PETITION TO LIST KOKANEE ONCORYNCHUS NERKA AS ENDANGERED UNDER THE ENDANGERED SPECIES ACT

March 15, 2000

****

TO: SECRETARY OF THE INTERIOR, DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE

From: Joanna A. Buehler (Petitioner), President, **Save Lake Sammamish,** 1420 N.W. Gilman Boulevard, #2565, Issaquah, Washington, 98027 (Tel: 425-641-3008); Kurt Beardslee (Petitioner), Executive Director, **Washington Trout**, P.O. Box 402, Duvall, Washington, 98019 (Tel: 425-788-1167); Gail Twelves (Petitioner), Vice-Chair, **Sierra Club Cascade Chapter**, 8511 15th Avenue NE, #201, Seattle, WA 98115-3101 (Tel: 206-523-2147); Joan Crooks (Petitioner), Executive Director, **Washington Environmental Council**, 615 Second Avenue, Suite 380, Seattle, WA 98104 (Tel: 206-622-8103); Shawn Cantrell (Petitioner), Northwest Regional Director, **Friends of the Earth**, 6512 23rd Avenue NW, Suite 320, Seattle, WA 98117 (Tel: 206-297-9460); Tom Cox (Petitioner), Chair, **King County Conservation Voters**, 300 Lenora, Box B-364, Seattle, WA 98121 (Tel: 206-632-7440); Gerald A. Ring Erickson, Ph.D., Washington State Field Representative, **Defenders of Wildlife**, 1101 Fourteenth Street NW, Suite 1400, Washington, D.C. 20005-5605 (Tel: 202-682-9400 or 360-427-2887).

Subject: Petition to the Secretary of the Interior to list as Endangered the population of native summer-run kokanee that spawns in Issaquah Creek (a Lake Sammamish tributary) and to designate critical habitat. This protection is sought for all Lake Sammamish tributary streams since several would be recolonized during a successful population recovery program. In addition, the tributaries have a significant effect on the quality of lake rearing habitat for kokanee. As the facts to be presented will attest, this population is in imminent danger of extinction and emergency regulations are warranted. Special habitat protection measures are needed (especially with respect to the cumulative effects of rapid, ongoing landscape modifications) and a captive broodstock or breeding program will be needed to rescue this population. The existing artificial production programs for other salmonids in Issaquah Creek also need to be examined critically and eliminated or restricted, as necessary, to protect the indigenous kokanee resource.

ATTACHED REPORTS ARE PART OF THE PETITION

In order to minimize redundancy, two detailed reports are attached with the intention that they be considered as an integral part of this petition. Except as listed at the end of this petition, all citations herein can be found in these two reports.

1. Gustafson, R.G., T.C. Wainwright, G.A. Winans, F.W. Waknitz, L.T. Parker, and R.S. Waples. 1997. Status review of sockeye salmon from Washington and Oregon. U.S. Dept. Commer., NOAA Tech. Memo, NMFS-NWFSC-33, 282 p.

2. Conner, E., B. Kvam, and L. Mighetto. 2000. Historic and Current Status of Kokanee in the Lake Washington Basin. Discussion Draft, March 13, 2000, prepared for King County, WA by R2 Resource Consultants, Inc., Redmond, WA, with historical research by Historical Research Associates, Inc., Seattle, WA.

The Issaquah Creek summer kokanee resource should be designated as a Distinct Population Segment (DPS) and listed as Endangered. The status of the population is as bad as that of Redfish Lake sockeye salmon when they were listed as an Endangered "species" in 1991. This was long before the broader determination of Evolutionarily Significant Units (ESUs) for sockeye salmon in December 1997 (at that time 7 individual sockeye populations were

****

designated as separate ESUs, one being Provisional). In addition, there exists compelling evidence of both genetic and life history uniqueness in the case of Issaquah Creek summer kokanee. The listing of Redfish Lake sockeye relied entirely on unique life history characteristics and was made in spite of the absence of direct genetic information indicating that this population was an ESU of the species. Using the National Marine Fisheries Service's (NMFS) determination of at least 7 sockeye ESUs as a guide, it is obvious that there likely exist, at a minimum, several additional kokanee DPSs within the taxonomic species' natural range within Washington, Oregon and Idaho.

