stocks is of great concern to NMFS.

Recent conservation planning efforts by the State of Oregon may reduce risks faced by steelhead in this ESU in the future; however, these efforts are still in their formative stages. Specifically, the OPSW, while substantially implemented and funded on the Oregon Coast, has not yet reached a similar level of development in inland areas. Furthermore, while the NFP has reduced habitat degradation on Federal lands within this ESU, less than 20 percent of land areas in this region are under Federal ownership and hence covered by this management plan.

Status of Hatchery Populations

NMFS concludes that none of the hatchery steelhead stocks identified as part of this ESU (see "Summary of Steelhead ESU Determinations") should be listed since they are not currently essential for its recovery (NMFS, 1999b).

(2) Middle Columbia River Basin ESU

Current population sizes are substantially lower than historic levels, especially in the rivers with the largest steelhead runs in the ESU: the John Day, Deschutes, and Yakima Rivers. At least two extinctions of native steelhead runs in the ESU have occurred (the Crooked and Metolius Rivers, both in the Deschutes River Basin). Trends in natural escapement in the Yakima and Umatilla Rivers have been highly variable since the mid-late 1970s, ranging from abundances that indicate relatively healthy runs to those that are cause for concern (i.e., from 2,000 to 3,000 steelhead during peaks to approximately 500 fish during the low points).

One of the most significant sources of risk to steelhead in the Middle Columbia ESU is the recent and dramatic increase in the percentage of hatchery fish in natural escapement in the Deschutes River Basin. ODFW estimates that in recent years, the percentage of hatchery strays in the Deschutes River has exceeded 70 percent, and most of these are believed to be long-distance strays from outside the ESU. Coincident with this increase in the percentage of strays has been a decline in the abundance of native steelhead in the Deschutes River. In combination with the trends in hatchery fish in the Deschutes River, estimates of increased proportions of hatchery fish in the John Day and Umatilla River Basins pose a risk to wild steelhead due to negative effects of genetic and ecological interactions with hatchery

fish. For example, in recent years, most of the fish planted in the Touchet River are from out of ESU stocks. As a result, a recent analysis of this stock by WDFW found that it was most similar genetically to Wells Hatchery steelhead from the Upper Columbia River ESU.

NMFS remains concerned about the widespread declines in abundance in the steelhead populations in this ESU. The serious declines in abundance in the John Day River Basin are especially troublesome, because the John Day River has supported the largest populations of naturally spawning summer steelhead in the ESU. Populations in the Yakima River Basin are at a small fraction of historical levels, with the majority of production coming from a single stream (Satus Creek). The number of naturally spawning fish in the Umatilla River has been relatively stable in recent years, but this has been accomplished with substantial supplementation of natural spawning by hatchery-reared fish. Naturally produced steelhead have declined precipitously in the Deschutes River over the past decade. The most optimistic observation that can be made for steelhead in this area is that some populations have shown resiliency to bounce back from even more depressed levels in the past (e.g., the late 1970s).

The continued increase of stray steelhead into the Deschutes River Basin is also a major source of concern to NMFS. ODFW and CTWSRO estimate that 60 to 80 percent of the naturally spawning population is composed of strays, which greatly outnumber naturally produced fish. Although the level of reproductive success of these stray fish has not been evaluated, the levels are so high that major genetic and ecological effects on natural populations are possible. Recent efforts underway by the CTWSRO and ODFW to determine the origin of strays and the proportion of strays that are spawning naturally in the Deschutes River may prove useful in focusing management efforts to address this serious issue.

ODFW argues that resident fish in the Deschutes River play a more substantial role in overall population dynamics and abundance of *O. mykiss* than is the case in other streams within this ESU or in most other steelhead ESUs. Further, they argue that the resident populations in the Deschutes River are robust and provide a substantial buffer against extinction. Evaluating the role of resident fish in extinction risk analysis for steelhead ESUs is very complex. Comprehensive abundance information for resident fish is not available, but if the data presented by ODFW for Nena Creek/North Junction are representative,

the overall abundance of resident fish in the Deschutes River may be fairly high. Some spawning between resident and anadromous fish has been observed, but there appears to be substantial microhabitat partitioning of reproduction between the forms based on size, timing, and location. Available information is limited, but it does not provide evidence that resident fish contribute significantly to anadromous returns. A tentative conclusion is that, within the Deschutes River Basin, the two forms are closely linked over evolutionary time frames, but the ability of the resident form to substantially affect demographic/genetic processes in steelhead populations in the short term is doubtful. To the extent that the resident form has been producing steelhead offspring in this ESU, the effect of that production has not been sufficient to stave off continued declines in steelhead populations. Furthermore, if there is substantial and continuing gene flow between resident and anadromous forms, that would suggest that the high stray rates of non-native hatchery steelhead also pose a genetic risk to resident fish in the Deschutes River. Not enough information currently exists to determine whether the relative abundances of the two life history forms should be viewed positively (e.g., the relatively high abundance of the resident form in those streams can act to buffer the anadromous form from declines) or negatively (e.g., the resident form is outcompeting or interbreeding with the anadromous form) in risk evaluations.

