North American Journal of Fisheries Management 17:1158–1172.

Author

The primary author of this 90-day finding is Lynn Kaeding (See **ADDRESSES** section).

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531–1544).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Dated: June 1, 1998.

Jamie Rappaport Clark,

Director, Fish and Wildlife Service.

[FR Doc. 98–15317 Filed 6–5–98; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018—AF01

Endangered and Threatened Wildlife and Plants: Proposal To List the Coastal-Puget Sound, Jarbidge River and St. Mary-Belly River Population Segments of Bull Trout as Threatened Species

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) proposes to list the Coastal-Puget Sound population segment of bull trout (*Salvelinus confluentus*) from the coastal drainages and Puget Sound in western Washington; the Jarbidge River population segment of bull trout from the Jarbidge River basin in southern Idaho and northern Nevada; and the St. Mary-Belly River population segment of bull trout in the St. Mary and Belly rivers in northwestern Montana as threatened with a special rule, pursuant to the Endangered Species Act of 1973 (Act). The Coastal-Puget Sound population segment, composed of 35 subpopulations of ''native char'', is threatened by habitat degradation, dams and diversions, and interactions with non-native fishes. The Jarbidge River population segment, composed of a single subpopulation, is threatened by habitat degradation from past and ongoing land management activities such as mining, road construction and maintenance, and grazing. The St. Mary-Belly River population segment, composed of four subpopulations, is threatened by the effects of water management such as dewatering, entrainment, and passage barriers at diversion structures, and interactions with introduced non-native fishes. The special rule allows for take of bull trout within the three population segments if in accordance with applicable State and Native American Tribal fish and wildlife conservation laws and regulations, and conservation plans. This proposal, if made final, would extend protection of the Act to these three bull trout population segments.

DATES: Comments from all interested parties must be received by October 8, 1998. Public hearings locations and dates are set forth in the **SUPPLEMENTARY INFORMATION** section.

ADDRESSES: Comments and material concerning this proposal should be sent to the U.S. Fish and Wildlife Service, Snake River Basin Field Office, 1387 S. Vinnell Way, Room 368, Boise, Idaho 83709. Comments and material received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Robert Ruesink, Supervisor, Snake River Basin Field Office, at the above address (telephone 208/378–5243; facsimile 208/378–5262).

SUPPLEMENTARY INFORMATION: Public hearings locations and dates are:

1. *Tuesday, July 7, 1998,* from 2:00–4:00 p.m. and from 6:00–8:00 p.m. at the Norman Worthington Conference Center at St. Martin's College, 5300 Pacific Avenue SE, Lacey, Washington.
2. *Thursday, July 9, 1998,* from 2:00–4:00 p.m. and from 6:00–8:00 p.m. at the Best Western Cotton Tree Inn, Mt. Adams Room, 2401 Riverside Dr, Mount Vernon, Washington.
3. *Tuesday, July 14, 1998,* from 2:00–until 4:00 p.m. and from 6:00–8:00 p.m. at Glacier Park Lodge, East Glacier, Montana.
4. *Tuesday, July 21, 1998,* from 2:00–4:00 p.m. and from 6:00–8:00 p.m. at Cactus Petes, 1385 US Highway 93, Jackpot, Nevada.

Background

Bull trout (*Salvelinus confluentus*), members of the family Salmonidae, are char native to the Pacific northwest and western Canada. Bull trout historically occurred in major river drainages in the Pacific northwest from about 41° N to 60° N latitude, from the southern limits in the McCloud River in northern California and the Jarbidge River in Nevada to the headwaters of the Yukon River in Northwest Territories, Canada (Cavender 1978; Bond 1992). To the west, bull trout range includes Puget Sound, various coastal rivers of British Columbia, Canada, and southeast Alaska (Bond 1992). Bull trout are wide-spread throughout tributaries of the Columbia River basin, including its headwaters in Montana and Canada. Bull trout also occur in the Klamath River basin of south central Oregon. East of the Continental Divide, bull trout are found in the headwaters of the Saskatchewan River in Alberta and the MacKenzie River system in Alberta and British Columbia (Cavender 1978; McPhail and Baxter 1996; Brewin and Brewin 1997).

Bull trout were first described as *Salmo spectabilis* by Girard in 1856 from a specimen collected on the lower Columbia River, and subsequently described under a number of names such as *Salmo confluentus* and *Salvelinus malma* (Cavender 1978). Bull trout and Dolly Varden (*Salvelinus malma*) were previously considered a single species (Cavender 1978; Bond 1992). Cavender (1978) presented morphometric (measurement), meristic (geometrical relation), osteological (bone structure), and distributional evidence to document specific distinctions between Dolly Varden and bull trout. Bull trout and Dolly Varden were formally recognized as separate species distributional evidence to document specific distinctions between Dolly Varden and bull trout. Bull trout and Dolly Varden were formally recognized as separate species by the American Fisheries Society in 1980 (Robins et al. 1980). Although bull trout and Dolly Varden co-occur in several northwestern Washington River drainages, there is little evidence of introgression (Haas and McPhail 1991) and the two species appear to be maintaining distinct genomes (Leary et al. 1993; Williams et al. 1995; Kanda et al. 1997; Spruell and Allendorf 1997).

Bull trout exhibit resident and migratory life-history strategies through much of the current range (Rieman and McIntyre 1993). Resident bull trout complete their life cycles in the tributary (or nearby) streams in which they spawn and rear. Migratory bull trout spawn in tributary streams where juvenile fish rear from one to four years before migrating to either a lake (adfluvial), river (fluvial), or in certain coastal areas, to saltwater (anadromous), where maturity is reached in one of the three habitats (Fraley and Shepard 1989; Goetz 1989). Anadromy is the least studied life-history type in bull trout, and some biologists believe the existence of anadromous bull trout may be uncertain (McPhail and Baxter 1996).

However, historical accounts, collection records, and recent circumstantial evidence suggests an anadromous life-history form for bull trout (Suckley and Cooper 1860; Cavender 1978; McPhail and Baxter 1996). Resident and migratory forms may be found together and bull trout may give rise to offspring exhibiting either resident or migratory behavior (Rieman and McIntyre 1993).

Bull trout have more specific habitat requirements compared to other salmonids (Rieman and McIntyre 1993). Habitat components that appear to influence bull trout distribution and abundance include water temperature, cover, channel form and stability, valley form, spawning and rearing substrates, and migratory corridors (Oliver 1979; Pratt 1984, 1992; Fraley and Shepard 1989; Goetz 1989; Hoelscher and Bjornn 1989; Sedell and Everest 1991; Howell and Buchanan 1992; Rieman and McIntyre 1993, 1995; Rich 1996; Watson and Hillman 1997). Watson and Hillman (1997) concluded that watersheds must have specific physical characteristics to provide the necessary habitat requirements for bull trout spawning and rearing, and that the characteristics are not necessarily ubiquitous throughout watersheds in which bull trout occur. Because bull trout exhibit a patchy distribution, even in undisturbed habitats (Rieman and McIntyre 1993), fish would likely not simultaneously occupy all available habitats (Rieman et al. 1997).

Bull trout are most often found in colder streams, although individual fish can occur throughout larger river systems. (Fraley and Shepard 1989; Rieman and McIntyre 1993, 1995; Buchanan and Gregory 1997; Rieman et al. 1997). Water temperature above 15° C (59° F) is believed to limit bull trout distribution, which partially explains the generally patchy distribution within a watershed (Fraley and Shepard 1989; Rieman and McIntyre 1995). Spawning areas are often associated with cold-water springs, groundwater infiltration, and the coldest streams in a given watershed (Pratt 1992; Rieman and McIntyre 1993; Rieman et al. 1997).

All life history stages of bull trout are associated with complex forms of cover, including large woody debris, undercut banks, boulders, and pools (Oliver 1979; Fraley and Shepard 1989; Goetz 1989; Hoelscher and Bjornn 1989; Sedell and Everest 1991; Pratt 1992; Thomas 1992; Rich 1996; Sexauer and James 1997; Watson and Hillman 1997). Jakober (1995) observed bull trout overwintering in deep beaver ponds or pools containing large woody debris in the Bitterroot River drainage, Montana, and suggested that suitable winter habitat may be more restrictive than summer habitat. Maintaining bull trout populations requires stream channel and flow stability (Rieman and McIntyre 1993). Juvenile and adult bull trout frequently inhabit side channels, stream margins, and pools with suitable cover (Sexauer and James 1997). These areas are sensitive to activities that directly or indirectly affect stream channel stability and alter natural flow patterns. For example, altered stream flow in the fall may disrupt bull trout during the spawning period and channel instability may decrease survival of eggs and young juveniles in the gravel during winter through spring (Fraley and Shepard 1989; Pratt 1992; Pratt and Huston 1993).

Preferred spawning habitat consists of low gradient streams with loose, clean gravel (Fraley and Shepard 1989) and water temperatures of 5 to 9° C (41 to 48° F) in late summer to early fall (Goetz 1989). Pratt (1992) reported that increases in fine sediments reduce egg survival and emergence. High juvenile densities were observed in Swan River, Montana, and tributaries characterized by diverse cobble substrate and a low percent of fine sediments (Shepard et al. 1984). Juvenile bull trout in four streams in central Washington occupied slow-moving water less than 0.5 meters/second (m/sec) (1.6 feet/second (ft/sec)) over a variety of sand to boulder size substrates (Sexauer and James 1997).

The size and age of maturity for bull trout is variable depending upon life-history strategy. Growth of resident fish is generally slower than migratory fish; resident fish tend to be smaller at maturity and less fecund (Fraley and Shepard 1989; Goetz 1989). Bull trout normally reach sexual maturity in 4 to 7 years and live as long as 12 years. Repeat and alternate year spawning has been reported, although repeat spawning frequency and post-spawning mortality are not well known (Leathe and Graham 1982; Fraley and Shepard 1989; Pratt 1992; Rieman and McIntyre 1996).

Bull trout typically spawn from August to November during periods of decreasing water temperatures. However, migratory bull trout frequently begin spawning migrations as early as April, and move upstream as far as 250 kilometers (km) (155 miles (mi)) to spawning grounds (Fraley and Shepard 1989). In the Blackfoot River, Montana, bull trout began spawning migrations in response to increasing temperatures (Swanberg 1997). Temperatures during spawning generally range from 4 to 10° C (39 to 51° F), with redds often constructed in stream reaches fed by springs or near other sources of cold groundwater (Goetz 1989; Pratt 1992; Rieman and McIntyre 1996). Depending on water temperature, incubation is normally 100 to 145 days (Pratt 1992), and juveniles remain in the substrate after hatching. Time from egg deposition to emergence may surpass 200 days. Fry normally emerge from early April through May depending upon water temperatures and increasing stream flows (Pratt 1992; Ratliff and Howell 1992).

Growth varies depending upon life-history strategy. Resident adults range from 150 to 300 millimeters (mm) (6 to 12 inches (in.)) total length and migratory adults commonly reach 600 mm (24 in) or more (Pratt 1985; Goetz 1989). The largest verified bull trout is a 14.6 kilogram (kg) (32 pound (lb)) specimen caught in Lake Pend Oreille, Idaho, in 1949 (Simpson and Wallace 1982).

Bull trout are opportunistic feeders with food habits primarily a function of size and life-history strategy. Resident and juvenile migratory bull trout prey on terrestrial and aquatic insects, macro-zooplankton, amphipods, mysids, crayfish and small fish (Wyman 1975; Rieman and Lukens 1979 *in* Rieman and McIntyre 1993; Boag 1987; Goetz 1989; Donald and Alger 1993). Adult migratory bull trout are primarily piscivorous, known to feed on various trout (*Salmo* spp.) and salmon (*Onchorynchus* spp.), whitefish (*Prosopium* spp.), yellow perch (*Perca flavescens*), and sculpin (*Cottus* spp.) (Fraley and Shepard 1989; Donald and Alger 1993).

Bull trout co-evolved with, and in most areas co-occur with native cutthroat trout (*Oncorhynchus clarki* ssp.), resident (redband) and migratory rainbow trout (*O. mykiss* ssp.), chinook salmon (*O. tshawytscha*), sockeye salmon (*O. nerka*), mountain whitefish (*Prosopium williamsoni*), pygmy whitefish (*P. coulteri*), and various sculpin (*Cottus* spp.), sucker (Catastomidae) and minnow (Cyprinidae) species (Mauser et al. 1988; Rieman and McIntyre 1993; R2 Resource Consultants, Inc. 1993). Bull trout habitat overlaps with the range of several fishes listed as threatened, endangered, proposed, and petitioned for listing under the Act, including the endangered Snake River sockeye salmon (November 20, 1991; 56 FR 58619); threatened Snake River spring and fall chinook salmon (April 22, 1992; 57 FR 14653); endangered Kootenai River white sturgeon (*Acipenser transmontanus*) (September 6, 1994; 59 FR 45989); threatened and endangered steelhead (August 18, 1997; 62 FR 43937); Puget Sound chinook salmon

(March 9, 1998; 63 FR 11481); and westslope cutthroat trout (*O. c. lewisi*) (petitioned for listing in July 1997). Widespread introductions of non-native fishes, including brook trout (*S. fontinalis*), lake trout (*S. namaycush*) (west of the Continental Divide), and brown trout (*Salmo trutta*), have also occurred across the range of bull trout. These non-native fishes are often associated with local bull trout declines and extirpations (Bond 1992; Ziller 1992; Donald and Alger 1993; Leary et al. 1993; Montana Bull Trout Scientific Group (MBTSG) 1996h). East of the Continental Divide, bull trout co-evolved with lake trout and westslope cutthroat trout (Fredenberg et al. 1996). Under these conditions, bull trout and lake trout have apparently partitioned habitat with lake trout dominating lentic (standing waters, such as, lakes, ponds, and marshes) systems, relegating bull trout to the fluvial life-history form (Donald and Alger 1993).

