DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 227

[Docket No. 910647-1147]

Endangered and Threatened Species; Proposed Threatened Status for Snake River Spring and Summer Chinook Salmon

AGENCY: National Marine Fisheries Service (NMFS), NOAA, Commerce.

ACTION: Proposed rule.

SUMMARY: NMFS is issuing a proposed determination that the Snake River spring and summer chinook salmon (*Oncorhynchus tshawytscha*) is a "species" under the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 *et seq.* (ESA), because of compelling evidence that Snake River spring/summer chinook salmon are reproductively isolated from Snake River fall chinook salmon and because there is a high probability of substantial gene flow between the spring and summer chinook salmon forms. Further, NMFS proposes to list the Snake River spring/summer chinook salmon as threatened under the ESA. Snake River spring/summer chinook salmon have declined to low numbers of fish that are thinly spread over a large and complex river system. Hydropower development, water withdrawal and diversions, water storage, harvest, inadequate regulatory mechanisms, and artificial propagation are factors contributing to the decline and represent a continued threat to the Snake River spring/summer chinook salmon's existence. Should the proposed listing be made final, protective regulations under the ESA would be put into effect and a recovery program would be implemented.

DATES: Comments from all interested parties must be received by August 26, 1991. Public hearings are scheduled as follows:

1. July 30, 1991, 7 p.m. to 9:30 p.m., Portland, Oregon;
2. July 31, 1991, 7 p.m. to 9:30 p.m., Seattle, Washington;
3. August 1, 1991, 7 p.m. to 9:30 p.m., Richland, Washington;
4. August 7, 1991, 7 p.m. to 9:30 p.m., Boise, Idaho.

ADDRESSES: Comments on this proposed rule should be sent to the Environmental and Technical Services Division, NMFS, Northwest Region, 911 NE. 11th Avenue, suite 620, Portland, OR 97232, or provided at any one of the public hearings. The hearings will be held at the following locations:

1. 1st Floor West Side, Federal Complex, 911 NE. 11th Ave., Portland, Oregon;
2. NOAA, Western Administrative Support Center, Building 9 Auditorium, 7600 Sand Point Way, NE., Seattle, Washington;
3. Richland Federal Building Auditorium, 825 Jadwin Avenue, Richland, Washington;
4. Boise Interagency Fire Center Auditorium, 3905 Vista Ave., Boise, Idaho.

FOR FURTHER INFORMATION CONTACT: Tracey Vriens, Environmental and Technical Services Division, NMFS, Portland, Oregon, 503-230-5420 or FTS-429-5420.

SUPPLEMENTARY INFORMATION:

Background

On June 7, 1990, NMFS received petitions from Oregon Trout, with co-petitioners Oregon Natural Resources Council, Northwest Environmental Defense Center, American Rivers, and Idaho and Oregon Chapters of American Fisheries Society to list the Snake River spring chinook salmon and the Snake River summer chinook salmon under the ESA. NMFS published a notice on September 11, 1990, (55 FR 37342) announcing that the petitions presented substantial scientific information indicating that the listings may be warranted and requesting information from the public.

NMFS has reviewed all available scientific information pertaining to the status of Snake River spring/summer chinook salmon. To assist in this review, NMFS convened a Technical Committee to provide information and to review and comment on the data in the record. The Technical Committee consists of representatives from Federal and State fisheries agencies, Indian tribes, industries, professional societies, and public interest groups that have technical expertise relevant to Snake River spring/summer chinook salmon.

Status Review for Snake River Spring/Summer Chinook Salmon

The NMFS Northwest Region Biological Review Team prepared a "Status Review for Snake River Spring/Summer Chinook Salmon" (Matthews and Waples 1991) providing more detailed information, discussion and references. This status review is available upon request (see **ADDRESSES**), and is summarized below.

Ecosystem

The Snake River is the major tributary of the Columbia River, entering the Columbia 324.3 miles (522 kilometers) upstream from the Pacific Ocean. The Snake River contains five principal subbasins that currently produce spring- and/or summer-run chinook (CBFWA 1990). Three of the five subbasins, the Clearwater, Grande Ronde, and Salmon Rivers, are large, complex systems; the other, the Tucannon and Imnaha Rivers, are small systems in which the majority of salmon production is in the mainstream rivers (Matthews and Waples 1991). In addition to the five major subbasins, three small streams, Asotin, Granite, and Sheep Creeks, that enter the Snake River between Lower Granite and Hell's Canyon Dams, provide small spawning and rearing areas CBFWA 1990).

The habitat occupied by spring/summer chinook salmon in the Snake River in unique to the biological species. Snake River spring/summer chinook salmon spawn at higher elevations, typically about 5,000-7,000 feet (1,500 to 2,133 meters), than any other populations of the species. They also migrate farther from the ocean, 600 to 900 miles (965 to 1,448 km.), than most other chinook salmon populations. Long migrating populations are also found in the Fraser and Yukon Rivers, and perhaps in the Soviet Union, but these populations do not spawn at such high elevations.

Spawning habitat in the Snake River is distinctive in having large areas of open, low relief streams at high elevation. Habitat, particularly in the Salmon River, is among the most productive for the species. The Salmon River (tributary to the Snake River) alone once produced approximately 40 percent of the spring/summer chinook salmon returning to the Columbia River. The Snake River flows through terrain that is warmer and drier on an annual basis than the upper Columbia River Basin or other drainages farther north. Geologically, the land forms are older and much more eroded than most other chinook salmon habitat. Collectively, these environmental factors result in a river that is warmer and more turbid, with higher ph and alkalinity, than most other within the biological species' range.

Life History

Adult chinook salmon migrating upstream past Bonneville Dam from March-May, June-July, and August-October are categorized as spring, summer, and fall run fish, respectively. In general, the habitats utilized for spawning and early juvenile rearing are different among the three forms. Spring chinook salmon tend to use small, higher elevation streams, summer chinook salmon tend to use mid-elevation streams, and fall chinook salmon use larger, lower elevation mainstem streams. However, in the Snake River, summer chinook salmon inhabit smaller, higher elevation tributaries more typical of spring chinook salmon habitat. (Matthews and Waples 1991). In contrast, upper Columbia River summer chinook salmon spawn in larger, lower elevation streams more characteristic of fall chinook salmon habitat. Juvenile behavior also suggests that Snake River summer chinook salmon are more closely related to Snake River spring chinook salmon than to Snake River fall chinook salmon, whereas the juvenile behavior of the upper Columbia River summer chinook salmon is more closely aligned to upper Columbia River fall chinook salmon. Snake River spring and summer chinook and upper Columbia River spring chinook salmon migrate seaward as yearling smolts (Matthews and Waples 1991 *citing* Schreck *et al.* 1986). Upper Columbia River summer and fall chinook salmon migrate seward as subyearlings. In addition, genetic analysis indicates that Snake River spring/summer chinook salmon are very similar, but, as a group, are quite distinct from Snake River fall chinook salmon (Matthews and Waples 1991).

The spawning age of Snake River spring/summer chinook salmon varies by stream and by sex, but the data indicate that most return after 2 or 3 years. the fecundity of the Snake River spring/summer chinook salmon varies; for example, in the Tucannon River, there was a mean fecundity of 3,916 and 4,095 eggs per female in 1986 and 1987, respectively (CBFWA 1990) and in the Grande Ronde River, a mean of 3,715 and 3,462 egges per female in 1983 and 1984, respectively (Howell *et al.* 1985). Egg to smolt survival also varies, and the data are limited. However, in the Tucannon River, the survival rate was 13.0 percent for the 1985 brood year and 14.2 percent for the 1987 brood year (Bugert *et al.* 1990). In the Grande Ronde River, this rate varied from 6.4 to 8 percent from 1965 through 1969 (Howell *et al.* 1985).

There are no date available for smolt to adult survival for individual streams or drainages. However, Raymond (1979) estimated a 0.4–4.4 percent smolt to adult survival rate for wild smolts arriving at Ice Harbor Dam for 1966–1975. These estimates do not take into account any smolt mortality between rearing areas and the uppermost Snake River dam (Ice Harbor Dam 1968; Lower Monumental Dam 1969; Little Goose Dam 1970–1974).