Listing Determination

NMFS concludes the Middle Columbia ESU warrants listing as a threatened species. Continued declines in steelhead abundance and increases in the percentage of hatchery fish in natural escapements pose significant threats to this ESU.

Recent conservation planning efforts by the States of Washington and Oregon may reduce risks faced by steelhead in this ESU in the future; however, these efforts are still in their formative stages. Federal management efforts, including the NFP, PACFISH, and forthcoming ICEBMP, address important habitat-related risk factors for this ESU. However, only about 24 percent of the land area within this ESU is under Federal management and subject to these management efforts.

Status of Hatchery Populations

NMFS concludes that none of the hatchery steelhead stocks identified as part of this ESU (see "Summary of Steelhead ESU Determinations") should

be listed since they are not currently essential for its recovery (NMFS, 1999b).

Determinations

Based on new information and comments received during the proposed rule, NMFS concludes that Upper Willamette River steelhead and Middle Columbia River steelhead warrant listing as threatened species under the ESA. The geographic boundaries (i.e., the watersheds within which the members of the ESU spend their freshwater residence) for these ESUs are described under "Summary of Steelhead ESU Determinations."

In both threatened steelhead ESUs, NMFS is listing only naturally spawned populations residing below impassable natural barriers (e.g., long-standing, natural waterfalls). NMFS' intent in listing only "naturally spawned" populations is to protect steelhead stocks that are indigenous to (i.e., part of) the ESU. In this listing determination, NMFS has identified various non-indigenous populations that co-occur with fish in the listed ESUs. The agency recognizes the difficulty of differentiating between indigenous and non-indigenous fish, especially when the latter are not readily distinguishable with a mark (e.g., fin clip). Also, matings in the wild of either type would generally result in progeny that would be treated as listed fish (i.e., they would have been naturally spawned in the geographic range of the listed ESU and have no distinguishing mark). Therefore, to reduce confusion regarding which steelhead are considered listed within an ESU, NMFS will treat all naturally spawned fish as listed for purposes of the ESA. Efforts to determine the conservation status of an ESU would focus on the contribution of indigenous fish to the listed ESU. It should be noted that NMFS will take actions necessary to minimize or prevent non-indigenous steelhead from spawning in the wild unless the fish are specifically part of a recovery effort.

NMFS has also evaluated the relationship between hatchery and natural populations of steelhead in the listed ESUs (described previously in "Summary of Steelhead ESU Determinations" and "Status of Steelhead ESUs"). None of the hatchery populations are being listed because, while some are considered part of the ESUs, none are deemed essential for the recovery of either ESU (NMFS, 1999b).

The determination that a hatchery stock is not "essential" for recovery does not preclude it from playing a role in recovery. Any hatchery population that is part of the ESU is available for use in recovery if conditions warrant. In

this context, an "essential" hatchery population is one that is vital to incorporate into recovery efforts (for example, if the associated natural population(s) were extinct or at high risk of extinction). Under such circumstances, NMFS would consider taking the administrative action of listing existing hatchery fish.

NMFS' "Interim Policy on Artificial Propagation of Pacific Salmon Under the Endangered Species Act" (58 FR 17573, April 5, 1993) provides guidance on the treatment of hatchery stocks in the event of a listing. Under this policy, "progeny of fish from the listed species that are propagated artificially are considered part of the listed species and are protected under the ESA." In the case of hatchery steelhead populations considered to be part of the Upper Willamette River ESU or Middle Columbia River ESU, the protective regulations that NMFS will issue shortly may except take of naturally spawned listed fish for use as broodstock as part of an overall conservation program. According to the interim policy, the progeny of these hatchery-wild or wild-wild crosses would also be listed. Given the requirement for an acceptable conservation plan as a prerequisite for collecting broodstock, NMFS determines that it is not necessary to consider the progeny of intentional hatchery-wild or wild-wild crosses as listed.

In addition, NMFS believes it is desirable to incorporate naturally spawned fish into these hatchery populations to ensure that their genetic and life history characteristics do not diverge significantly from the natural populations. NMFS therefore concludes that it is not inconsistent with NMFS' interim policy, nor with the policy and purposes of the ESA, to consider these progeny as part of the ESU but not listed.