Bull trout habitat in the coterminous United States is found in a mosaic of land ownership, including Federal lands administered by the U.S. Forest Service (USFS), Bureau of Land Management (BLM), National Park Service (NPS), and Department of Defense (DOD); Native American tribal lands; state land in Montana, Idaho, Oregon, Washington and Nevada; and private lands. As much as half of occupied bull trout habitat occurs on non-federal lands.

Migratory corridors link seasonal habitats for all bull trout life-history forms. The ability to migrate is important to the persistence of local bull trout subpopulations (Rieman and McIntyre 1993; M. Gilpin, University of California, *in litt.* 1997; Rieman et al. 1997). Migrations facilitate gene flow among local subpopulations because individuals from different subpopulations interbreed when some return to non-natal streams. Migratory fish can also reestablish extirpated local subpopulations.

Metapopulation concepts of conservation biology theory are applicable to the distribution and characteristics of bull trout (Rieman and McIntyre 1993). A metapopulation is an interacting network of local subpopulations with varying frequencies of migration and gene flow among them (Meffe and Carroll 1994). Local subpopulations may become extinct, but can be reestablisheded by individuals from other subpopulations. Metapopulations provide a mechanism for reducing risk because the simultaneous loss of all subpopulations is unlikely. Habitat alteration, primarily through construction of impoundments, dams, and water diversions, has fragmented habitats, eliminated migratory corridors, and isolated bull trout, often in the headwaters of tributaries (Rieman et al. 1997).

Distinct Population Segments

The best available scientific and commercial information supports designating five distinct population segments (DPSs) of bull trout in the coterminous United States—(1) Klamath River, (2) Columbia River, (3) Coastal-Puget Sound, (4) Jarbidge River, and (5) St. Mary-Belly River. A final listing determination for the Klamath River and Columbia River bull trout DPSs, published elsewhere in today's **Federal Register**, includes a detailed description of the rationale behind the DPS delineation. The approach is consistent with the joint National Marine Fisheries Service (NMFS) and Service policy for recognizing distinct vertebrate population segments under the Act (February 7, 1996; 61 FR 4722). This proposed rule addresses only the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River bull trout DPSs.

Coastal-Puget Sound Population Segment

The Coastal-Puget Sound bull trout DPS encompasses all Pacific coast drainages within the coterminous United States north of the Columbia River in Washington. This population segment is discrete because it is geographically segregated from other subpopulations by the Pacific Ocean and the crest of the Cascade Mountain Range. The population segment is significant to the species as a whole because it is thought to contain the only anadromous forms of bull trout in the coterminous United States, thus, occurring in a unique (i.e., marine) ecological setting. In addition, the loss of this population segment would significantly reduce the overall range of the taxon.

Jarbidge River Population Segment

The Jarbidge River, in southwest Idaho and northern Nevada, is a tributary in the Snake River basin and contains the southernmost habitat occupied by bull trout. This population segment is discrete because it is segregated from other bull trout in the Snake River basin by a large gap (greater than 240 km (150 mi)) in suitable habitat and several impassable dams on the mainstem Snake River. The occurrence of a species at the extremities of its range is not necessarily sufficient evidence of significance to the species as a whole. However, because the Jarbidge River possesses bull trout habitat that is disjunct from other patches of suitable habitat, the population segment is considered significant because it occupies a unique or unusual ecological setting and its loss would result in a substantial modification of the species' range.

St. Mary-Belly Rivers

The St. Mary-Belly River DPS is located in northwest Montana east of the Continental Divide. Both the St. Mary and Belly rivers are tributaries in the Saskatchewan River basin in Alberta, Canada. The population segment is discrete because it is segregated from other bull trout by the Continental Divide and is the only bull trout population found east of the Continental Divide in the coterminous United States. The population segment is significant because its loss would result in a significant reduction in the range of the taxon. Bull trout in this population segment are believed to migrate into Canada where a substantial amount of habitat still remains.

Status and Distribution

To facilitate evaluation of current bull trout distribution and abundance for the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River population segments, the Service analyzed data on a subpopulation basis within each segment because fragmentation and barriers have isolated bull trout. A subpopulation is considered a reproductively isolated bull trout group that spawns within a particular area(s) of a river system. In areas where two groups of bull trout are separated by a barrier (e.g., an impassable dam or waterfall, or reaches of unsuitable habitat) that may allow only downstream access (i.e., one-way passage), both groups were considered subpopulations. In addition, subpopulations were considered at risk of extirpation from naturally occurring events if they were: (1) Unlikely to be reestablished by individuals from another subpopulation (i.e., functionally or geographically isolated from other subpopulations); (2) limited to a single spawning area (i.e., spatially restricted); (3) characterized by low individual or spawner numbers; or (4) consisted primarily of a single life-history form. For example, a subpopulation of resident fish isolated upstream of an impassable waterfall would be considered at risk of extirpation from naturally occurring events if it had low numbers of fish that spawn in a relatively restricted area. In such cases, a natural event such as a fire or flood could eliminate the subpopulation, and,

subsequently, reestablishment from fish downstream would be prevented by the impassable waterfall. However, a subpopulation residing downstream of the waterfall would not be considered at risk of extirpation because of potential reestablishment by fish upstream. Because resident bull trout may exhibit limited downstream movement (Nelson 1996), the Service's estimate of subpopulations at risk of naturally occurring extirpation may be underestimated. The status of subpopulations was based on modified criteria of Rieman et al. (1997), including the abundance, trends in abundance, and the presence of life-history forms of bull trout.

The Service considered a subpopulation ''strong'' if 5,000 individuals or 500 spawners likely occur in the subpopulation, abundance appears stable or increasing, and life-history forms historically present were likely to persist; and ''depressed'' if less than 5,000 individuals or 500 spawners likely occur in the subpopulation, abundance appears to be declining, or a life-history form historically present has been lost. If there was insufficient abundance, trend, and life-history information to classify the status of a subpopulation as either ''strong'' or ''depressed,'' the status was considered ''unknown.'' It is emphasized that the assignment of ''unknown'' status implies only a deficiency of data to assign a subpopulation as ''strong'' or ''depressed,'' not a lack of information regarding the status or threats. Section 4 of the Act requires the Service to make a determination solely on the best scientific and commercial data available. Although complete status and trend information is not available for all the subpopulations, bull trout are naturally rare and as discussed in the ''Summary of Factors Affecting These Species'' there is sufficient information on threats to propose these population segments for listing.

Coastal-Puget Sound Population Segment

The Coastal-Puget Sound bull trout population segment encompasses all Pacific coast drainages within Washington, including Puget Sound. No bull trout exist in coastal drainages south of the Columbia River. Within this area, bull trout are sympatric with Dolly Varden. Because the two species are virtually impossible to visually differentiate, the Washington Department of Fish and Wildlife (WDFW) currently manages bull trout and Dolly Varden together as ''native char.'' The Coastal-Puget Sound population segment contain 35 subpopulations of ''native char'' (bull trout, Dolly Varden, or both species) (Service 1998a). The species can be differentiated by both genetic and morphological-meristic analyses, of which one or both analyses have been conducted on 15 of the 35 subpopulations. Bull trout were confirmed in 12 of 15 subpopulations investigated (5 with only bull trout, 3 with only Dolly Varden, and 7 with both species), and it is likely that bull trout occur in the majority of the remaining 20 subpopulations (Service 1998a). In order to identify trends that may be specific to certain geographic areas, the 35 ''native char'' subpopulations were grouped into five analysis areas—Coastal, Strait of Juan de Fuca, Hood Canal, Puget Sound, and Transboundary.

Coastal Analysis Area

Ten ''native char'' subpopulations occur in five river basins in the Coastal analysis area (number of subpopulations)— Chehalis River-Grays Harbor (1), Coastal Plains-Quinault River (5), Queets River (1), Hoh River-Goodman Creek (2), and Quillayute River (1). Recent efforts to determine species composition in three subpopulations have confirmed bull trout in two, the upper Quinault River and Queets River (Leary and Allendorf 1997; WDFW 1997a). Only Dolly Varden have been identified in the upper Sol Duc River (Cavender 1978, 1984; WDFW 1997a).

Subpopulations of ''native char'' in the southwestern portion of the coastal area appear to be in low abundance based on anecdotal information. Because this is the southern extent of coastal bull trout and Dolly Varden, abundance may be naturally low in systems like the Chehalis, Moclips, and Copalis rivers (WDFW 1997a). Although little historical and current information is known concerning bull trout in these river basins, habitat degradation in the past has adversely affected other salmonids (Phinney and Bucknell 1975; Hiss and Knudsen 1993; WDFW 1997a). Habitat degradation in these basins is assumed to have similarly affected bull trout. Although ''native char'' are believed to be relatively more abundant in the Quinault River, extensive portions of the basin have been degraded by past forest management (Phinney and Bucknell 1975; WDFW 1997a).

Most ''native char'' subpopulations in the northwestern coastal area occur partially within Olympic National Park, which contains relatively undisturbed habitats. However, outside Olympic National Park, ''native char'' habitat has been severely degraded by past forest practices in the Queets River and Hoh River basins (Phinney and Bucknell 1975; WDFW 1997a). Non-native brook trout are also present in some park waters and threaten bull trout from competition and hybridization. The Hoh River may have the largest subpopulation of ''native char'' on the Washington coast, although likely greatly reduced since 1982 (Washington Department of Wildlife (WDW) 1992; WDFW 1997a). Reasons for the decline are unknown, but overfishing is believed to be a contributing factor (WDFW 1997a; WDFW, *in litt.* 1997). The Service considers the Hoh River subpopulation ''depressed.'' The current status of the remaining nine ''native char'' subpopulations in the coastal analysis area is ''unknown'' because insufficient abundance, trend, and life-history information is available (Service 1998a).

Strait of Juan de Fuca Analysis Area

Five ''native char'' subpopulations occur in three river basins in the Strait of Juan de Fuca analysis area (number of subpopulations)—Elwha River (2), Angeles basin (1), and Dungeness River (2). Recent efforts to determine species composition in three subpopulations have confirmed bull trout in the upper Elwha River and lower Dungeness River-Gray Wolf River (Leary and Allendorf 1997; WDFW 1997a). Only Dolly Varden have been identified in the upper Dungeness River subpopulation (Cavender 1978, 1984; WDFW 1997a).

The two subpopulations in the Dungeness River basin occur partially within Olympic National Park and Buckhorn Wilderness Area, and likely benefit from the relatively undisturbed habitats located there. However, non-native brook trout occur in some streams in the park. Large portions of the Dungeness River basin lie outside of Olympic National Park, and have been severely degraded by past forest and agricultural practices (Williams et al. 1975; WDFW 1997a). Within Olympic National Park, the lower and upper Elwha River subpopulations are isolated by dams. Although ''native char'' are widespread in some basins within the analysis area, such as the Dungeness and Gray Wolf rivers, fish abundance is thought to be ''greatly reduced in numbers'' (WDW 1992; WDFW 1997a). The Service considers subpopulations in the lower Elwha River and lower Dungeness River-Gray Wolf River ''depressed.'' The remaining three ''native char'' subpopulations in the Strait of Juan de Fuca coastal analysis area are considered ''unknown'' because

insufficient abundance, trend, and life-history information is available (Service 1998a).

Hood Canal Analysis Area

Three ''native char'' subpopulations occur in the Skokomish River basin in the Hood Canal analysis area. Recent surveys have confirmed bull trout in the South Fork-lower North Fork Skokomish River (Leary and Allendorf 1997; WDFW 1997a) and Cushman Reservoir (Brown 1992; Brenkman 1996 *in* WDFW 1997a). Bull trout in Cushman Reservoir have been isolated and restricted to an adfluvial life-history form due to Cushman Dam on the North Fork Skokomish River. Spawner surveys indicate a decline in adult bull trout through the 1970's, subsequent increases from 4 adults in 1985 to 412 adults in 1993, and relatively stable numbers of 250 to 300 adults in recent years (WDFW 1997a). The increase in adults from 1985 to 1993 is likely related to harvest closure on Cushman Reservoir and upper North Fork Skokomish River in 1986 (Brown 1992). Recent surveys indicate low numbers of bull trout in tributaries of the South Fork Skokomish River such as Church, Pine, Cedar, LeBar, Brown, Rock, Flat, and Vance creeks, as well as in the mainstem (L. Oss, Olympia National Forest (ONF), *in litt.* 1997). Habitat in the South Fork-lower North Fork Skokomish River has been degraded by past forest and agricultural practices and hydropower development (Williams et al. 1975; Hood Canal Coordination Council (HCCC) 1995; WDFW 1997a). The upper North Fork Skokomish River subpopulation occurs within Olympic National Park and habitat is likely relatively undisturbed. The Service considers the South Fork-lower North Fork Skokomish River subpopulation ''depressed.'' The remaining two ''native char'' subpopulations in the Hood Canal analysis area are considered ''unknown'' because insufficient abundance, trend, and life-history information is available (Service 1998a).