Outmigrating Snake River spring/summer chinook salmon are present at lower Granite Dam (the first major dam encountered by the outmigrants) generally from early April through June.

Consideration as a "Species" Under the ESA

To consider the Snake River spring/summer chinook salmon for listing, they must qualify as a "species" either together or separately, under the ESA. The ESA defines a "species" to include any "distinct population segment of any segment of vertebrate. . . which interbreeds when mature." NMFS published an interim policy (March 13, 1991; 56 FR 10542) on how it will apply the ESA species definition in evaluating Pacific salmon. A salmon population will be considered distinct, and hence a species under the ESA, if it represents an evolutionarily significant unit (ESU) of the biological species. The stock must satisfy two criteria to be considered an ESU: (1) It must be reproductively isolated from other conspecific population units 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 be strong enough to permit evolutionarily important differences to accrue in different population units. The second criterion is met if the population contributes substantially to the ecological/genetic diversity of the species as a whole. Further guidance on application of this policy is contained in the NMFS paper "Definition of Species under the Endangered Species Act: Application to Pacific Salmon" (Waples 1991).

Spring/summer run fish have traditionally been considered separate runs based on the difference in timing of adult returns to spawning areas. In determining whether Snake River spring/summer chinook salmon should be considered together or separately as a species as defined by the ESA, it is necessary to determine whether fish with different run-time designations are reproductively isolated. Schreck *et al.* (1986) and Utter *et al.* (1989) suggest that spring-, summer-, and fall-run chinook salmon probably do not represent separate lineages in the Pacific Northwest. They found that, in general, geographic proximity was a more important factor than run-timing in predicting similarities between stocks. This suggests that run-time differences may have evolved independently following colonization of a new area (Matthews and Waples 1991). However, in spite of this general pattern, there are pronounced genetic (Schreck *et al.* 1986; Utter *et al.* 1989) and life history (Matthews and Waples 1991) differences between spring and fall chinook salmon in the Snake River.

The relationship between spring/summer run fish in the Snake River is not so clear. Even though some spring/summer populations appear to be substantially reproductively isolated, this isolation may be due to geographical separation as much as to temporal differences in spawn timing. Furthermore, reproductive isolation could be as strong (or stronger) between populations with similar run-timing from different drainages.

The key to understanding the evolutionary significance of spring and summer run-timing is the relationship between the two forms in streams where they occur together (Matthews and Waples 1991). Matthews and Waples (1991) discuss two hypotheses that could explain the presence of both forms in the same stream: (1) the two forms arose from a single colonization event by one of the forms or (2) spring and summer-run fish are two independent evolutionary units, and the reason both forms are found in the same stream is that, in these cases, two colonization events occurred. Presently, there is insufficient information to determine which of these hypotheses is true, or whether hypothesis 1 is true in some cases and hypothesis 2 is true in others.

Because of compelling evidence that Snake River fall chinook salmon are reproductively isolated from spring/summer chinook salmon and because there is a probability of substantial levels of gene flow between the spring/summer chinook salmon forms in at least some localities. NMFS is considering Snake River spring/summer chinook salmon as a unit. This decision, however, does not imply that the two forms are not both important; the presence of fish with a spectrum of run and spawn timing is crucial to the long-term health and viability of Snake River chinook salmon.

To determine whether Snake River spring/summer chinook salmon consist of one or multiple ESUs, the criteria of reproductive isolation and substantial contribution to ecological/genetic diversity of the biological species are important. The most compelling evidence of an anadromous salmonid population's reproductive isolation is the ability of individuals to return to their natal streams to reproduce. This is particularly true for upriver populations, such as Snake River spring/summer chinook salmon (Chapman *et al.* 1991). The great distances that these fish must travel (over 324 miles (522 km)) in fresh water to reach their natal streams reduces the likelihood of straying from other major river systems outside the Snake River. All available information suggests that if an adult spring or summer chinook salmon enters the Columbia River, it will most likely spawn only in its natal stream (Matthews and Waples 1991).

Recent studies (Schreck 1986; Waples *et al.* 1990) examining the genetic relationships among Columbia River Basin chinook salmon stocks indicate that there is little, if any, genetic exchange between Snake River spring/summer-run chinook salmon and lower and mid-Columbia River spring chinook salmon and upper Columbia River summer chinook salmon (Matthews and Waples 1991).

The available information also indicates that Snake River spring/summer chinook salmon are ecologically/genetically distinct. The fact that juvenile migrational behavior is the same for spring/summer chinook salmon in the Snake River and is different for the same forms in the upper Columbia River, strongly implies ecological/genetic adaptiveness. The precision required to migrate great distances from different natal streams and tributaries and return with high fidelity and exact timing to start the next generation 1 to 3 years later speaks of biological entities that are highly adapted to their particular environments. Protein electrophoresis shows clear differences between Snake River spring/summer chinook salmon and other chinook salmon populations in the Columbia River Basin.

Snake River spring/summer chinook salmon as a group meet both criteria to be considered a "species" under the ESA; they are strongly isolated reproductively from other conspecific population units and they contribute substantially to the ecological/genetic diversity of the biological species. While more than one ESU may exist within the Snake River Basin, the data presently available are not sufficient to clearly demonstrate the existence of multiple ESUs, or to define their boundaries. Thus, NMFS is proposing that the Snake River spring/summer chinook be considered as one ESU of the biological species *O. tshawytscha* under the ESA. NMFS recognizes that there is evidence of important differences between some population segments within the Snake River Basin; therefore, NMFS emphasizes that the proposed ESU's viability is strongly dependent on the continued existence of healthy populations distributed throughout the area of the ESU. As more data become available, smaller ESUs within the Snake River ESU may be defined.

In determining the nature and extent of the ESU for Snake River spring/summer chinook salmon, it is also necessary to consider the effects of artificial propagation and transfers. In general, introduced salmon populations will not be considered for protection under the ESA, and changes caused by artificial propagation or hybridization may also erode qualities by which a population is recognized as distinct (Waples 1991). The extent to which these efforts have altered the genetic makeup of indigenous populations is not understood fully. Hindar *et al.* (in press) found evidence, in some cases, that hatchery-reared fish had interbred with native fish, but they also found cases in which repeated supplementation had no detectable genetic effect on the indigenous population. In the Snake River, there are a number of streams without any recorded history of outplanting, others have been planted with only minimal numbers of nonindigenous fish, and others have had extensive stock transfers and evidence of hybridization (for more detail, see ETSD 1991). Presumably, the native fish in streams with little or no outplanting retain essentially unchanged genetic characteristics of the native populations.

One area for which the evidence of stock transfers and hybridization is overwhelming is the Clearwater River. Indigenous chinook salmon populations were virtually, if not completely eliminated by the Lewiston Dam (1927–1940). Subsequent efforts to restore the runs included transfer of eggs from the Salmon River subbasin and massive outplants of juveniles from hatcheries throughout the Columbia River Basin. Descendants of these fish of mixed, non-native origin are not considered part of the ESU for Snake River spring/summer chinook salmon.

Distribution and Abundance

Historically, it is estimated that 44 percent of the combined Columbia River spring/summer chinook salmon returning adults entered the Salmon River (Fulton 1968). Matthews and Waples (1991) combined a number of estimates (Fulton 1968; Chapman 1986; CBFWA 1990) and concluded that during some years in the late 1800s, the Snake River produced in excess of 1.5 million spring/summer chinook salmon. From 1950 through 1960, the abundance of adult spring/summer chinook salmon had declined to an average of 125,000 per year (Fulton 1968). Since the 1960s, counts at Snake River dams have declined considerably, from an average at Ice Harbor Dam of 58,798 fish during 1962 through 1970, to a low of 11,855 in 1979. Counts gradually increased over the next 9 years, peaking at 42,184 in 1988. However, in 1989 and 1990, counts dropped to 21,244 and 26,524 fish, respectively. These numbers are illustrative of population trends, but are not indicative of wild fish abundance, because adult counts at dams have been confounded by returns of hatchery-reared fish since 1967.

