DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AF01

Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for Bull Trout in the Coterminous United States

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service, determine threatened status for all populations of bull trout (*Salvelinus confluentus*) within the coterminous United States, with a special rule, pursuant to the Endangered Species Act of 1973, as amended (Act). This determination is based on our finding that the Coastal-Puget Sound and St. Mary-Belly River population segments are threatened, coupled with our earlier findings of threatened status for the Klamath River, Columbia River, and Jarbidge River population segments. These population segments are disjunct and geographically isolated from one another with no genetic interchange between them due to natural and man-made barriers. These population segments collectively encompass the entire range of the species in the coterminous United States. Therefore, for the purposes of consultation and recovery, we recognize these five distinct population segments as interim recovery units. With this final rule, the bull trout will now be listed as threatened throughout its entire range in the coterminous United States.

The Coastal-Puget Sound bull trout population segment encompasses all Pacific coast drainages within Washington, including Puget Sound. The St. Mary-Belly River bull trout population segment occurs in northwest Montana. Bull trout are threatened by the combined effects of habitat degradation, fragmentation and alterations associated with dewatering, road construction and maintenance, mining, and grazing; the blockage of migratory corridors by dams or other diversion structures; poor water quality; incidental angler harvest; entrainment (process by which aquatic organisms are pulled through a diversion or other device) into diversion channels; and introduced non-native species. This final determination was based on the best available scientific and commercial information including current data and new information received during the comment period.

EFFECTIVE DATE: December 1, 1999.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the Snake River Basin Office, 1387 S. Vinnell Way, Room 368, Boise, Idaho 83709.

FOR FURTHER INFORMATION CONTACT: Robert Ruesink, Supervisor, at the above address (telephone 208/378–5243; facsimile 208/378–5262) to make an appointment to inspect the complete file for this rule or for information pertaining to the Columbia River population segment; Gerry Jackson, Manager, Western Washington Office (telephone 360/753–9440; facsimile 360/753–9008) for information pertaining to the Coastal-Puget Sound population segment; Kemper McMaster, Field Supervisor, Montana Field Office (telephone 406/449–5225; facsimile 406/449–5339) for information pertaining to the St. Mary-Belly River population segment; Steven Lewis, Field Supervisor, Klamath Falls Fish and Wildlife Office (telephone 541/885–8481; facsimile 541/885–7837) for information pertaining to the Klamath River population segment; Robert D. Williams, Field Supervisor, Nevada State Office (telephone 775/861–6300; facsimile 775/861–6301) for information pertaining to the Jarbidge River population segment.

SUPPLEMENTARY INFORMATION:

Background

Bull trout (*Salvelinus confluentus*), members of the family Salmonidae, are char native to the Pacific northwest and western Canada. They 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, north 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 Washington, British Columbia, Canada, and southeast Alaska (Bond 1992; Leary and Allendorf 1997). Bull trout are relatively dispersed 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; 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 (counts), osteological (bone structure), and distributional evidence to document specific distinctions between Dolly Varden and bull trout. Subsequently, 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 and the two species appear to be maintaining distinct genomes (Leary and Allendorf 1997).

Bull trout exhibit both 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 streams in which they spawn and rear. Migratory bull trout spawn in tributary streams, and juvenile fish rear from 1 to 4 years before migrating to either a lake (adfluvial), river (fluvial), or in certain coastal areas, saltwater (anadromous), to mature (Fraley and Shepard 1989; Goetz 1989). Anadromy is the least studied life-history type in bull trout, and some biologists believe the existence of true anadromy in bull trout is still uncertain (McPhail and Baxter 1996). However, historical accounts, collection records, and recent evidence suggests an anadromous life-history form for bull trout (Suckley and Cooper 1860; Cavender 1978; McPhail and Baxter 1996; Washington Department of Fish and Wildlife (WDFW) *et al.* 1997—formerly the Washington Department of Wildlife (WDW)). Resident and migratory forms may be found together, and bull trout may produce offspring exhibiting either resident or migratory behavior (Rieman and McIntyre 1993).

Compared to other salmonids, bull trout have more specific habitat requirements (Rieman and McIntyre 1993) that appear to influence their distribution and abundance. Critical parameters 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 not likely occupy all available habitats simultaneously (Rieman *et al.* 1997).

Bull trout are typically associated with the colder streams in a river system, although fish can occur throughout larger river systems (Fraley and Shepard 1989; Rieman and McIntyre 1993, 1995; Buchanan and Gregory 1997; Rieman *et al.* 1997). For example, water temperature above 15° C (59° F) is believed to negatively influence 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 generally consists of low gradient stream reaches often found in high gradient streams that have 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).

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 (productive) (Fraley and Shepard 1989; Goetz 1989). 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 normally reach sexual maturity in 4 to 7 years and can live 12 or more years. Biologists report repeat and alternate year spawning, 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 may begin spawning migrations as early as April, and move upstream as far as 250 kilometers (km) (155 miles (mi)) to spawning grounds in some areas of their range (Fraley and Shepard 1989; Swanberg 1997). 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 (spawning beds) 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, egg 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).

Bull trout are opportunistic feeders, with food habits primarily a function of size and life-history strategy. Resident and juvenile 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 and salmon species (*Onchorynchus* spp.), whitefish (*Prosopium* spp.), yellow perch (*Perca flavescens*) and sculpin (*Cottus* spp.) (Fraley and Shepard 1989; Donald and Alger 1993).

In the Coastal-Puget Sound and St. Mary-Belly River population segments, bull trout co-evolved with, and in some areas, co-occur with native cutthroat trout (*Oncorhynchus clarki* subspecies (ssp.)), migratory rainbow trout (*O. mykiss* ssp.), chinook salmon (*O. tshawytscha*), coho salmon (*O. kisutch*), sockeye salmon (*O. nerka*), mountain whitefish (*Prosopium williamsoni*), pygmy whitefish (*P. coulteri*), and various sculpin, sucker (Catastomidae) and minnow (Cyprinidae) species (Rieman and McIntyre 1993; R2 Resource Consultants, Inc. 1993). Bull trout habitat within the coterminous United States overlaps with the range of several fishes listed as threatened or endangered, and proposed or petitioned for listing under the Act, including 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); threatened Puget Sound chinook salmon (March 9, 1998; 63 FR 11481); threatened Hood Canal summer-run chum salmon and Columbia River chum salmon (March 25, 1999; 64 FR 14507); proposed threatened status for southwestern Washington/Columbia River coastal cutthroat trout (April 5, 1999; 64 FR 16397); and westslope cutthroat trout in northern Idaho, eastern Washington, and northwest Montana (*O. c. lewisi*) for which a status review is currently underway (June 10, 1998; 63 FR 31691).

Widespread introductions of non-native fishes, including brook trout (*Salmo fontinalis*), lake trout (*S. namaycush*) (west of the Continental Divide), and brown trout (*Salmo trutta*) and hatchery rainbow trout (*Oncorhynchus mykiss*), 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) 1996a,h). East of the Continental Divide, in the St. Mary-Belly River drainage, bull trout co-evolved with lake trout and westslope cutthroat trout (Fredenberg 1996). In this portion of their range, bull trout and lake trout have apparently partitioned habitat with lake trout dominating lentic (i.e., lake) systems, relegating bull trout to riverine systems and 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, State, Tribal, and private lands. For the Coastal-Puget Sound population segment, over half of the bull trout habitat occurs on non-Federal lands. For the St. Mary-Belly River population segment, about two-thirds of the habitat occurs on Federal land (Glacier National Park) and about a third on Tribal lands of the Blackfeet Indian Nation.

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; Mike Gilpin, University of California, *in litt.* 1997; Rieman and Clayton 1997; Rieman *et al.* 1997). Migrations facilitate gene flow among local subpopulations if individuals from different subpopulations interbreed when some return to non-natal streams. Migratory fish may also reestablish extirpated local subpopulations.

Metapopulation concepts of conservation biology theory may be applicable to the distribution and characteristics of bull trout (Rieman and McIntyre 1993; Kanda 1998). A metapopulation is an interacting network of local subpopulations with varying frequencies of migration and gene flow among them (Meffe and Carroll 1994). Metapopulations provide a mechanism for reducing risk because the simultaneous loss of all subpopulations is unlikely. Although local subpopulations may become extinct, they can be reestablished by individuals from other local subpopulations. However, because bull trout exhibit strong homing fidelity when spawning and their rate of straying appears to be low, natural re-establishment of extinct local subpopulations may take a very long time. 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

Using the best available scientific and commercial information, we identified 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. The final listing determination for the Klamath River and Columbia River bull trout DPSs on June 10, 1998 (63 FR 31647), includes a detailed description of the rationale behind the DPS delineation for those two population segments. The Jarbidge River DPS final listing determination was made on April 8, 1999 (64 FR 17110). However, the DPS policy, published on February 7, 1996 (61 FR 4722), is intended for cases where only a segment of a species' range needs the protections of the Act, rather than the entire range of a species. Although the bull trout DPSs are disjunct and geographically isolated from one another with no genetic interchange between them due to natural and man-made barriers, collectively, they include the entire distribution of the bull trout in the coterminous United States. In accordance with the DPS policy, our authority to list DPSs is to be exercised sparingly. Thus a coterminous listing is appropriate in this case. In recognition of the scientific basis for the identification of these bull trout population segments as DPSs, and for the purposes of consultation and recovery planning, we will continue to refer to these populations as DPSs. These DPSs will serve as interim recovery units in the absence of an approved recovery plan.

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, including those flowing into Puget Sound. 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 ecological setting. In addition, the loss of this population segment would significantly reduce the overall range of the taxon.

St. Mary-Belly River Population Segment

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 of 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 within the coterminous United States. Bull trout in this population segment migrate across the international border with Canada (Clayton 1998).

Status and Distribution

To facilitate evaluation of current bull trout distribution and abundance for the Coastal-Puget Sound and St. Mary-Belly River population segments, we analyzed data on a subpopulation basis within each population 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 natural 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); and (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 natural 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 of the subpopulation 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 from upstream. Because resident bull trout may exhibit limited downstream movement (Nelson 1996), our estimate of subpopulations at risk of natural 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.

We considered a bull trout 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. A subpopulation was considered ''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 (Rieman *et al.*1997). 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 should be noted that the assignment of ''unknown'' status implies only a deficiency of available data to assign a subpopulation as ''strong'' or ''depressed,'' not a lack of information regarding the threats. Section 4 of the Act requires us to make a determination solely on the best scientific and commercial data available.

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 often occur with (*i.e.*, are sympatric) Dolly Varden. Because the two species are virtually impossible to visually differentiate, the WDFW currently manages bull trout and Dolly Varden together as ''native char.'' Previously, we delineated a total of 35 subpopulations of ''native char'' (bull trout, Dolly Varden, or both species) within the Coastal-Puget Sound population segment published on June 10, 1998 (63 FR 31693). Upon further review, we revised the total number of subpopulations to 34. In order to be fully consistent with the defined subpopulation criteria, we concluded that the Puyallup River Basin only has two subpopulations as opposed to three, which are the upper Puyallup River and the lower Puyallup (includes Carbon River and White River).