BASIS FOR THE PETITION

Section 4 of the Endangered Species Act (ESA) contains provisions allowing interested persons to petition the Secretary of the Interior or the Secretary of Commerce to add a species to, or remove a species from, the List of Endangered or Threatened Wildlife. Petitioners file this petition under the Endangered Species Act, 16 U.S.C. section 1531-1543 (1982), its implementing regulations, 50 C.F.R. part 424, and the Administrative Procedure Act, 5 U.S.C.

section 553(c). The Fish and Wildlife Service (USFWS) has jurisdiction over this petition under 16 U.S.C. section 1533 (a) and the August 26, 1974 Memorandum of Understanding Between

the USFWS and NMFS Regarding Jurisdictional Responsibilities and Listing Procedures Under the Endangered Species Act of 1973. In 1978, the ESA was amended so that the definition of a

ecies included "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of rtebrate fish or wildlife which interbreeds when mature." The authority to list a "species" as endangered or threatened is thus not restricted to species as recognized in formal taxonomic terms, but extends to subspecies, and for vertebrate taxa, to DPSs.

The conservation, ecological, recreational, research and commercial interests of the citizens of the United States (including the Petitioners) will be adversely affected if the requested petition is not granted and acted upon immediately.

The ESA requires the Service to determine whether a species is a threatened or endangered species because of any of the following factors, 16 U.S.C. Sec.11533(a)(1):

(A) the present or threatened destruction, modification, or curtailment of its habitat or range;

(B) overutilization for commercial, recreational, scientific, or educational purposes;

(C) disease or predation;

(D) the inadequacy of existing regulatory mechanisms; or

(E) other natural or manmade factors affecting its continued existence.

As detailed in the incorporated reports Conner et al, (2000), Pfeifer (1992), these ESA factors are present. For example, 1) habitat is being destroyed by changed hydrology and siltation consequent to rapid land use changes; 2) increase in water temperature is often directly linked to increase in disease; 3) operation of the fish hatchery weir affects the movemert and behavior of the kokanee 4) redd superimpostion by hatchery chinook on summer-run kokanee redds; and 5) lack of regulatory enforcement (Chassen , 2000).

****

The joint USFWS and NMFS policy on vertebrate populations was set forth in the Federal Register on February 7, 1996 (Volume 61, Number 26, Notices Page 4721-4725). The following is taken from that document:

Three elements are considered in a decision regarding the status of a possible DPS as endangered or threatened under the Act. These are applied similarly for addition to the lists of endangered and threatened wildlife and plants, reclassification, and removal from the lists:

1. Discreteness of the population segment in relation to the remainder of the species to which is belongs;
2. The significance of the population segment to the species to which it belongs; and
3. The population segment's conservation status in relation to the Act's standards for listing (i.e., is the population segment, when treated as if it were a species, endangered or threatened?).

Discreteness: A population segment of a vertebrate species may be considered discrete if it satisfies either one of the following conditions:

1. It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.
2. It is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(11)(D) of the Act.

Significance: If a population segment is considered discrete under one or more of the above conditions, its biological and ecological significance will then be considered in light of Congressional guidance that the authoritv to list DPSs be used "sparingly" while encouraging the conservation of genetic diversity. In carrying out this examination, the Services will consider available scientific evidence of the discrete population segment's importance to the taxon to which it belongs. This consideration may include, but is not limited to, the following:

1. Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon;
2. Evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon;
3. Evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range; or
4. Evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

This petition and the attached reports present evidence that the Issaquah Creek summer-run kokanee population is a DPS based on 1) its "discreteness," as shown by ecological and behavioral factors, and by genetic and morphological differences; and 2) its "significance," as shown by evidence that the discrete population segment differs markedly from other populations

of the species in its genetic characteristics, including its possession of unusual run timing and fry emergence timing which are both under genetic control.

****

THE PRIMARY BASIS FOR PROPOSED LISTING: AN UNPRECEDENTED RECENT DECLINE IN RESOURCE ABUNDANCE FOR THIS UNIQUE KOKANEE POPULATION

The most critical quantitative data are the estimated late summer kokanee escapements in Issaquah Creek (Sources: Pfeifer 1992, Ostergaard 1998a, Conner et al. 2000). This escapement trend clearly shows that the population is in imminent danger of extinction.