Matthews and Waples (1991) estimated the abundance of wild fish going over the uppermost Snake River dam (1968—Ice Harbor Dam; 1969—Lower Monumental Dam; 1970–74—Little Goose Dam; and 1975–90—Lower Granite Dam) utilizing an expansion factor based on the relationship between adult counts at the uppermost dam and redd counts in index areas prior to hatchery influence. Redd counts are available since 1957 from all Snake River index areas except the Grande Ronde River, for which enumeration began in 1964. Using this method, the estimated number of wild adult spring/summer chinook salmon passing over Lower Granite Dam averaged 9,674 fish from 1980 through 1990, with a low count of 3,343 fish in 1980 and a high count of 21,870 fish in 1988.

Snake River redd counts in index areas provide the best indicator of trends and status of the wild spring/summer chinook salmon population. In 1957, over 13,000 redds were counted in index areas excluding the Grande Ronde River. By 1964, including the counts in Grande Ronde River, the annual count in index areas was 8,542 redds. Over the next 16 years, annual counts in all areas declined steadily, reaching a minimum of 620 redds in 1980. Annual counts increased gradually over the next 8 years, reaching a peak of 3,395 redds in 1988. However, in 1989 and 1990, counts dropped again to 1,008 and 1,224, respectively.

The abundance of wild Snake River spring/summer chinook salmon has declined more at the mouth of the Columbia River than the redd trends indicate (Chapman *et al.* 1991). Prior to curtailment in the mid-1970s, the in-river fisheries in the lower Columbia River below McNary Dam harvested 20 to 88 percent of these fish annually (Raymond 1988). Therefore, any analysis of population decline using redd counts provides a conservative approximation of the actual decline in abundance of adults.

Factors relevant to the determination of whether a "species" is threatened or endangered include current and historical abundance, population trends, the distribution of fish in space and time, and other information indicative of the health of the population. Nearly 95 percent of the total reduction in estimated abundance occurred prior to the mid-1900s. Over the last 30–40 years, the remaining population was further reduced nearly ten-fold. Currently, the abundance of these fish is about 0.5 percent of the estimated historical abundance. Furthermore, the 1990 (1,224) redd count in index areas represents only 14.3 percent of the 1964 count (8,542).

Although the data suggest that several thousand wild spring/summer chinook salmon currently return to the Snake River each year, these fish are thinly spread over a large and complex river system. In cases where significant population subdivision has occurred within the Snake River Basin, the size of some local populations have declined to levels at which risks associated with inbreeding, difficulty of finding spawning mates, and other random factors become important. Short-term projections for Snake River spring/summer chinook salmon are not optimistic. Based upon the lowest return on record of jack (precocious male salmon that return after 1 year of ocean residence) spring/summer chinook salmon return to Lower Granite Dam in 1990 (357 compared to 2,451 in 1989), adult and redd count are expected to drop considerably over the next 2 years. Furthermore, the recent series of drought years severely reduced the number of outmigrating juveniles that must produce returning adults in the next few years.

Summary of Factors Affecting the Species

Section 2(a) of the ESA states that various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation. The ESA requires a determination whether a species is threatened or endangered because of any of the five factors identified in section 4(a)(1). These factors, as they apply to Snake River spring/summer chinook salmon, are discussed extensively in the NMFS' "Supplementary Information on Factors Causing Decline for the Notice of Proposed Rulemaking, Snake River Spring/Summer Chinook Salmon" (ETSD 1991). This report is available upon request (see **ADDRESSES**). A brief description of these factors follows.

A. The present or threatened destruction, modification, or curtailment of its habitat or range

Hydropower development has resulted in blockage and inundation of habitat, turbine-related mortality of juvenile fish, increased delay of juvenile migration through the Snake and Columbia Rivers, increased predation on juvenile salmon due to residualism in reservoirs and increased predator populations due to ideal foraging areas created by impoundments, and increased delay of adults on their way to spawning grounds. Water withdrawal and storage, irrigation diversions, siltation and pollution from sewage, farming, grazing, logging, and mining also degraded the Snake River spring/summer chinook salmon's habitat.

B. Overutilization for commercial, recreational, scientific, or educational purposes

Historically, combined ocean and river harvest rates of Snake River spring/summer chinook salmon exceeded 80 and sometimes 90 percent (Ricker 1959). However, current ocean and river harvest levels have been greatly curtailed in the commercial, recreational, and Indian fisheries due to low escapements and efforts to protect these runs. The majority of current harvest occurs in the Columbia River net fisheries. Recreational fishing in the Columbia River is second in significance (Berkson 1991). Columbia River fisheries directed toward other species can also impact significant numbers of spring/summer chinook salmon (ODFW and WDF 1989).

C. Disease or predation

Spring/summer chinook salmon are exposed to numerous bacterial, protozoan, viral, and parasitic organisms; however, these organisms' impacts on Snake River spring/summer chinook salmon are largely unknown.

Predators, particularly northern squawfish, *Ptychocheilus oregonensis*, and avian predator populations have increased due to hydroelectric development that created impoundments providing ideal foraging areas for the predators. Turbulent conditions in turbines, dam bypasses, and spillways have increased predator success by stunning or disorienting passing juvenile salmon migrants.

Marine mammal numbers, especially harbor seals and California sea lions, are increasing on the West Coast and increases in predation by pinnipeds have been noted in all Northwest salmonid fisheries. However, the extent to which predation is a factor causing the decline of spring/summer chinook salmon is unknown.

D. Inadequacy of existing regulatory mechanisms

A wide variety of Federal and state laws and programs have affected the abundance and survival of anadromous fish populations in the Columbia River. However, they have not prevented the decline of Snake River spring/summer chinook salmon. Several of the more pertinent laws are summarized in the Factors Report.

E. Other natural and manmade factors

Drought is the principal natural condition that may have contributed to reduced spring/summer chinook salmon production. Annual mean streamflows for the 1977 water year were generally less than ever recorded for many streams since the late nineteenth century (Columbia River Water Management Group 1978). The 1990 water year became the fourth consecutive year of drought conditions in the Snake River Basin (Columbia River Water Management Group—in press).

Artificial propagation has, in some cases, impacted the Snake River spring/summer chinook salmon. Potential problems associated with hatchery programs include genetic impacts on indigenous wild populations from stock transfers and reduced natural production due to collection of wild adults for hatchery brook stocks. Several hatchery brood stocks were initiated, at least in part, by trapping wild fish, and native returns are still utilized for a portion of their brood stock. In recent years, at least one hatchery has produced less than one adult for each wild fish collected.

Proposed Determination

The ESA defines an endangered species as any species in danger of extinction throughout all or a significant portion of its range; and a threatened species as any species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Section 4(b)(1) of the ESA requires that the listing determination be based solely on the best scientific and commercial data available, after conducting a review of the status of the species and after taking into account those efforts, if any, being made to protect such species.

Based on its assessment of the best scientific and commercial information available, NMFS is issuing a proposed determination that the Snake River spring/summer chinook salmon is a "species" under the ESA. This collective evidence does not suggest that the ESU is in danger of extinction throughout a significant portion of its range, but the ESU may reach that point in the foreseeable future if corrective measures are not taken. Therefore, NMFS proposes to list the Snake River spring/summer chinook salmon as threatened.

Proposed Protective Regulations

NMFS proposes to adopt protective measures to prohibit, with respect to Snake River spring/summer chinook, taking, interstate commerce, and the other ESA prohibitions applicable to endangered species, with the exceptions provided by the ESA for endangered species. This is the normal course followed by the U.S. Fish and Wildlife Service with respect to threatened listings (see 50 CFR 17.31(a)).

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the ESA include recognition, prohibitions on taking, recovery actions, and Federal agency consultation requirements. Recognition through listing promotes conservation actions by Federal and state agencies and private groups and individuals.

Section 7(a)(4) of the ESA requires that Federal agencies confer with NMFS on any actions likely to jeopardize the continued existence of a species proposed for listing and on actions resulting in 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 adversely affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with NMFS.