Puget Sound Analysis Area

Sixteen ''native char'' subpopulations occur in eight river basins in the Puget Sound analysis area (number of subpopulations)—Nisqually River (1), Puyallup River (3), Green River (1), Lake Washington basin (2), Snohomish River-Skykomish River (1), Stillaguamish River (1), Skagit River (4), and Nooksack River (3). Recent surveys of eight subpopulations have confirmed bull trout bull trout in six—Carbon River, Green River, Chester Morse Reservoir, Skykomish River-Snohomish River, lower Skagit River, and upper Middle Fork Nooksack River (R2 Resource consultants, Inc. 1993; Samora and Girdner 1993; Kraemer 1994; M. Barclay, Cascades Environmental Services, Inc., pers. comm. 1997; Leary and Allendorf 1997; E. Warner, Muckleshoot Indian Tribe (MIT), pers. comm. 1997). Only Dolly Varden have been identified in the Canyon Creek (tributary to the Nooksack River) subpopulation (Leary and Allendorf 1997).

The current abundance of ''native char'' in southern Puget Sound is likely lower than occurred historically and declining (T. Cropp, WDW, *in litt.* 1993; F. Goetz, U.S. Army Corps of Engineers (COE), pers. comm. 1994a,b). Historical accounts from southern Puget Sound indicate that anadromous char entered rivers there in ''vast numbers'' during the fall and were harvested until Christmas (Suckley and Cooper 1860). ''Native char'' are now rarely collected in the southern drainages of the area (Cropp, *in litt.* 1993; Goetz, pers. comm. 1994a,b). There is only one record of a ''native char'' being collected in the Nisqually River. A juvenile char was collected during a stream survey for salmon in the mid-1980's (G. Walter, Nisqually Indian Tribe (NIT), pers. comm. 1997; WDFW 1997a). In the Puyallup River, ''native char'' are occasionally caught by steelhead anglers (WDW 1992). In the Green River, ''native char'' are rarely observed (Cropp, *in litt.* 1993; Goetz, pers. comm. 1994a,b; Warner, pers. comm. 1997). Habitat in watersheds of the Nisqually, Puyallup, and Green rivers has been degraded by logging, agriculture, road construction, and urban development. In the Chester Morse Reservoir subpopulation, fewer than 10 redds were observed in 1995 and 1996; and fry abundance was low in spring 1996 and 1997 (D. Paige, Seattle Water Department (SWD), *in litt.* 1997). Logging and extensive road construction have occurred within the basin (Foster Wheeler Environmental 1995; WDFW 1997a), and have likely affected ''native char'' in Chester Morse Reservoir. Only two ''native char'' have been observed during the past 10 years in the Issaquah Creek drainage and none have been observed in the Sammamish River system. Habitat in the Sammamish River and Issaquah Creek drainages has been negatively affected by urbanization, road building and associated poor water quality (Williams et al. 1975, Washington Department of Ecology (WDOE) 1997a). The Service considers the Nisqually River, Puyallup River, Green River, Chester Morse Reservoir, and Sammamish River-Issaquah Creek subpopulations ''depressed.''

Drainages in the northern Puget Sound area appear to support larger subpopulations of ''native char'' than the southern portion (Goetz, pers. comm. 1994a,b; S. Fransen, Service, pers. comm. 1997). The WDFW conducts redd counts in two index reaches of the northern Puget Sound, the upper South Fork Sauk River in the Skagit River basin (lower Skagit River subpopulation) and the upper North Fork Skykomish River (Snohomish River-Skykomish River subpopulation), which have healthy habitats supporting stable numbers of ''native char'' (Kraemer 1994). Redd surveys have been conducted since 1988 in both index reaches. In the upper Sauk River, a substantial increase in redds was observed in 1991, a year after a minimum 508-mm (20-in) harvest restriction was implemented; and redd numbers have remained relatively stable (WDFW 1997a). Harvest restrictions were implemented in the Skagit River and its tributaries in 1990. ''Native char'' in the lower Skagit River subpopulation have access to at least 38 documented or suspected spawning tributaries in the basin (WDFW et al. 1997) and the number of adults is estimated to be 8,000 to 10,000 fish (C. Kraemer, WDFW, pers. comm. 1998). The number of redds in the upper North Fork Skykomish River index reach have averaged 78 redds (range—21 to 159) during 1988 through 1993, with 75 or fewer redds observed since 1993. Within the Puget Sound analysis area, the Service considers the lower Skagit River subpopulation ''strong'' and five subpopulations ''depressed.'' The remaining 10 ''native char'' subpopulations in the Puget Sound analysis area are considered ''unknown'' because insufficient abundance, trend, and life-history information is available (Service 1998a).

Transboundary Analysis Area

One ''native char'' subpopulation occurs in the Chilliwack River basin in the Transboundary analysis area. The Chilliwack River is a transboundary system flowing into British Columbia, Canada. The species composition of the subpopulation has not been determined. In Washington, portions of the Chilliwack River are within the North Cascades National Park and a tributary, Selesia Creek, are within the Mount Baker Wilderness where the habitat is relatively undisturbed (WDFW 1997a). Little information is available for ''native char'' in the Chilliwack River-Selesia Creek subpopulation (Service 1998a). The current status of the ''native

char'' subpopulations in the Transboundary analysis area is ''unknown'' because insufficient abundance, trend, and life-history information is available (Service 1998a).

Jarbidge River Population Segment

The Jarbidge River DPS consists of one bull trout subpopulation occurring primarily in Nevada (Service 1998b). Resident fish inhabit the headwaters of the East Fork and West Fork of the Jarbidge River and several tributary streams, and low numbers of migratory (fluvial) fish are present (Zoellick et al. 1996; L. McLelland, Nevada Division of Wildlife (NDOW), *in litt.* 1998; K. Ramsey, Humboldt National Forest (HNF), *in litt.* 1997). Bull trout were not observed during surveys in the Idaho portion of the Jarbidge River basin in 1992 and 1995 (Warren and Partridge 1993; Allen et al. 1997), however, a single, small bull trout was captured when traps were operated on the lower East Fork and West Fork Jarbidge River during August through October 1997 (F. Partridge, Idaho Department of Fish and Game (IDFG), pers. comm. 1998). A loss of range likely has occurred for migratory bull trout (fluvial) in the lower Jarbidge and Bruneau rivers and perhaps downstream to the Snake River (Johnson and Weller 1994; Zoellick et al. 1996). Low numbers of migratory (fluvial) bull trout have been documented in the West Fork Jarbidge River from the 1970's through the mid-1980's (Johnson and Weller 1994).

The distribution of bull trout in Nevada includes at least six headwater streams above 2,200 m (7,200 ft), primarily in wilderness areas—East Fork and West Fork Jarbidge River and Slide, Dave, Pine, and Jack creeks (Johnson and Weller 1994). Zoellick et al. (1996) compiled data from 1954 through 1993 and estimated bull trout population size in the middle and upper headwater areas of the West Fork and East Fork of the Jarbidge River. In each stream, sampled areas were located at elevations above 1,792 m (5,880 ft), and population estimates were less than 150 fish/km (240 fish/mi) (Zoellick et al. 1996).

In general, bull trout represent a minor proportion of the fish fauna downstream of the headwater reaches; native redband trout are the most abundant salmonid and sculpin the most abundant fish (Johnson and Weller 1994). Although accounts of bull trout distribution in the Jarbidge River basin date to the 1930's, historic abundance is not well documented. In 1934, bull trout were collected in the East Fork Jarbidge River drainage downstream of the Idaho-Nevada border (Miller and Morton 1952). In 1985, 292 bull trout ranging from 73 to 266 mm (2.9 to 10.5 in) in total length, were estimated to reside in the West Fork Jarbidge River (Johnson and Weller 1994). In 1992, the abundance of bull trout in the East Fork Jarbidge River was estimated to be 314 fish ranging from 115 to 165 mm (4.5 to 6.5 in) in total length (Johnson and Weller 1994). In 1993, bull trout numbers in Slide and Dave creeks were estimated at 361 and 251 fish, respectively (Johnson and Weller 1994). During snorkel surveys conducted in October 1997, no bull trout were observed in 40 pools of the West Fork Jarbidge River or in four 30-m (100-ft) transects in Jack Creek (G. Johnson, NDOW, pers. comm. 1998). Only one bull trout had been observed at the four transects in 1992 (Johnson, pers. comm. 1998). However, it is premature to consider bull trout extirpated in Jack Creek (Service 1998b). There is no information on whether bull trout have been extirpated from other Jarbidge River headwater tributaries.

It is estimated that between 50 and 125 bull trout spawn throughout the Jarbidge River basin annually (Johnson, pers. comm. 1998). However, exact spawning sites and timing are uncertain (Johnson, pers. comm. 1998) and only two redds have been observed in the basin (Ramsey, *in litt.* 1997; Ramsey, pers. comm. 1998a). Presumed spawning streams have been identified by records of one or more small bull trout (about 76 mm (3 in)).

Population trend information for bull trout in the Jarbidge River subpopulation is not available, although the current characteristics of bull trout in the basin (i.e., low numbers and disjunct distribution) have been described as similar to that observed in the 1950's (Johnson and Weller 1994). Based on recent surveys, the subpopulation is considered ''depressed.'' Past and present activities within the basin are likely restricting bull trout migration in the Jarbidge River, thus reducing opportunities for bull trout reestablishment in areas where the fish are no longer found (Service 1998b).

St. Mary-Belly River Population Segment

Much of the historical information regarding bull trout in the St. Mary-Belly River DPS is anecdotal and abundance information is limited. Bull trout probably entered the system via postglacial dispersal routes from the Columbia River through either the Kootenai River or Flathead River systems (Fredenberg et al. 1996). The St. Mary River system historically contained native bull trout, lake trout, and westslope cutthroat trout. Although abundance of these fishes is unknown, the presence of lake trout suggests that migratory bull trout were primarily fluvial and not adfluvial (Donald and Alger 1993). Within the St. Mary River system, historic accounts of bull trout date to the 1930's (Fredenberg et al. 1996). Historic distribution of bull trout in the Belly River basin is limited but migratory bull trout from Canada likely spawned in the North Fork and mainstem Belly Rivers.

Both migratory (fluvial) and resident life-history forms are present (Fredenberg et al. 1996), but bull trout within the St. Mary-Belly River DPS are isolated and fragmented by irrigation dams and diversions (Fredenberg et al. 1996; R. Wagner, Service, pers. comm. 1998). Bull trout that migrate across the international border are dependent upon the relatively undisturbed water quality and spawning habitat located in the upper St. Mary and Belly rivers and their tributaries (Fredenberg et al. 1996).

Based on natural and artificial barriers to fish passage within the St. Mary-Belly River DPS, the Service identified four bull trout subpopulations— (1) upper St. Mary River (from the U.S. Bureau of Reclamation (USBR) diversion structure on lower St. Mary Lake upstream to St. Mary Falls, including Swiftcurrent and Boulder creeks below Lake Sherburne, and Red Eagle and Divide creeks); (2) Swiftcurrent Creek (including tributaries and Lake Sherburne and Cracker Lake); (3) lower St. Mary River (St. Mary River downstream of the USBR diversion structure including Kennedy, Otatso, and Lee creeks); and (4) Belly River (mainstem and North Fork Belly River) (Service 1998c). The current status of the bull trout subpopulations in the St. Mary-Belly River DPS is ''unknown'' because insufficient abundance, trend, and life-history information is available (Service 1998c).

In summary, little information is available on the abundance, trends in abundance, and distribution of bull trout in the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River DPSs. The Coastal-Puget Sound population segment includes the only anadromous bull trout found in the coterminous United States. The population segment is composed of 35 ''native char'' subpopulations of which bull trout have been confirmed in 12 of 15 subpopulations examined. The remaining 20 subpopulations consist of ''native char'' that may include bull trout, Dolly Varden, or both species. At this time, Dolly Varden only have been confirmed in three subpopulations. The

status of the lower Skagit River subpopulation is considered ''strong'' and nine additional subpopulations ''depressed.'' The Jarbidge River population segment consists of one subpopulation found in the East Fork and West Fork Jarbidge River and headwater tributaries in Nevada. The population segment is isolated from other bull trout by a large expanse of unsuitable habitat. Migratory fish (fluvial) may be present in low abundance, but resident fish are the predominant life-history form. The total population size is low, with spawner abundance throughout the basin estimated to be from 50 to 125 fish. The status of the Jarbidge River population segment of bull trout is considered ''depressed.'' The St. Mary-Belly River population segment of bull trout is composed of four subpopulations and represents the only area of bull trout range east of the Continental Divide within the coterminous United States. Migratory fish occur in three of the subpopulations and the life-history form in the fourth subpopulation is unknown. The status of bull trout subpopulations in the St. Mary-Belly River DPS is ''unknown.''