1980	692 fish
1981	438 fish
1982	1016 fish
1983	10 fish
1984 - 89	unknown
1990	70 fish
1991	unknown
1992	11 fish
1993	27 fish
1994	39 fish
1995	4 fish
1996	16 fish
1997	19 fish
1998	0 fish
1999	4 fish

EVIDENCE OF DISCRETENESS:

ECOLOGICAL AND BEHAVIORAL FACTORS

The early run timing for these stream spawning kokanee is unique within the Lake Washington and Lake Sammamish

system and is rare among native stream spawning kokanee populations in general throughout the western United States. Pfeifer (1992) was unable "to identify any other kokanee populations in Washington with an August spawning period." Elsewhere, native stocks of kokanee that spawn in inlet tributaries in August (such as in Redfish Lake, Idaho and in the Upper Arrow lakes in British Columbia), must do so to avoid the early onset of winter. The graphic representation provided by Pfeifer (1992, Figure 5.21, p. 121 – copy attached) gives the most striking portrayal of difference. In this Figure, he compares the completely separate early spawning timing curve for Issaquah Creek kokanee against curves for seven other kokanee populations in Washington, Oregon, and British Columbia.

Available evidence indicates that this resource was much more abundant in the past and probably utilized several tributaries of Lake Sammamish. Ostergaard et al (1995) stated that early entering kokanee in Issaquah Creek are known to be native. Ostergaard (1996) listed 8 creeks, tributary to the east and south shores of Lake Sammamish, that supported native early entering kokanee. It is currently confined to Issaquah Creek – if it still exists. As noted above, no fish were observed in 1998 and the final total escapement estimate for 1999 was only 4 fish.

Perhaps the most compelling evidence of uniqueness comes from studies of a key life history parameter, fry emergence timing. Berggren (1973) used a modified plankton net to collect

