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SCIENTIFIC EVALUATION OF BIOLOGICAL OPINIONS ON

ENDANGERED AND THREATENED FISHES

IN THE KLAMATH RIVER BASIN

Statement of

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The Klamath River Basin has an abundance of aquatic environments, including perennial streams and rivers, shallow lakes, and wetlands. Among the great diversity of organisms that can be found in these

environments are the Lost River and shortnose suckers and coho salmon belonging to the Southern Oregon/Northern California Coasts (SONCC) evolutionarily significant unit (ESU) of this species. The Lost River and shortnose suckers are restricted in distribution to the Klamath River Basin, while the SONCC coho salmon is found in the Klamath River Basin and in adjoining river basins. Because of low abundance and restricted distribution, the Lost River and shortnose suckers were listed federally as endangered under the Endangered Species Act (ESA) in 1988. For similar reasons, the Klamath Basin coho salmon was listed as threatened under the ESA in 1997.

The Lost River and shortnose suckers are large, long-lived species that once reached great abundances in the Klamath River Basin. By the 1960s, it became clear that these species had decreased greatly in abundance. Because excessive harvesting was considered a contributor to decline in the populations, fishing was restricted and presently is essentially prohibited. The populations remain small, however, as compared with their very high abundances in the early part of the 20th century. Factors that may explain the failure of these species to increase in abundance in the absence of harvest include pollution of Upper Klamath Lake with nutrients that cause harmful changes in its water quality, introduction of non-native species leading to increased predation and competition, blockage of tributaries used by some portions of the population for spawning, destruction of habitat, and entrainment of fish into water management structures.

The Klamath Basin coho also has shown great declines in abundance since the middle of the 20th century. Although no reliable population estimates are available, direct observation of spawning runs indicates that the native coho now is present only in small numbers, whereas it was earlier a major component of the total salmonidpopulation in the Klamath Basin. Factors contributing to the decline of this population may include excessive harvest, which is now largely curtailed, loss of tributary habitat, blockage of migration pathways, warming of waters in reservoirs and in tributaries where riparian vegetation has been removed and flows have been reduced, physical degradation of tributary habitat, introduction of large numbers of hatchery-reared coho on an annual basis, and manipulation of the hydrologic regime for water management purposes.

The extensive water resources of the Klamath River Basin are managed in large part by the U.S. Bureau of Reclamation (USBR) through its Klamath Project. The Klamath Project, which was initiated in 1908 and reached its present operating configuration in 1960, consists of an extensive system of canals, pumps, diversion structures, and dams capable of routing water to approximately 220,000 acres of irrigated farmlands in the Klamath Basin. At and below points of diversion and impoundment, the Klamath Project may be harmful to the welfare of the two endangered sucker species. Potential mechanisms of harm to the species that have been identified by federal fisheries biologists and others include blockage of migration routes, entrainment of fish of all ages in canals and other management structures, and alteration of flows and water levels either with respect either to quantity or seasonal timing. These factors related to the Klamath Project are primarily of concern in Upper Klamath Lake and its outlet, the Lost River drainage including Clear Lake, and the Tule Lake sumps, which are hydrologicallyconnected to the Lost River. Downstream, on the main stem of the Klamath River and its tributaries, the Klamath Project also potentially has adverse effects on the threatened cohosalmon. The salmon, which presently cannot access portions of the Klamath River Basin above Iron Gate Dam, could be affected in a variety of ways by depletion of flows and alteration of seasonality of flows in the main stem through operation of the Klamath Project.

Because of the potential for connections between operation of the Klamath Project and adverse influences on the welfare of the two endangered sucker species and the threatened coho salmon population,

the USBR prepared a biological assessment of the effects of Klamath Project operations for the two endangered sucker species (2001) and a separate, similar assessment for thecoho salmon (2001). These assessments contain recommendations on lake levels and main-stem flows in the Klamath River that the USBR judged adequate for protection of the threatened and endangered species. The assessments were submitted to the USFWS for evaluation with respect to the two sucker species and to the National Marine Fisheries Service for evaluation with respect to the coho salmon.