Examples of Federal actions that may be affected by this proposal include authorized purposes of mainstem Columbia River and Snake River hydroelectric and storage projects. Such authorized purposes include hydroelectric power generation, flood control, irrigation, and navigation. Federal actions including COE section 404 permitting activities under the Clean Water Act, COE section 10 permitting activities under the Rivers and Harbors Act, and FERC licenses for non-Federal development and operation of hydropower may also be affected.

Based on information presented in this proposed rule, general conservation measures that could be implemented to help conserve the species are listed below. This list does not constitute NMFS' interpretation of a recovery plan under section 4(f) of the ESA.

(1) Efforts could be made to ensure that adult passage facilities at dams effectively pass migrating salmon upstream.

(2) Flows in the Snake and Columbia Rivers could be regulated to pass downstream migrating juvenile fish through the system more effectively. It is recognized that coordination of hydropower production in the Northwest is a continuous, long-term effort, and that some changes cannot be made on short notice. However, NMFS believes that the parties responsible for flow regulation have sufficient authority and flexibility to improve flow conditions for Snake River spring/summer chinook salmon immediately. Additional provisions could also be incorporated into ongoing planning for system regulation in the spring and early summer of 1992. Beyond these short-term needs, the parties could also begin to address longer term needs through development of improved institutional mechanisms for the definition and treatment of fishery flow requirements in system regulation studies and implementation under the Pacific Northwest Coordination Agreement. Progress could also be made in power planning through greater consideration of resources and strategies that complement, rather than conflict, with the need for increased flows, and thus increase hydroelectric power generation in spring and summer. NMFS encourages efforts such as these during the period between this proposed rule and a final ruling.

(3) All water diversions affecting downstream migrating juvenile spring/summer chinook salmon could be screened. Chinook salmon juveniles migrate downstream from late March through June. Many unscreened diversions and existing screens in need of replacement have been identified, and a thorough review of the impact of irrigation diversions on spring/summer chinook salmon could be conducted.

(4) All irrigation diversion structures could be surveyed and adequate adult fish passage facilities provided.

(5) All water diversions could have adequate headgate and staff gauge structures installed to control and monitor water usage accurately. Water rights should be enforced to prevent irrigators from exceeding the amount of water to which they are legally entitled.

(6) Research could be conducted to evaluate the mortality level associated with the catch of sub-legal (undersize) Snake River spring/summer chinook salmon caught in ocean troll fisheries.

(7) Artificial propagation could be conducted in a manner minimizing impacts upon native populations of chinook salmon.

Critical Habitat

Section 4(a)(3)(A) of the ESA requires that, to the extent prudent and determinable, critical habitat be designated concurrently with the listing of a species. To avoid delaying this listing proposal, NMFS will propose critical habitat in a separate rulemaking.

Public Comments Solicited

To ensure that the final action resulting from this proposal will be as accurate and as effective as possible, NMFS is soliciting comments and suggestions from the public, other concerned governmental agencies, the scientific community, industry, and any other interested parties. Four public hearings have been scheduled (see **DATES** and **ADDRESSES**). The final decision on this proposal will take into consideration the comments and any additional information received by NMFS, and may differ from this proposed rule.

Classification

The 1982 amendments to the ESA (Pub. L. 97–304) in section 4(b)(1)(A), restricted 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*, 657 F.2d 829 (6th Cir., 1981), NMFS has categorically excluded all endangered species listings from environmental assessment requirements of the National Environmental Policy Act (48 FR 4413, February 6, 1984).

The Conference Report on the 1982 amendments to the ESA notes that economic considerations have no relevance to determinations regarding the status of species, and that E.O. 12291 economic analysis requirements, the Regulatory Flexibility Act, and the Paperwork Reduction Act are not applicable to the listing process. Similarly, listing actions are not subject to the requirements of E.O. 12612.

References

The complete citations for the references used in this document can be found in one of the following:

Environmental and Technical Services Division. 1991. Supplementary information on factors causing decline for the notice of proposed rulemaking. Snake River spring/summer chinook salmon. National Marine Fisheries Service. June, 1991.

Matthews, G.M. and R.S. Waples. 1991. Status review for Snake River spring and summer chinook salmon. U.S. Dep. Commer., NOAA Tech. Memo. NMFS F/NWC-200, 75 p.

Waples, R.S. 1991. Definition of "species" under the Endangered Species Act: Application to Pacific salmon. U.S. Dep. Comme., NOAA Tech. Memo. NMFS F/NWC-194. 29 p.

List of Subjects in 50 CFR Part 227

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

Dated: June 21, 1991.

Samuel W. McKeen,

Acting Assistant Administrator for Fisheries.

For the reasons set out in the preamble, 50 CFR part 227 is proposed to be amended as follows:

PART 227—THREATENED FISH OR WILDLIFE

1. The authority citation of part 227 continues to read as follows:

Authority: 16 U.S.C. 1531 *et seq.*

2. In § 227.4, a new paragraph (g) is added to read as follows:

§ 227.4 Enumeration of threatened species.

* * * * *

(g) Snake River spring/summer chinook salmon (*Oncorhynchus tschawytscha*).

3. In subpart C, a new § 227.22 is added to read as follows:

§ 227.22 Snake River spring/summer chinook salmon.

(a) *Prohibitions.* The prohibitions of section 9 of the Act (16 U.S.C. 1538) relating to endangered species apply to the Snake River spring/summer chinook salmon except as provided in paragraph (b) of this section.

(b) *Exceptions.* The exceptions of section 10 of the Act (16 U.S.C. 1539) and other exceptions under the Act relating to endangered species, and the provisions of regulations issued under the Act relating to endangered species (such as 50 CFR part 222, subpart C—Endangered Fish or Wildlife Permits), also apply to the Snake River spring/summer chinook salmon. This section supersedes other restrictions on the applicability of 50 CFR part 222, including, but not limited to, the restrictions specified in §§ 222.2(a) and 222.22(a) of this chapter.

[FR Doc. 91-15243 Filed 6-26-91; 8:45 am]

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50 CFR Part 227

[Docket No. 910649-1149]

Endangered and Threatened Species; Proposed Threatened Status for Snake River Fall Chinook Salmon

AGENCY: National Marine Fisheries Service (NMFS), NOAA, Commerce.

ACTION: Proposed rule.

SUMMARY: NMFS is issuing a proposed determination that the Snake River fall chinook salmon (*Oncorhynchus tshawytscha*) is a "species" under the endangered Species Act of 1973, as amended, 16 U.S.C. 1531 *et seq.* (ESA). Further, NMFS proposes to list the Snake River fall chinook salmon as threatened under the ESA. The Snake River fall chinook salmon has experienced a substantial decline in abundance, and is currently distributed over a fraction of its former range. Hydroelectric development, commercial harvest, water withdrawal, water storage, and inadequate regulatory mechanisms are the primary factors contributing to the "species" decline. Should the proposed listing be made final, protective regulations under the ESA would be put into effect and a recovery program would be implemented.

DATES: Comments from all interested parties must be received by August 26, 1991. Public hearings are scheduled as follows:

1. July 30, 1991, 7 p.m. to 9:30 p.m., Portland, Oregon;

2. July 31, 1991, 7 p.m. to 9:30 p.m., Seattle, Washington;

3. August 1, 1991, 7 p.m. to 9:30 p.m., Richland, Washington;

4. August 7, 1991, 7 p.m. to 9:30 p.m., Boise, Idaho.

ADDRESSES: Comments on this proposed rule should be sent to the Environmental and Technical Services Division, NMFS, Northwest Region, 911 NE 11th Avenue, suite 620, Portland, OR 97232, or provided at any one of the public hearings. The hearings will be held at the following locations:

1. 1st Floor West Side, Federal Complex, 911 NE 11th Ave., Portland, Oregon;

2. NOAA, Western Administrative Support Center, Building 9 Auditorium, 7600 Sand Point Way, NE., Seattle, Washington;

3. Richland Federal Building Auditorium, 825 Jadwin Avenue, Richland, Washington;

4. Bosie Interagency Fire Center Auditorium, 3905 Vista Ave., Boise, Idaho.

FOR FURTHER INFORMATION CONTACT: Tracey Vriens, Environmental and Technical Services Division, NMFS, Portland, Oregon, 503-230-5420 or FTS-429-5420.