****

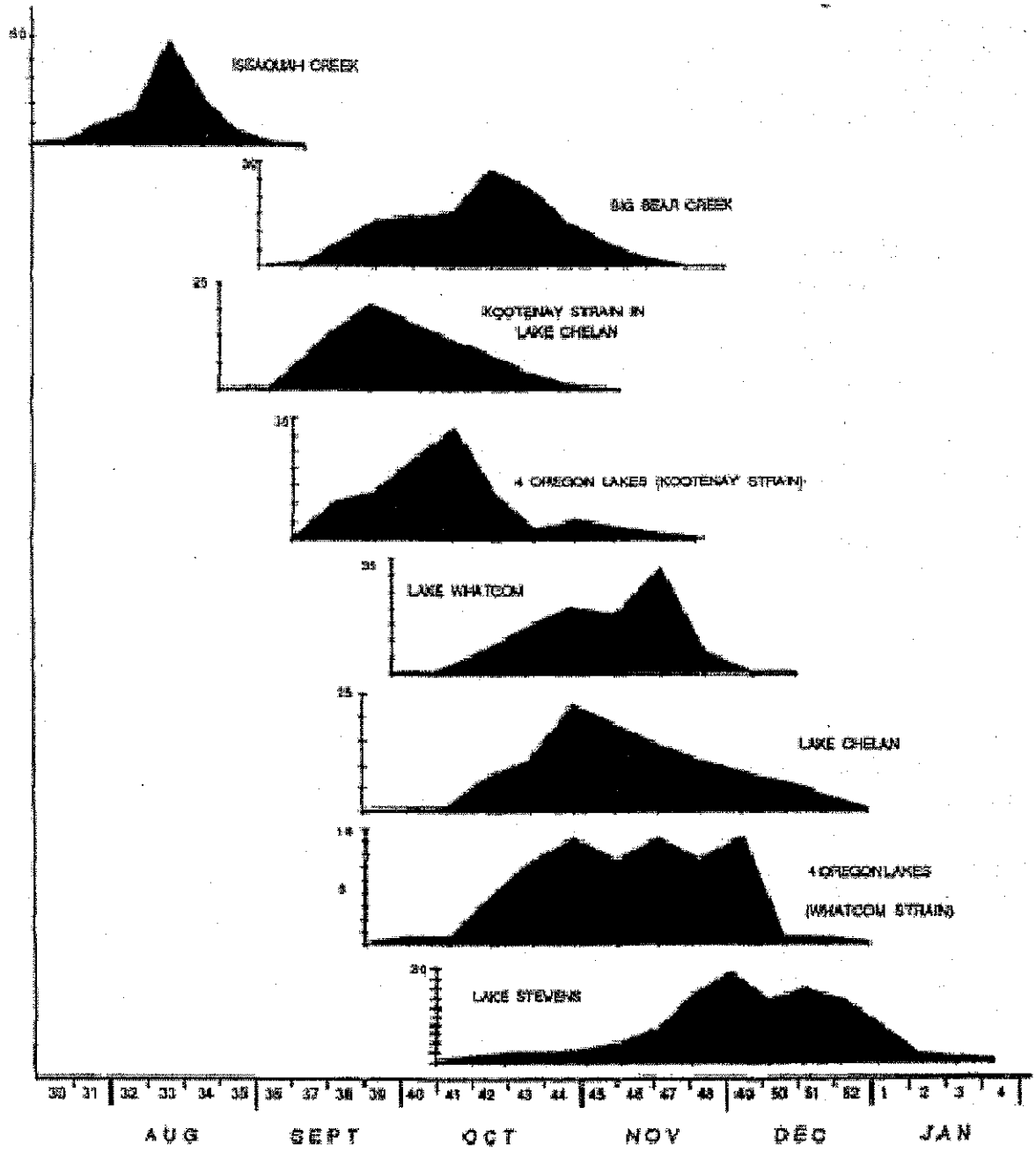

Figure 5.21 Relative time of spawning by kokanee in Issaquah Creek and Big Bear Creek compared with Kootenay Lake kokanee in Lake Chelan (Brown 1984), and four Oregon lakes (Lewis 1971), as well as Lake Whatcom kokanee in Lakes Whatcom, Chelan, four Oregon lakes, and Stevens (Pfeifer 1978). Y axes are percent of total run, or of summed weekly peak spawner counts.

****

okanee fry by fishing from a foot bridge at the mouth of Issaquah Creek in Lake Sammamish State Park during 1972. The fish were already present on the first sampling date (November 27) when 28 fry were captured. The peak catch (122) was made on November 30. Sampling also occurred on December 5, 8, 11, and 18, with 19, 3, 1, and 4 kokanee fry being taken, respectively. Berggren (1973) concluded that "The kokanee fry start migrating before November 27

and appear to stop by the end of December. The peak was measured on November 30." This highly unusual early emergence timing may be the most important survival trait that has evolved for this particular population. The fry become free-swimming just prior to most or all of the winter flooding events that could easily mobilize (or smother with silt) the relatively small spawning gravels used by kokanee.

An additional demonstration of uniqueness comes from the external characteristics and coloration exhibited by Issaquah Creek kokanee at the time of spawning. The coloration of

Issaquah Creek kokanee and anadromous sockeye salmon is similar whereas the kokanee in Bear and Cottage creeks have a less intense red color than the sockeye salmon spawning in those same

locations (King County Surface Water Management 1994). Comparisons of Whatcom Lake kokanee with those in Issaquah Creek demonstrated that the latter were brighter red in color and

larger in size than Whatcom Lake fish, which had a "subdued pinkish-brown appearance" (Fletcher 1973b).

GENETIC DIFFERENCES AND EVIDENCE OF SIGNIFICANCE:

Genetics researchers have consistently demonstrated that this population is both native to the system and probably unique among kokanee and sockeye populations in the western United States Hendry (1995) and Hendry et al. (1996) reported on work that showed Issaquah Creek kokanee to be distinct from the following sockeye populations in the Lake Washington/Lake Sammamish system: Cedar River, Issaquah Creek, Cottage Creek, Bear Creek, and Lake Washington beach spawners. In addition, the kokanee could be clearly distinguished from Baker Lake and Cultus L sockeye samples. In earlier work, Seeb and Wishard (1977) and Wishard (1980) reported that Issaquah Creek kokanee were genetically distinct from Bear Creek and Cedar River kokanee as well as sockeye from Bear Creek, Cedar River, Lake Sammamish and Lake Washington beach spawning populations. The Issaquah Creek kokanee were also distinct from Baker Lake and Cultus Lake sockeye samples and kokanee from Lake Whatcom.