At this time, NMFS is listing only anadromous life forms of *O. mykiss*.

Prohibitions and Protective Measures

Section 9 of the ESA prohibits certain activities that directly or indirectly affect endangered species. These prohibitions apply to all individuals, organizations, and agencies subject to U.S. jurisdiction. Section 9 prohibitions apply automatically to endangered species, as described in the following discussion, this is not the case for threatened species.

Section 4(d) of the ESA directs the Secretary of Commerce to implement regulations "to provide for the conservation of [threatened] species," that may include extending any or all of the prohibitions of section 9 to threatened species. Section 9(a)(1)(g)

also prohibits violations of protective regulations for threatened species implemented under section 4(d). NMFS will issue shortly protective regulations pursuant to section 4(d) for the listed ESUs.

Section 7(a)(4) of the ESA requires that Federal agencies consult with NMFS on any actions likely to jeopardize the continued existence of a species proposed for listing and on actions likely to result in the destruction or adverse modification of proposed critical habitat. For listed species, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or conduct are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with NMFS.

Examples of Federal actions likely to affect steelhead in the listed ESUs include authorized land management activities of the USFS and BLM, as well as operation of hydroelectric and storage projects of the Bureau of Reclamation and COE. Such activities include timber sales and harvest, hydroelectric power generation, and flood control. Federal actions, including the COE section 404 permitting activities under the Clean Water Act, COE permitting activities under the River and Harbors Act, National Pollution Discharge Elimination System permits issued by EPA, highway projects authorized by the Federal Highway Administration, Federal Energy Regulatory Commission licenses for nonfederal development and operation of hydropower, and Federal salmon hatcheries, may also require consultation. These actions will likely be subject to ESA section 7 consultation requirements that may result in conditions designed to achieve the intended purpose of the project and avoid or reduce impacts to steelhead and its habitat within the range of the listed ESUs. It is important to note that the current listing applies only to the anadromous form of *O. mykiss*; therefore, section 7 consultations will not address resident forms of *O. mykiss* at this time.

There are likely to be Federal actions ongoing in the range of the listed ESUs at the time these listings become effective. Therefore, NMFS will review all ongoing actions that may affect the listed species with Federal agencies and will complete formal or informal consultations, where requested or necessary, for such actions pursuant to ESA section 7(a)(2).

Sections 10(a)(1)(A) and 10(a)(1)(B) of the ESA provide NMFS with authority to grant exceptions to the ESA's "taking" prohibitions. Section 10(a)(1)(A) scientific research and enhancement permits may be issued to entities (Federal and non-Federal) conducting research that involves a directed take of listed species.

NMFS has issued ESA section 10(a)(1)(A) research or enhancement permits for other listed species (e.g., Snake River chinook salmon and Sacramento River winter-run chinook salmon) for a number of activities, including trapping and tagging, electroshocking to determine population presence and abundance, removal of fish from irrigation ditches, and collection of adult fish for artificial propagation programs. NMFS is aware of several sampling efforts for steelhead in the listed ESUs, including efforts by Federal and state fishery management agencies. These and other research efforts could provide critical information regarding steelhead distribution and population abundance.

ESA Section 10(a)(1)(B) incidental take permits may be issued to non-Federal entities performing activities that may incidentally take listed species. The types of activities potentially requiring a section 10(a)(1)(B) incidental take permit include the release of artificially propagated fish by state or privately operated and funded hatcheries, state or university research on species other than steelhead, not receiving Federal authorization or funding, the implementation of state fishing regulations, and timber harvest activities on nonfederal lands.

Take Guidance

On July 1, 1994, (59 FR 34272) NMFS and FWS published a policy committing the agencies to identify, to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the ESA. The intent of this policy is to increase public awareness of the effect of a listing on proposed and on-going activities within the species' range. NMFS believes that, based on the best available information, the following actions will not result in a violation of section 9: (1) Possession of steelhead from the listed ESUs acquired lawfully by permit issued by NMFS pursuant to section 10 of the ESA, or by the terms of an incidental take statement pursuant to section 7 of the ESA; and (2) federally funded or approved projects that involve activities such as silviculture, grazing, mining, road construction, dam construction

and operation, discharge of fill material, stream channelization or diversion for which a section 7 consultation has been completed, and when such an activity is conducted in accordance with any terms and conditions provided by NMFS in an incidental take statement accompanied by a biological opinion pursuant to section 7 of the ESA. As described previously in this notice, NMFS may adopt 4(d) protective regulations that except other activities from section 9 take prohibitions for threatened species.