SUPPLEMENTARY INFORMATION:

Background

On June 7, 1990, NMFS received a petition from Oregon Trout, with co-petitioners Oregon Natural Resources Council, the Northwest Environmental Defense Center, American Rivers, and the Idaho and Oregon Chapters of the American Fisheries Society to list Snake River fall chinook salmon and to designate critical habitat under the ESA. NMFS published a notice on September 11, 1990 (55 FR 37342), that the petition presented substantial scientific information indicating that the listing may be warranted and requested information from the public.

NMFS has reviewed available scientific information pertaining to the stautus of Snake River fall chinook salmon. To assist in this review, NMFS convened a Technical Committee to provide information and to review and comment on the data in the record. The Technical Committee consists of representatives from Federal and state agencies, Indian tribes, industry, professional societies and public groups that have expertise relevant to Snake River fall chinook salmon.

Status Review for Snake River Fall Chinook

The NMFS Northwest Region Biological Review Team prepared a "Status Review for Snake River fall chinook salmon" (Waples *et al.* 1991) providing more detailed information, discussion and references. This status review is available upon request (see **ADDRESSES**), and is summarized below.

Ecosystem

The Snake River is the major tributary of the Columbia River, entering the Columbia 324.3 miles (522 kilometers) upstream from the Pacific Ocean. The Snake River Basin includes a range of climatic, geological and vegetative zones and extends into five States (Idaho, Washington, Oregon, Wyoming and Nevada). The habitat occupied by fall chinook salmon in the Snake River appears to be unique to this race of chinook salmon. In contrast to coastal mountains and the Cascade Range, the Snake River drainage is composed of batholithic granite that is prone to erosion, creating relatively turbid water with higher mineral content and alkalinity in comparison to the Columbia River and coastal areas. The region is relatively arid with warm summers resulting in higher annual temperatures than in many other salmon production areas in the Pacific Northwest. These characteristics combine to produce a highly productive habitat.

Chapman *et al.* (1991) described ten geologic provinces in the Snake River Basin, each being unique to some degree in the type of habitat it provides for anadromous salmonids, in terms of both geology and climate. Together, these areas form an aquatic ecosystem for chinook salmon that is unique in the Columbia River Basin and, probably, the world. Utter *et al.* (1982) reported that the Snake and Columbia Rivers differ ecologically in a number of ways. Habitat characteristics of the Snake River Basin provide strong evidence of ecological/genetic distinctness of Snake River fall chinook salmon.

Life History

The life history of Snake River fall chinook salmon reflects unique adaptations to the Snake River Basin. Snake River fall chinook salmon adults enter the Columbia River in July, reaching the Snake River from the middle of August through October. Snake River fall chinook salmon historically sustained the longest freshwater migration (940 miles, 1,512 km) of any North American chinook salmon population with a juvenile life history strategy of subyearling migration to the ocean. Although fall chinook salmon are presently restricted to the lower Snake River, genes associated with this lengthy migration may still reside in the population. Given this extended freshwater migration, Snake River fall chinook salmon retain their coloration and flesh quality longer than lower Columbia River fall chinook salmon.

Spawning occurs in October and November (Bugert *et al.* 1990) in the mainstem Snake River from the upper extent of Lower Granite Dam pool to Hells Canyon Dam. Some spawning also occurs in the lower reaches of the Imnaha, Grande Ronde, Clearwater, and Tucannon Rivers, each a major subbasin of the Snake River.

Fall chinook salmon emerge from the gravel in March and April, and downstream migration usually begins with several weeks of emergence (Becker 1970; Allen and Meekin 1973). Water temperatures in the Snake River during summer months can exceed 25 °C (77 °F), and average monthly temperatures are often 6 to 8 °C higher than in the upper Columbia River (Utter *et al.* 1982). Elevated water temperatures are thought to preclude fall chinook salmon from rearing in the Snake River after mid-July (Van Hyning 1968; Chapman *et al.* 1990). Fall chinook salmon subyearlings are present in the Columbia River estuary from June to October (Rich 1922). Dawley *et al.* (1986) found that approximately 80 percent of all juvenile fall chinook salmon enter the estuary from late April through early September. Data specific to juvenile Snake River fall chinook salmon are unavailable.

Consideration as a "Species" Under the ESA

To consider the Snake River fall chinook salmon for listing, it must qualify as a "species" under the ESA. The ESA defines a "species" to include any "distinct population segment of any species of vertebrate . . . which in interbreeds when mature." NMFS published an interim policy (March 13, 1991; 56 FR 10542) on how it will apply the ESA species definition in evaluating Pacific salmon. This policy stipulates that a salmon population will be considered distinct, and hence a species under the ESA, if it represents an evolutionarily significant unit (ESU) of the biological species. The population must satisfy two criteria to be considered an ESU: (1) It must be reproductively isolated from other conspecific population units; 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 be strong enough to permit evolutionarily important differences to accrue in different population units. The second criterion would be met if the population contributed substantially to the ecological/genetic diversity of the species as a whole. Further guidance on the application of this policy is contained in the NMFS paper "Definition of Species under the Endangered Species Act: Application to Pacific Salmon" (Waples 1991).

Determining whether Snake River fall chinook salmon constitute a "species" under the ESA is complicated by the presence of spring/summer chinook salmon in the Snake River, and fall chinook salmon in the upper Columbia River. Based on a previous status review in 1982, NMFS concluded that Snake River and upper Columbia River fall chinook salmon were separate, identifiable, and distinct populations that warrant designation as "species" under the ESA (Utter *et al.* 1982). Available evidence indicates that, through the early 1980s, Snake River fall chinook salmon met both criteria necessary to be an ESU—reproductive isolation and ecological/genetic distinctness.

Based on the first criterion, populations with different migration timing that are reproductively isolated should be considered separately under the ESA. Fish with different migration timing for which reproductive isolation cannot be established should be considered as a unit. Compelling evidence indicates that Snake River fall chinook salmon are reproductively isolated from spring/summer chinook salmon (Matthews and Waples 1991). The very low incidence of natural straying of upper Columbia River fall chinook salmon (McIssac and Quinn 1988), and consistent genetic differences between upper Columbia River and Snake River fall chinook salmon demonstrate significant, long-term reproductive isolation between these groups.

Available information indicates that Snake River fall chinook salmon satisfy the second criterion, which stipulates that a population must represent an important component in the evolutionary legacy of the biological species to be considered an ESU. Historically, the Columbia River system was the largest producer of chinook salmon in the world. Prior to 1960, the Snake River was the most important production area for fall chinook salmon in the Columbia River system (Bureau of Commercial Fisheries and Bureau of Sport Fisheries and Wildlife 1964). Unique ecological features of the Snake River Basin, characteristic freshwater habitats, contrasting ocean distribution patterns, and genetic differences relative to other chinook salmon, are evidence of the ecological/genetic distinctness of the Snake River fall chinook salmon.

It is noted that, since 1987, hatchery fall chinook salmon with genotypes characteristic of upper Columbia River fall chinook salmon have strayed into the Snake River in increasing numbers, and in 1990 some were recovered on the spawning grounds in the Snake River. However, the degree to which fall chinook salmon strays have produced viable progeny is unknown.

Evidence of introgression of upper Columbia River genes into Lyons Ferry Hatchery fall chinook salmon has prompted concern regarding the status of the Snake River fall chinook salmon ESU. However, because (1) Snake River fall chinook salmon represented an ESU prior to these straying events, (2) significant straying of hatchery reared Upper Columbia River fall chinook salmon has occurred only within the last generation, and (3) direct evidence of genetic change in wild Snake River fall chinook salmon is lacking. NMFS concludes, based on the weight of existing information, that Snake River fall chinook salmon still represent an ESU.

NMFS concludes that the best available information indicates that this population satisfies both criteria necessary to be considered an ESU. Therefore, NMFS is issuing a proposed determination that the Snake River fall chinook salmon is a "species" under the ESA.