STATUS OF KOKANEE POPULATIONS IN THE WESTERN U.S.

Petitioners were unable to locate anything approaching a complete, comprehensive assessment of kokanee populations in their native western United States range. The "best" available information, albeit obviously incomplete, can be extracted from the kokanee inventory work done by Myers and Reiman (1991). They list 78 different kokanee populations from British Columbia (3), Colorado (4), Idaho (16), Montana (3), Oregon (2), Utah (2), and Washington (48). In some cases, information is given on origin of the populations but this is difficult to interpret. Respondents to their survey were asked three separate questions: (1) Introduced or Native: (2) Year First Introduced; and (3) Source lake if introduced (original native stock if known). However, during data entry, the various responses were aggregated into a single field (Kokanee Source). The 78 Populations as well as stated information on "kokanee source" and time of spawning are as follows:

****

British Columbia:

Kootenay – Native, September

Okanogan

Upper Arrow – Kootenay, September

Colorado:

Dillon Reservoir

Granby

Green Mountain

Shadow Mountain

Idaho:

Alturas

Anderson Ranch – Introduced/Unknown, September

Coeur D'Alene – Pend Oreille, November/December

Deadwood, August

Dworshak – Whatcom/Anderson Ranch

Island Park

Lucky Peak

Mackay

Palisades

Payette – Native/Pend Oreille, August/ September

Pend Oreille, November/December

Priest Lake, October/December

Redfish Lake

Spirit Lake, November/December

Stanley

Upper Priest, October/December

Montana:

Flathead Lake – Introduced/Unknown, October/December

Libby/Koocanusa – Introduced, September/October

Mary Ronan – Flathead, October/November

Oregon:

Odell – Kootenay/Flathead, October/November

Wallowa Lake – Native/Stocked

Utah:

Flaming Gorge

Porcupine – Introduced, September

Washington:

Alder Lake

American Lake – Whatcom

Angle Lake – Introduced/Unknown

Baker Lake – Native

****

Banks Lake – Native/Whatcom, October/November

Billy Clapp Lake – Native/Whatcom, October/November

Bonaparte Lake – Whatcom

Bumping Lake – Native/Whatcom

Cascade Lake – Whatcom

Cavanah Lake – Introduced/Unknown

Chain Lake – Whatcom

Chapman Lake – Whatcom

Chelan Lake – Whatcom/Kootenay, September/October

Cle Elum Lake – Native/Whatcom

Clear Lake

Cooper Lake – Native/Whatcom

Davis Lake – Whatcom

Deep Lake, Grant County – Whatcom

Deep Lake, King County – Introduced/Unknown

Deer Lake – Whatcom

Easton Lake

Kachees Lake –Native/Whatcom

Keechelus Lake – Native/Whatcom

Loon Lake – Whatcom

Lost Lake – Whatcom

Meridian Lake – Introduced/Unknown

Merwin – Introduced/Unknown, September/October

Mountain Lake – Whatcom

Padden Lake – Whatcom

Palmer Lake – Whatcom

Pierre Lake – Whatcom

Pipe-Lucerne – Whatcom

Rimrock – Whatcom, September

Roesiger, South Arm – Introduced/Unknown

Roesiger, North Arm – Introduced/Unknown

Sammamish Lake

Sawyer Lake - Whatcom

Shannon Lake

Star Lake – Introduced/Unknown

Steilacoom Lake – Introduced/Unknown

Stevens Lake – Whatcom, November/January

Sullivan Lake – Whatcom

Toad Lake – Introduced/Unknown

Trout Lake – Whatcom

Washington Lake

Wenatchee Lake – Native/Whatcom

Wilderness Lake

Yale Lake – Cultus Lake ?, September/October

****

As noted previously, a number of populations are missing from the list of 78 shown above. The distinctive Warm Lake (Idaho) population described by Winans et al. (1996) is missing, as are

the Ozette Lake and Whatcom Lake kokanee. Other native populations that are missing include Crescent Lake kokanee from the northern edge of Washington's Olympic Peninsula. Here, the noted Beardslee rainbow trout coevolved with kokanee and is a specialized predator on kokanee (Behnke 1992). Introduced populations that are missing include the kokanee in Summit Lake near Olympia, WA.