Bull trout and Dolly Varden can be differentiated by both genetic and morphological-meristic (measurements and counts) analyses, of which biologists have conducted one or both analyses on 15 of the 34 subpopulations. To date, we have documented bull trout in 12 of 15 subpopulations investigated (five with only bull trout, three with only Dolly Varden, and seven with both species), and it is likely that bull trout occur in the majority of the remaining 19 subpopulations (Service 1998a). Although we only documented three of the tested ''native char'' subpopulations as containing Dolly Varden at this time, we are not yet confident in excluding these subpopulations from the listing. We believe it would be premature to conclude that bull trout do not exist in these subpopulations given the limited sample sizes used in the analyses, the location of the subpopulations, and the evidence that bull trout and Dolly Varden can frequently co-exist together. In order to identify trends that may be specific to certain geographic areas, the 34 ''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 documented bull trout in at least two, the upper Quinault River and Queets River (Leary and Allendorf 1997; WDFW 1997a). Biologists identified only Dolly Varden in the upper Sol Duc River to date (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 (Mongillo 1993). 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). In recent years, there have been even fewer reports of incidental catches of ''native char'' in the Chehalis River Basin. In 1997, a single juvenile was captured in a downstream migrant trap on the mainstem of the Chehalis River (WDFW 1998a). 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 have been stocked in many of the high lakes and streams in the Olympic National Park. Brook trout are present in the upper Sol Duc subpopulation and threaten this subpopulation from competition and hybridization (Service 1998a). Data collected while seining for outmigrating salmon smolts on the Queets River indicate a decline in ''native char'' catch rate from 3.3 fish/day in 1977 to 1 fish/day by 1984 (WDFW 1997a). From 1985 to the time seining was discontinued in 1991, catch rate remained relatively stable at approximately 1.5 fish/day. The WDFW believes that the Hoh River may have the largest subpopulation of ''native char'' on the Washington coast, although their numbers have greatly declined since 1982 (WDFW *in litt.* 1992; WDFW 1997a). Reasons for the decline are unknown, but overfishing is believed to be a contributing factor (WDFW 1997a; WDFW, *in litt.* 1997). Forty-one and 31 adult ''native char'' were observed during snorkel surveys of a 17.6-km (11-mi) section of the South Fork Hoh River in 1994 and 1995, respectively (WDFW 1997a). We consider the Hoh River subpopulation ''depressed.'' The 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). Although the status of these subpopulations is unknown, we believe that anecdotal information, such as described for the Chehalis River-Grays Harbor and Queets River subpopulations, indicate declines in abundance in other subpopulations within the coastal analysis area.

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 documented bull trout in at least two, 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 to date (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. Biologists have observed few ''native char'' in the lower Elwha subpopulation in recent years. Since 1983, one or two individuals have been seen each year in a chinook salmon rearing channel located in the lower Elwha River (WDFW 1997a). A creel census, conducted in 1981 and 1982 on the Elwha River reservoirs of the upper Elwha River subpopulation, reported that ''native char'' were found in low numbers (WDFW 1997a). Although ''native char'' are believed to be 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, *in litt.* 1992; WDFW 1997a). Electrofishing surveys conducted in four sections of the upper Dungeness River subpopulation during 1996 recorded an overall ''native char'' density of 0.78 fish/meter (2.56 fish/foot) for the four sections (WDFW 1997a). These preliminary surveys indicate that the upper Dungeness River subpopulation may be ''strong.'' We consider the lower Elwha River subpopulation ''depressed'' because less than 500 spawners likely occur in the subpopulation, and the lower Dungeness River-Gray Wolf River ''depressed'' because abundance has declined. The remaining three ''native char'' subpopulations in the Strait of Juan de Fuca coastal analysis area have ''unknown'' status 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. Surveys by Brown (1992) and Brenkman (1996 in WDFW 1997) documented bull trout in Cushman Reservoir, and Leary and Allendorf (1997) and WDFW (1997a) documented bull trout in the South Fork-lower North Fork Skokomish River. Due to the construction of Cushman Dam on the North Fork Skokomish River, bull trout in Cushman Reservoir are isolated and restricted to an adfluvial life-history form. Spawner surveys, which began in 1973, indicate a decline in adult bull trout through the 1970s, subsequent increases from 4 adults in 1985 to 412 adults in 1993, and relatively stable numbers of 250 to 300 spawning adults in recent years (WDFW 1997a). The increase in adult bull trout 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 (Larry Ogg, Olympia National Forest (ONF), *in litt.* 1997). Past forest and agricultural practices and hydropower development have severely degraded habitat in the South Fork-lower North Fork Skokomish River (Williams *et al.* 1975; Hood Canal Coordinating Council (HCCC) 1995; WDFW 1997a). The upper North Fork Skokomish River subpopulation occurs within Olympic National Park and habitat is relatively undisturbed. We consider the South Fork-lower North Fork Skokomish River subpopulation ''depressed,'' because fewer than 500 spawners and fewer than 5,000 individuals likely occur in the subpopulation. Although the number of spawning adult bull trout appears to have been relatively stable in the Cushman Reservoir subpopulation since 1990, under our analysis, this population is consider ''depressed'' based on the criteria used to determine subpopulation status (*i.e.*, less than 500 spawning adults). The status of the upper North Fork Skokomish subpopulation is considered ''unknown'' because insufficient abundance, trend, and life-history information is available (Service 1998a).

Puget Sound Analysis Area

Fifteen ''native char'' subpopulations occur in eight river basins in the Puget Sound analysis area (number of subpopulations)—Nisqually River (1), Puyallup River (2), 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 seven ''native char'' subpopulations have documented bull trout in at least six—lower Puyallup (Carbon River), Green River, Chester Morse Reservoir, Snohomish River-Skykomish River, lower Skagit River, and upper Middle Fork Nooksack River (R2 Resource Consultants, Inc. 1993; Samora and Girdner 1993; Kraemer 1994; Michael Barclay, Cascades Environmental Services, Inc., pers. comm. 1997; Leary and Allendorf 1997; Eric Warner, Muckleshoot Indian Tribe, pers. comm. 1997). Leary and Allendorf (1997) identified only Dolly Varden in the Canyon Creek (tributary to the Nooksack River) subpopulation.

The current abundance of ''native char'' in southern Puget Sound is likely lower than occurred historically and declining (Tom Cropp, WDW, *in litt.* 1993; Fred Goetz, U.S. Army Corps of Engineers (COE), pers. comm. 1994a,b). Historical accounts from southern Puget Sound indicate that anadromous ''native 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 (T. Cropp, *in litt.* 1993; F. Goetz, pers. comm. 1994a,b). There is only one recent 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-1980s (George Walter, Nisqually Indian Tribe, pers. comm. 1997; WDFW 1997a). In the Puyallup River (lower Puyallup subpopulation), ''native char'' are occasionally caught by steelhead anglers (WDW, *in litt.* 1992; WDFW 1997a). In the White River (lower Puyallup subpopulation), counts of upstream migrating ''native char'' at the Buckley diversion dam have averaged 23 adults since 1987. Although trapping effort has varied during the past 11 years, annual counts have generally been poor to moderate, ranging from a low of 8 to a high of 46 adult ''native char'' (WDFW 1998a). In the Green River, ''native char'' are rarely observed (T. Cropp, *in litt.* 1993; F. Goetz, pers. comm. 1994a,b; E. Warner, pers. comm. 1997). Aquatic habitat in the Nisqually, Puyallup, and Green rivers has been variously degraded by logging, agriculture, road construction, and urban development. In the Chester Morse Reservoir

subpopulation, biologists observed fewer than 10 redds as recently as 1995 and 1996; and fry abundance was low in spring 1996 and 1997 (Dwayne Paige, Seattle Water Department, *in litt.* 1997). Logging and extensive road construction have occurred within the Basin (Foster Wheeler Environmental 1995; WDFW 1997a), and likely affected bull trout 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, which are occupied by the Sammamish River-Issaquah Creek subpopulation. It is questionable whether a viable subpopulation remains. 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) 1997). We consider the Nisqually River, Green River, Chester Morse Reservoir, Sammamish River-Issaquah Creek, and lower Puyallup subpopulations ''depressed'' based on fewer than 500 spawning adults and a decline in general abundance.

Drainages in the northern Puget Sound area appear to support larger subpopulations of ''native char'' than the southern portion (F. Goetz, pers. comm. 1994a, b; Steve Fransen, Service, pers. comm. 1997). The WDFW conducts redd counts in two index reaches of the northern Puget Sound; a reach in the upper South Fork Sauk River that is included in the lower Skagit River subpopulation, and a reach in the upper North Fork Skykomish River that is included in the Snohomish River-Skykomish River subpopulation. These areas are said to have healthy habitats supporting stable numbers of ''native char'' (Kraemer 1994). Biologists have conducted redd surveys since 1988 in both index reaches. In the upper South Fork Sauk River, WDFW (1997a) observed a substantial increase in redds in 1991, a year after a minimum 508-mm (20-in) harvest restriction was implemented; and redd numbers have remained relatively stable at or above 34. The State implemented harvest restrictions 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 (WDFW *et al.* 1997) with the number of adults estimated to be 8,000 to 10,000 fish (Curt 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 1996, with 75 or fewer redds observed between 1993 and 1996 (WDFW 1997a). A total of 170 redds were counted in 1997 (WDFW 1998a). Redd counts in the North Fork Skykomish River index reach have been more variable between years than the South Fork Sauk River index reach. The upper Skagit River is fragmented into three reservoirs from the construction of Gorge, Diablo, and Ross dams (WDFW 1997a). The primary spawning area for the Gorge Reservoir subpopulation is said to be the lower Steattle Creek and a portion of the Skagit River below Diablo Dam (WDFW 1997a). The primary spawning areas for the Diablo Reservoir subpopulation is thought be in the Thunder Arm area, including Fisher Creek (WDFW 1997a), although WDFW *et al.* (1997) did not locate any ''native char'' adults or juveniles upstream of the mouth of Thunder Creek during snorkel and electrofishing surveys. Within Ross Reservoir, it is reported that spawning occurs in lower reach areas of at least six tributaries, in addition to a portion of the upper Skagit River in Canada (WDFW 1997a). Biologists have documented ''native char'' spawning in at least seven creeks in the Stillaguamish River subpopulation and in five creeks and several mainstem areas of the Lower Nooksack River subpopulation. Biologists have also observed ''native char'' in at least four creeks in the upper Middle Fork Nooksack River subpopulation. Neither adult count data nor redd count data is available for these six subpopulations (WDFW 1997a). Within the Puget Sound analysis area, we consider the lower Skagit River subpopulation ''strong,'' based on a large number of spawning adults and high overall abundance. We consider five subpopulations within the Puget Sound analysis area ''depressed'' and the status of the remaining nine ''native char'' subpopulations in the Puget Sound analysis area ''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. We have not determined the species composition of this subpopulation. 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).

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 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 restricted primarily to streams and rivers and not common in lakes (Donald and Alger 1993). Within the St. Mary River system, historic accounts of bull trout date to the 1930s (Fredenberg 1996). In the Belly River, historic distribution of bull trout in the 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 1996), although bull trout within the St. Mary-Belly River DPS are isolated and fragmented by irrigation dams and diversions (Fredenberg 1996; Clayton 1998; Robin 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 within the coterminous United States (Fredenberg 1996).

Based on natural and artificial barriers to fish passage within the St. Mary-Belly River DPS, we 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 1998b). Based on 1997 and 1998 trapping of post-spawning adults, fewer than 100 fish existed in the Boulder Creek and Kennedy Creek spawning populations (Lynn Kaeding, Service, *in litt.* 1998). These two streams include the strongest known spawning runs in the upper St. Mary River and lower St. Mary River subpopulations, respectively, and evaluation of these streams is continuing. Based on studies conducted in 1996 and 1997, the Belly River drainage is thought to contain fewer than 100 adult bull trout (Clayton 1998). The status of the upper St. Mary River, lower St. Mary River, and North Fork Belly River bull trout subpopulations is ''depressed'' because fewer than 500 spawning adults or 5,000 total bull trout occur in the subpopulations. The status of the Swiftcurrent Creek subpopulation is ''unknown'' because insufficient abundance, trend, and life-history information is available (Service 1998b).