Distribution and Abundance

Historically, fall chinook salmon were widely distributed throughout the Snake River and many of its major tributaries from its confluence with the Columbia River near Pasco, Washington, upstream 615 miles (990 km) to Shoshone Falls, Idaho (Columbia Basin Interagency Committee 1957; Haas 1965; Fulton 1968; Van Hyning 1968; Lavier 1976). During the early 1900s, a weir was placed in the Snake River downstream of Swan Falls Dam near Ontario, Oregon, river mile (Rm) 372, river kilometer (Rkm) 599, to collect fall chinook salmon broodstock. Although only a portion of the returning fish were intercepted, more than 20 million eggs (a minimum of 4,000 females) were taken in a single year (Parkhurst 1950). This provides some indication of the distribution and large number of fall chinook salmon migrating into the upper reaches of the Snake River during this period. Historically, the most important spawning grounds for fall chinook salmon in the Snake River were between Huntington, Idaho (Rm 328, Rkm 527) and Auger Falls, Idaho (Rm 607, Rkm 977) (Evermann 1896). Fall chinook salmon production above Rm 456, Rkm 734, was terminated in 1907 by Swan Falls Dam, which obstructed the passage of returning adults (Parkhurst 1950).

Snake River fall chinook salmon abundance remained relatively stable until 1950, but declined substantially thereafter. The estimated mean number of fall chinook salmon returning annually to the Snake River decreased from 72,000 between 1928 and 1949, to 29,000 from 1950 through 1959 (Irving and Bjornn 1981). In spite of this significant decline in abundance, the Snake River remained the most important production area for fall chinook salmon in the Columbia River Basin through the 1950s (Fulton 1968).

The construction of Brownlee at Rm 285, Rkm 459 (1958), Oxbow at Rm 273, Rkm 439 (1961), and Hells Canyon Dams at Rm 247, Rkm 397 (1967), inundated spawning areas and prevented access to the primary production areas of Snake River fall chinook salmon when fish passage facilities at these projects proved to be inadequate (Van Hyning 1968). Snake River fall chinook salmon habitats were further reduced with the construction of Ice Harbor at Rm 10, Rkm 16 (1961), Lower Monumental at Rm 42, Rkm 67 (1969), Little Goose at Rm 70, Rkm 113 (1970), and Lower Granite Dams at Rm 108, Rkm 173 (1975).

For Snake River fall chinook salmon, dam counts represent the best indication of the population's recent abundance. Counts at the uppermost dam affording adult fish passage averaged 12,720 at Ice Harbor from 1969 through 1974, and 610 at Lower Granite from 1975 through 1980 (ODFW 1990; Corps unpublished). Since 1983, dam counts have been confounded by returns of hatchery-reared fish. Adult returns of hatchery-reared fish cannot be visually distinguished from wild Snake River chinook salmon in all cases because only a portion of these fish are marked. Recent efforts have established the number of hatchery-reared fall chinook salmon and wild Snake River fall chinook salmon returning to Lower Granite Dam. Based on these estimates, wild Snake River fall chinook salmon escapement to Lower Granite Dam varied from 428 adults in 1983 to 295 in 1989, and was 78 in 1990 (Washington Department of Fisheries 1991).

Summary of Factors Affecting the Species

Section 2(a) of the ESA states that various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation. The ESA requires a determination whether a species is threatened or endangered because of any of the five factors identified in section 4(a)(1). These factors, as they apply to Snake River fall chinook salmon, are discussed extensively in the NMFS' "Supplementary Information on Factors Causing Decline for the Notice of Proposed Rulemaking, Snake River Chinook Salmon" (ETSD 1991). This report is available upon request (see **ADDRESSES**). A brief description of these factors follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

Hydropower development has substantially curtailed the range of Snake River fall chinook salmon and inundated large amounts of accessible habitat, contributing significantly to the population's decline. Turbine-related juvenile mortality, delayed juvenile migration through the Snake and Columbia River, juvenile predation from the creation of ideal foraging areas and resulting increases in predator populations, and adult migration delays, have also resulted from hydropower development.

Water withdrawal for agriculture, and water storage to accommodate flood control objectives and increased hydropower production, have increased juvenile mortality and may result in the dessication of spawning areas and mortality of fall chinook salmon fry.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Columbia River chinook salmon harvest rates have exceeded 80 percent, and sometimes 90 percent, since 1926. The total exploitation rate for Lyons Ferry Hatchery fish, which are assumed to have the same distribution as wild Snake River fall chinook salmon, is estimated to be 74 percent. These harvest rates may be higher than Snake River fall chinook salmon can sustain.

C. Disease and Predation

Fall chinook salmon are exposed to numerous bacterial, protozoan, viral, and parasitic organisms. Very little current or historical information exists to quantify changes in infection levels and mortality rates attributable to these diseases for Snake River fall chinook salmon.

Freshwater predators, particularly northern squawfish (*Ptychocheilus oregonensis*), have increased in abundance due to hydroelectric development that created ideal foraging areas. Turbulent conditions associated with turbines, dam bypasses, and spillways have increased predatory success by disorienting juvenile salmon migrants.

Marine mammal abundance, particularly harbor seals and California sea lions, has increased along the Pacific Coast, and increases in marine mammal predation have been noted in Northwest salmon fisheries.

D. Inadequacy of Existing Regulatory Mechanisms

A variety of Federal and state laws and programs are factors in the decline of Snake River fall chinook salmon. Although some progress has occurred, regulatory mechanisms have failed to provide for the conservation of the population.

E. Other Natural and Manmade Factors

Artificial propagation activities have not been a primary factor in the decline of Snake River fall chinook salmon. However, the taking of Snake River fall chinook salmon for hatchery broodstock has reduced natural escapements, and the recent straying of fall chinook salmon from other areas into the Snake River threatens the genetic integrity of wild Snake River fall chinook salmon.

Proposed Determination

The ESA defines an endangered species as any species in danger of extinction throughout all or a significant portion of its range; and a threatened species as any species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Section 4(b)(1) of the ESA requires that determinations whether any species is threatened or endangered be based soley on the best scientific and commercial data available, after conducting a review of the status of the species and after taking into account those efforts, if any, being made to protect such species.

Regarding efforts being made to protect Snake River fall chinook salmon, NMFS believes that several measures merit consideration. During the planning of Lower Snake River Compensation Plan (LSRCP) production facilities, an egg bank program was initiated to ensure the conservation of Snake River origin fall chinook salmon. LSRCP efforts to maintain the integrity of Snake River fall chinook salmon were initially successful based on genetic monitoring of broodstock collection in 1977, 1978, 1979, and 1980 (Utter *et al.* 1982).

A review of coded-wire-tag (CWT) data showed that stray hatchery fish of Columbia River origin have been used as broodstock at LSRCP facilities (Lyons Ferry Hatchery) in recent years. These strays are predominantly upper Columbia River stock released as juveniles into the Umatilla River, a tributary of the Columbia River downriver from the confluence with the Snake River. Poor acclimation prior to release of these fish, and inadequate flow for returning adults resulting from the diversion of water from the Umatilla, are factors responsible for this straying. In the years 1984–1990, Columbia River strays made up 5, 11, 3, 4, 18, 39, and 25 percent, respectively, of the adults spawned at Lyons Ferry Hatchery.

Another consideration is the potential effect of stray Columbia River fish on the wild Snake River fall chinook salmon gene pool. Upper Columbia River fall chinook salmon comprised 1 to 2 percent of the adult fall chinook at Lower Granite Dam in 1984–1986, 6 to 9 percent in 1987–1988, and 25 to 29 percent in 1989–1990.

