

The petition noted that the green sturgeon is a recognized species, but also indicated that until recently, geographic variation in the species had received little attention. Although Russian and Asian forms of the green sturgeon are morphologically similar to the North American form, the petitioners cited genetic evidence that demonstrates differences between the Asian and North American forms and suggesting they are two distinct species. In this petition, therefore, the use of *A. medirostris* referred to the North American population of the green sturgeon. The petitioners also noted that the stock structure of this species is poorly known as well, and that there may prove to be DPSs within this biological species as new data are gathered and analyzed.

The petitioners indicated that the only remaining spawning populations of the North American green sturgeon are in the Sacramento and Klamath River basins in California and possibly the Rogue River, Oregon. The petitioners also suggest that the spawning population in the Klamath River basin is larger than the population in the Sacramento River basin. Running-ripe adults and young of the year have been observed in the Rogue River, but exact spawning locations have not been confirmed. The petitioners also stated that green sturgeon apparently no longer spawn in the Eel River, the South Fork Trinity River, and the San Joaquin River in California. The petitioners also cited recent declines in green sturgeon in the Umpqua River in Oregon and the Fraser River in Canada. The petitioners cite Musick et al. (2000) as indicating that each of the known or suspected spawning populations of green sturgeon presently contain a few hundred mature females at most.

The petitioners concluded that the North American green sturgeon is at a high risk of extinction because of the reduced number and size of spawning populations, ongoing threats to the species from the loss and/or degradation of habitat particularly in those river systems where they are known or thought to spawn, and continuing impacts to the species from harvest in sport fisheries or as bycatch in other fisheries (e.g. commercial white sturgeon fishery). Specific concerns regarding habitat loss and degradation cited by the petitioners include the construction of dams and operation of large scale water projects in the Sacramento, Klamath River and other coastal systems, and logging, agriculture, mining, road construction and urban development in coastal watersheds. With respect to fisheries

impacts on green sturgeon, the petitioners cited fisheries that occur in coastal Washington and the Columbia River which focus on white sturgeon or salmon but take green sturgeon as a bycatch. Of particular concern is the potential bycatch of pre-reproductive individuals in these fisheries, particularly if this harvest is supported by the spawning populations that exist in the Klamath and Sacramento River basins.

NMFS evaluated the information provided or cited in the petition and also reviewed other information readily available to agency scientists on issues related to the distribution, abundance, and threats to the petitioned species. On December 14, 2001, NMFS published a 90-day finding (66 FR 64793) that the petition presented substantial information that listing North American green sturgeon under the ESA may be warranted, and announced the initiation of a review of the biological status of the species.

To ensure that the status review was complete and based on the best available scientific and commercial data, the 90-day finding also requested information and comments from the public concerning the status of North American green sturgeon (66 FR 64793). In addition, NMFS specifically requested information and comments on green sturgeon from State and Tribal co-managers in California, Oregon, and Washington. NMFS requested information on: (1) biological or other relevant data that may help identify DPSs of this species (e.g., age structure, genetics, migratory patterns, morphology, etc.); (2) the range, distribution, and abundance of this species, including information on the spawning populations of the species; (3) current or planned activities and their possible impact on this species (e.g., harvest impacts, habitat changes or alterations, etc.); and (4) efforts being made to protect this species in California, Oregon, Washington and Canada. NMFS also requested quantitative evaluations describing the quality and extent of freshwater, estuarine and marine habitats for this species, as well as information on areas that may qualify as critical habitat in California, Oregon, and Washington. For areas potentially qualifying as critical habitat, NMFS requested information describing (1) the activities that affect the area or could be affected by the designation, and (2) the economic costs and benefits of additional requirements of management measures likely to result from the designation.

NMFS assembled a Biological Review Team (BRT) comprised of staff from the

agency's Southwest Fisheries Science Center, Northwest Fisheries Science Center, and the U.S. Geological Survey. The BRT has reviewed the best available scientific and commercial information pertaining to green sturgeon from California through the Pacific Northwest and prepared a status review for the species (NMFS, 2002). This document summarizes the principal results of the green sturgeon status review. Copies of the BRT status review report and other documents relevant to this review are available online. Paper copies are available upon request (see ADDRESSES).

Biology and Life History of Green Sturgeon

The green sturgeon (*A. medirostris*) is the most widely distributed member of the sturgeon family Acipenseridae. Like all sturgeon species it is anadromous, but it is also the most marine oriented of the sturgeon species. The only recently-documented green sturgeon spawning locations are in the Klamath, Sacramento, and Rogue rivers along the west coast of North America. However, green sturgeon are known to range in nearshore marine waters from Mexico to the Bering Sea and are commonly observed in bays and estuaries along the coast with particularly large concentrations entering the Columbia River estuary, Willapa Bay, and Grays Harbor during the late summer (Moyle et al., 1992). The reasons for these concentrations are unclear, but do not appear to be related to spawning or feeding.

Sturgeons in general have a life history that is susceptible to overharvesting and a number of species have some kind of protection or special status. The green sturgeon has a status designation of Special Concern in Canada (Houston 1988) because it has characteristics that make it particularly sensitive to human activities or natural events. Sakhalin sturgeon (*A. mikadoi*), a species that was at one time synonymized with green sturgeon, is extirpated throughout Japan, Korea, and China. In Russia the species is reduced in range to the Tumnin River where there is a hatchery. In the United States, there are five sturgeon species listed as threatened or endangered under the ESA: Shortnose sturgeon (*A. brevirostrum*); pallid sturgeon (*Scaphirhynchus albus*); Gulf sturgeon (*A. oxyrinchus*); white sturgeon, Kootenai River population (*A. transmontanus*); and Alabama sturgeon (*S. suttkusi*). More detailed information on the geographic distribution, spawning, early life history, ocean residence, age and growth, and feeding