The USFWS and the NMFS both issued biological opinions and accompanying reasonable and prudent alternatives during 2001. In a detailed review of information on fish, water quality, and habitat as well as background information from the literature on the requirements of the species, the USFWS found that the proposals of the USBR would leave the two sucker species in jeopardy. As a reasonable and prudent alternative, the USFWS proposed screening of water management structures to prevent entrainment of suckers, establishment of adequate dam passage facilities, restoration of habitat, adaptive management of water quality, interagency coordination for operations during dry years, further studies of sucker populations, and a schedule of lake levels higher than those recommended by USBR in its assessment. Similarly, the NMFS found the proposals of USBR inadequate to avoid jeopardy of the threatened coho and proposed a reasonable and prudent alternative involving reduced rates of change in flow (ramping rates) below main-stem dams to prevent stranding of coho, interagency coordination, and minimum flows in the Klamath River higher than those proposed by the USBR.

During year 2001, a severe drought occurred in the Klamath River Basin. Having received the two biological opinions relevant to operation of the Klamath Project, the U.S. Department of the Interior (DOI) determined that it could not authorize delivery of water from the Klamath Project for agricultural use without first meeting the requirements for minimum lake levels in Upper Klamath Lake and for minimum flows in the main stem of the Klamath River below Iron Gate Dam. Thus, the availability of water through the Klamath Project to irrigators was severely restricted, and substantial loss of agricultural production occurred in the farmed areas normally served by the Klamath Project.

Following the irrigation season of 2001, the DOI requested that the National Academy of Sciences form a committee through the National Research Council to undertake a two-part study of the endangered and threatened species in the Klamath River Basin. The purpose of the first part of the study, which was completed in February 2002, was to analyze and reach conclusions about the scientific support for the biological opinions issued by the USFWS and the NMFS. The second part of the work, which will be in progress until May of 2003, involves a broader examination of the overall requirements for maintenance and welfare of the threatened and endangered fishes over the long term. The NRC committee met during November 2001 in Sacramento after reading the assessments, biological opinions, and related literature and data summaries relevant to the threatened and endangered fishes. At its meeting, the committee heard presentations from scientists involved in studying the fishes and their environment and took public testimony. The committee then began deliberations and came to consensus opinions that it refined over the next two months, after which it released its interim report.

The NRC committee concluded that all components of the biological opinion issued by USFWS on the endangered suckers have substantial scientific support except for the recommendations concerning minimum water levels for the Upper Klamath Lake. Despite the availability of a substantial amount of data collected by federal scientists and others, no clear connection has been documented between low water level in Upper Klamath Lake and conditions that are adverse to the welfare to the suckers. For example, incidents of adult mortality (fish kills) have not been associated with years of low water level. Extremes of chemical conditions considered threatening to the welfare of the fish have not coincided with years of low water level,

and the highest recorded recruitment of new individuals into the population occurred through reproduction in a year of low water level. Thus, the committee concluded that there was as of February 2002 no sound scientific basis for recommending an operating regime for the Klamath Project that seeks to ensure lake levels higher on average than those occurring between 1990 and 2000. At the same time, the committee could not find a sound scientific basis for operating the lake at mean minimum levels below the recent historical ones (1990-2000), as would be allowed under the USBR proposal. Operations leading to lower lake levels would require acceptance of undocumented risks to the suckers.

The NRC committee found a sound scientific basis for recommendations in the NMFS biological opinion involving coordination of operations and reduction of ramping rates for flows below the main stem dams. The committee did not, however, find sound scientific basis for NMFS recommendations on increased minimum flows in the Klamath River main stem. Tributary conditions appear to be the critical factor for the cohopopulation, and are not addressed through operations of the Klamath Project. Increases in habitat associated with increased flows in the main stem were projected entirely through computer modelling and are subject to considerable uncertainty. Even if additional habitat is achieved in the main stem through increased flows, benefits to the fish are very uncertain in view of the poor condition of tributary waters. Finally, the committee found that water needed to sustain higher flows in the main stem during dry years would likely be originating from reservoirs, and could during summer months result in additional warming of waters in the main stem, thus potentially having a negative effect on coho. The committee also concluded, however, that the proposals of the USBR are without significant scientific support insofar as they would allow operation of the river at lower mean water levels in the main stem than have historically been the case. Reduction of flows in the main stem to an additional degree would produce undocumented risks to the species.

The committee's conclusions are subject to modification in the future if scientific evidence becomes available to show that modification of flows or water levels would promote the welfare of the threatened and endangered species under consideration by the committee. The committee will make a more comprehensive and detailed consideration of the environmental requirements of the endangered suckers and threatened coho in the Klamath River Basin over the next year, during which time it will develop final conclusions.

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