Although the total number of populations is impressive, there are very few which are both native and free from no. local introductions. This leaves a host of unanswered questions on how many true native populations actually exist.

DISTINCT POPULATION SEGMENTS (DPSs) FOR KOKANEE

From the evidence examined by the Petitioners, it does not appear that there is currently enough information to establish DPSs for kokanee throughout their range in the western U.S. One problem is the apparent lack of any comprehensive resource assessment of the total number of populations, their current status, and their origins. The most geographically extensive genetic analysis available appears to be the work described by Winans et al. (1996). However, even their efforts covered only 12 United States kokanee populations (plus 3 Canadian) out of what must be well over 100 native and introduced United States kokanee populations in total. Waples et al. (1997, cited as "In press" in Gustafson et al. 1997) sampled 32 different sockeye and kokanee populations but these were heavily concentrated in the Snake River basin.

An additional complication is the extensive stocking of the species (kokanee plus sockeye) into waters where they are not indigenous. Such releases have been recorded in the following states: Arizona, California, Colorado, Connecticut, Idaho, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Mexico, New York, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Washington, Wisconsin, West Virginia, and Wyoming (Fuller et al. 1999).

ADDITIONAL AT-RISK KOKANEE POPULATIONS

With the exception of kokanee in the Lake Sammamish and Lake Washington systems, the Petitioners were unable to identify any other populations which were considered to be at-risk by anyone. Thus, the Fish and Wildlife Service will not be swamped with additional ESA petitions for single kokanee populations. The Final Environmental Impact Statement for the Wild Salmonid Policy described the status of kokanee in Washington as follows (WDFW 1997, p.64): "Kokanee populations are generally healthy, although the indigenous Lake Sammamish and Lake Washington populations are critically low. The range of kokanee has been greatly expanded as the result of hatchery introductions. There are currently about 40 wild populations and 40 hatchery populations. Habitat destruction has caused kokanee population declines in localized areas, while construction of reservoirs has increased available habitat suitable for kokanee in others." (Note: the term "wild" refers to any population with significant natural production, regardless of original stock origin.) One obvious cause for the apparent lack of any

****

other at-risk kokanee populations is simply a general lack of quantitative data on this resource. Washington probably has the most kokanee populations, but WDFW (1997, p. 15) states that

"Except for Yale Reservoir, individual resident populations are rarely monitored for spawner abundance."

ADDITIONAL REFERENCE CITATIONS

The following reference citations do not appear in either of the two reports that are part of this petition:

Behnke, R.J. 1992. Native trout of western North America. American Fisheries Society Monograph 6.

Berggren, T.J. 1973. Issaquah Creek kokanee study. Unpublished report. University of Washington, Seattle, WA.

Chasen, Daniel Jack, March 2000. The Rusted Shield: Government's Failure to Enforce – or Obey – Our System of Environmental Law Threatens the Recovery of Puget Sound's Wild Salmon. Report to Bullitt Foundation.

Fuller, P.L., L.G. Nico, and J.D. Williams. 1999. Nonindigenous fishes introduced into the inland waters of the United States. American Fisheries Society Special Publication 27.

King County Surface Water Management. 1994. Abundance of spawning kokanee in the Sammamish River drainage. Current and historic trends. Unpublished report. Seattle, WA.

Myers, D.L., and B.D. Rieman. 1991. Kokanee population dynamics. Idaho Dept. of Fish and Game. Job Completion Report F-73-R-13, Subproject 2, Study 2, Job 2. Boise, ID.

PETITION PREPARER

This petition was prepared for the Petitioners by Sam Wright, PMB 126, 2103 Harrison NW, Ste. 2, Olympia, WA 98502-2607 (Tel. 360-943-4424). The author is a scientist and Certified Fisheries Professional (CFP, American Fisheries Society).