Previous Federal Action

On September 18, 1985, the Service published an animal notice of review in the **Federal Register** (50 FR 37958) designating the bull trout a category 2 candidate for listing in the coterminous United States. At that time, a category 2 species was one for which conclusive data on biological vulnerability and threats was not available to support a proposed rule. The Service published updated notices of review for animals on January 6, 1989 (54 FR 554), and November 21, 1991 (56 FR 58804), reconfirming the bull trout's category 2 status. The Service discontinued using category designations upon publication of a February 28, 1996, notice of review (61 FR 7596) and now maintains a list of candidate species. Candidate species are those for which the Service has on file sufficient information on biological vulnerability and threats to support a proposal to list the species as threatened or endangered. The Service elevated the bull trout in the coterminous United States to candidate status on November 15, 1994 (59 FR 58982).

On October 30, 1992, the Service received a petition to list the bull trout as an endangered species throughout its range from the following conservation organizations in Montana—Alliance for the Wild Rockies, Inc., Friends of the Wild Swan, and Swan View Coalition (petitioners). The petitioners also requested an emergency listing and concurrent critical habitat designation for bull trout populations in select aquatic ecosystems where the biological information indicates that the species is in imminent threat of extinction. A 90-day finding, published on May 17, 1993 (58 FR 28849), determined that the petitioners had provided substantial information indicating that listing of the species may be warranted. The Service initiated a range-wide status review of the species concurrent with publication of the 90-day finding.

On June 6, 1994, the Service concluded in the original finding that listing of bull trout throughout its range was not warranted due to unavailable or insufficient data regarding threats to, and status and population trends of, the species within Canada and Alaska. However, the Service determined that sufficient information on the biological vulnerability and threats to the species was available to support a warranted finding to list bull trout within the coterminous United States. Because the Service concluded that the threats were imminent and moderate to bull trout in the coterminous United States, the Service gave the bull trout within the coterminous United States a listing priority number of 9. As a result, the Service found that listing a distinct vertebrate population segment consisting of bull trout residing in the coterminous United States was warranted but precluded due to higher priority listing actions.

On November 1, 1994, Friends of the Wild Swan, Inc. and Alliance for the Wild Rockies, Inc. (plaintiffs) filed suit in the U.S. District Court of Oregon (Court) arguing that the warranted but precluded finding was arbitrary and capricious. After the Service issued a ''recycled'' 12-month finding for the population segment of bull trout in the coterminous United States on June 12, 1995, the Court issued an order declaring the plaintiffs' challenge to the original finding moot. The plaintiffs declined to amend their complaint and appealed to the Ninth Circuit Court of Appeals, which found that the plaintiffs' challenge fell ''within the exception to the mootness doctrine for claims that are capable of repetition yet evading review.'' On April 2, 1996, the circuit court remanded the case back to the district court. On November 13, 1996, the Court issued an order and opinion remanding the original finding to the Service for further consideration. Included in the instructions from the Court were requirements that the Service limit its review to the 1994 administrative record, and incorporate any emergency listings or high magnitude threat determinations into current listing priorities. In addition, reliance on other Federal agency plans and actions was precluded. The reconsidered 12-month finding based on the 1994 administrative record was delivered to the Court on March 13, 1997.

On March 24, 1997, the plaintiffs filed a motion for mandatory injunction to compel the Service to issue a proposed rule to list the Klamath River and Columbia River bull trout populations within 30 days based solely on the 1994 administrative record. In response to this motion, the Service ''concluded that the law of this case requires the publication of a proposed rule'' to list the two warranted populations. On April 4, 1997, the Service requested 60 days to prepare and review the proposed rule. In a stipulation between the Service and plaintiffs filed with the Court on April 11, 1997, the Service agreed to issue a proposed rule in 60 days to list the Klamath River population of bull trout as endangered and the Columbia River population of bull trout as threatened based solely on the 1994 record. Based upon the Court agreement and stipulation, and information contained solely in the 1994 record, the Service proposed to list the Klamath River population of bull trout as endangered and Columbia River population of bull trout as threatened on June 13, 1997 (62 FR 32268).

The plaintiffs then challenged the Service's determination that listing was not warranted for the Coastal-Puget Sound, Jarbidge River, and Saskatchewan River population segments of bull trout. On December 4, 1997, the Court ordered the Service to reconsider its designation of five distinct bull trout population segments, as well as its determination that listing was not warranted for the Coastal-Puget Sound population. In compliance with the Court's order, the Service reviewed the original 1994 administrative record, as well as a substantial body of new information on the status of bull trout. In light of that review, the Service has reached two conclusions. First, the Service determined that its designation of five distinct population segments remains valid, but has modified the boundraries of two to those segments—the Coastal-Puget Sound segment and the Saskatchewan River segment— to include only those portions within the coterminous United States. The Service now refers to the portion of the Saskatchewan River segment that is in the United States as the St. Mary-Belly River segment. Second, the Service has determined that the listing is warranted for the Coastal-Puget Sound, Jarbidge

River, and St. Mary-Belly River distinct population segments.

The Service published Listing Priority Guidance for Fiscal Years 1998 and 1999 on May 8, 1998 (63 FR 25502). The guidance clarifies the order in which the Service will process rulemakings giving highest priority (Tier 1) to processing emergency rules to add species to the Lists of Endangered and Threatened Wildlife and Plants (Lists); second priority (Tier 2) to processing final determinations on proposals to add species to the Lists, processing new proposals to add species to the Lists, processing administrative findings on petitions (to add species to the Lists, delist species, or reclassify listed species), and processing a limited number of proposed or final rules to delist or reclassify species; and third priority (Tier 3) to processing proposed or final rules designating critical habitat. Processing of this proposed rule is a Tier 2 action.

Summary of Factors Affecting These Species

Procedures found in section 4 of the Act and regulations (50 CFR part 424) promulgated to implement the Act set forth the procedures for adding species to the Federal lists. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River population segments of bull trout (*Salvelinus confluentus*) are as follows:

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

Land and water management activities that degrade and continue to threaten all of the bull trout distinct population segments in the coterminous United States include dams, forest management practices, livestock grazing, agriculture and agricultural diversions, roads, and mining (Beschta et al. 1987; Chamberlain et al. 1991; Furniss et al. 1991; Meehan 1991; Nehlsen et al. 1991; Sedell and Everest 1991; Craig and Wissmar 1993; Frissell 1993; Henjum et al. 1994; McIntosh et al. 1994; Wissmar et al. 1994; U.S. Department of Agriculture (USDA) and U.S. Department of the Interior (USDI) 1995, 1996, 1997; Light et al. 1996; MBTSG 1995a–e, 1996a–h).

Coastal-Puget Sound Population Segment

Bull trout are often migratory (Fraley and Shepard 1989; Pratt 1992; Rieman and McIntyre 1993; Oregon Department of Fish and Wildlife (ODFW) 1995; McPhail and Baxter 1996). In the Coastal-Puget Sound population segment, migratory ''native char'' exhibit both anadromous and fluvial strategies. Flood control structures, hydroelectric projects, water diversion structures including irrigation withdrawals, forest practices, agricultural cultivation, grazing, urbanization, and industrial development have all contributed to degradation of migratory corridors used by bull trout (Rieman and McIntyre 1993; Spence et al. 1996; WDFW 1997a).

In the Coastal-Puget Sound DPS, eight subpopulations (four currently determined solely as bull trout based on genetic samples) are currently known to be isolated or fragmented as a result of man-made barriers. These are the lower Elwha River, upper Elwha River, South Fork-lower North Fork Skokomish River, Cushman Reservoir, Gorge Reservoir, Diablo Reservoir, Ross Reservoir, and upper Middle Fork Nooksack River (Service 1998a).

Past forest management activities have contributed to degraded watershed conditions, including increased sedimentation of bull trout habitat (Salo and Cundy 1987; Meehan 1991; Bisson et al. 1992; USDA et al. 1993; Henjum et al. 1994; Spence et al. 1996). These activities continue to negatively affect ''native char'' in the Coastal-Puget Sound population segment. Timber harvest and road building in riparian areas reduce stream shading and cover, channel stability, large woody debris recruitment, and increase sedimentation and peak stream flows (Chamberlin et al. 1991). These can alternatively lead to increased stream temperatures and bank erosion, and decreased long-term stream productivity.

Strict cold water temperature requirements make bull trout particularly vulnerable to activities that warm spawning and rearing waters (Goetz 1989; Pratt 1992; Rieman and McIntyre 1993). Increased temperature reduces habitat suitability, which can exacerbate fragmentation within and between subpopulations (Rieman and McIntyre 1993). Of the 35 ''native char'' subpopulations in the Coastal-Puget Sound population segment, 11 are likely affected by elevated stream temperatures as a result of past forest practices (lower Nooksack River, Stillaguamish River, Skykomish-Snohomish River, Green River, White River, Nisqually River, South Fork-lower North Fork Skokomish River, Goodman Creek, Copalis River, Moclips River, and Chehalis River-Grays Harbor) (Phinney and Bucknell 1975; Williams et al. 1975; Hiss and Knudsen 1993; WDFW 1997a; WDOE 1997a). Bull trout have been confirmed in 3 of these ''native char'' subpopulations (Green River, South Fork-lower North Fork Skokomish River, and Skykomish-Snohomish River).

Road construction and maintenance account for a majority of man-induced sediment loads to streams in forested areas (Shepard et al. 1984; Cederholm and Reid 1987; Furniss et al. 1991). Sedimentation affects streams by reducing pool depth, altering substrate composition, reducing interstitial space, and causing braiding of channels (Rieman and McIntyre 1993), which reduce carrying capacity. Sedimentation negatively affects bull trout embryo survival and juvenile bull trout rearing densities (Shepard et al. 1984; Pratt 1992). In National Forests in Washington, large deep pools have been reduced 58 percent due to sedimentation and loss of pool-forming structures such as boulders and large wood (USDA et al. 1993). The effects of sedimentation from roads and logging are prevalent in basins containing 10 ''native char'' subpopulations (Nooksack, Skykomish, Stillaguamish, Puyallup, upper Cedar, Skokomish, Dungeness, Hoh, Queets, and Coastal Plain-Quinault basins) (HCCC 1995; ONF 1995a,b; S. Noble and S. Spalding, Service, *in litt.* 1995; WDFW 1997a, WDOE 1997a). Bull trout have been confirmed in six of these subpopulations (upper Cedar, Skokomish, Dungeness, Queets, Quinault, and Skykomish basins).

A recent assessment of the Interior Columbia Basin ecosystem revealed that increasing road densities and associated effects caused declines in four non-anadromous salmonid species (bull trout, Yellowstone cutthrout trout, westslope cutthroat trout, and redband trout) within the basin (Quigley and Arbelbide 1997). Bull trout were less likely to use highly roaded basins for spawning and rearing, and if present, were likely to be at lower population levels (Quigley and Arbelbide 1997). Quigley et al. (1996) demonstrated that when average road densities were between 0.4 to 1.1 km/km^2 (0.7 and 1.7 mi/mi^2) on USFS lands, the proportion of subwatersheds supporting ''strong'' populations of key salmonids dropped substantially. Higher road densities caused further declines. When USFS lands were compared to lands administered by all other entities at a given road density, the proportion of lands supporting ''strong'' bull trout populations was lower on lands administered by other entities. Although this assessment was conducted east of the Cascade Mountain Range, effects

from high road densities may be more severe in western Washington. Higher precipitation west of the Cascade Mountains increases the frequency of surface erosion and mass wasting (USDI et al. 1996b). Limited data concerning road densities are available for the Coastal-Puget Sound DPS; however, two bull trout subpopulations (lower Dungeness River-Gray Wolf River and Chester Morse Reservoir) occur in basins with road densities greater than 1.1 km/km² (1.7 mi/mi²). The effects of relatively high road density on aquatic habitat may contribute to the ''depressed'' status of these two ''native char'' subpopulations. Other basins containing ''native char'' subpopulations also have relatively high road densities, ranging from 1.5 to 3.0 km/km² (2.4 to 4.8 mi/mi²), in portions of the Queets River basin (ONF 1995a; Cederholm and Reid 1987). ''Native char'' in these areas are likely negatively affected by the presence of roads.

Approximately 65 percent of the ''native char'' subpopulations within the Coastal-Puget Sound DPS are affected by past or present forest management activities. Areas not affected by such activities occur primarily within National Parks or Wilderness Areas. Five ''native char'' subpopulations lie completely within National Parks and Wilderness Areas withdrawn from timber harvest. These are the upper Quinault River, upper Sol Duc River, Gorge Reservoir, Diablo Reservoir, and Ross Reservoir. The status of these ''native char'' subpopulations is ''unknown'' at this time. However, all but the upper Quinault River subpopulation are threatened by non-native brook trout (see Factor D). Of these five ''native char'' subpopulations, species composition has been examined in two, and only the upper Quinault River subpopulation is known to contain bull trout. Eleven ''native char'' subpopulations (lower Quinault River, Queets River, Hoh River, upper Elwha River, lower Dungeness River-Gray Wolf River, upper Dungeness River, upper North Fork Skokomish River, Carbon River, Skykomish River-Snohomish River, lower Skagit River, and Chilliwack River-Selesia Creek) lie partially within withdrawn Federal areas. Species composition has been examined in seven subpopulations, and bull trout were confirmed in six (Queets River, upper Elwha River, Dungeness River-Gray Wolf River, Carbon River, Skykomish River-Snohomish River, and lower Skagit River).