In summary, we considered the information received during the public comment period on the abundance, trends in abundance, and distribution of bull trout in the Coastal-Puget Sound and St. Mary-Belly River population segments. The Coastal-Puget Sound population segment includes the only anadromous bull trout found in the coterminous United States. The population segment is composed of 34 ''native char'' subpopulations of which bull trout have been documented in 12 of 15 subpopulations examined. The remaining 19 subpopulations consist of ''native char'' that may include bull trout, Dolly Varden, or both species. At this time, the only ''native char'' documented in three of the subpopulations is Dolly Varden. Of the 34 subpopulations, we believe one is ''strong,'' 10 are ''depressed,'' and insufficient abundance, trends in abundance, and life-history information exists to assign either category to the remaining 23 subpopulations.

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. Bull trout subpopulations in the St. Mary River Basin are isolated by impassable diversion structures. Three of the four subpopulations are ''depressed'' due to low abundance of fish, and the status of one subpopulation is ''unknown'' because insufficient abundance, trends in abundance, and life-history information exists to categorize the subpopulations as ''strong'' or ''depressed.''

Previous Federal Action

On October 30, 1992, we 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 indicated that the species was in imminent danger of extinction. In our 90-day finding, published on May 17, 1993 (58 FR 28849), we determined that the petitioners had provided substantial information indicating that listing of the species may be warranted. We initiated a rangewide status review of the species concurrent with publication of the 90-day finding.

In our June 10, 1994, 12-month finding (59 FR 30254), we concluded that listing the 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, we determined that sufficient information on the biological vulnerability and threats to the species was available to support a warranted 12-month finding to list bull trout within the coterminous United States, but this action was precluded due to higher priority listings.

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 we recycled the petition and issued a new warranted but precluded 12-month finding for the coterminous population of bull trout on June 12, 1995 (60 FR 30825), 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 us for further consideration. Included in the instructions from the Court were requirements that we limit our review to the 1994 administrative record, and incorporate any emergency listings or high magnitude threat determinations into current listing priorities. We delivered the reconsidered 12-month finding based on the 1994 Administrative Record to the Court on March 13, 1997. We concluded in the finding that two populations of bull trout warranted listing (Klamath River and Columbia River population segments).

On March 24, 1997, the plaintiffs filed a motion for mandatory injunction to compel us 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. On April 4, 1997, we requested 60 days to prepare and review the proposed rule. In a stipulation between us and plaintiffs filed with the Court on April 11, 1997, we agreed to issue a proposed rule within 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.

We proposed 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 proposal included a 60-day comment period and gave notice of five public hearings in Portland, Oregon; Spokane, Washington; Missoula, Montana; Klamath Falls, Oregon; and Boise, Idaho. The comment period on the proposal, which originally closed on August 12, 1997, was extended to October 17, 1997 (62 FR 42092), to provide the public with more time to compile information and submit comments.

On December 4, 1997, the Court ordered us to reconsider several aspects of the 1997 reconsidered finding. On February 2, 1998, the Court gave us until June 12, 1998, to respond. The final listing determination for the Klamath River and Columbia River population segments of bull trout and the concurrent proposed listing rule for the Coastal-Puget Sound, St. Mary-Belly River, and Jarbidge River DPSs constituted our response.

We published a final rule listing the Klamath River and Columbia River population segments of bull trout as threatened on June 10, 1998 (63 FR 31647). On the same date, we also published a proposed rule to list the Coastal-Puget Sound, Jarbidge River, and St. Mary-Belly River population segments of bull trout as threatened (63 FR 31693). On August 11, 1998 (63 FR 42757), we issued an emergency rule listing the Jarbidge River population

segment of bull trout as endangered due to river channel alteration associated with unauthorized road construction on the West Fork of the Jarbidge River, which we found to imminently threaten the survival of the distinct population segment. On April 8, 1999 (64 FR 17110), we published the final rule to list the Jarbidge River population segment as threatened in the **Federal Register**.

Summary of Comments and Recommendations

In the June 10, 1998 (63 FR 31693), proposed rule, we requested interested parties to submit comments or information that might contribute to the final listing determination for bull trout. The proposed rule included the Coastal-Puget Sound, St. Mary-Belly River, and Jarbidge River bull trout DPSs. We sent announcements of the proposed rule and notice of public hearings to at least 800 individuals, including Federal, State, county and city elected officials, State and Federal agencies, interested private citizens, and local area newspapers and radio stations. We also published announcements of the proposed rule in 10 newspapers, which included the Idaho Statesman, Boise, Idaho; the Times-News, Twin Falls, Idaho; the Glacier Reporter, Browning, Montana; the Daily Inter Lake; Kalispell, Montana; the Great Falls Tribune, Great Falls, Montana; the Elko Daily Free Press, Elko, Nevada; the Bellingham Herald, Bellingham, Washington; the Olympian, Olympia, Washington; the Spokesman-Review, Spokane, Washington, and the Seattle Post-Intelligencer, Seattle, Washington. We held public hearings on July 7, 1998, in Lacey, Washington; July 9, 1998, in Mount Vernon, Washington; July 14, 1998, in East Glacier, Montana; and July 21, 1998, in Jackpot, Nevada. The comment period on the proposed rule closed on October 8, 1998.

We received 12 oral and 40 written comments on the proposed rule. These included comments from two Federal agencies, one Native American Tribe, three State agencies, one county in Nevada, three cities in Washington, and two private companies. In addition, we solicited formal scientific peer review of the proposal in accordance with our July 1, 1994 (59 FR 34270), Interagency Cooperative Policy on Peer Review. We requested six individuals, who possess expertise in bull trout biology and salmonid ecology, and whose affiliations include academia and Federal, State, and provincial agencies, to review the proposed rule by the close of the comment period. One individual responded to our request and we have addressed their comments in this section of the rule.

We considered all comments for the proposed rule for the Coastal-Puget Sound, St. Mary-Belly River, and Jarbidge River population segments, including oral testimony presented at the public hearings and the comments from the peer reviewer who responded to our request to review the proposed rule. The majority of comments supported the listing proposal and nine comments were in opposition. Opposition was based on several concerns, including possible negative economic effects from listing bull trout; potential restrictions on activities; lack of solutions to the bull trout decline that would result from listing; and interpretation of data concerning the status of bull trout and their threats in the three population segments. The U.S. Forest Service (USFS) (B. Siminoe, USFS, *in litt.* 1998); National Park Service (NPS) (David Morris, NPS, *in litt.* 1998), Idaho Department of Fish and Game (IDFG) (F. Partridge, IDFG, *in litt.* 1998; Partridge and Warren 1998), Nevada Division of Wildlife (NDOW) (T. Crawforth, NDOW, *in litt.* 1998; R. Haskins, NDOW, *in litt.* 1998), (Bruce Crawford, WDFW, *in litt.* 1998; WDFW 1998a), and Alberta Environmental Protection (AEP) (Duane Radford, AEP, *in litt.* 1998) provided us with information on respective agency efforts to assess, evaluate, monitor, and conserve bull trout in habitats affected by each agency's management for the three DPSs. Comments specific to the Jarbidge River population segment were addressed in the final rule determination for that DPS (April 8, 1999; 64 FR 17110). Comments specific to the Coastal-Puget Sound and St. Mary-Belly River population segments are addressed in this rule. Because multiple respondents offered similar comments, we grouped comments of a similar nature or point. These comments and our responses are presented below.

Issue 1: Several respondents opposed the Federal listing, while others supported it. Some respondents requested that we delay or preclude Federal listing until additional data on the Coastal-Puget Sound population segment are collected and considered, and one respondent based this on the belief that some subpopulations within the north Puget Sound region and the Olympic Peninsula appear to be stable or increasing, and other subpopulations occur in excellent or pristine habitat. A respondent asked if complete status and trend information is not available, whether changes in habitat or threats are sufficient to list a species, even if there is no indication that a population is in trouble. Another respondent noted we did not evaluate listing criteria with objective and quantitative methods, making it difficult to interpret new information in a consistent manner. The respondent also said that, although quantitative data are lacking for many local populations of bull trout, sufficient information exists to design an inventory program to describe their current distribution, relative abundance, and population structure.

Our Response: A species may be determined to be an endangered or threatened species due to the five factors identified in section 4(a)(1) of the Act and addressed in the ''Summary of Factors Affecting the Species'' section. The Act requires us to base listing determinations on the best available commercial and scientific information. Data are often not available to make statistically rigorous inferences about a species' status (*e.g.*, abundance, trends in abundance, and distribution). Overall, we found that sufficient evidence exists in each of the population segments that demonstrate they are threatened by a variety of past and ongoing threats, and are likely to become endangered in the foreseeable future.

In making this final determination, we took into account the overall status of bull trout in the coterminous United States. We acknowledge that three north Puget Sound subpopulations of bull trout (lower Skagit River, Stillaguamish River, and Snohomish River-Skykomish River supopulations) appear to be in better condition than subpopulations in other areas of the Coastal-Puget sound population segment. We determined that the lower Skagit subpopulation was ''strong.'' The WDFW has identified ''native char'' spawning areas in a number of tributaries in the Stillaguamish River subpopulation, and reported them as stable or expanding based on limited spawner surveys of Boulder Creek and the upper Stillaguamish River (WDFW 1997a). However, Mongillo (1993) and WDFW (1997a) identified other areas of the Stillaguamish subpopulation, specifically Deer Creek and Canyon Creek, as declining. Although the 1997 redd count for the Snohomish-Skykomish River subpopulation was the highest since an index reach was established in 1988 (WDFW 1998a), redd counts have been highly variable over this time period, possibly indicating an unstable population. There is scant evidence that subpopulations within the Nooksack River are increasing or stable, although much of the habitat within the Nooksack River drainage has been

severely degraded (WDFW 1998a). The Cushman Reservoir subpopulation, on the Olympic Peninsula, appears to have an adult spawner return that has stabilized around 300 fish for the past 7 years (WDFW 1998a). The available spawning habitat for this subpopulation lies primarily within Olympic National Park and WDFW considers it to be in excellent condition (WDFW 1998a). In contrast, bull trout in the South Fork-lower North Fork Skokomish River occur in low numbers with no known spawning sites. Habitat in the south Fork and lower North fork Skokomish River is severely degraded (WDFW 1998a).

Conversely, we have ample information regarding threats to the Coastal-Puget Sound population segments. Many of the threats are similar to those described for the threatened Klamath River and Columbia River bull trout population segments (June 10, 1998; 63 FR 31647). We acknowledge that available information is insufficient to designate many of the subpopulations within the Coastal-Puget Sound population segment as ''strong'' or ''depressed.'' However, because bull trout display a high degree of sensitivity to environmental disturbance and are referred to as an indicator species, we believe that bull trout are significantly impacted by past and current habitat degradation within the Coastal-Puget Sound population segment, similar to other listed and sensitive species (i.e., salmon). Habitat loss and degradation is acknowledged as a significant factor limiting salmon and trout populations within Washington (Washington Department of Fisheries (WDF) *et al.* 1993; Weitkamp *et al.* 1995; Busby *et al.* 1996; Spence *et al.* 1996; WDFW 1997a, b). Although a number of subpopulations have documented spawning and rearing habitat in protected areas of watersheds, the spawning and rearing habitats of many other subpopulations are not identified. In addition, habitats used by other life-history stages for migration, overwintering, sub-adult rearing, are degraded, and all life-history stages are required for a species to persist. See the ''Summary of Factors Affecting the Species'' section for a more complete discussion of threats affecting bull trout.

Because the location of spawning areas for many bull trout subpopulations are not well known for the Coastal-Puget Sound population segment, we have been funding efforts to determine the distribution of spawning areas in various Coastal-Puget Sound subpopulations. Although estimates of bull trout abundance based on redd counts will provide information on which to evaluate the status of ''native char'' subpopulations, the method should be used with caution. For example, in analyzing counts of bull trout redds in Idaho and Montana, Rieman and Myers (1997) found that variability of counts in individual streams reduces the ability to detect trends, especially with data sets for relatively short periods. They caution that detection of trends will often require more than 10 years of sampling, even where declines could be large, and for many bull trout spawning reaches, declining trends may not be statistically evident until numbers drop to critically low levels. Given the lack or limitations of statistically rigorous data for bull trout in the Coastal-Puget Sound population segment, our review of the status of ''native char'' subpopulations is based on the generally low number of individuals observed in several subpopulations throughout the population segment, and the apparent declines reported in others.