Activities that NMFS believes could potentially harm, injure or kill steelhead in the listed ESUs and result in a violation of section 9 of the ESA include, but are not limited to: (1) land-use activities that adversely affect steelhead habitat in this ESU (e.g., logging, grazing, farming, road construction in riparian areas, and areas susceptible to mass wasting and surface erosion); (2) destruction or alteration of steelhead habitat in the listed ESUs, such as removal of large woody debris and "sinker logs" or riparian shade canopy, dredging, discharge of fill material, draining, ditching, diverting, blocking, or altering stream channels or surface or ground water flow; (3) discharges or dumping of toxic chemicals or other pollutants (e.g., sewage, oil, gasoline) into waters or riparian areas supporting listed steelhead; (4) violation of discharge permits; (5) pesticide and herbicide applications; (6) interstate and foreign commerce of steelhead from the listed ESUs and import/export of steelhead from listed ESUs without an ESA permit, unless the fish were harvested pursuant to legal exception; (7) collecting or handling of steelhead from listed ESUs (permits to conduct these activities are available for purposes of scientific research or to enhance the propagation or survival of the species); and (8) introduction of non-native species likely to prey on steelhead in these ESUs or displace them from their habitat. This list is not exhaustive. It is intended to provide some examples of the types of activities that might or might not be considered by NMFS as constituting a take of listed steelhead under the ESA and its regulations. Questions regarding whether specific activities will constitute a violation of this rule, and general inquiries regarding prohibitions and permits, should be directed to NMFS (see ADDRESSES).

Effective Date of Final Listing

Given the cultural, scientific, and recreational importance of this species, and the broad geographic range of these listings, NMFS recognizes that

numerous parties may be affected by this listing. Therefore, to permit an orderly implementation of the consultation requirements associated with this action, this final listing will take effect May 24, 1999.

Conservation Measures

Conservation benefits are provided to species listed as endangered or threatened under the ESA through increased recognition, recovery actions, Federal agency consultation requirements, and prohibitions on taking. Increased recognition through listing promotes public awareness and conservation actions by Federal, state, and local agencies, private organizations, and individuals.

Several conservation efforts are underway that may reverse the decline of west coast steelhead and other salmonids. NMFS is encouraged by these significant efforts, which could provide all stakeholders with an approach to achieving the purposes of the ESA—protecting and restoring native fish populations and the ecosystems upon which they depend that are less regulatory. NMFS will continue to encourage and support these initiatives as important components of recovery planning for steelhead and other salmonids.

To succeed, protective regulations and recovery programs for steelhead will need to focus on conserving aquatic ecosystem health. NMFS intends that Federal lands and Federal activities play a primary role in preserving listed populations and the ecosystems upon which they depend. However, throughout the range of the listed ESUs, steelhead habitat occurs and can be affected by activities on state, tribal or private land.

Conservation measures that could be implemented to help conserve the species are listed here (the list is generalized and does not constitute NMFS' interpretation of a recovery plan under section 4(f) of the ESA). Progress on some of these is being made to differing degrees in specific areas.

1. Measures could be taken to promote practices that are more protective of (or restore) steelhead habitat across a variety of land and water management activities. Activities affecting this habitat include timber harvest; agriculture; livestock grazing and operations; pesticide and herbicide applications; construction and urban development; road building and maintenance; sand and gravel mining; stream channelization; dredging and dredged spoil disposal; dock and marina construction; diking and bank stabilization; dam construction/operation; irrigation withdrawal,

storage, and management; mineral mining; wastewater/pollutant discharge; wetland and floodplain alteration; habitat restoration projects; and woody debris/structure removal from rivers and estuaries. Each of these activities could be modified to ensure that watersheds and specific river reaches are adequately protected in the short- and long-terms.

2. Fish passage could be restored at barriers to migration through the installation or modification of fish ladders, upgrade of culverts, or removal of barriers.

3. Harvest regulations could be modified to protect listed steelhead populations affected by both directed harvest and incidental take in other fisheries.

4. Artificial propagation programs could be modified to minimize negative impacts (e.g., genetic introgression, competition, disease, etc.) upon native populations of steelhead.

5. Predator control/relocation programs could be implemented in areas where predators pose a significant threat to steelhead.

6. Measures could be taken to improve monitoring of steelhead populations and their habitat.

7. Federal agencies such as the USFS, BLM, Federal Energy Regulatory Commission, COE, U.S. Department of Transportation, and U.S. Bureau of Reclamation could review their management programs and use their discretionary authorities to formulate conservation plans pursuant to section 7(a)(1) of the ESA.