The Washington Department of Fisheries has implemented measures to minimize potential impacts of straying on Lyons Ferry Hatchery (LFH) broodstock (the only Snake River hatchery now producing fall chinook salmon), and wild Snake River fall chinook salmon (Washington Department of Fisheries 1991). All juvenile fall chinook salmon from 1989 LFH broodstock were marked, and will be excluded from use as broodstock upon their return as adults. Only progeny from confirmed LFH adults that returned in 1990 will be used for future broodstock. Commencing in 1991, all LFH fish will be tagged (CWT), and only confirmed LFH fish will be used as broodstock. During the previous 14 years, an average of 31 percent of the wild Snake River fall chinook salmon population is estimated to have been taken annually for broodstock purposes. The exclusive use of known LFH fish in broodstock collection will also allow significantly more wild Snake River fall chinook salmon to reach their spawning grounds beginning in 1991.

In addition to these measures, other efforts are underway to protect Snake River fall chinook salmon. The Oregon Department of Fish and Wildlife has initiated actions to reduce the straying of Umatilla fall chinook salmon into the Snake River by improving the acclimation of juvenile fall chinook salmon released into the Umatilla River, and beginning in 1991, marking all such releases for later identification. Facilities specifically designed to provide additional flow in the Umatilla River and reduce adult straying are under construction by the Bureau of Reclamation.

Prior to 1991, the Pacific Fisheries Management Council (PFMC) did not consider Snake River fall chinook salmon separately from upper Columbia River fall chinook salmon in the management of ocean fisheries. Management measures adopted by the PFMC for 1991 specifically address fishery impacts on Snake River fall chinook salmon and reduce the total ocean exploitation rate of Snake River fall chinook salmon relative to 1990 harvest rates by 20 percent (PFMC 1991).

Mortality of juvenile fall chinook salmon at dams and in reservoirs can be significantly reduced by collecting juveniles and transporting them downriver around the dams by barge and trucks. The Regional Salmon Program for 1991, implemented by the States of Idaho, Oregon, and Washington, Federal agencies, Indian tribes, utilities, and other interests, includes a commitment to provide maximum salmon and extend the transportation program through October (Andrus et. al. 1991).

Reductions in Snake River flows by the Hells Canyon Dam Complex have previously resulted in the dessication of spawning areas and mortality of emerging salmon fry. Projected reductions in flow during May 1991 to 5 to 7 kcfs (142 to 198 cubic meters per second) were expected to jeopardize Snake River fall chinook salmon nests (38 documented redds) spawned from October through December of 1990 at flows of approximately 12 kcfs (340 cubic meters per second). To protect these fish, flow augmentation from Brownlee Reservoir was requested (Fish Passage Center 1991) and ultimately provided through the system operation process, a coordinated effort between state and Federal agencies, Indian tribes and system managers.

Based on its assessment of available scientific and commercial information, and after taking into account those efforts being made to protect the species, NMFS is issuing a proposed determination that Snake River fall chinook salmon is a threatened "species" under the ESA. This collective evidence indicates that Snake River fall chinook salmon are likely to become an endangered species within the foreseeable future if corrective measures are not implemented.

Proposed Protective Regulations

NMFS proposes to adopt protective measures to prohibit, with respect to Snake River fall chinook, taking, interstate commerce, and the other ESA prohibitions applicable to endangered species, with the exceptions provided by the ESA. This is the normal course followed by the U.S. Fish and Wildlife Service with respect to threatened listings (see 50 CFR 17.31(a)).

Available Conservation Measures

Conservation measures provided to species listed as threatened or endangered under the ESA include prohibitions on taking, recovery actions, and Federal agency consultation requirements. Recognition through listing promotes conservation actions by Federal and state agencies and private groups and individuals.

Section 7(a)(4) of the ESA requires that Federal agencies confer with NMFS on any actions likely to jeopardize the continued existence of a species proposed for listing an on actions resulting in 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 adversely affect a listed species or it critical habitat, the responsible Federal agency must enter into formal consultation with NMFS.

Examples of Federal actions that may be affected by this proposal include operations of mainstem Columbia River and Snake River hydroelectric and storage projects. Such operations include hydroelectric power generation, flood control, irrigation, and navigation. Federal actions including COE section 404 permitting activities under the Clean Water Act, COE section 10 permitting activities under the Rivers and Harbors Act, and Federal Energy Regulatory Commission licenses for non-Federal development and operation of hydropower may also be affected.

Based on information presented in this proposed rule, general conservation that could be implemented to help conserve the species are listed below. This list does not constitute NMFS' interpretation of a recovery plan under section 4(f) of the ESA.

(1) Operate adult passage facilities as mainstem Snake and Columbia River dams to pass migrating salmon upstream more effectively.

(2) Regulate flows in the Snake and Columbia Rivers to pass downstream migrating juvenile fish through the system more effectively and protect incubating eggs. NMFS believes that the parties responsible for flow regulation have sufficient authority and flexibility to improve immediately flow conditions for Snake River fall chinook salmon. These parties could also address the definition and treatment of fishery flow requirements in system regulation under the Pacific Northwest Coordination Agreement. Greater consideration of resources and strategies that complement, rather than conflict, with the need for increased flows is necessary in power planning. NMFS encourages the implementation of measures to improve flows during the period between this proposed rule and a final ruling.

(3) Install adequate headgate and staff gauge structures to control and monitor water usage accurately. Enforce water rights at all water diversions to prevent withdrawals exceeding legal entitlement.

(4) Further evaluate mortality associated with the catch of sub-legal (undersize) Snake River fall chinook salmon in ocean troll fisheries.

(5) Conduct artificial propagation to minimize impacts to Snake River fall chinook salmon. Necessary measures include:

(a) Tag all hatchery reared fall chinook salmon released into the Snake River, Umatilla River and into the Columbia River upstream from the confluence with the Snake River.

(b) Remove marked adult fall chinook salmon returning to the Snake River at fish collection facilities to minimize their escapement to spawning areas and potential introgression with wild Snake River fall chinook salmon.

(c) Allow all unmarked adult fall chinook salmon (potentially wild fish) in the Snake River to escape to spawning areas. Exclude Wild Snake River fall chinook salmon from hatchery broodstock collection at this time.

(6) Manage harvest activities specifically to consider and provide Snake River fall chinook salmon escapement necessary to allow the population to recover.

Critical Habitat

Section 4(a)(3)(A) of the ESA requires that, to the extent prudent and determinable, critical habitat be designated concurrently with the listing of a species. To avoid delaying this listing proposal, NMFS will propose critical habitat in a separate rulemaking.

Public Comments Solicited

To ensure that the final action resulting from this proposal will be as accurate and as effective as possible, NMFS is soliciting comments and suggestions from the public, other concerned governmental agencies, the scientific community, industry, and any other interested parties. Four public hearings have been scheduled (see DATES and ADDRESSES). The final decision on this proposal will take into consideration the comments and any additional information received by NMFS, and may differ from this proposed rule.

Classification

The 1982 amendments to the ESA (Pub. L. 97–304) in section 4(b)(1)(A), restricted 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*, 657 F.2d 829 (6th Cir., 1981), NMFS has categorically excluded all endangered species listings from environmental assessment requirements of the National Environmental Policy Act (48 FR 4413, February 6, 1984).

The Conference Report on the 1982 amendments to the ESA notes that economic considerations have no relevance to determinations regarding the status of species, and that E.O. 12291 economic analysis requirements, the Regulatory Flexibility Act, and the Paperwork Reduction Act are not applicable to the listing process. Similarly, listing actions are not subject to the requirements of E.O. 12612.

References

The complete citations for the references used in this document can be found in one of the following:

Environmental and Technical Services Division. 1991. Supplementary information factors causing decline for the notice of proposed rulemaking, Snake River fall chinook salmon. National Marine Fisheries Service. June, 1991.

Waples, R.S. 1991. Definition of "species" under the Endangered Species Act: Application to Pacific salmon. U.S. Dep. Comme., NOAA Tech. Memo. NMFS F/NWC-194. 29 p.

Waples, R.S., R.P. Jones, Jr., B.R. Beckman, and G.A. Swan. 1991. Status review for Snake River fall chinook salmon. U.S. Dep. Commer., NOAA Tech. Memo. NMFS F/NWC-201, 73 p.

List of Subjects in 50 CFR Part 227

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

Dated: June 21, 1991.

Samuel W. McKeen,

Acting Assistant Administrator for Fisheries.