Issue 2: A respondent noted that the proposed rule considered that loss of the St. Mary-Belly River population segment would constitute a significant reduction in the range of the taxon. They asked what portion of the range is significant, and would the statement be true for the St. Mary-Belly River population segment if fish in Canada were considered. They also inquired whether bull trout in the population segment are distinct from fish east of the Continental Divide in Canada. Because a large portion of the St. Mary-Belly River population segment occurs on the Blackfeet Reservation, another respondent requested that we establish government-to-government relations with the Blackfeet Tribe, expressing concern that Tribal comments and interactions with us were considered similarly to those from the general public and not on a government-to-government basis.

Our Response: We considered both biological (available data) and administrative (international boundary) issues in determining distinct population segments. Policy used to guide determination of distinct population segments is described in 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). Although we are not including bull trout in Canada in the St. Mary-Belly River population segment, fish are believed to migrate across the international boundary. Determination of a significant reduction in range was based only on bull trout occurring within the coterminous United States, of which loss of the population segment would result in elimination of all bull trout east of the Continental Divide. Mogen (1998) noted genetic work that indicated bull trout from the upper St. Mary River drainage in Glacier National Park and the Belly River in Alberta form a genetically similar group, and bull trout collected from other areas in southern Alberta form another (Thomas *et al.* 1997, cited in Mogen 1998). Genetic analysis of tissue samples collected in the St. Mary River drainage during 1997 is not complete (Mogen 1998).

Regarding governmental relations, a June 1997 Secretarial Order on Federal-Tribal trust responsibilities and the Act, clarifies responsibilities of agencies relative to Tribal lands, rights, and trust resources in implementing the Act. A cooperative agreement among us, the Blackfeet Tribe, and Bureau of Reclamation establishes a partnership focused on the conservation and restoration of native salmonids and habitat in the St. Mary River drainage. Mogen (1998) presents results of a study to investigate bull trout spawning areas and fish abundance conducted pursuant to the cooperative agreement. We have met with representatives of the Blackfeet Tribe to address concerns about bull trout and government-to-government relations.

Issue 3: One respondent noted that criteria we used to determine the status of subpopulations were adopted from Rieman *et al.* (1997), who originally developed them to apply to 6th field watersheds in the Interior Columbia Basin Ecosystem Management Project (ICBEMP). Because fish in 6th field watersheds are roughly equivalent to local populations (see Rieman and McIntyre 1995), using the criteria may be inconsistent with subpopulations as defined in the proposed rule. Also, several respondents were concerned about applying the criteria to the Coastal-Puget Sound population segment for evaluating whether a subpopulation is ''strong'' or ''depressed.'' One respondent asked whether our definition of subpopulation designation required absolute reproductive isolation or only some level of structuring that means reduced gene flow and some local adaptation, and whether subpopulations can compose a larger metapopulation or if a metapopulation is equivalent to a subpopulation. Another respondent contended that some dams were not isolating mechanisms for subpopulations (Middle Fork Nooksack, Skagit, and Nisqually rivers) because

they believe the dams were constructed at natural barriers.

Our Response: In adopting the criteria, we considered a bull trout 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 (see Rieman *et al.* 1997). If there was insufficient abundance, trend, and life-history information to classify the status of a subpopulation as either ''strong'' or ''depressed,'' we considered status as ''unknown.''

We used these criteria because they represent the best available information and were used in evaluating bull trout in the Klamath River and Columbia River population segments. We acknowledge the criteria were originally developed for application to salmonids in the Columbia River Basin, but their underlying premises are based on concepts of conservation biology. Whether a subpopulation is ''strong'' or ''depressed'' relative to its potential may vary among population segments. However, we were unable to refine these criteria, either higher or lower, based on the available data. Designating a subpopulation as ''strong'' or ''depressed'' is only one of several factors that we considered in evaluating the overall status of a bull trout subpopulation in a given population segment.

Regarding the use of 6th field watersheds, we acknowledge the different spatial scales used in applying criteria developed by Rieman *et al.* (1997) for ICBEMP in our evaluation of bull trout subpopulations. Subpopulations identified in the population segments for bull trout in the coterminous United States (see June 10, 1998; 63 FR 31647) ranged in size from a portion of a single watershed unit used by ICBEMP to several watersheds. For example, the best available information concerning bull trout and ''native char'' in the Coastal-Puget Sound population segment was based on a spatial scale consisting of up to several ICBEMP watershed units. Although the spatial scale of most subpopulations identified in the proposed rule occupy multiple ICBEMP watershed units, we believe that the criteria offered useful information in evaluating the status of bull trout.

We selected subpopulations as a convenient unit on which to analyze bull trout within population segments, and defined subpopulation as ''a reproductively isolated group of bull trout that spawns within a particular area of a river system.'' We identified subpopulations based on documented or likely barriers to fish movement (*e.g.*, impassable barriers to movement and unsuitable habitat). To be considered a single subpopulation, two-way passage at a barrier is required, otherwise bull trout upstream and downstream of a barrier are each considered a subpopulation. Because it is likely that fish above a barrier could pass downstream and mate with fish downstream, absolute reproductive isolation was not required to be considered a subpopulation.

We viewed metapopulation concepts (see Rieman and McIntyre 1993) as useful tools in evaluating bull trout, but, in querying biologists both within the Service and elsewhere, we found considerable variability in the definition of a metapopulation and the types of data suggestive of a metapopulation. Some biologists may consider a subpopulation, as defined by us, as a metapopulation if it has multiple spawning areas. Likewise, subpopulations without reciprocal interactions (*i.e.*, individuals from upstream of a barrier may mingle with individuals downstream, but not vice versa) may be considered components of a metapopulation consisting of more than one subpopulation. Because little genetic and detailed movement information exists throughout bull trout range in the population segments addressed in the proposed rule, we believe that barriers to movement is an appropriate consideration for identifying subpopulations.

Relative to dams, the WDFW (1998a) believes that bull trout were able to commingle on both the Middle Fork Nooksack River and the Skagit River prior to construction of the dams. There may have been a natural barrier between La Grande and Alder dams on the Nisqually River. Because the existence of ''native char'' above Alder Dam is not established, we chose not to identify this area as a separate subpopulation. Regardless, the DPS discreteness criterion can be satisfied by natural or man-made barriers.

Issue 4: Several respondents believed the Federal listing was not necessary due to current and recently improved regulations related to forest land management.

Our Response: We believe that implementation of the Northwest Forest Plan (NFP) and Washington Department of Natural Resources (WDNR) Habitat Conservation Plan (HCP) should limit further degradation to aquatic habitats from future forest management practices for the Coastal-Puget Sound population segment. Only about 32 percent of the Coastal-Puget Sound population segment is covered by either one of these two plans. An additional 15 percent of the population segment resides on National Park lands. Bull trout in this population segment will continue to be negatively affected by severely degraded habitats in many subbasins where ''native char'' occur (*e.g.*, increased stream temperatures and sedimentation, altered stream flows, and lack of instream cover). These effects are expected to continue because many river basins affected by past, poor forest practices that contain ''native char'' will take decades to fully recover.

Approximately 45 percent of the Coastal-Puget Sound population segment occurs on lands under private ownership. Timber harvest activities on lands in forest production are subject to Washington State Forest Practice Rules (WFPR). Although State rules and regulations governing forested land management activities on private lands are improving, we believe they are not adequate to conserve and recover bull trout or remedy the effects of past damage to bull trout habitats (U.S. Department of Interior (USDI) et al. 1996a). The WFPR are currently being renegotiated, and it is anticipated that there will be some improvements over past rules. Because the State has not issued new rules, we are unable to evaluate their adequacy to conserve and recover bull trout on private lands within the Coastal-Puget Sound area. If improved sufficiently, these rules could form the basis for a delisting, 4(d) rule, or HCP.

Issue 5: The U.S. Forest Service proposed that we issue a special rule pursuant to section 4(d) of the Act that would relax the prohibition against incidental take associated with Federal actions consistent with the NFP. Another respondent requested that we develop a special rule that was sufficiently protective to address any threat to bull trout from a specific development project.

Our Response: Under section 4(d) of the Act, we have the authority to issue regulations as deemed necessary and advisable to provide for the conservation of a species listed as threatened. We recognize that on-going and future land-use activities will occur on non-Federal lands and that these activities may result in take of bull trout. Elsewhere in today's **Federal Register** we have published a Notice of Intent to prepare another special rule pursuant to section 4(d) of the Act for bull trout within the coterminous

United States (see ''Special Rule'' section). The special rule would address two categories of non-Federal activities affecting bull trout: (1) Habitat restoration; and (2) regulations that govern land and water management activities. Special regulations addressing both categories would provide for the conservation of bull trout. We have already issued two special rules, one for Jarbidge River population segment on April 8, 1999, and the other for the Klamath and Columbia River population segments on June 10, 1998. In general, these special rules exempt from the take prohibition fishing and activities that are conducted in accordance with State, Tribal, and NPS laws and regulations governing fish and wildlife conservation. The special rule for the Coastal Puget-Sound and St. Mary-Belly population segments, described in the ''Special Rule'' section, will also exempt from the take prohibition fishing and activities conducted in accordance with State, Tribal, and NPS laws and regulations.

A proposal to relax the prohibition against incidental taking of bull trout associated with Federal actions consistent with the NFP Aquatic Conservation Strategy (ACS) is an option we may address in the future. There are a number of issues regarding the interpretation of ACS objectives and ACS components that are being discussed at an interagency level, but currently remain unresolved. It would not be prudent for us to consider a 4(d) rule until these discussions are concluded and the issues are satisfactorily resolved. The NFP applies to Federal lands in the Coastal-Puget Sound population segment. Although we have not finalized a programmatic biological opinion, we have re-initiated programmatic consultations with three National Forests, including conferencing on bull trout with the USFS regional office for those three National Forests. Thus, we will address Federal actions consistent with the NFP either through section 7 of the Act or through a 4(d) rule.

Issue 6: One respondent felt it was inappropriate to include in the final rule those streams or stream segments where only ''native char'' or both bull trout and Dolly Varden are documented to date. One respondent suggested the listing of bull trout will be a (de facto) listing of Dolly Varden, due to their similarities in appearance and life-history characteristics.

Our Response: It is true that species composition is not yet known in many streams in Washington containing ''native char.'' However, bull trout are documented in most streams that biologists have investigated (12 of 15 subpopulations). We are funding WDFW to collect and analyze bull trout tissue samples in an effort to determine the genetic identity of ''native char'' in the 19 subpopulations that biologists have not evaluated. Information from these studies may eventually be used to exclude stream systems with only Dolly Varden from the listing, if we are satisfied that bull trout are not present in the system. Based on the available evidence, we believe there is a high likelihood that bull trout occur in the majority of the remaining 19 subpopulations. For subpopulations that contain both bull trout and Dolly Varden it is completely appropriate to include those subpopulations in the listing.

Bull trout and Dolly Varden are virtually indistinguishable based upon physical appearance (Service 1998a) and share similar life-history strategies and habitat requirements. Because of these similarities, the WDFW manage the two species as one (WDFW 1998a), and we can evaluate the threats to subpopulations currently known only as ''native char.'' Although the listing currently does not include Dolly Varden under the similarity of appearance rule, the coexistence of Dolly Varden and bull trout within a certain subpopulation would not be justification to preclude listing of bull trout in that particular subpopulation. Finally, there is no evidence demonstrating strong Dolly Varden subpopulations coexisting with depressed bull trout subpopulations.

Issue 7: One respondent said we failed to identify and properly address other threats to bull trout, primarily the reduction in the bull trout forage base as a result of the commercial and recreational harvest of returning salmon and steelhead.