Agricultural practices and associated activities can affect bull trout and their habitat. Irrigation withdrawals including diversions can dewater spawning and rearing streams, impede fish passage and migration, and cause entrainment (process by which aquatic organisms suspended in water are pulled through a pump or other device). Discharging pollutants such as nutrients, agricultural chemicals, animal waste and sediment into spawning and rearing waters is also detrimental (Spence et al. 1996). Agricultural practices regularly include stream channelization and diking, large woody debris and riparian vegetation removal, and bank armoring (Spence et al. 1996). Improper livestock grazing can promote streambank erosion and sedimentation, and limit the growth of riparian vegetation important for temperature control, streambank stability, fish cover, and detrital input. In addition, grazing can increase input of organic nutrients into streams (Platts 1991). Ten ''native char'' subpopulations in the Coastal-Puget Sound DPS (Carbon River, White River, Puyallup River, Stillaguamish River, lower Skagit River, lower Nooksack River, Green River, South Fork-lower North Fork Skokomish River, Dungeness River-Gray Wolf River, and Chehalis River-Grays Harbor) are negatively affected by past or ongoing agricultural or livestock grazing practices (Williams et al. 1975; Hiss and Knudsen 1993; Washington Department of Fisheries (WDF) et al. 1993; HCCC 1995; ONF 1995b; WDFW 1997a). Species composition has been examined in five of these subpopulations, and bull trout were confirmed in four (Green River, Carbon River, South Fork-lower North Fork Skokomish River, and Dungeness River-Gray Wolf River).

Dams constructed with poorly designed fish passage or without fish passage create barriers to migratory bull trout, precluding access to former spawning, rearing, and migration habitats. Dams disrupt the connectivity within and between watersheds essential for maintaining aquatic ecosystem function (Naiman et al. 1992; Spence et al. 1996) and bull trout subpopulation interaction (Rieman and McIntyre 1993). Natural recolonization of historically occupied sites can be precluded by migration barriers (e.g., McCloud Dam in California (Rode 1990)). Within the Coastal-Puget Sound DPS, there are at least 41 existing or proposed hydroelectric projects regulated by the Federal Energy Regulatory Commission (FERC) that are within watersheds supporting bull trout (G. Stagner, Service, *in litt.* 1997). Of the 41 projects or proposals, 17 are currently operating and most are run-of-the-river small hydroelectric projects. Negotiated instream flows for these projects have been primarily based on resident cutthroat or rainbow trout flow requirements, and may not meet the needs of species with different life-history strategies, such as bull trout (T. Bodurtha, Service, *in litt.* 1995). Of the 41 existing or proposed projects, fish passage has not been addressed for 28 (Stagner, *in litt.* 1997). In addition, the Service is aware of 10 water diversions or other dams, not regulated by FERC, currently operating in watersheds with ''native char''. None of these 10 facilities provide for upstream fish passage. Dams on the Middle Fork Nooksack, Skagit, Baker (Skagit tributary), Green, Puyallup, White, Nisqually, Skokomish, and Elwha rivers are barriers to upstream fish migration and have fragmented populations of ''native char'' within the Coastal-Puget Sound DPS. A draft Environmental Impact Statement (EIS) has been published for three proposed hydroelectric projects on Skagit River tributaries, and a final EIS recommends two proposed hydroelectric projects on the lower Nooksack River. This illustrates that FERC is close to licensing decisions on these projects.

Urbanization has led to decreased habitat complexity (uniform stream channels and simple nonfunctional riparian areas), impediments and blockages to fish passage, increased surface runoff (more frequent and severe flooding), and decreased water quality and quantity (Spence et al. 1996). In the Puget Sound area, human population growth is predicted to increase by 20 percent between 1987 and 2000, requiring a 62 percent increase in land area developed (Puget Sound Water Quality Authority (PSWQA) 1988 *in* Spence et al. 1996). The effects of urbanization, concentrated at the lower most reaches of rivers within Puget Sound, primarily affect ''native char'' migratory corridors and rearing habitats. Six ''native char'' subpopulations in the Coastal-Puget Sound DPS (lower Dungeness River-Gray Wolf River, Puyallup River, White River, Green River, Sammamish River-Issaquah Creek, and Stillaguamish River) are known to be negatively affected by urbanization (Williams et al. 1975; WDFW 1997a).

Mining can degrade aquatic systems by generating sediment and heavy metals pollution, altering water pH levels, and changing stream channels and flow (Martin and Platts 1981). Although not currently active, mining in the Nooksack River basin, where ''native char'' occur, has adversely affected streams. For example, the Excelsior Mine on the upper North Fork Nooksack River was active at the turn of the

century and mining spoils were placed directly into Wells Creek (Mt. Baker-Snoqualmie National Forest (MBSNF) 1995), a known spawning stream for ''native char.'' Spoils in and adjacent to the stream may continue to be sources of sediment and heavy metals.

Jarbidge River Population Segment

Although timber was historically removed from the Jarbidge River basin, forest management is not thought to be a major factor currently affecting bull trout habitat. The steep terrain of the Jarbidge River basin has been a deterrent to grazing (J. Frederick, HNF, *in litt.* 1998a); and grazing does not occur in approximately 60 percent of the watershed. Although much of the remaining 40 percent of public and private lands are grazed, the effects are localized and considered of relatively minor importance to bull trout habitat in the Jarbidge River basin. For example, livestock grazing is affecting about 3.2 km (2 mi) of the East Fork Jarbidge River and portions of Dave Creek and Jack Creek (Frederick, pers. comm. 1998; Johnson, pers. comm. 1998).

Ongoing threats affecting bull trout habitat have maintained degraded conditions in the West Fork Jarbidge River (McNeill et al. 1997; Frederick, pers. comm. 1998; Ramsey, pers. comm. 1998a). At least 11.2 km (7 mi) of the West Fork Jarbidge River has been affected by over a century of human activities such as road development and maintenance, historic mining and adit (horizontal passage from the surface in a mine) drainage, channelization and removal of large woody debris, residential development, and road and campground development on USFS lands (McNeill et al. 1997). As a result of these activities, the riparian canopy and much of the upland forest has been removed, recruitment of large woody debris has been reduced, and channel stability has decreased (McNeill et al. 1997; Ramsey, *in litt.* 1997; Frederick, *in litt.* 1998a). These activities reduce habitat complexity and likely elevate water temperatures seasonally. For example, water temperatures recorded near Bluster Bridge were 15 to 17°C (59 to 63°F) for 24 days in 1997.

Culverts installed at road crossings may act as barriers to bull trout movement in the Jarbidge River basin. For example, an Elko County road culvert had prevented upstream movement of bull trout in Jack Creek, a West Fork Jarbidge River tributary, for approximately 17 years. Private and public funding was used to replace the culvert with a bridge in the fall of 1997 (Frederick, *in litt.* 1998b); however, a rock structure approximately 300 m (1,000 ft) upstream from the bridge in Jack Creek may still impede bull trout movement, at least seasonally during low flows.

St. Mary-Belly River Population Segment

Forest management practices, livestock grazing, and mining are not thought to be major factors affecting bull trout in the St. Mary-Belly River DPS. However, bull trout subpopulations are fragmented and isolated by dams and diversions (Fredenberg et al. 1996). Specifically, the USBR diversion at the outlet of lower St. Mary Lake is an unscreened trans-basin diversion (i.e., transferring water to the Missouri River drainage via the Milk River) that threatens bull trout. This diversion restricts upstream bull trout passage into the upper St. Mary River. Consequently, migratory (fluvial) bull trout are prevented from reaching suitable spawning habitat in Divide and Red Eagle creeks (Fredenberg et al. 1996; Wagner, pers. comm. 1998). Similarly, the irrigation dam on Swiftcurrent Creek (Lake Sherburne) physically blocks bull trout passage into the upper watershed (Fredenberg et al. 1996; Wagner, pers. comm. 1998).

In addition to the dams physically isolating subpopulations, the associated diversions seasonally dewater the streams, effectively decreasing available habitat for migratory and resident bull trout (Fredenberg et al. 1996). The diversion at the outlet of lower St. Mary Lake may result in a reduction (up to 50 percent) of instream flow, possibly affecting juvenile and adult bull trout (Wagner, pers. comm. 1998). The diversion is unscreened and recent information suggests downstream loss through entrainment of bull trout (Wagner, pers. comm. 1998). Similarly, the irrigation dam on Swiftcurrent Creek (Lake Sherburne) seasonally dewaters the creek downstream, effectively eliminating habitat (Fredenberg et al. 1996; Wagner, pers. comm. 1998).

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

Declines in bull trout have prompted states to institute restrictive fishing regulations and eliminate the harvest of bull trout in most waters in Idaho, Oregon, Washington, Nevada, and Montana. Recent observations of increased numbers of adult bull trout in some areas have been attributed to more restrictive regulations. However, illegal harvest and incidental harvest still threaten bull trout in some areas.

Coastal-Puget Sound Population Segment

Fishing for ''native char'' is currently closed in most of the waters within the Coastal-Puget Sound population segment. Most of these closures were implemented in 1994. Areas where harvest of ''native char'' is still allowed are the mainstem Skagit River and several of its tributaries (Cascade, Suiattle, Whitechuck and Sauk rivers) (508-mm (20-in) minimum size limit); the Snohomish River mainstem and the Skykomish River below the forks (508-mm (20-in) minimum size limit and 2 fish daily bag limit) (WDFW 1997a); and portions of the Quinault and Queets rivers that are within the Quinault Indian Reservation (QIN) boundary (4 fish daily bag limit with no minimum size restriction) (S. Chitwood, Quinault Indian Nation, pers. comm. 1997; WDFW 1997a). Olympic National Park has catch-and-release regulations for ''native char'' in all park waters. Fishing for bull trout in Mount Rainier National Park is prohibited. There is likely some mortality from incidental hook and release of ''native char'' in fisheries targeting other species, especially in streams where restrictive angling regulations (i.e., artificial flies or lures with barbless single hook, bait prohibited) have not been established.

The objective of the 508-mm (20-in) minimum size limit is to allow most females to spawn at least once before harvest (WDFW 1997a), however, there is concern that this size limit will have minimal effects in conserving bull trout (J. Johnston, WDFW, pers. comm. 1995). The regulation protects smaller fish, but older, larger fish are more fecund and able to use a greater range of substrates for spawning (Johnston, pers. comm. 1995). Regulations on the Quinault Indian Reservation in the lower Quinault River and Queets River systems offer less bull trout conservation opportunity because there is no minimum size limit to allow most females to reach maturity before being subject to harvest. Areas of the lower Quinault and Queets rivers outside of the Quinault Indian Reservation have been closed to harvest for ''native char'' (WDFW 1997a).

In 1993, WDFW increased the catch limit for brook trout in order to reduce interactions with bull trout (WDFW 1995). The liberalization of the brook trout catch has the potential to increase harvest of bull trout due to misidentification by anglers. In a Montana study, only 40 percent of the anglers surveyed correctly identified bull trout out of six species of salmonids found locally (M. Long and S. Whalen,

Montana Fish Wildlife and Parks (MFWP), *in litt.* 1997).

Poaching is considered a factor negatively affecting ''native char'' in nine drainages within the Coastal-Puget Sound population segment. These are the South Fork Nooksack River, North Fork Nooksack River (above and below the falls), Sauk River and tributaries, North Fork Skykomish River, Chester Morse Reservoir, lower Dungeness River-Gray Wolf River, Hoh River, Goodman Creek, and Morse Creek (WDW 1992; Mongillo 1993; WDFW 1997a).

Jarbidge River Population Segment

Overutilization by angling was a concern in the past for the Jarbidge River DPS of bull trout. Although Idaho prohibited harvest of bull trout beginning in 1995, Nevada, until recently, allowed harvest of up to 10 trout per day, including bull trout, in the Jarbidge River basin. An estimated 100 to 400 bull trout were harvested annually in the Jarbidge River basin (Johnson 1990; P. Coffin, Service, pers. comm. 1994; Coffin, *in litt.* 1995). Nevada State regulations were recently amended to allow only catch-and-release of bull trout starting March 1, 1998 (G. Weller, NDOW, *in litt.* 1997; Johnson, pers. comm. 1998). We anticipate that this change in the regulations will have a positive effect on conservation of bull trout, however, the effects of the new harvest regulations may require five years to evaluate (Johnson, pers. comm. 1998).

St. Mary-Belly River Population Segment

Historically, the harvest of bull trout in the St. Mary-Belly River DPS was considered ''extensive'' (Fredenberg et al. 1996). Currently, legal angler harvest in the St. Mary-Belly River DPS only occurs on the Blackfeet Indian Reservation, which has a five fish per day limit (Fredenberg et al. 1996).

