American Eel Questions and Answers

Endangered Species Act 12-Month Petition Finding

U.S. Fish and Wildlife Service

Q. What is the U.S. Fish and Wildlife Service's (USFWS) 12-month finding on the Endangered Species Act (ESA) petition to list the American eel?

A. The USFWS finds that the petitioned action is not warranted and does not propose ESA protection for the American eel.

The American eel has been extirpated from some portions of its historic freshwater habitat over the last 100 years or so, mostly as a result of dams built up until the late 1960s. There is also evidence that the species' abundance within freshwater habitats, and to some degree estuarine habitats, has declined in some areas (e.g., upper St. Lawrence River/Lake Ontario and the Chesapeake Bay), likely as a result of harvest or turbine mortality, or a combination of factors.

However, the species remains widely distributed throughout the majority of its historic range. Information from the Atlantic States Marine Fisheries Commission (ASMFC) stock assessment and peer review and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessment indicates a decline in abundance of eel in the yellow eel phase. However, recent recruitment trends for eel in the glass eel phase, although variable from year to year, appear stable over the past 15 years. (ASMFC represents 15 states from Maine to Florida.)

The American eel is a highly resilient species, with the ability to occupy the broadest range of habitats within freshwater, as well as estuarine and marine waters, and it remains a widely distributed fish species. Because of the lack of population subdivision (i.e., panmixia) in the American eel, the species is not at risk of genetic problems that can result from decline and isolation of subpopulations.

Q. What happens now?

A. At this point, no further regulatory action will be taken by the USFWS regarding the American eel.

The USFWS will be suggesting to the ASMFC and the Great Lakes Fishery Commission (GLFC) ways to integrate the status review information into sustainable fisheries management, and we will continue conservation efforts to benefit this unique and fascinating species.

Q. Why did USFWS initiate a status review of the American eel?

A. The ASMFC asked the USFWS and NOAA-Fisheries (in the U.S. Department of Commerce) to prepare a status review. The USFWS has taken the lead in preparing the status review.

The ASMFC and the GLFC expressed concern about a regional decline in the eel population in the St. Lawrence River and Lake Ontario. European eel experts have noted declines in the number of European eel, Japanese eel experts have noted declines in the number of Japanese eel, and there was concern that eels may be declining globally.

Following the ASMFC request, Douglas Harold Watts of Augusta, Maine, and Timothy Allan Watts of South Middleborough, Mass., petitioned for Endangered Species Act protection for the eel.

> "The American eel is an important component of the ecosystem, and regional declines of eels would adversely affect other species," said Heather Bell, fishery biologist with USFWS. "For example, eels may be a host for some mussel species."

Q. What document contains the status review?

A. The status review and 12-month petition finding are combined in a single "Federal Register" notice.

The "Federal Register" notice is scheduled to be published Friday, Feb. 2, 2007. The "Federal Register" is accessible at http://www.archives.gov/federal-register/index.html Additional background information, maps and list of references used to prepare the status review may be found at http://www.fws.gov/northeast/ameel

Q. What is the life history of the American eel?

A. "Facultative Catadromy" is the term used for this species unique life history.

The American eel begins its life in the Sargasso Sea where eggs hatch into larvae that are transported by ocean currents to the Atlantic coasts of North America and northern South America. The larvae enter coastal waters where they may stay, or they may move into estuarine waters or migrate up freshwater rivers, where they mature for seven to 30 years. Upon nearing sexual maturity, these eels begin migration toward the Sargasso Sea near Bermuda, completing sexual maturation en route. Spawning occurs in the Sargasso Sea. After spawning, the adult eels die.

Q. Given the many unknown aspects of the life history and the effects of threats on the American eel, how did you approach the question of whether the species is endangered or threatened?

A. When addressing uncertainty (not having complete, or in some cases any, data on one or more of the questions listed above), we employed a multi-step approach.

The life history of American eels presents unique challenges to understanding the biological and environmental processes influencing eels at the species level. The eel's panmictic nature, wide geographic range, oceanic spawning, and segregation into freshwater, estuarine, and marine

environments all contribute to the complexity of assessing status, threats, and whether listing is warranted.

As discussed in the finding, much speculation exists on factors that could negatively affect eels, often based on effects seen on other species but with little supporting data for eels. Much of the uncertainty exists because decreased fitness would occur in the open ocean.

The first step in our approach was to review all available data on the American eel and determine, for example, if the data we have about an impact at a local or regional level imply an impact at a population level. If so, what is the likely response of the population, and in what given time period? If there were no data for American eel, we reviewed data for other Anguillid species, such as the European and Japanese eel, and determined if the application of those data was appropriate to the analysis. If uncertainty still remained high, we requested individual assessments from experts regarding the probable implications to the species given the uncertainties.