Our Response: Ratliff and Howell (1992) suggest that due to its highly piscivorous nature, bull trout may have been adversely affected by declines in prey species. They present the example of declining bull trout populations occurring above Hells Canyon Dam, where there is no longer anadromous salmon and steelhead production. We acknowledge that the depressed status or declining abundance of anadromous fish stocks in some river basins may have negatively affected bull trout through a decreased prey base. However, we are unable to determine from the available information whether this is a threat or just a suppressing factor to bull trout since they are opportunistic feeders and forage on a wide variety of prey. In addition, we are unable to determine whether current escapement goals set for anadromous salmon and steelhead are at levels that may limit bull trout. A threat would clearly exist where anadromous fish stocks are no longer accessible to a bull trout subpopulation, and it is determined that an alternative forage base does not exist.

Issue 8: One respondent questioned the rationale of our exclusion of bull trout in Canada in delineating distinct population segments. The respondent stated that bull trout in Canada were excluded because fish there are outside the jurisdiction of the Act or that listing would not have much effect on the Canadian government, as opposed to the explanation in the proposed rule that data for bull trout in Canada are limited and suggested we should clarify the issue.

Our Response: We acknowledge that additional information concerning the status and threats to bull trout in Canada has been compiled in recent years. Some of the available data indicate a decline of bull trout in several areas in Canada. Although we recognize that more data on bull trout in Canada currently exist than we originally considered, this new information did not lead us to conclude that listing the bull trout in Canada is necessary at this time. We believe that addressing bull trout only in the coterminous United States relative to the Act is appropriate. We acknowledge that for threatened or endangered species that cross international boundaries, recovery is more complex. For areas where bull trout subpopulations cross international boundaries, we intend to work with all appropriate jurisdictional entities, Tribal, provincial and Federal Canadian agencies and all entities in the United States, in developing and implementing a recovery plan for bull trout.

Issue 9: One respondent noted that critical habitat is presently not determinable. They noted that consistent patterns in juvenile fish distribution, primarily with respect to stream elevation and water temperature, is useful in predicting patches of spawning and rearing habitats, which are probably sensitive to land use and important for the overall productivity of local populations. Another respondent asked us to consider including as critical habitat, streams that contribute to the water quality of Puget Sound, but are not part of the current known distribution of bull trout. Several respondents encouraged us to consider several issues, such as designating all historic and existing bull trout habitat as critical, protecting roadless and riparian areas, establishing standards for water temperature, sediment delivery, and

other habitat parameters and other management activities.

Our Response: The definition of critical habitat as stated in section 3 of the Act holds that critical habitat may include specific areas outside of the geographical area occupied by the species at the time it is listed, upon determination that such areas are essential for the conservation of the species. At this time, we find that critical habitat is not determinable for the Coastal-Puget Sound and St. Mary-Belly River population segments. We appreciate the comments and believe that patterns in fish distribution will likely be useful in determining future critical habitat designations. This and other habitat considerations will be important issues to be considered during development of the recovery plan.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, we determine the Coastal-Puget Sound and St. Mary-Belly River population segments of bull trout to be threatened species. We followed procedures found at section 4(a)(1) of the Act and regulations (50 CFR part 424) implementing the listing provisions of the Act. 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 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 bull trout habitat and continue to threaten all of the bull trout 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; Chamberlin *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; USDA and USDI 1995, 1996, 1997; Light *et al.* 1996; MBTSG 1995a–e, 1996a–h).

Coastal-Puget Sound Population Segment

Barriers, timber harvesting, agricultural practices, and urban development are thought to be major factors affecting ''native char'' in the Coastal-Puget Sound DPS (Service 1998a). 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), and migratory ''native char'' exhibit anadromous, adfluvial, and fluvial strategies in the Coastal-Puget Sound DPS. Factors affecting ''native char'' may preclude or inhibit migratory behavior or contribute to degradation of aquatic habitats used by ''native char'' (Rieman and McIntyre 1993; Spence *et al.* 1996; WDFW 1997a).

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). Past 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. Over 35 percent of natural forested areas in Puget Sound have been eliminated (WDFW 1997b).

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 34 ''native char'' subpopulations in the Coastal-Puget Sound population segment, 11 are likely affected by elevated stream temperatures resulting from past forest practices (lower Nooksack River, Stillaguamish River, Snohomish River-Skykomish River, Green River, lower Puyallup, 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 1997). Bull trout are documented in three of these ''native char'' subpopulations (Green River, South Fork-lower North Fork Skokomish River, and Snohomish River-Skykomish River).

The effects of road construction and associated maintenance account for a majority of 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 10 basins containing ''native char'' subpopulations (Nooksack, Skykomish, Stillaguamish, Puyallup, upper Cedar, Skokomish, Dungeness, Hoh, Queets, and Coastal Plain-Quinault basins) (HCCC 1995; Olympic National Forest 1995a,b; Sandra Noble and Shelley Spalding, Service, *in litt.* 1995; WDFW 1997a, WDOE 1997). Bull trout are documented in six of these basins (upper Cedar, Skokomish, Dungeness, Queets, Quinault, and Skykomish basins). We consider five subpopulations within these basins to be ''depressed''. These are the Chester Morse Reservoir, lower Puyallup River, South Fork-lower North Fork Skokomish River, lower Dungeness-Gray Wolf, and Hoh River subpopulations. The remaining six affected subpopulations found in Canyon Creek, upper Middle Fork Nooksack River, Snohomish River-Skykomish River, Stillaguamish River, Queets River, and lower Quinault River are considered ''unknown.''

A recent assessment of the interior Columbia Basin ecosystem revealed that increasing road densities were associated with declines in four non-anadromous salmonid species (bull trout, Yellowstone cutthroat trout, westslope cutthroat trout, and redband trout) within the Columbia River Basin, likely through a variety of factors associated with roads (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 were associated with 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, some 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. It is known, however, that 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), and the effects of sedimentation from high road density on aquatic habitat is likely a contributing factor to the ''depressed'' status of these two ''native char'' subpopulations. Because basins in portions of the Queets River drainage contain high road densities, ranging from 1.5 to 3.0 km/km² (2.4 to 4.8 mi/mi²) (ONF 1995a; Cederholm and Reid 1987), we believe that the Queets River ''native char'' subpopulation is affected by high road density.

At least 22 ''native char'' subpopulations within the Coastal-Puget Sound DPS are affected by past or present forest management activities. Remaining subpopulations not affected by such activities occur primarily within National Parks or Wilderness Areas. For example, five ''native char'' subpopulations lie completely within National Parks and Wilderness Areas withdrawn from timber harvest. These include the upper Quinault River, upper Sol Duc River, Gorge Reservoir, Diablo Reservoir, and Ross Reservoir subpopulations. Although the status of these ''native char'' subpopulations is considered ''unknown'' at this time, all except the upper Quinault River subpopulation are threatened by non-native brook trout (see Factor E).

Agricultural practices and associated activities also affect ''native char'' and their aquatic habitats. Irrigation withdrawals including diversions can dewater spawning and rearing streams, impede fish passage and migration, and cause entrainment. 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 often results in increased organic nutrient input in streams (Platts 1991). Eight ''native char'' subpopulations in the Coastal-Puget Sound DPS (lower Puyallup, 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 subject to the effects of past or ongoing agricultural or livestock grazing practices (Williams *et al.* 1975; Hiss and Knudsen 1993; WDF *et al.* 1993; HCCC 1995; ONF 1995b; WDFW 1997a). Species composition has been examined in five of these subpopulations, and bull trout are documented in four (Green River, lower Puyallup, 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 ''native char,'' precluding access to suitable 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) within watersheds supporting ''native char'' (Gene Stagner, Service, *in litt.* 1997). Of the 41 existing or proposed projects, 17 are currently operating and most are run-of-the-river small hydroelectric projects. Negotiated instream flows for these projects are based primarily on resident cutthroat trout or rainbow trout flow requirements, and may not meet seasonal migratory flow requirements of bull trout (Tim Bodurtha, Service, *in litt.* 1995). Fish passage has not been addressed for 28 of the existing or proposed projects (G. Stagner, *in litt.* 1997). We are aware of at least seven water diversions or other dams currently operating in watersheds with ''native char,'' and none currently providing for upstream fish passage. These diversions and dams are located on the Middle Fork Nooksack, Skagit, Green, Puyallup, and Nisqually rivers. These seven facilities currently affect the lower Nooksack River, upper Middle Fork Nooksack River, lower Skagit River, Gorge Reservoir, Diablo Reservoir, Ross Reservoir, lower Puyallup, upper Puyallup River subpopulations. Projects in the Green and Nisqually rivers block fish passage in the upper stream reaches of these basins, although ''native char'' use of the river areas above the facilities remains unconfirmed. Various fish surveys conducted in the upper Green River watershed above the facility, did not detect ''native char'' (Ed Connor and Phil Hilgert, R2 Resource Consultants, Inc., *in litt.* 1998). Surveys of the upper Nisqually River watershed are underway (WDFW 1998a). Dams on the Skokomish and Elwha rivers are also barriers to upstream fish migration and have fragmented populations of ''native char'' within the Coastal-Puget Sound DPS. FERC published an Environmental Impact Statement (EIS) for three proposed hydroelectric projects on Skagit River tributaries. The final EIS recommends two proposed hydroelectric projects on the lower Nooksack River, affecting two subpopulations, the lower Skagit River and the lower Nooksack River. We consider the status of these subpopulations ''strong'' and ''unknown,'' respectively.

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. Five ''native char'' subpopulations in the Coastal-Puget Sound DPS (lower Dungeness River-Gray Wolf River, lower Puyallup River, Green River, Sammamish River-Issaquah Creek, and Stillaguamish River) are 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.

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 1996; Clayton 1998; Mogen 1998). 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 the species in the St. Mary River Basin (upper St. Mary River, lower St. Mary River, and Swiftcurrent Creek subpopulations). 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 1996; R. Wagner, pers. comm. 1998). Similarly, the irrigation dam on Swiftcurrent Creek (Lake Sherburne) physically blocks bull trout passage into the upper watershed (Fredenberg 1996; R. Wagner, pers. comm. 1998), affecting the three St. Mary River subpopulations. In the Belly River drainage, two adult bull trout implanted with radio transmitters that spawned in the North Fork Belly River near the international border in 1997 were subsequently passed down the Mountain View Irrigation District Canal and captured (Terry Clayton, Alberta Conservation Association (ACA), *in litt.* 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 1996). The diversion at the outlet of lower St. Mary Lake may result in a reduction (up to 50 percent) of instream flow of the St. Mary River, possibly affecting juvenile and adult bull trout (R. Wagner, pers. comm. 1998). The diversion is unscreened and recent information suggests downstream loss through entrainment of bull trout (R. Wagner, pers. comm. 1998). Similarly, the irrigation dam on Swiftcurrent Creek (Lake Sherburne) seasonally dewaters the creek downstream, effectively eliminating habitat (Fredenberg 1996; R. Wagner, pers. comm. 1998).

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

Declines in bull trout abundance have prompted States to institute restrictive fishing regulations and eliminate the harvest of bull trout in most waters in Idaho, Oregon, Montana, Nevada, and Washington. These more restrictive regulations resulted in an increase in recent observations of adult bull trout in some areas of their range. However, illegal harvest and incidental hook and release of ''native char'' in fisheries targeting other species 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. The State of Washington implemented most of these closures in 1994. Harvest of ''native char'' is still allowed in the area of the lower Skagit River subpopulation in the mainstem Skagit River and several of its tributaries (Cascade, Suiattle, Whitechuck and Sauk rivers) (508 mm (20 in.) minimum size limit and two fish daily bag limit); the Snohomish River-Skykomish River subpopulation in the Snohomish River mainstem and the Skykomish River below the forks (508 mm (20 in.) minimum size limit and two 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) (Scott Chitwood, Quinault Indian Nation, pers. comm. 1997; WDFW 1997a). Olympic National Park has recently closed fishing for ''native char'' in all park waters (D. Morris, *in litt.* 1998). 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) are not established.