In 1994, at least 19 adult and subadult bull trout were harvested in gill nets set for a commercial fishery for lake whitefish (*Coregonus clupeaformis*) in lower St. Mary Lake (Blackfeet Tribe, *in litt.* 1998). Given the apparent low abundance of adult bull trout in the upper St. Mary Lake subpopulation, and restricted migration opportunities over the USBR diversion on lower St. Mary Lake, any harvest of bull trout from this subpopulation represents a threat. Record-keeping by the two commercial fishers is a requirement of the Blackfeet Tribal Fish and Game Commission, but not strictly enforced.

C. Disease and Predation

Diseases affecting salmonids are present or likely present in the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly DPSs, but are not thought to be a factor threatening bull trout. However, interspecific interactions, including predation, likely negatively affect bull trout where non-native salmonids have been introduced (J. Palmisano and V. Kaczynski, Northwest Forestry Resources Council (NFRC), *in litt.* 1997).

Coastal-Puget Sound Population Segment

Disease is not believed to be a factor in the decline of bull trout in the Coastal-Puget Sound DPS. Outbreaks of the parasite *Dermocystidium salmonis* in the lower Elwha River may negatively affect ''native char'' in years of high chinook salmon returns (K. Amos, WDFW, pers. comm. 1997). The susceptibility of bull trout to the parasite is unknown. There is concern about whirling disease (*Myxobolus cerebralis*), which occurs in wild trout waters of western states, but it has not been documented in Washington (Bergersen and Anderson 1997). Apparently, most species of salmonids are susceptible to the organism, and it has been diagnosed in Dolly Varden (Post 1987). However, laboratory testing indicates that bull trout may be one of the least susceptible salmonids (McDowell et al. 1997). It is not currently treatable in the wild.

Predation is not considered a primary factor in the decline of Coastal-Puget Sound ''native char'' and bull trout. However, the recent discovery of largemouth bass (*Micropterus salmoides*) in Cushman Reservoir on the Skokomish River may potentially affect the bull trout subpopulation (S. Brenkman, Oregon State University, pers. comm. 1997; WDFW 1997a). Warm-water species (centrarchids and percids), which may prey on ''native char,'' are also established in portions of the Sammamish River system and Lake Washington.

Jarbidge River Population Segment

Disease or predation are not known to be factors affecting the survival of bull trout in the Jarbidge River basin.

St. Mary-Belly River Population Segment

Disease or predation are not known to be factors affecting the survival of bull trout in the St. Mary-Belly River basin. However, non-native brook trout are present and may prey on juvenile bull trout. Whirling disease has also been documented in numerous Missouri River watersheds in central Montana.

D. The Inadequacy of Existing Regulatory Mechanisms

Although efforts are underway to assist in conserving bull trout throughout the coterminous U.S. (e.g., Batt 1996; R. Joslin, USFS, *in litt.* 1997; A. Thomas, BLM, *in litt.* 1997), the implementation and enforcement of existing Federal and State laws designed to conserve fishery resources, maintain water quality, and protect aquatic habitat have not been sufficient to prevent past and ongoing habitat degradation leading to bull trout declines and isolation. Regulatory mechanisms, including the National Forest Management Act, the Federal Land Policy and Management Act, the Public Rangelands Improvement Act, the Clean Water Act, the National Environmental Policy Act, Federal Power Act, State Endangered Species Acts and numerous State laws and regulations oversee an array of land and water management activities that affect bull trout and their habitat.

Coastal-Puget Sound Population Segment

In April 1994, the Secretaries of Agriculture and Interior adopted the Northwest Forest Plan for management of late-successional forests within the range of the northern spotted owl (*Strix occidentalis caurina*) (USDA and USDI 1994a). This plan set forth objectives, standards, and guidelines to provide for a functional late-successional and old-growth forest ecosystem. Included in the plan is an aquatic conservation strategy involving riparian reserves, key watersheds, watershed analysis, and habitat restoration. Approximately 22 percent of the total acreage within the Coastal-Puget Sound population segment lies within USFS jurisdiction, and would thus be subject to Northwest Forest Plan standards and guidelines (U.S. Geological Survey (USGS), *in litt.* 1996). An assessment panel determined that the proposed standards and guidelines in the Northwest Forest Plan would result in an 85 percent future likelihood of attaining sufficient aquatic habitat to support well-distributed populations of bull trout on Federal lands (USDA and USDI 1994b). Almost all projects developed under the Northwest Forest Plan in this DPS have been determined to have ''no effect'' on bull trout. However, existing habitat conditions are severely degraded in many subbasins. Effects from past land management activities can be expected to continue into the foreseeable future in the form of increased stream

temperatures, altered stream flows, sedimentation, and lack of instream cover. These effects can be exacerbated due to future slides, road failures, and debris torrents. Many of these aquatic systems will require decades to fully recover (USDA et al.1993). Until then, future habitat losses can be expected due to past activities, potentially resulting in local extirpations, migratory barriers, and reduced reproductive success (Spence et al. 1996).

Washington State Forest Practice Rules (WFPR) apply to all State, city, county, and private lands not currently covered under a Habitat Conservation Plan (HCP) or other conservation agreement in Washington. Approximately 45 percent of the Coastal-Puget Sound population segment is held under private ownership and 1.5 percent under city or county ownership. Bull trout face threats from ongoing and future timber harvest activities on these lands that are in forest production. The WFPR set forth timber harvest regulations for non-Federal and non-Tribal forested lands in the State of Washington. These rules set standards for timber harvest activities in and around riparian areas, in an effort to protect aquatic resources. These riparian management zone widths, as specified by the WFPR, do not ensure protection of the riparian components, because the minimum widths are insufficient to fully protect riparian ecosystems (USDI et al. 1996a). Thus, bull trout will continue to be negatively affected by forest practices on lands guided by the WFPR.

In January 1997, the Washington State Department of Natural Resources (WDNR) entered into a multispecies HCP with the Service, covering all WDNR-owned lands within the range of the northern spotted owl. The WDNR HCP was initiated primarily to address the conservation needs for old-growth forest dependent species, northern spotted owl, and marbled murrelet (*Brachyramphus marmoratus marmoratus*), while allowing WDNR to meet its trust responsibilities to the State. The HCP also addresses the conservation needs of other terrestrial and aquatic species on WDNR lands. Approximately 10 percent of the Coastal-Puget Sound population segment is in State ownership and is managed under the HCP. The HCP specifically provides Riparian Conservation Strategies designed to maintain the integrity and function of freshwater stream habitat necessary for the health and persistence of aquatic species, especially salmonids. Road maintenance and network planning strategies included in the HCP also play important roles in protecting aquatic habitats, but are often reliant on the Riparian Conservation Strategy stream buffers for complete protection.

If fully and properly implemented, the HCP should aid in the restoration and protection of freshwater salmonid habitat on the Olympic Peninsula and the areas on the west slope of the Cascades. There are still continued threats to bull trout subpopulations on State lands even with the HCP in place. For example, the HCP states, ''Adverse impacts to salmonid habitat will continue to occur because past forest practices have left a legacy of degraded riparian ecosystems, deforested unstable hillslopes, and a poorly planned and maintained road network'' (WDNR 1997). Areas that have been logged in the past will take decades to fully recover. In addition, ''Some components of the riparian conservation strategy require on-site management decisions, and adverse impacts to salmonid habitat may occur inadvertently. For example, timber harvesting in the riparian buffer must ''maintain or restore salmonid habitat'', but, at present, the amount of timber harvesting in riparian ecosystems compatible with high quality salmonid habitat is unknown'' (WDNR 1997).

In 1992, the Washington Department of Wildlife (now the Washington Department of Fish and Wildlife) developed a draft bull trout-Dolly Varden management and recovery plan. In 1995, WDFW released a draft EIS for the management plan. The plan establishes a goal of restoring and maintaining the health and diversity of ''native char'' stocks and their habitats in the State of Washington (WDFW 1995). At this time, the management plan has not been finalized and implemented. The Wild Salmonid Policy has been described as an umbrella document to the management plan, and in an effort to avoid contradicting documents, WDFW has postponed finalizing the plan.

Since 1994, WDFW has been in the process of developing a Wild Salmonid Policy (WSP) to address management of all native salmonids in the State. In September 1997, WDFW released the final EIS for the WSP. The policy establishes a goal to protect, restore, and enhance the productivity, production, and diversity of wild salmonids and their ecosystems to sustain ceremonial, subsistence, commercial, and recreational fisheries; non-consumptive fish benefits; and related cultural and ecological values well into the future (WDFW 1997b). The WSP, in its current form, may not adequately protect sensitive salmonid species such as bull trout because the primary focus is wild salmon and steelhead. Although other wild salmonids, including bull trout, are referred to in an ancillary manner in the document, the proposed policy does not address the unique requirements of bull trout. As a result, proposed habitat and water quality standards (current State surface water quality standards), originally developed with a focus on salmon, may fall short in protection for bull trout. The final EIS is not considered a policy document to direct WDFW. The EIS describes a set of alternatives presented to the Washington State Fish and Wildlife Commission (Commission). The Commission has the final responsibility for taking action on the preferred alternative and recommending policy direction. When implemented, the policy would present guidelines for actions that WDFW must follow, but would not be binding on other state, tribal, or private entities. The publication of a WSP will likely occur in the near future, but the format and exact content of the document is unknown. Given the uncertainties surrounding implementation of the plan and lack of specificity concerning bull trout, possible benefits to bull trout can not be evaluated.

Section 305(b) of the 1972 Federal Clean Water Act requires states to identify water bodies biennially that are not expected to meet State surface water quality standards (WDOE 1996). These waters are reported in the Section 303(d) list of water quality limited streams. The Washington State 303(d) list (WDOE 1997a) reflects the poor condition of lower stream reaches of some systems containing bull trout and Dolly Varden. At least 30 stream reaches, occupied by 14 subpopulations of ''native char'', are listed on the Washington State proposed 1998 303(d) list of water quality impaired streams (WDOE 1997a). Waters on the 303(d) list that inhibit these subpopulations because of temperature exceedances are—Chehalis River-Grays Harbor, lower Quinault River, Hoh River, lower Elwha River, Nisqually River, White River, Green River, Sammamish River-Issaquah Creek, Stillaguamish River, and lower Nooksack River. Bull trout have been identified in one of these subpopulations (Green River). The State temperature standards are likely inadequate for bull trout because temperatures in excess of 15°C (59°F) are thought to limit bull trout distribution (Rieman and McIntyre 1993) and the State temperature standard for the highest class of waters is 16°C (61°F).

Waters on the 303(d) list that do not meet instream flow standards and

contain ''native char'' subpopulation include—Dungeness River-Gray Wolf River, South Fork-lower North Fork Skokomish River, Puyallup River, lower Skagit River, and lower Nooksack River. Bull trout are known to occur in three of these subpopulations (Dungeness River-Gray Wolf River; South Fork-lower North Fork Skokomish River; and lower Skagit River). Although minimum instream flow requirements for bull trout have not been determined, variable stream flows and low winter flows are thought to negatively influence the embryos and alevins (a young fish which has not yet absorbed its yolk sac) of bull trout (Rieman and McIntyre 1993).

Subpopulations in waters that occur on the 303(d) list for not meeting the standards for dissolved oxygen are—Chehalis River-Grays Harbor and Sammamish River-Issaquah Creek (WDOE 1997a). Although no dissolved oxygen standards have been developed for bull trout, poor water quality and highly degraded migratory corridors may hinder or interrupt migration (Spence et al. 1996), leading to the further fragmentation of habitat and isolation of bull trout.

Surface waters are assigned to one of five classes under the Water Quality Standards for Surface Waters of the State of Washington (WAC 173–201A–130). These classes are AA (extraordinary), A (excellent), B (good), C (fair) and Lake class. For each of these classes a set of criteria have been established for water quality parameters such as temperature, fecal coliform, turbidity, dissolved oxygen, and toxic deleterious material concentrations. With the exception of dissolved oxygen, parameters are not to exceed the maximum levels specified for each class. Maximum water temperature criteria range from 16° C (60.8°F) (Class AA), 18°C (64.4°F) (Class A), 21°C (69.8°F) (Class B), to 22°C (71.6°F) (Class C). Bull trout streams within the Coastal-Puget Sound population segment have stream segments that fall in classes AA, A, and B. Given the low temperature requirements of bull trout, these temperature standards are inadequate to protect bull trout spawning, rearing or migration (Rieman and McIntyre 1993). Segments of the Quinault, Queets, Elwha, Skokomish, Nisqually, White, Green, and Snohomish rivers do not meet existing State standards for their respective classes. It is unknown whether the current standards established for other water quality parameters (fecal coliform, turbidity, dissolved oxygen, toxic deleterious material concentrations) within the various classes, are adequate to protect bull trout. See Factor A for additional discussion of water quality.