Information solicitation – People who work with eel and people who are knowledgeable about the activities we thought were affecting the eel in the United States, Canada, Japan and Europe responded to USFWS requests for information. Almost every state in which the eel is found provided us with updated eel distribution information. Hundreds of peer-reviewed documents were assembled and reviewed, and NatureServe provided the USFWS with an updated distribution map including distribution in other countries.

Workshops – To assist with this decision, two workshops convened 25 expert panelists selected through a rigorous process from academia, hydropower, fisheries, non-governmental organizations, private industry, states, ASMFC, the GLFC, NOAA-Fisheries, U.S. Geological Survey, Tribal Nations, Canada, Europe and Japan. The goal of the workshops was to ensure that the USFWS properly utilized the best and most current scientific and commercial data available in conducting the status review. Panelists represented a balanced, broad and diverse range of relevant scientific perspectives in robust discussions. For minutes of the workshops, see http://www.fws.gov/northeast/ameel

Peer review – After asking ASMFC and GLFC for suggested peer reviewers, we solicited and received comments from six peer reviewers on the draft status review used to prepare the 12-month finding. We addressed those comments as appropriate.

Q. What does this 12-month finding mean in light of the recent ASMFC stock status review and the COSEWIC assessment?

A. The results of these two assessments and the USFWS finding under the ESA should be viewed in the context of their intent.

The USFWS status review focused rangewide. Information regarding the status and threats to this species were analyzed in relation to the five factors provided in section 4(a)(1) of the ESA (see next question). We examined each of these factors as they relate to the current distribution of American eel, the standard being the definitions of "threatened" and "endangered" in the ESA. The data from the ASMFC and COSEWIC reviews were a part of the information used in our analysis. Additionally, we analyzed the immediacy, severity and geographic scope of the threats as well as the implications of these threats on the existing population, taking into account the species' life history.

The ASMFC assessed the status of the American eel in fresh and estuarine habitats for management of the American commercial eel harvest, i.e., to determine allowable eel harvest. The COSEWIC assessment focused on the status of the American eel within Canadian waters.

Q. What criteria are used to determine whether a species should be protected by the ESA?

A. Five factors are weighed in determining the need for ESA protection of a species:

Factor A. The Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range
Factor B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes
Factor C. Disease or Predation
Factor D. Inadequacy of Existing Regulatory Mechanisms
Factor E. Other Natural or Manmade Factors Affecting the Species' Continued Existence

For a complete analysis of each of these threats to the American eel, see the Federal Register notice.

Q. Is the regional decline we're seeing in Canada (the northern edge of the range) indicative of an impending decline throughout the entire range?

A. Although uncertainties exist, we have determined that local and regional historical declines are not indicative of an impending rangewide decline.

> "Although the current status of American eels cannot be described in absolute terms because rangewide estimates of abundance do not exist, the number of yellow phase and silver phase eels is probably in the many millions, perhaps billions," said David Perkins, Ph.D., senior fisheries biologist, USFWS

In many species a decline is first noticed at the extreme ends of the species' range and often portends a range contraction. However, the American eel relies on ocean conditions to deliver larvae to the coast throughout its range. We believe variations in ocean conditions, such as the relative position of the Gulf Stream and its proximity to North America, play a significant role in where the larvae are delivered.

To see an infrared satellite image of the Gulf Stream, see downloadable images at http://www.USFWS.gov/northeast/ameel

Q. What is the process spelled out in the ESA for evaluating petitions to list a species?

A. The ESA requires that a finding to be made on whether a petition presents substantial information indicating that the species should be listed, delisted or reclassified.

To the maximum extent practicable, the Service makes an initial finding within 90 days of receipt of the petition and publishes this 90-day finding in the "Federal Register." This finding is based

on information contained in the petition, supporting information submitted with the petition and information otherwise available to the agency at the time of the finding. If USFWS finds that the information presented indicated the action may be warranted, the agency begins a thorough review of the status of the species. This status review is to be completed, if feasible, within 12 months of receipt of the petition. In what is called the 12-month finding, one of three determinations is made: (1) the petitioned action is warranted, therefore the species is proposed for listing (ESA protection); (2) the petitioned action is not warranted; or (3) the petitioned action is warranted, but precluded by other pending listing actions. The 12-month finding the USFWS made on the eel petition is (2) the petitioned action is not warranted.

For further information, see http://www.fws.gov/northeast/ameel