populations and must be biologically significant.

The Team determined that the Atlantic salmon populations in the Sheepscot, Ducktrap, Narraguagus, Pleasant, Machias, East Machias, and Dennys rivers, are, as a group, reproductively isolated, and therefore, discrete. These populations are also, as a group, biologically significant. The Services are proposing that these seven populations be listed as one DPS but that management be conducted on a watershed basis. Since the persistence of Atlantic salmon in the Kennebec River, Penobscot River, Tunk Stream, and St. Croix River and their link to native populations warrant further study, these populations were designated as category 2 candidate species by FWS and candidate species by NMFS (60 FR 14410, March 17, 1995). Since that time, the FWS has clarified that only species for which it has sufficient information on biological vulnerability and threat(s) to support issuance of a proposed listing are designated as candidate species. This definition is synonymous with the FWS' former category 1 candidate species. Former category 2 species are regarded by the FWS as species of concern, and are not, at present, candidates for listing. NMFS maintains its candidate species list, however, NMFS and FWS plan to issue joint guidance on candidate species soon. Specific information needs for these four rivers are identified below under Available Conservation Measures.

A critical factor in determining the significance of the river populations of U.S. Atlantic salmon is the continuous persistence of a substantial component of native stock reproduction. If the documented absence of wild Atlantic salmon from natal habitat were to occur for at least two generations (12 years), this would suggest the total loss of the river's native population even under the most conservative approach. Such a gap has not occurred in the DPS rivers. While it is unlikely that U.S. Atlantic salmon exist in a genetically pure native form in any of the DPS rivers, these stocks represent a significant component of the species' genetic legacy.

Naturally reproducing populations of Atlantic salmon in U.S. rivers are substantially reproductively isolated from those in Canada. Within the United States, Atlantic salmon populations exhibit strong fidelity to natal streams. Although there is some evidence of straying, recolonization from adjacent watersheds appears to be minimal. Gene flow between wild populations, or stock transfers, was determined not to have been sufficient to have eliminated all historic differences. As a group, the seven populations composing the DPS meet the criterion of reproductive isolation.

In salmonids, adaptations to local ecosystems are important to the survival of populations and the survival of the species throughout its range. An examination of U.S. populations of Atlantic salmon provides evidence of their distinctness from stocks in Canada and northern Europe. Historically, adult spawners in U.S. rivers have been predominantly 2-sea-winter fish, whereas many Canadian and European stocks return predominantly after 1 year at sea. The riverine habitat occupied by U.S. Atlantic salmon is distinctive in that it is located at the southern extent of the range of the species in North America. U.S. rivers produce smolts that are younger than those produced in rivers at the northern extreme of the range. Atlantic salmon have persisted in the Sheepscot, Ducktrap, Narraguagus, Pleasant, Machias, East Machias, and Dennys rivers, and, consequently, represent the last known wild remnant of U.S. Atlantic salmon. All of these factors indicate that the DPS is discrete and biologically significant.

Distribution and Abundance

The original range of Atlantic salmon in the United States was from the Housatonic River in Connecticut, north to U.S. tributaries of the St. Johns River in New Brunswick, Canada. The historic Atlantic salmon run in the United States has been estimated to have approached 500,000 fish.

The species began to disappear from U.S. rivers 150 years ago and currently only remnant populations occur in a limited number of rivers in Maine. Construction of hundreds of dams blocked salmon migration and reduced spawning habitat to a fraction of that available historically. Water pollution and overexploitation further reduced the abundance of Atlantic salmon. Indigenous Atlantic salmon in rivers south of the Kennebec River were extirpated by the mid-1800's. In addition, some populations north of the Kennebec River were also extirpated; most of these were in small rivers with less than 1 hectare (2.5 acres) of available nursery habitat. Beginning in the mid-1800's and continuing to the present time, numerous restoration efforts were undertaken. The Connecticut and Merrimack rivers provided nearly 40 percent of historic U.S. Atlantic salmon habitat. These rivers are currently the focus of restoration efforts using nonindigenous stocks, and extensive efforts are being

undertaken to provide access to historic habitat.

The North American Salmon Working Group's method for estimating the escapement goal for adequate egg deposition for each river was used. Thus, an escapement goal was determined for each river and the return calculated as a percentage of the escapement goal. Throughout the past 24 years, the Dennys and Narraguagas rivers have had the best returns relative to available habitat, averaging 20 percent of escapement goal. The Pleasant, Sheepscot, and Machias rivers have had returns that averaged between 10 and 12 percent of escapement goal. However, recent downward trends in abundance have put most rivers at less than 10 percent of their respective escapement goals. Only the Narraguagas River has exceeded 10 percent in the past seven years.

The combination of low relative abundance and low numbers relative to spawning requirements demonstrates that the DPS is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Summary of Factors Affecting the Species

Section 4 of the Act and regulations promulgated to implement the listing provisions of the Act (50 CFR part 424) set forth the procedures for adding species to the Federal list. Section 4 also requires that listing determinations be based solely on the best scientific and commercial data available, without reference to possible economic or other impacts of such determinations. A species may be determined to be endangered or threatened due to one or more of the five factors described in section 4(a)(1) of the Act. These factors and their application to the Atlantic salmon DPS are:

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

The construction of dams with either inefficient or non-existent fishways was a major cause for the decline of U.S. Atlantic salmon. Dams adversely impact Atlantic salmon by impeding both their upstream and downstream migration, increasing predation, altering the chemistry and flow pattern of rivers, increasing water temperature, and reducing available flow downstream. Currently, there are no dams on rivers in the DPS that have the potential to adversely impact the species. The Machias and Dennys rivers have natural falls that may partially bar salmon migration at certain flows. Beaver dams