Jarbidge River Population Segment

Regulatory mechanisms addressing alterations to stream channels, riparian areas, and floodplains from road construction and maintenance, and the effects associated with roads and past mining on water quality, have been inadequate to protect bull trout habitat in the Jarbidge River basin. For example, the Jarbidge Canyon Road parallels the West Fork Jarbidge River for much of its length and includes at least seven undersized bridges for the stream and floodplain. Maintenance of the road and bridges requires frequent channel and floodplain modifications that affect bull trout habitat, such as channelization; removal of riparian trees and beaver dams; and placement of rock, sediment, and concrete (McNeill et al. 1997; Frederick, pers. comm. 1998; Frederick, *in litt.* 1998a). In 1995, debris torrents washed out a portion of the upper Jarbidge Canyon Road above Pine Creek, and plans to reestablish the road include channelizing the river (McNeill et al. 1997). The Service has recommended that this road segment be closed to vehicular traffic and that a trail be maintained to reduce the effects of the road and its maintenance on the river (R. Williams, Service, *in litt.* 1998). Periodic channelization in the Jarbidge River by unknown parties has occurred without the oversight provided by the COE Clean Water Act section 404 regulatory program (M. Elpers, Service, pers. comm. 1998), and the HNF has been unable to control trespass (unauthorized road openings) on Federal lands. Several old mines (adits) are releasing small quantities of warm water and other contaminants into the West Fork Jarbidge River.

The Nevada water temperature standards throughout the Jarbidge River are 21°C (67°F) for May through October, and 7°C (45°F) for November through April, with less than 1°C (2°F) change for beneficial uses (Nevada Department of Environmental Protection (NDEP), *in litt.* 1998). Water temperature standards for May through October exceed temperatures conducive to bull trout spawning, incubation, and rearing (Rieman and McIntyre 1993; Buchanan and Gregory 1997). There is no Clean Water Act section 303(d) designation in the destabilized seven mile reach of the West Fork Jarbidge River (J. Heggeness, NDEP, pers. comm. 1998).

In 1994, a local Bull Trout Task Force was formed to gather and share information on bull trout in the Jarbidge River. The task force is open to any representative from Elko and Owyhee counties, the towns of Jarbidge (Nevada) and Murphy Hot Springs (Idaho), road districts, private land owners, NDOW, IDFG, the Boise District of BLM, HNF, and the Service. The task force was successful in 1997 in obtaining nearly $150,000 for replacing the Jack Creek culvert with a concrete bridge to facilitate bull trout passage into Jack Creek. However, the task force has not yet developed a comprehensive conservation plan addressing all threats to bull trout in the Jarbidge River basin.

In 1995, the Humbolt National Forest plan was amended to include the Inland Native Fish Strategy. This fish and wildlife habitat policy sets a no net loss objective and is currently guiding possible reconstruction of a portion of the Jarbidge Canyon Road (Ramsey 1997).

St. Mary-Belly River Population Segment

Two USBR structures likely affect bull trout by dewatering stream reaches, acting as passage barriers, or exposing fish to entrainment (Service 1998c). The Service is not aware that the effects of the structures were considered in their construction (1902 and 1921) or operation. Currently, operators attempt to minimize passage and entrainment problems by staging the fall dewatering of the canal and removing boards in the dam during winter. The effectiveness of the operations has not been evaluated.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Natural and manmade factors affecting the continued existence of bull trout include—previous introductions of non-native species that compete, hybridize, and prey on bull trout; fragmentation and isolation of bull trout subpopulations from habitat changes caused by human activities; and subpopulation extirpations due to naturally occurring events such as droughts, floods and other environmental events.

Previous introductions of non-native species by the Federal government, State fish and game departments and unauthorized private parties, across the range of bull trout has resulted in declines in abundance, local extirpations, and hybridization of bull trout (Bond 1992; Howell and Buchanan 1992; Leary et al. 1993; Donald and Alger 1993; Pratt and Huston 1993; MBTSG 1995b,d, 1996g; Platts et al. 1995; Palmisano and Kaczynski, *in litt.* 1997). Non-native species may exacerbate stresses on bull trout from habitat degradation, fragmentation, isolation, and species interactions (Rieman and McIntyre 1993). In some

lakes and rivers, introduced species, such as rainbow trout or kokanee, may benefit large adult bull trout by providing supplemental forage (Faler and Bair 1991; Pratt 1992; ODFW, *in litt.* 1993; MBTSG 1996a). However, the same introductions of game fish can negatively affect bull trout due to increased angling and subsequent incidental catch, illegal harvest of bull trout, and competition for space (Rode 1990; Bond 1992; WDW 1992; MBTSG 1995d).

Coastal-Puget Sound Population Segment

Competition and hybridization with introduced brook trout threatens the persistence of some ''native char'' subpopulations in the Coastal-Puget Sound DPS. Brook trout have been introduced into headwater areas occupied by bull trout and ''native char''; however, the distribution of brook trout within many of these areas appears to be limited. Brook trout can threaten bull trout even in areas with undisturbed habitats (e.g., National Parks). Brook trout may have a reproductive advantage (earlier maturation) over resident bull trout, which can lead to species replacement (Leary et al. 1993; Thomas 1992). At present, portions of 14 ''native char'' subpopulations overlap with brook trout (Sol Duc River, upper Elwha River, lower Dungeness River-Gray Wolf River, upper North Fork Skokomish River, South Fork-lower North Fork Skokomish River, Green River, Carbon River, Skykomish River-Snohomish River, Gorge Reservoir, Diablo Reservoir, Ross Reservoir, Lower Skagit River, upper Middle Fork Nooksack River, and Canyon Creek) (R. Glesne, North Cascades National Park (NCNP), *in litt.* 1993; Mongillo and Hallock 1993; J. Meyer, ONP, pers. comm. 1995; Morrill and McHenry 1995; Brenkman, pers. comm. 1997; B. Green, MBSNF, pers. comm. 1997). Of the 14 subpopulations, species composition has been examined in 10 and bull trout have been confirmed in 8 (Service 1998a).

''Native char'' subpopulations that have become geographically isolated may no longer have access to migratory corridors. ''First-, and second-order streams in steep headwaters tend to be hydrologically and geomorphically more unstable than large, low-gradient streams. Thus, salmonids are being restricted to habitats where the likelihood of extirpation because of random environmental events is greatest'' (Spence et al. 1996). ''Native char'' subpopulations likely more prone to naturally occurring events as a result isolation are Cushman Reservoir, South Fork-lower North Fork Skokomish River, Gorge Reservoir, Diablo Reservoir, Ross Reservoir, upper Middle Fork Nooksack River, upper Quinault River, upper Sol Duc River, upper Dungeness River, and Chester Morse Reservoir (Service 1998a). Of these 10 ''native char'' subpopulations, species composition has been examined in 7 and bull trout have been confirmed in 5 (Cushman Reservoir, South Fork-lower North Fork Skokomish River, upper Quinault River, Chester Morse Reservoir, and upper Middle Fork Nooksack River) (Service 1998a).

Jarbidge River Populations Segment

''The smaller and more isolated parts of the range [such as the bull trout remaining in the Owyhee Uplands ecological reporting units or Jarbidge River basin] likely face a higher risk'' of naturally occurring extirpation relative to other bull trout populations (Rieman et al. 1997). One such risk is fire. In 1992, a 4,900 hectare (ha) (12,000 acre (ac)) fire (Coffeepot Fire) occurred at lower elevations, up to 2,286 m (7,500 ft), in areas adjacent to the Bruneau River basin and a small portion of the Jarbidge River basin. Although the Coffeepot Fire did not affect areas currently occupied by bull trout, similar conditions likely exist in nearby areas where bull trout occur. Adverse effects of fire on bull trout habitat may include loss of riparian canopy, increased water temperature and sediment, loss of pools, mass wasting of soils, altered hydrologic regime and debris torrents. Fires large enough to eliminate one or two suspected spawning streams are more likely at higher elevations where bull trout are usually found in the Jarbidge River basin (Frederick, *in litt.* 1998a; Ramsey, pers. comm. 1998b).

Hybridization with introduced brook trout is also a potential threat. In the West Fork Jarbidge River, approximately one percent of the harvest from the 1960's through the 1980's was brook trout (Johnson 1990). Some brook trout may spill out of Emerald Lake into the East Fork Jarbidge River during peak runoff events, but the lake lacks a defined outlet so that the event appears unlikely (Johnson, pers. comm. 1994). Although low numbers of brook trout persist in the Jarbidge River basin, conditions are apparently not conducive to the expansion of a brook trout population.

Other naturally occurring risks have been recently documented. The Jarbidge River Watershed Analysis (McNeill et al. 1997) indicates that 65 percent of the upper West Fork Jarbidge River basin has a 45 percent or greater slope. Debris from high spring runoff flows in the various high gradient side drainages such as Snowslide, Gorge, and Bonanza gulches provide the West Fork Jarbidge River with large volumes of angular rock material. This material has moved down the gulches at regular intervals, altering the river channel and damaging the Jarbidge River Canyon road, culverts, and bridge crossings. Most of the river flows are derived from winter snowpack in the high mountain watershed, with peak flows corresponding with spring snowmelt, typically in May and June (McNeill et al. 1997). Rain on snow events earlier in the year (January and February) can cause extensive flooding problems and has the potential for mass-wasting, debris torrents, and earth slumps, which could threaten the existence of bull trout in the upper Jarbidge River and tributary streams. In June, 1995, a rain on snow event triggered debris torrents from three of the high gradient tributaries to the Jarbidge River in the upper watershed (McNeill et al. 1997). The relationship between these catastrophic events and the history of intensive livestock grazing, burning to promote livestock forage, timber harvest and recent fire control in the Jarbidge River basin is unclear. However, debris torrents may potentially affect the long-term viability of the Jarbidge River bull trout subpopulation.

St. Mary-Belly Population Segment

Non-native species are pervasive throughout the St. Mary and Belly rivers (Fitch 1994; Fredenberg et al. 1996; Clayton 1997). Brook, brown, and rainbow trout have been widely introduced in the area. The Service is not aware of any studies conducted in the DPS evaluating the effects of introduced non-native fishes on bull trout. However, because brook trout occur in the four bull trout subpopulations, competition and hybridization are threats in the St. Mary and Belly rivers (Service 1998c), especially on resident bull trout (Wagner, pers. comm. 1998).

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River population segments of bull trout in determining to propose this rule. Based on this evaluation, the proposed action is to list the bull trout as threatened in each of the three population segments. Determinations by distinct population segment follow:

Coastal-Puget Sound. Bull trout and ''native char'' in the Coastal-Puget

Sound population segment, despite their relative widespread distribution, have declined in abundance and distribution within many individual river basins. Bull trout and ''native char'' currently occur as 35 isolated subpopulations, which indicates the level of habitat fragmentation and geographic isolation. Eight subpopulations are isolated by dams or other diversion structures, with at least 17 dams proposed in streams inhabited by other bull trout or ''native char'' subpopulations. Bull trout and ''native char'' continue to be threatened by the effects of habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, harvest, and introduced non-native species.

Jarbidge River. This population segment is composed of a single subpopulation, characterized by low numbers of resident fish. Activities, such as mining and grazing, threaten bull trout in the Jarbidge River basin. Although some of these activities have been modified or discontinued in recent years, the lingering effects continue to alter water quality, contribute to channel and bank instability, and inhibit habitat recovery. Ongoing threats include channel and bank alterations associated with road construction and maintenance, a proposed stream rechannelization project, recreational fishing (intentional and unintentional harvest), and competition with brook trout.

St. Mary-Belly River This population segment is composed of four subpopulations primarily isolated by dams and unsuitable habitat conditions created by irrigation diversions. The primary threat to bull trout are effects of introduced non-native fishes. Three of the four subpopulations are threatened by dams and irrigation diversions.

Based on this evaluation, the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River population segments of bull trout are likely to become endangered within the foreseeable future, and thus, these population segments fit the definition of threatened as defined in the Act.

Critical Habitat

Critical habitat is defined in section 3 of the Act as—(i) the specific area within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection and; (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. ''Conservation'' means the use of all methods and procedures needed to bring the species to the point at which listing under the Act is no longer necessary.

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. Service regulations (50 CFR 424.12(a)) state that critical habitat is not determinable if information sufficient to perform required analysis of impacts of the designation is lacking or if the biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat. Section 4(b)(2) of the Act requires the Service to consider economic and other relevant impacts of designating a particular area as critical habitat on the basis of the best scientific data available. The Secretary may exclude any area from critical habitat if he determines that the benefits of such exclusion outweigh the conservation benefits, unless to do such would result in the extinction of the species.

The Service finds that the determination of critical habitat is not determinable for these distinct population segments based on the best available information. When a ''not determinable'' finding is made, the Service must, within 2 years of the publication date of the original proposed rule, designate critical habitat, unless the designation is found to be not prudent. The Service reached this conclusion because the biological needs of the species in the three population segments are not sufficiently well known to permit identification of areas as critical habitat. No information is available on the number of individuals required for a viable population throughout the distinct population segment and the extent of habitat required for recovery of these fish has not been identified. In addition, within the Coastal-Puget Sound bull trout are sympatric with Dolly Varden. These two species are virtually impossible to visually differentiate and genetic and morphological-meristic analyses to determine the presence or absence of bull trout and Dolly Varden have only been conducted on 15 of the 35 ''native char'' subpopulations. The presence of bull trout in the remaining 20 subpopulations in the Coastal-Puget Sound along with the information noted above is considered essential for determining critical habitat for these population segments. Therefore, the Service finds that designation of critical habitat for bull trout in the Coastal-Puget Sound, Jarbidge River and St. Mary-Belly River distinct population segments is not determinable at this time. Protection of bull trout habitat will be addressed through the recovery process and through section 7 consultations to determine whether Federal actions are likely to jeopardize the continued existence of the species.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain activities. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Act provides for possible land acquisition and cooperation with the State and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) requires Federal agencies to insure that activities that they authorize, fund, or carry out 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 formal consultation with the Service.