For the reasons set out in the preamble, 50 CFR part 227 is proposed to read as follows:

PART 227—THREATENED FISH OR WILDLIFE

1. The authority citation of part 227 continues to read as follows:

Authority: 16 U.S.C. 1531 *et seq.*

2. In § 227.4, a new paragraph (h) is added to read as follows:

§ 227.4 Enumeration of threatened species.

* * * * *

(h) Snake River fall chinook salmon (*Oncorhynchus tschawytscha*).

3. In subpart C, a new § 227.23 is added to read as follows:

§ 227.23 Snake River fall chinook salmon.

(a) *Prohibitions.* The prohibitions of section 9 of the Act (16 U.S.C. 1538) relating to endangered species apply to the Snake River fall chinook salmon except as provided in paragraph (b) of this section.

(b) *Exceptions.* The exceptions of section 10 of the Act (16 U.S.C. 1539) and other exceptions under the Act relating to endangered species, and the provisions of regulations issued under the Act relating to endangered species (such as the 50 CFR part 222, subpart C—Endangered Fish or Wildlife Permits), also apply to the Snake River fall chinook salmon. This section supersedes other restrictions on the applicability of 50 CFR part 222, including, but not limited to, the restrictions specified in §§ 222.2(a) and 222.22(a) of this chapter.

[FR Doc. 91-15244 Filed 6-26-91; 8:45 am]
BILLING CODE 3510-22-M

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[Docket No. 910648-1148]

Endangered and Threatened Species; Lower Columbia River Coho Salmon

AGENCY: National Marine Fisheries Service (NMFS), NOAA, Commerce.

ACTION: Notice of determination.

SUMMARY: On June 7, 1990, NMFS received a petition from Oregon Trout, with co-petitioners Oregon Natural Resources Council, the Northwest Environmental Defense Center, American Rivers, and the Idaho and Oregon Chapters of the American Fisheries Society, to list lower Columbia River coho salmon and to designate critical habitat under the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 *et seq.* (ESA). NMFS published a notice on September 11, 1990 (55 FR 37342), that the petition presented substantial scientific information indicating that the listing may be warranted. NMFS also announced its intention at that time to conduct a status review of lower Columbia River coho salmon and requested comments from any party having relevant information. A Technical Committee comprised of individuals with expertise relevant to lower Columbia River coho salmon, representing public interest groups, Federal and State agencies, Indian tribes, industry and professional societies was convened by NMFS to provide technical information and comment on data in the administrative record. NMFS has evaluated the status of lower Columbia River coho salmon and concluded that available biological evidence indicates that these fish do not constitute a "species" under the ESA and, therefore, a proposal to list is not warranted at this time.

ADDRESSES: Environmental and Technical Services Division, NMFS, Northwest Region, 911 NE. 11th Avenue, suite 620, Portland, OR 97232.

FOR FURTHER INFORMATION CONTACT: Tracey Vriens, Environmental and Technical Services Division, NMFS, Portland, Oregon, 503-230-5420 or FTS-429-5420.

SUPPLEMENTARY INFORMATION: The NMFS Northwest Region Biological Review Team prepared a "Status Review for Lower Columbia River Coho Salmon" providing more detailed information, discussion and references. The status review is available upon request (see **ADDRESSES**), and is summarized below.

Background

Coho salmon (*Oncorhynchus kisutch*) range throughout the temperate waters of the northern Pacific Ocean. The species was once abundant throughout the Columbia River Basin, with naturally spawning populations exceeding 600,000 fish annually. Two-thirds of the historical Columbia River coho salmon production is thought to have originated in the lower Columbia River (LCR). The LCR, for the purposes of this document, is defined as the Columbia River and its tributaries below Bonneville Dam. Columbia River (upstream from John Day Dam) and Snake River coho salmon were drastically reduced or eliminated prior to the 1950s and are now extinct. LCR coho salmon were reduced to less than 5 percent of historic abundance levels by the late 1950s. Excessive harvest and habitat alteration are the primary factors responsible for this decline of Columbia River coho salmon.

This drastic decline in coho salmon abundance precipitated the development of an extensive hatchery program which restored LCR coho salmon adult returns to historic levels, often exceeding 400,000 fish annually during the last 30 years. Intensive hatchery production and the overharvest of wild coho salmon in mixed stock fisheries resulted in their continued decline. The LCR is managed exclusively for the commercial exploitation of hatchery coho salmon.

Consideration as a "Species" Under the ESA

To consider LCR coho salmon for listing, it must qualify as a "species" under the ESA. The ESA defines a "species" to include any "distinct population segment of any species of vertebrate * * * which interbreeds when mature." NMFS published an interim policy (March 13, 1991; 56 FR 10542) on how it will apply the ESA species definition in evaluating Pacific salmon. This policy provides that a salmon population will be considered distinct, and hence a species under the ESA, if it represents an evolutionary significant unit (ESU) of the biological species. The population must satisfy two criteria to be considered an ESU: (1) It must be reproductively isolated from other conspecific population units; 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 be strong enough to permit evolutionarily important differences to accrue in different population units. The second criterion would be met if the population contributed substantially to the ecological/genetic diversity of the species as a whole. Further guidance on the application of this policy is contained in the NMFS paper "Definition of Species under the Endangered Species Act: Application to Pacific Salmon" and is available upon request (see **ADDRESSES**).

Regarding the first criterion, available information is not conclusive as to whether LCR coho salmon are reproductively isolated from coastal populations of coho salmon in Washington and Oregon. Available information does not indicate that LCR coho salmon satisfy the second criterion, which stipulates that a population must represent an important component in the evolutionary legacy of the biological species to be considered "distinct" (and hence a "species") for the purposes of the ESA. Information on coho salmon habitat utilization, life-history characteristics, and phenotypic and genetic traits was inconclusive, and did not demonstrate that LCR coho salmon are "distinct" from other wild coho salmon populations.

Special Considerations

The release of hatchery-reared fish into an area inhabited by a wild population, and overharvest, can affect a wild population to such an extent that it does not represent a "distinct" population segment under the ESA. Each of these factors has profoundly affected LCR coho salmon.

Non-indigenous coho salmon stocks have been extensively transferred into the LCR since the 1890s. All of the LCR coho salmon hatchery stocks evaluated exhibited a heritage of coastal or other non-indigenous coho salmon. Although the effect of non-indigenous stock transfers on the genetic character of LCR coho salmon has not been adequately studied, the extent and magnitude of these transfers suggest that significant introgression of non-indigenous stocks has occurred into LCR hatcheries.

Coho salmon have also been extensively transferred from various hatcheries into streams and drainages throughout the LCR. This practice (outplanting) began in the early 1960s and continues today (a period of over ten coho salmon generations) and has resulted in hatchery fish being transferred into practically every accessible stream in the LCR. In 1986, researchers from the Oregon Department of Fish and Wildlife found the density of wild coho salmon in streams supplemented with hatchery coho salmon fry was reduced by over 40 percent and that the majority of returning adults from the year of the outplants had run-times representative of the hatchery, rather than of the wild population. Thus, outplanting, combined with the high percentage of coho salmon from hatcheries spawning in the wild, likely resulted in significant hatchery introgression of the indigenous population throughout the LCR.

Overharvest has severely affected wild coho salmon indigenous to the LCR. Ocean and in-river harvest rates for LCR coho salmon increased dramatically during the 1960s, and have stabilized at approximately 90 percent. Conservation measures for wild coho salmon indigenous to the LCR were not incorporated into the operation of hatcheries constructed to mitigate the decline in this population. Increased hatchery production, beginning in the 1960s, allowed harvest rates to remain high, and wild LCR coho salmon, already depressed in abundance, were not afforded an opportunity to recover.

Determination

Section 4(b)(1)(a) of the ESA requires that determinations whether any species is threatened or endangered be based solely on the best scientific and commercial information available after conducting a review of the status of the species. NMFS has evaluated the status of LCR coho salmon and determined that available biological evidence does not indicate that these fish represent a "species" under the ESA; therefore, a proposal to list LCR coho salmon under the ESA is not warranted at this time.

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