The objective of the 508 mm (20 in.) minimum size limit in the Skagit River and Snohomish-Skykomish River systems is to allow most females to spawn at least once before harvest (WDFW 1997a), and evidence suggests that more females are allowed to spawn in these two systems where the regulation is in place (WDFW 1998b). However, the minimum size limit allows the selective harvest of larger, mature fish that are more fecund (Jim Johnston, WDFW, 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. Consistent with the June 1997 Secretarial Order on Tribal-Federal Trust responsibilities and the Act, we will continue to assess the effects of these regulations and work with the Tribes to assure that the conservation needs of bull trout are met. The State of Washington has closed areas of the lower Quinault River and Queets River watersheds outside of the Quinault Indian Reservation to harvest of ''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 increased brook trout catch has the potential to increase the incidental harvest of bull trout due to misidentification by anglers. For example, only 40 percent of Montana anglers surveyed correctly identified bull trout out of six species of salmonids found locally (Mack Long and Sean Whalen, Montana Fish Wildlife and Parks, *in litt.* 1997).

Poaching is still a factor that threatens ''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, *in litt.* 1992; Mongillo 1993; WDFW 1997a; Service 1998a).

St. Mary-Belly River Population Segment

Historically, the harvest of bull trout in the St. Mary-Belly River DPS was considered ''extensive'' (Fredenberg 1996). Currently, legal angler harvest in the St. Mary-Belly River DPS occurs only on the Blackfeet Indian Reservation, which has a five fish per day limit with only one fish over 508 mm (20 in.) (Fredenberg 1996).

In 1994, the Blackfeet Tribe reported harvest of at least 19 adult and subadult bull trout 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 is not strictly enforced. As discussed in Issue 2 in the ''Summary of Comments and Recommendations section'', a cooperative agreement exists among us, the Blackfeet Tribe, and the Bureau of Reclamation which establishes a partnership focused on the conservation and restoration of native salmonids and habitat in the St. Mary River drainage. We have recently met with the Blackfeet Tribe to address our concerns about bull trout. We will continue to assess the effects of their harvest regulations and, in accordance with the June 1997 Secretarial Order on Tribal-Federal Trust responsibilities and the Act, we will continue work with the Tribe to assure that the conservation needs of bull trout are met. Specifically, the ongoing research carried out under the cooperative agreement is evaluating movement patterns, population status, and genetic structure of the bull trout in the St. Mary River drainage. We will utilize the results as a basis to develop future management recommendations.

C. Disease or Predation

Diseases affecting salmonids are present or likely present in both population segments, but are not thought to be a factor threatening bull trout. Instead, interspecific interactions, including predation, likely negatively affect bull trout where non-native salmonids are introduced (Bond 1992; Ziller 1992; Donald and Alger 1993; Leary *et al.* 1993; MBTSG 1996a; J. Palmisano and V. Kaczynski, Northwest Forestry Resources Council, *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 (Kevin 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, and though this may be a potential threat to bull trout, we do not have specific information on it at this time.

Predation is not considered a primary factor in the decline of Coastal-Puget Sound ''native char.'' The only exception may be largemouth bass (*Micropterus salmoides*) in Cushman Reservoir on the Skokomish River that may potentially affect the bull trout subpopulation (Sam Brenkman, Oregon State University, pers. comm. 1997; WDFW 1997a).

St. Mary-Belly River Population Segment

Disease and predation are not known to be factors affecting the survival of bull trout in the St. Mary-Belly River Basin. Whirling disease has been documented in numerous Missouri River watersheds in central Montana, though not in the Saskatchewan River drainage where the St. Mary-Belly River bull trout subpopulations occur.

D. The Inadequacy of Existing Regulatory Mechanisms

Although varying efforts are underway to assist in conserving bull trout throughout the coterminous United States (*e.g.*, Batt 1996; Light *et al.* 1996; Robert Joslin, USFS, *in litt.* 1997; Allan Thomas, BLM, *in litt.* 1997; Montana Bull Trout Restoration Team 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. Statutory 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 35 percent of the total acreage within the Coastal-Puget Sound bull trout population segment are Federal lands subject to Northwest Forest Plan standards and guidelines (U.S. Geological Survey (USGS), *in litt.* 1996). In 1994, 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). Prior to 1997, most projects developed under the Northwest Forest Plan in this DPS were determined to have ''no impact'' on bull trout and its habitat. However, these determinations were made prior to the development of specific criteria (Service 1998c) to evaluate the effects of Forest Service activities on bull trout and their habitat. Because existing aquatic habitat conditions are severely degraded in many subbasins, the 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 are often exacerbated by landslides, 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 and their habitats continue to face threats from ongoing and future timber harvest activities on many of these lands. 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 buffer widths are likely insufficient to fully protect riparian ecosystems (USDI *et al.* 1996a).

In January 1997, the Washington State Department of Natural Resources (WDNR) developed a multispecies HCP under section 10 of the Act, covering all WDNR-owned lands within the range of the northern spotted owl. The WDNR HCP primarily addresses the conservation needs for old-growth forest-dependent species, such as the 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 covered by 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 ''legacy'' 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 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 WDFW (formerly the WDW) 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). In 1998, WDFW distributed a revised draft of the bull trout and Dolly Varden management plan to us for review (WDFW 1998b). Although commendable goals and strategies are presented in the new draft plan, specific guidance on how these goals and strategies would be accomplished is not provided. Our review of the plan determined that it does not fully address all elements necessary to conserve and restore bull trout populations (Nancy Gloman, Service, *in litt.* 1998). Because all elements necessary for conservation and restoration of bull trout are not fully addressed and there are uncertainties concerning implementation of the plan, the effect of the plan on future bull trout conservation in Washington is unknown.

Since 1994, WDFW has been 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 bull trout because the primary focus is restoring wild salmon and steelhead. Although other wild salmonids, including bull trout, are referred to 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, including funding, 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 1997) reflects the poor condition of lower stream reaches of some systems containing bull trout and Dolly Varden. At least 30 stream reaches within habitat occupied by 13 subpopulations of ''native char'' are listed on the Washington State proposed 1998 303(d) list of water quality impaired streams (WDOE 1997). Eight of these subpopulations are ''depressed,'' one is ''strong,'' and four are ''unknown.'' Waters included on the 303(d) list due to temperature exceedances are found in areas where the Chehalis River-Grays Harbor, lower Quinault River, Hoh River, lower Elwha River, Nisqually River, lower Puyallup, Green River, Sammamish River-Issaquah Creek, Stillaguamish River, and lower Nooksack River subpopulations occur. We have identified bull trout in two of these subpopulations (Green River and lower Puyallup). 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).

Subpopulations that occur in waters on the 303(d) list not meeting instream flow standards include the Dungeness River-Gray Wolf River, South Fork-lower North Fork Skokomish River, lower Puyallup River, lower Skagit River, and lower Nooksack River ''native char'' subpopulations. Bull trout are known to occur in four of these subpopulations (Dungeness River-Gray Wolf River; South Fork-lower North Fork Skokomish River; lower Puyallup; and lower Skagit River). Although no minimum instream flow requirements exist for bull trout, 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).

The Chehalis River-Grays Harbor and Sammamish River-Issaquah Creek ''native char'' subpopulations occur in waters on the 303(d) list for not meeting the standards for dissolved oxygen. Although no dissolved oxygen

standards exist 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. These classes of criteria are established for the following water quality parameters: temperature, fecal coliform, turbidity, dissolved oxygen, and toxic deleterious material concentrations. With the exception of dissolved oxygen, parameters are not to exceed specified maximum levels 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 apparent low temperature requirements of bull trout (Rieman and McIntyre 1993), these temperature standards are likely inadequate to protect bull trout spawning, rearing or migration. 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.

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 1998b). We are 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. USBR has not evaluated the effectiveness of the operations and has not established formal guidelines to minimize the effects of the structures' operations on bull trout. The draft Montana Bull Trout Restoration Plan (1998) does not address or incorporate recommendations for bull trout conservation found in the St. Mary-Belly River population segment.

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 and hybridize with ''native char;'' subpopulation habitat fragmentation and isolation caused by human activities; and the risk of local extirpations due to natural events such as droughts and floods.

Introductions of non-native species by the Federal government, State fish and game departments and unauthorized private parties across the range of bull trout have 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; John Palmisano and V. 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 including rainbow trout and 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. The State of Washington has introduced brook trout into several headwater areas occupied by ''native char;'' however, the distribution of brook trout within many of these areas appears to be limited. Brook trout can affect bull trout even in areas with undisturbed habitats (e.g., National Parks). Brook trout normally have a reproductive advantage (earlier maturation) over resident bull trout, which can lead to species replacement (Leary *et al.* 1993; Thomas 1992). At present, the distribution of 14 ''native char'' subpopulations partially overlap with brook trout in the upper 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, lower Puyallup (Carbon River), Snohomish River, Skykomish River, Gorge Reservoir, Diablo Reservoir, Ross Reservoir, Lower Skagit River, upper Middle Fork Nooksack River, and Canyon Creek (Reed Glesne, North Cascades National Park, *in litt.* 1993; Mongillo and Hallock 1993; John Meyer, Olympic National Park, pers. comm. 1995; Morrill and McHenry 1995; S. Brenkman, pers. comm. 1997; Brady Green, MBSNF, pers. comm. 1997).

''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 that are likely to be negatively affected by natural events as a result of 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, we have examined species composition in seven and bull trout have been confirmed in five (Cushman Reservoir, South Fork-lower North Fork Skokomish River, upper Quinault River, Chester Morse Reservoir, and upper Middle Fork Nooksack River), of which three are ''depressed'' (Service 1998a).

St. Mary-Belly Population Segment

Non-native species are pervasive throughout the St. Mary and Belly rivers (Fitch 1994; Fredenberg 1996; Clayton 1997). Brook, brown, and rainbow trout have been widely introduced in the area. We are 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 1998b), especially on resident bull trout (R. Wagner, pers. comm. 1998).

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by the Coastal-Puget Sound and St. Mary-Belly River

population segments of bull trout in determining this rule. Based on this evaluation, we have determined to list the bull trout as threatened in both population segments as summarized below.

Coastal-Puget Sound Population Segment

Bull trout and ''native char'' in the Coastal-Puget Sound population segment have declined in abundance and distribution within many individual river basins. Bull trout and ''native char'' currently occur as 34 separate subpopulations, which indicates the level of habitat fragmentation and geographic isolation. Seven subpopulations are isolated above 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'' are threatened by the combined effects of habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, harvest, and introduced non-native species. Although several subpopulations lie completely or partially within National Parks or Wilderness Areas, these subpopulations are threatened by the presence of brook trout, or from habitat degradation that is occurring outside of these restricted land use areas. Based on the best available information, we have concluded that at least 10 subpopulations are currently ''depressed,'' one subpopulation is ''strong,'' and the status of the remaining 23 subpopulations is ''unknown.'' Some subpopulations in the north Puget Sound have relatively greater abundance compared to other areas of the Coastal-Puget Sound population segment. However, we remain concerned over the reported declines in abundance in other north Puget Sound subpopulations, and the documented threats present in these subpopulation basins. Available anecdotal information indicates additional subpopulations within the population segment have declined in abundance.

St. Mary-Belly River Population Segment

The St. Mary-Belly population segment contains the only bull trout found east of the Continental Divide in the coterminous United States. We identified four subpopulations isolated primarily by irrigation dams and diversions. Recent surveys indicate that bull trout occur in relatively low abundance, with three subpopulations ''depressed'' and the status of one subpopulation ''unknown.'' Migratory bull trout are known to occur in three subpopulations, but these subpopulations are isolated by irrigation dams and unscreened diversions. We consider the dams and unscreened diversions a major factor affecting bull trout in the population segment by inhibiting fish movement and possibly entrainment into diversion channels and habitat alterations associated with dewatering. There are no formal guidelines to minimize the effects of the operation of the structures on bull trout. Bull trout are also threatened by negative interactions with non-native brook trout that occur with the four subpopulations.