The three bull trout population segments occur on lands administered by the USFS, NPS, and BLM; various State-owned properties in Washington (Coastal-Puget Sound population segment), Idaho and Nevada (Jarbidge population segment), and Montana (St. Mary-Belly River population segment); Blackfeet Tribal lands in Montana and various Tribal lands in Washington; and

private lands. Federal agency actions that may require conference or consultation as described in the preceding paragraph include COE involvement in projects such as the construction of roads and bridges, and the permitting of wetland filling and dredging projects subject to section 404 of the Clean Water Act (33 U.S.C. 1344 et seq.); FERC licensed hydropower projects authorized under the Federal Power Act; USFS and BLM timber, recreational, mining, and grazing management activities; Bureau of Indian Affairs (BIA) land management activities; Environmental Protection Agency authorized discharges under the National Pollutant Discharge System of the Clean Water Act; NPS activities such as construction on park lands; and U.S. Housing and Urban Development projects.

The Act and its implementing regulations, found at 50 CFR 17.21 and 17.31, set forth a series of general trade prohibitions and exceptions that apply to all threatened wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, or collect; or attempt any of these), import or export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving threatened wildlife under certain circumstances. Regulations governing permits are at 50 CFR 17.32. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities. For threatened species, permits are also available for zoological exhibition, educational purposes, or special purposes consistent with the purpose of the Act. Private landowners seeking permits under section 10 of the Act for incidental take are a means of protecting bull trout habitat through the voluntary development of habitat conservation plans. Information collections associated with these permits are approved under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, and assigned Office of Management and Budget clearance number 1018–0094. For additional information concerning these permits and associated requirements, see 50 CFR 17.32.

It is the policy of the Service published in the **Federal Register** on July 1, 1994 (59 FR 34272), 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 Act. The intent of this policy is to increase public awareness of the effect of this listing on proposed and ongoing activities within the species' range. The Service believes the following actions would not be likely to result in a violation of section 9:

(1) Actions that may affect bull trout in the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River population segments that are authorized, funded or carried out by a Federal agency when the action is conducted in accordance with an incidental take statement issued by the Service pursuant to section 7 of the Act;

(2) Possession of Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River population segments bull trout caught legally in accordance with state fishing regulations (see Special Rule section).

With respect to the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River bull trout population segments, the following actions likely would be considered a violation of section 9:

(1) Take of bull trout without a permit, which includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting any of these actions, except in accordance with applicable State fish and wildlife conservation laws and regulations within the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River bull trout population segments;

(2) Possession, sale, delivery, carriage, transportation, or shipment of illegally taken bull trout;

(3) Unauthorized interstate and foreign commerce (commerce across state and international boundaries) and import/export of bull trout (as discussed earlier in this section);

(4) Introduction of non-native fish species that compete or hybridize with, or prey on bull trout;

(5) Destruction or alteration of bull trout habitat by dredging, channelization, diversion, in-stream vehicle operation or rock removal, or other activities that result in the destruction or significant degradation of cover, channel stability, substrate composition, temperature, and migratory corridors used by the species for foraging, cover, migration, and spawning;

(6) Discharges or dumping of toxic chemicals, silt, or other pollutants into waters supporting bull trout that result in death or injury of the species; and

(7) Destruction or alteration of riparian or lakeshore habitat and adjoining uplands of waters supporting bull trout by recreational activities, timber harvest, grazing, mining, hydropower development, or other developmental activities that result in destruction or significant degradation of cover, channel stability, substrate composition, temperature, and migratory corridors used by the species for foraging, cover, migration, and spawning.

Other activities not identified above will be reviewed on a case-by-case basis to determine if a violation of section 9 of the Act may be likely to result from such activity. The Service does not consider these lists to be exhaustive and provides them as information to the public.

Questions regarding whether specific activities may constitute a violation of section 9 should be directed to the Field Supervisor of the Service's Snake River Basin Office (see **ADDRESSES** section). Requests for copies of the regulations concerning listed species and inquiries regarding prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Endangered Species Permits, 911 NE. 11th Avenue, Portland, Oregon 97232–4181 (telephone 503/231–6241; facsimile 503/231–6243).

Special Rule

Section 4(d) of the Act provides authority for the Service to promulgate special rules for threatened species that would relax the prohibition against taking. In this case, the Service proposes a special rule for the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River bull trout distinct population segments (see ''Proposed Regulations Promulgation'' section). The Service recognizes that statewide angling regulations have become more restrictive in an attempt to protect bull trout throughout Washington, Idaho, Montana, and Nevada. The Service intends to continue to work with the States in developing management plans and agreements with the objective of recovery and eventual delisting (in the event that they are listed) of the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River bull trout distinct population segments. Further, the Service, acting under the June, 1997, Secretarial Order on Federal-Tribal trust responsibilities and the Endangered Species Act, will work with Tribal governments who manage bull trout streams to restore ecosystems and

enhance Tribal management plans affecting the species. The Service is consequently proposing a special rule under section 4(d) that offers additional management flexibility for these population segments. The special rule would allow for take of bull trout within the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River bull trout distinct population segments when it is in accordance with applicable State and Tribal fish and wildlife conservation laws and regulations, and conservation plans approved by the Service. The Service believes that this special rule will allow for more efficient management of the species, thereby facilitating its conservation. The Service also feels that this special rule is consistent with the Secretarial Order designed to enhance Native American participation under the Act and will allow more efficient management of the species on Tribal lands.

Similarity of Appearance

Section 4(e) of the Act authorizes listing based on similarity of appearance if—(A) The species so closely resembles in appearance an endangered or threatened species that enforcement personnel would have substantial difficulty in differentiating between the listed and unlisted species; (B) the effect of this substantial difficulty is an additional threat to an endangered or threatened species; and (C) such treatment will substantially facilitate the enforcement and further the policy of the Act.

Within the Coastal-Puget Sound population segment, bull trout occur sympatrically within the range of Dolly Varden. These two species so closely resemble one another in external appearance, that it is virtually impossible for the general public to visually differentiate the two. Currently, Washington Department of Fish and Wildlife (WDFW) manages bull trout and Dolly Varden together as ''native char''. Fishing for bull trout and Dolly Varden is open in four subpopulations within the Coastal-Puget Sound population segment, two under WDFW regulations and two under Native American Tribal regulations. These ''native char'' fisheries may adversely affect these subpopulations of bull trout. However, under current harvest management there is no evidence that the specific harvest for Dolly Varden creates an additional threat to bull trout within this population segment. Therefore, a similarity of appearance rule is not being proposed for Dolly Varden at this time. However, if bull trout and Dolly Varden are managed in Washington State as separate species in the future, the Service may consider at that time the merits of proposing Dolly Varden under the similarity of appearance provisions of the Act.

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule are hereby solicited. The Service will follow its peer review policy (59 FR 34270; July 1, 1994) in the processing of this rule. Comments particularly are sought concerning:

(1) Biological, commercial trade, or other relevant data concerning threat (or lack thereof) to these three population segments;

(2) The location of any additional populations of the three segments and the reasons why any habitat should or should not be determined to be critical habitat as provided by section 4 of the Act;

(3) Additional and updated information concerning the range, distribution, and population size of the three segments;

(4) Current or planned activities in the subject area and their possible impacts on the three population segments; and

(5) Promulgation of the special rule.

The final decision on this proposal will take into consideration the comments and any additional information received by the Service, and such communications may lead to a final determination that differs from this proposal.

The Act provides for at least one public hearing on this proposal, if requested. However, given the high likelihood of several requests throughout the range of the population segments, the Service has scheduled four hearings in advance of any request. The hearings are scheduled for Lacey, Washington, on July 7, 1998; Mount Vernon, Washington, on July 9, 1998; East Glacier, Montana on July 14, 1998; and Jackpot, Nevada on July 21, 1998. For additional information on public hearings, see the DATES section.

National Environmental Policy Act

The Fish and Wildlife Service has determined that Environmental Assessments and Environmental Impact Statements, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

Required Determinations

This rule does not contain any new collections of information other than those already approved under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, and assigned Office of Management and Budget clearance number 1018–0094. For additional information concerning permit and associated requirements for threatened species, see 50 CFR 17.32.

References Cited

A complete list of all references cited herein is available upon request from the Snake River Basin Field Office (see **ADDRESSES** section).

Author: The primary authors of this proposed rule include—Jeffery Chan, Western Washington Fishery Resource Office, Olympia, WA; Timothy Cummings, Columbia River Fisheries Program Office, Vancouver, WA; Stephen Duke, Snake River Basin Office, Boise, ID; Robert Hallock, Upper Columbia River Basin Office, Spokane, WA; Samuel Lohr, Snake River Basin Office, Boise, ID; Leslie Propp, Western Washington State Office, Olympia, WA.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, the Service hereby proposes to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.11(h) by adding the following, in alphabetical order under Fishes, to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
*	*	*	*	*	*		*
FISHES:							
*	*	*	*	*	*		*
Trout, bull	*Salvelinus confluentus.*	U.S.A. (Pacific NW), Canada (NW Territories).	Coastal-Puget Sound (U.S.A.–WA) all pacific coast drainages north of Columbia R..	T		NA	17.44 (w)
Do.	do	do	Jarbidge R. (U.S.A.—ID, NV).	T		NA	Do.
Do.	do	do	St. Mary-Belly R. (U.S.A.—MT east of Continental Divide).	T		NA	Do.
*	*	*	*	*	*		*

3. Amend § 17.44 by adding paragraph (w) to read as follows:

§ 17.44 Special rules—fishes.

* * * * *

(w) Bull trout (*Salvelinus confluentus*), Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River bull trout distinct population segments.

(1) Prohibitions. Except as noted in paragraph (w)(2) of this section, all prohibitions of 50 CFR 17.31 and exemptions of 50 CFR 17.32 shall apply to the bull trout Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River population segments within the contiguous United States.

(2) Exceptions. No person shall take this species, except in accordance with with applicable State and Native American Tribal fish and wildlife conservation laws and regulations, as constituted in all aspects relevant to protection of bull trout in effect on [date of publication of final determination in the **Federal Register**].

(3) Any violation of applicable State and Native American Tribal fish and wildlife conservation laws or regulations with respect to the taking of this species is also a violation of the Endangered Species Act.

(4) No person shall possess, sell, deliver, carry, transport, ship, import, or export, any means whatsoever, any such species taken in violation of this section or in violation of applicable State and Native American Tribal fish and game laws and regulations.

(5) It is unlawful for any person to attempt to commit, solicit another to commit, or cause to be committed, any offense defined in paragraphs (w) (2) through (4) of this section.

Dated: June 1, 1998.

Jamie Rappaport Clark,

Director, Fish and Wildlife Service.

[FR Doc. 98–15318 Filed 6–5–98; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 630

[Docket No. 980527137–8137–01; I.D. 121597D]

RIN 0648–AL24

Atlantic Swordfish Fishery; South Atlantic Quotas; Quota Adjustment Procedures

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

ACTION: Proposed rule; request for comments.

SUMMARY: NMFS proposes to amend the regulations governing the Atlantic swordfish fishery to establish annual quotas for the South Atlantic swordfish stock. Additionally, NMFS proposes changes to the quota adjustment procedures. The purpose of these proposed actions is to improve conservation and management of the Atlantic swordfish resource, while allowing harvests consistent with recommendations of the International Commission for the Conservation of Atlantic Tunas (ICCAT). NMFS seeks comment on the proposed measures and on two related issues and will schedule public hearings at a later date.

DATES: Comments must be submitted on or before August 10, 1998.

ADDRESSES: Comments on the proposed rule should be submitted to Rebecca Lent, Highly Migratory Species Management Division (F/SF1), Office of Sustainable Fisheries, NMFS, 1315 East-West Highway, Silver Spring, MD 20910. Copies of the Environmental Assessment/Regulatory Impact Review (EA/RIR) supporting this action may be obtained from Jill Stevenson by calling (301) 713–2347 or by writing to the preceding address.

FOR FURTHER INFORMATION CONTACT: Jill Stevenson: 301–713–2347 or FAX 301–713–1917; Buck Sutter: 813–570–5447 or FAX 813–570–5364.

SUPPLEMENTARY INFORMATION: The U.S. Atlantic swordfish fishery is managed under the Fishery Management Plan for Atlantic Swordfish. Regulations at 50 CFR part 630 are issued under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (codified at 16 U.S.C. 1801 *et seq.*) and the Atlantic Tunas Convention Act (ATCA) (codified at 16 U.S.C. 971 *et seq.*). Regulations issued under the authority of ATCA implement the recommendations of ICCAT.

ICCAT has identified two management units for Atlantic swordfish; the one comprises fish occurring north and the other fish occurring south of a dividing line designated at 5° N. latitude. ICCAT has noted that high levels of fishing effort over the last several decades have led to a decline in the North Atlantic swordfish stock. In recent years, the South Atlantic swordfish stock has been under increased fishing pressure, and biomass of that stock may also be declining. ICCAT has recommended