NMFS encourages non-Federal landowners to assess the impacts of their actions on threatened or endangered salmonids. In particular, NMFS encourages state and local governments to use their existing authorities and programs, and encourages the formation of watershed partnerships to promote conservation in accordance with ecosystem principles. These partnerships will be successful only if state, tribal, and local governments, landowner representatives, and Federal and non-Federal biologists all participate and share the goal of restoring steelhead and salmon to the watersheds.

Critical Habitat

Section 4(b)(6)(C) of the ESA requires that, to the extent prudent, critical habitat be designated concurrently with the listing of a species unless such critical habitat is not determinable at that time. On February 5, 1999, NMFS published a proposed critical habitat rule for all listed and proposed steelhead ESUs (64 FR 5740). Copies of this critical habitat proposed rule are available upon request (see ADDRESSES).

Classification

The 1982 amendments to the ESA, in section 4(b)(1)(A), restrict the information that may be considered when assessing species for listing. Based on this limitation of criteria for a listing decision and the opinion in *Pacific Legal Foundation v. Andrus*, 675 F.2d 825 (6th Cir. 1981), NMFS has categorically excluded all ESA listing actions from environmental assessment requirements of the National Environmental Policy Act (NEPA) under NOAA Administrative Order 216-6.

As noted in the Conference Report on the 1982 amendments to the ESA, economic impacts cannot be considered when assessing the status of species. Therefore, the economic analysis requirements of the Regulatory Flexibility Act (RFA) are not applicable to the listing process. Similarly, this final rule is exempt from review under E.O. 12866.

This rule has been determined to be major under the Congressional Review Act (5 U.S.C. 801 *et seq.*)

At this time NMFS is not promulgating protective regulations pursuant to ESA section 4(d). In the future, prior to finalizing its 4(d) regulations for the threatened steelhead ESUs, NMFS will comply with all relevant NEPA and RFA requirements.

References

A complete list of all references cited herein is available upon request (see ADDRESSES) and can also be obtained from the internet at www.nwr.noaa.gov.

Threatened Species Regulations Consolidation

In the proposed rule issued on March 10, 1998 (63 FR 11774), Upper Willamette River steelhead was designated the letter (v) and Middle Columbia River steelhead the letter (w) in § 227.4. Since March 10, 1998, NMFS issued a final rule consolidating and reorganizing existing regulations regarding implementation of the ESA. In this reorganization, § 227.4 has been redesignated as § 223.102; therefore, Upper Willamette River steelhead is designated in this final rule as paragraph (a)(14) and Middle Columbia River steelhead as paragraph (a)(15) of § 223.102. The regulatory text of the proposed rule remains unchanged in this final rule.

List of Subjects in 50 CFR Part 223

Endangered and threatened species, Exports, Imports, Marine mammals, Transportation.

Dated: March 15, 1999.

Andrew A. Rosenberg,

Deputy Assistant Administrator for Fisheries, National Marine Fisheries Service.

For the reasons set forth in the preamble, 50 CFR part 223 is amended as follows:

PART 223—THREATENED MARINE AND ANADROMOUS SPECIES

1. The authority citation for part 223 continues to read as follows:

Authority: 16 U.S.C. 1531 *et seq.*; 16 U.S.C. 742a *et seq.*; 31 U.S.C. 9701.

2. In § 223.102, paragraphs (a)(14) and (a)(15) are added to read as follows:

§ 223.102 Enumeration of threatened marine and anadromous species.

* * * * *

(a) * * *

(14) Upper Willamette River steelhead (*Oncorhynchus mykiss*). Includes all naturally spawned populations of winter-run steelhead in the Willamette River, Oregon, and its tributaries upstream from Willamette Falls to the Calapooia River, inclusive;

(15) Middle Columbia River steelhead (*Oncorhynchus mykiss*). Includes all naturally spawned populations of steelhead in streams from above the Wind River, Washington, and the Hood River, Oregon (exclusive), upstream to, and including, the Yakima River, Washington. Excluded are steelhead from the Snake River Basin.

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[FR Doc. 99-6817 Filed 3-24-99; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 223

[Docket No. 980219043-9068-02; I.D. 011498A]

RIN 0648-AK52

Endangered and Threatened Species: Threatened Status for Ozette Lake Sockeye Salmon in Washington

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule.

SUMMARY: The National Marine Fisheries Service (NMFS) is issuing a final determination that the Ozette Lake sockeye salmon (*Oncorhynchus nerka*) Evolutionarily Significant Unit (ESU), located on Washington's Olympic Peninsula, is a threatened species under