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. Our 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 us 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 so would result in the extinction of the species.

We find that the designation of critical habitat is not determinable for bull trout in the coterminous United States, based on the best available information. When a ''not determinable'' finding is made, we 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. We reached a ''not determinable'' critical habitat finding in the proposed rule, and we specifically requested comments on this issue. While we received a number of comments advocating critical habitat designation, none of these comments provided information that added to our ability to determine critical habitat. Additionally, we did not obtain any new information regarding specific physical and biological features essential for bull trout during the open comment period, including the five public hearings. The biological needs of bull trout is not sufficiently well known to permit identification of areas as critical habitat. Insufficient information is available on the number of individuals or spawning reaches required to support viable subpopulations throughout each of the distinct population segments. In addition, we have not identified the extent of habitat required and all specific management measures needed for recovery of this fish. This information is considered essential for determining critical habitat for these population segments. 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, we find that designation of critical habitat for bull trout in the coterminous United States is not determinable at this time. We will protect bull trout habitat 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 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 States 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)(2) requires Federal agencies to ensure that activities 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 us.

The Coastal-Puget Sound and St. Mary-Belly River population segments occur on lands administered by the USFS, NPS, and BLM; various State- and privately-owned properties in Washington (Coastal-Puget Sound population segment) and Montana (St. Mary-Belly River population segment); Blackfeet Tribal lands in Montana, and various Tribal lands in Washington. Federal agency actions that may require 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; Federal Energy Regulatory Commission licensed hydropower projects authorized under the Federal Power Act; USFS and BLM timber, recreation, mining, and grazing management activities; Environmental Protection Agency authorized discharges under the National Pollutant Discharge System of the Clean Water Act; and U.S. Housing and Urban Development projects.

On January 27, 1998, an interagency memorandum between the USFS, BLM and us outlined a process for bull trout section 7 conference and consultation in recognition of the possibility of an impending listing of bull trout in the Klamath River and Columbia River basins. The process considers both programmatic actions (*e.g.,* land management plans) and site-specific actions (*e.g.,* timber sales and livestock grazing allotments) and incorporates conference and consultation at the watershed level. The process uses a matrix (Service 1998c) to determine the environmental baseline and the effects of actions on the environmental baseline of bull trout. The USFS and BLM provided a Biological Assessment (BA) to us on June 15, 1998, which evaluated the effects of implementing the land management plans, as amended by PACFISH and INFISH strategy, in the Klamath River and Columbia River basins. PACFISH is the Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California, developed by the USFS and BLM. PACFISH is intended to be an ecosystem-based, aquatic habitat and riparian-area management strategy for Pacific salmon, steelhead, and sea-run cutthroat trout habitat on lands administered by the two agencies that are outside the area subject to implementation of the NFP. INFISH is the Inland Native Fish Strategy, which was developed by the USFS to provide an interim strategy for inland native fish in eastern Oregon and Washington, Idaho, western Montana, and portions of Nevada. The BA concluded the plans, as amended, would not jeopardize the Klamath River and Columbia River DPSs of bull trout. In addition, in a June 19, 1998, letter, the land management agencies provided commitments in implementing the PACFISH and INFISH aquatic conservation strategies to ensure the USFS and BLM management plans and associated actions would conserve federally listed bull trout. The commitments addressed: restoration and improvement; standards and guidelines of PACFISH and INFISH; key and priority watershed networks; watershed analysis; monitoring; long-term conservation and recovery; and section 7 consultation at the watershed level. The BA and additional commitments were part of the materials we evaluated in developing a biological opinion on the management plans. The non-jeopardy biological opinion, issued August 14, 1998, endorsed implementation of those commitments in the Klamath River and Columbia River basins, in addition to identifying further actions to help ensure conservation of bull trout in those DPSs. The NFP applies to Federal lands in the Coastal-Puget Sound population segment. Although we have not finalized a programmatic biological opinion, programmatic consultations with three National Forests have been re-initiated, including conferencing on bull trout with the USFS regional office for the Olympic, Mount Baker-Snoqualmie, and Gifford Pinchot National Forests.

The Act and implementing regulations found at 50 CFR 17.31 set forth a series of general 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 (which includes to 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 our agents and State conservation agencies. In this case, a special rule tailored to this particular species takes the place of the regulations in 50 CFR 17.31; the special rule, though, incorporates most requirements of the general regulations, although with additional exceptions.

We may issue permits under section 10(a)(1) of the Act to carry out otherwise prohibited activities involving endangered and threatened wildlife under certain circumstances. Regulations governing permits are at 50 CFR 17.32 for threatened species. 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. Permits are also available for zoological exhibition, educational purposes, or special purposes consistent with the purpose of the Act. For copies of the regulations concerning listed plants and animals, and general inquiries regarding prohibitions and permits, contact the U.S. Fish and Wildlife Service, Ecological Services, Endangered Species Permits, 911 N.E. 11th Avenue, Portland, Oregon, 97232–4181 (telephone 503/231–2063; facsimile 503/231–6243).

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species list, listing 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. We believe the following actions would not be likely to result in a violation of section 9, provided the activities are carried out in accordance with all existing regulations and permit requirements:

(1) Actions that may affect bull trout and are authorized, funded or carried out by a Federal agency when the action is conducted in accordance with an incidental take statement issued by us pursuant to section 7 of the Act;

(2) Possession of bull trout caught legally in accordance with authorized State, NPS, and Tribal fishing regulations (see ''Special Rule'' section);

(3) State, local and other activities approved by us under section 4(d), section 6(c)(1), or section 10(a)(1) of the Act;

(4) The planting of native vegetation within riparian areas, using hand tools or mechanical auger. This does not include any site preparation that involves the removal of native vegetation (such as deciduous trees and shrubs) or goes beyond that necessary to plant individual trees, shrubs, etc.;

(5) The installation of fences to exclude livestock impacts to the riparian area and stream channel. The installation of new off-channel livestock watering facilities where livestock use streams for watering, and the operation and maintenance of existing off-channel livestock watering facilities. These watering facilities must consist of low volume pumping, gravity feed or well systems, and in-water intakes must be screened consistent with National Marine Fisheries Service (NMFS) Juvenile Fish Screen Criteria For Pump Intakes. This does not include the potential impacts associated with the grazing activity itself or negative effects attributable to depleting stream flow due to water withdrawal;

(6) The placement of human access barriers, such as gates, fences, boulders, logs, vegetative buffers, and signs to limit use- and disturbance-associated impacts. These impacts include timber theft, disturbance to wildlife, poaching, illegal dumping of waste, erosion of soils, and sedimentation of aquatic habitats, particularly in sensitive areas such as riparian habitats or geologically unstable zones. This does not include road maintenance or the potential impacts associated with the road itself;

(7) The current operation and maintenance of fish screens on various water facilities that meet the current NMFS Juvenile Fish Screen Criteria and Juvenile Fish Screen Criteria For Pump Intakes. This does not include the use of traps or other collection devices at screen installations, operation of the diversion structure, or negative effects attributable to depleting stream flow due to water diversion;

(8) The installation, operation, and maintenance of screens where the existing canal or ditch is located off the main stream channel. The canal or ditch must be dewatered prior to screen and bypass installation and prior to fish entering the canal or ditch. Installed screens and bypass structures must meet the current NMFS Juvenile Fish Screen Criteria. Bypass must be accomplished through free (volitional) access, with adequate velocities, construction materials and stream re-entry conditions that will not result in harm or death to fish. This does not include the use of traps or other collection devices at screen installations, placement or operation of the diversion structure, or negative effects attributable to depleting stream flow due to water diversion;

(9) The general maintenance of existing structures (such as homes, apartments, commercial buildings) which may be located in close proximity to a stream corridor, but outside of the stream channel. This does not include potential impacts associated with sediment or chemical releases that may adversely affect bull trout or their habitat, nor does this include those activities that may degrade existing riparian areas or alter streambanks (such as removal of streamside vegetation and streambank stabilization); and

(10) The lawful use of existing State, county, city, and private roads. This does not include road maintenance and the potential impacts associated with the road itself that may destroy or alter bull trout habitat (such as grading of unimproved roads, stormwater and contaminant runoff from roads, failing road culverts, and road culverts that block fish migration), unless authorized by us through section 7 or 10 of the Act.

The following actions likely would be considered a violation of section 9:

(1) Take of bull trout without a permit or other incidental take authorization from us. Take includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting any of these actions, except in accordance with applicable State, NPS, and Tribal fish and wildlife conservation laws and regulations;

(2) To possess, sell, deliver, carry, transport, or ship illegally taken bull trout;

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

(4) Intentional 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, grading of unimproved roads, stormwater and contaminant runoff from roads, failing road culverts, and road culverts that block fish migration or other activities that result in the destruction or significant degradation of cover, channel stability, substrate composition, turbidity, 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 timber harvest, grazing, mining, hydropower development, road construction 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.

We will review other activities not identified above 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. We do not consider these lists to be exhaustive and provide them as information to the public.

Direct your questions regarding whether specific activities may constitute a violation of section 9 to the Supervisor, Western Washington Office, 510 Desmond Drive SE, Suite 102, Lacey, Washington 98503 (telephone 360/753–9440; facsimile 360/753–9518) for the Coastal-Puget Sound population segment; the Montana Field Office, 100 N. Park, Suite 320 Helena, Montana 59601 (telephone 406/449–5225; facsimile 406/449–5339) for the St. Mary-Belly River population segment.

Special Rule

Section 4(d) of the Act provides that when a species is listed as threatened, we are to issue such regulations as are necessary and advisable to provide for the conservation of the species. We have generally done so by adopting regulations (50 CFR 17.31) applying with respect to threatened species the same prohibitions that under the Act apply with respect to endangered species. Those prohibitions generally make it illegal to import, export, take, possess, ship in interstate commerce, or sell a member of the species. The ''take'' that is prohibited includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting the wildlife, or attempting to do any of those things. However, we may also issue a special rule tailored to

a certain threatened species, establishing with respect to it only those particular prohibitions that are necessary and advisable for its conservation. In that case, the general prohibitions in 50 CFR 17.31 do not apply to that species, and the special rule contains all the prohibitions and exceptions that do apply. Typically, such special rules incorporate all the prohibitions contained in 50 CFR 17.31, with additional exceptions for certain forms of take that we have determined are not necessary and advisable to prohibit in order to provide for the conservation of that particular species.

The special rule in this final determination for bull trout will apply to bull trout wherever found in the coterminous lower 48 States, except in the Jarbidge River basin in Nevada and Idaho. The principal effect of the special rule is to allow take in accordance with State, NPS, and Native American Tribal permitted fishing activities. Since we are finalizing the listing of bull trout as a coterminous listing, we are essentially adding the special rule we had proposed for the Coastal-Puget Sound and St. Mary-Belly River population segments to the existing special rule for the Klamath and Columbia River population segments published on June 10, 1998 (63 FR 31647). The resultant special rule is effectively identical to the proposed rule for the Coastal-Puget Sound and St. Mary-Belly population segments and does not change the existing special rule for the Klamath and Columbia River population segments. The special rule for the Jarbidge River population segment is effectively identical to the special rule for the other four population segments except that it is only valid until April 9, 2001, and thus, will remain separate.

We believe that statewide angling regulations have become more restrictive in an attempt to protect bull trout in Washington, Idaho, Oregon, California, and Montana, and are adequate to provide continued conservation benefits for bull trout in the Klamath River, Columbia River, Coastal-Puget Sound and the St. Mary-Belly River population segments. The State of Washington closed fishing in 1994 for ''native char'' in most waters within the Coastal-Puget Sound population. Legal angler harvest in the St. Mary-Belly River DPS in Montana occurs only on the Blackfeet Indian Reservation. Legal harvest of bull trout in the Klamath River basin was eliminated in 1992 when the Oregon Department of Fish and Wildlife imposed a fishing closure. State management agencies in Idaho, Oregon, Montana, and Washington have suspended harvest of bull trout in the Columbia River basin, except in Lake Billy Chinook (Oregon) and Swan Lake (Montana). Since the States and many Tribal governments have demonstrated a willingness to adjust their regulations to reduce fishing pressures where needed, we do not believe it is necessary and advisable for the conservation of the species to prohibit take through regulated fishing of subpopulations of bull trout that are exhibiting stable or increasing numbers of individuals and where habitat conditions are not negatively depressing local fish stocks. Using discretion when applying 4(d) exemptions can foster incentives for States and Tribes to expedite conservation efforts by providing rewards for restoring stocks and allowing regulated harvest prior to delisting. For example, Washington has only two systems in the Coastal-Puget Sound population segment that are open for bull trout fishing. These systems have a two fish limit with a minimum 508 mm (20 in.) size limit to allow females to spawn at least once. Also, as long as these systems are closely monitored, we are gaining valuable information about the life history, relative abundance, and distribution of bull trout, which will be important for working towards the recovery of the species. We intend to continue to work with the States and Tribes in assessing whether current fishing regulations are adequate to protect bull trout, and in developing management plans and agreements with the objective of recovery and eventual delisting of the species.

In accordance with the June 1997 Secretarial Order on Federal-Tribal trust responsibilities and the Act, we will work with Tribal governments that manage bull trout streams to restore ecosystems and enhance Tribal management plans affecting the species. We believe that the 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.

Elsewhere in today's **Federal Register** we have published a Notice of Intent which outlines our intent to develop, through section 4(d) of the Act, another special rule for bull trout that would provide conservation benefits to the species, while ensuring the future continuation of land management actions. The special rule would address two categories of activities affecting bull trout: (1) Habitat restoration; and (2) regulations that govern land and water management activities. Please refer to the notice for further information and if you wish to provide comments to us.

Similarity of Appearance

Section 4(e) of the Act authorizes the listing of a non-threatened or endangered species based on similarity of appearance to a threatened or endangered species 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 the 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, 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 issued for Dolly Varden at this time. However, if bull trout and Dolly Varden are managed in Washington State as separate species in the future, we may consider, at that time, the merits of proposing Dolly Varden under the similarity of appearance provisions of the Act.

Section 7 Consultation

Although this rule consolidates the five bull trout DPSs into one listed taxon, based on conformance with the DPS policy for purposes of consultation under section 7 of the Act, we intend to retain recognition of each DPS in light of available scientific information relating to their uniqueness and significance. Under this approach, these DPSs will be treated as interim recovery units with respect to application of the jeopardy standard until an approved recovery plan is developed. Formal establishment of bull trout recovery

units will occur during the recovery planning process.

Paperwork Reduction Act for the Listing

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. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information, unless it displays a currently valid control number. For additional information concerning permit and associated requirements for threatened species, see 50 CFR 17.32.

Required Determinations for the Special Rule

Regulatory Planning and Review, Regulatory Flexibility Act, and Small Business Regulatory Enforcement Fairness Act

The special rule was not subject to Office of Management and Budget (OMB) review under Executive Order 12866.

This special rule will not have an annual economic effect of $100 million or adversely affect an economic sector, productivity, jobs, the environment, or other units of the government. Therefore, a cost-benefit and full economic analysis is not required.

Section 4(d) of the Act provides authority for us to issue regulations necessary to provide for the conservation of species listed as threatened. We find that State, NPS, and Native American Tribal angling regulations have become more restrictive in an attempt to protect bull trout in the coterminous United States. We believe that existing angling regulations developed independently by the States, National Park Service, and Native American Tribes are adequate to provide continued conservation benefits for the bull trout in the coterminous United States. As a result, the special rule will allow angling to take place in the river systems within the Klamath River, Columbia River, Coastal-Puget Sound, and St. Mary-Belly River DPSs under existing State regulations. The Jarbidge River DPS has a separate special rule that was made final on April 8, 1999 (64 FR 17110), and continues to remain in effect for that DPS. The economic effects discussion addresses only the economic benefits that will accrue to the anglers who can continue to fish in river systems within the Klamath River, Columbia River, Coastal-Puget Sound and St. Mary-Belly River population segments. Although the special rule for the Klamath River and Columbia River DPSs was finalized on June 10, 1998 (63 FR 31647), and continues to remain in effect, they are included in this ''Required Determinations for the Special Rule'' section since the special rule applies to all four DPSs (see ''Special Rule'' section for further discussion of this issue).

This special rule will allow continued angling opportunities in Washington, Idaho, Oregon, California, and Montana under existing State, NPS, and Native American Tribal regulations. Data on the number of days of trout fishing under new State regulations are available by State from the 1996 National Survey of Fishing, Hunting, and Wildlife Associated Recreation. These data pertain to total trout fishing in each State. In order to develop an estimate of angling days preserved by this rule, we used the proportion of the river miles in this rule to total river miles of coldwater running rivers and streams in each State to estimate the portion of total trout angling days affected by this rule. Because of the lack of definitive data, we decided to do a worst case analysis. We analyzed the economic loss in angling satisfaction, measured as consumer surplus, if all trout fishing were prohibited in the Klamath, Columbia, St. Mary-Belly rivers and the Coastal-Puget Sound. Since there are substitute sites in each State where fishing is available, this measure of consumer surplus is a conservative estimate and would be a maximum estimate. The total estimated angling days affected is 266,490 annually. We used a consumer surplus of $19.35 (1999$) per day for trout fishing to get an estimated benefit of slightly over $5 million annually. If the assumption that the affected rivers receive an average amount of angling pressure does not hold true, and the angling pressure is twice the average for the affected rivers, then the annual consumer surplus will be in the range of $10 million annually. Consequently, this rule will have a small measurable economic benefit on the United States economy, and even in the event that fishing pressure is twice the State average in the affected rivers, this rule will not have an annual effect of $100 million or more for a significant rule-making action.

This special rule will not create inconsistencies with other agencies' actions.

The special rule allows for continued angling opportunities in accordance with existing State, NPS, and Native American Tribal regulations.

This special rule will not materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients. This special rule does not affect entitlement programs.

This special rule will not raise novel legal or policy issues. There is no indication that allowing for continued angling opportunities in accordance with existing State, NPS, and Native American Tribal regulations would raise legal, policy, or any other issues.

The Department of the Interior certifies that the final rule will not have a significant economic effect on a substantial number of small entities as defined under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). A Regulatory Flexibility Analysis is not required. Accordingly, a Small Entity Compliance Guide is not required. We recognize that some affected entities are considered ''small'' in accordance with the Regulatory Flexibility Act, however, no individual small industry within the United States will be significantly affected by allowing for continued angling opportunities in accordance with existing State, NPS, and Tribal regulations.

The special rule is not a major rule under 5 U.S.C. 801 *et seq.*, the Small Business Regulatory Enforcement Fairness Act.

This special rule does not have an annual effect on the economy of $100 million or more. Trout fishing in the Klamath River, Columbia River, the Coastal-Puget Sound, and the St. Mary-Belly River generates expenditures by local anglers of an estimated $8.7 million per year. Consequently, the maximum benefit of this rule for local sales of equipment and supplies is no more than $8.7 million per year and most likely smaller because all fishing would not cease in the area even if the Klamath River, Columbia River, the Coastal-Puget Sound, and the St. Mary-Belly River were closed to trout fishing. The availability of numerous substitute sites would keep anglers spending at a level probably close to past levels.

This special rule will not cause a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. This special rule allows the continuation of fishing in the Klamath River, Columbia River, Coastal-Puget Sound and St. Mary-Belly River population segments and, therefore, allows for the usual sale of equipment and supplies by local businesses. This special rule will not affect the supply or demand for angling opportunities in Washington, Idaho, Oregon, California, and Montana, and

therefore, should not affect prices for fishing equipment and supplies, or the retailers that sell equipment. Trout fishing in the affected rivers accounts for less than 2 percent of the available trout fishing in the States.

This special rule does not have significant adverse effects on competition, employment, investment productivity, innovation, or the ability of United States based enterprises to compete with foreign-based enterprises. Because this rule allows for the continuation of spending of a small number of affected anglers, approximately $8.6 million for trout fishing, there will be no measurable economic effect on the freshwater sportfish industry which has annual sales of equipment and travel expenditures of $24.5 billion nationwide.

Unfunded Mandates Reform Act

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501, *et seq.*):

This special rule will not ''significantly or uniquely'' affect small governments. A Small Government Agency Plan is not required; and

This special rule will not produce a Federal mandate of $100 million or greater in any year; that is, it is not a ''significant regulatory action'' under the Unfunded Mandates Reform Act.

Takings Implication

We have determined that this special rule has no potential takings of private property implications as defined by Executive Order 12630. The special rule would not restrict, limit, or affect property rights protected by the Constitution.

Federalism

This special rule will not have substantial direct effects on the States, in their relationship between the Federal Government and the States, or on the distribution of power and responsibilities among various levels of government. Therefore, in accordance with Executive Order 12612, we have determined that this special rule does not have sufficient federalism implications to warrant a Federalism Assessment.

Civil Justice Reform

The Department of the Interior has determined that this special rule meets the applicable standards provided in sections 3(a) and 3(b)(2) of Executive Order 12988.

National Environmental Policy Act

We have determined that an Environmental Assessment and Environmental Impact Statement, 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. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

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

Author(s)

The primary authors of this final rule are Jeffrey Chan, Western Washington Fishery Resource Office, Olympia, Washington; Wade Fredenberg, Creston Fish and Wildlife Center, Kalispell, Montana; Samuel Lohr, Snake River Basin Office, Boise, Idaho; and Shelley Spalding, Western Washington State Office, Olympia, Washington.

List of Subjects in 50 CFR Part 17

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

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

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 revising the entries for ''trout, bull'' under FISHES, in the List of Endangered and Threatened Wildlife to read as follows:

§ 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. (AK, Pacific NW into CA, ID, NV, MT), Canada (NW Territories).	U.S.A, coterminous (lower 48 states).	T	637, 659, 670	NA	17.44(w) 17.44(x)
*	*	*	*	*	*	*	

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

§ 17.44 Special rules—fishes.

* * * * *

(w) What species are covered by this special rule? Bull trout (*Salvelinus confluentus*), wherever found in the coterminous lower 48 States, except in the Jarbidge River Basin in Nevada and Idaho (see 50 CFR 17.44(x)).

(1) What activities do we prohibit? 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 in the coterminous United States as defined in paragraph (w) of this section.

(i) No person may possess, sell, deliver, carry, transport, ship, import, or export, by any means whatsoever, any such species taken in violation of this section or in violation of applicable State, National Park Service, and Native American Tribal fish and conservation laws and regulations.

(ii) It is unlawful for any person to attempt to commit, solicit another to

commit, or cause to be committed, any offense listed in this special rule.

(2) What activities do we allow? In the following instances you may take this species in accordance with applicable State, National Park Service, and Native American Tribal fish and wildlife conservation laws and regulations, as constituted in all respects relevant to protection of bull trout in effect on November 1, 1999:

(i) Educational purposes, scientific purposes, the enhancement of propagation or survival of the species, zoological exhibition, and other conservation purposes consistent with the Act; or

(ii) Fishing activities authorized under State, National Park Service, or Native American Tribal laws and regulations;

(3) How does this rule relate to State protective regulations? Any violation of applicable State, National Park Service, or 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.

* * * * *

Dated: October 14, 1999.

Donald Barry,

Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 99–28295 Filed 10–29–99; 8:45 am]

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