

Young of Year Survey

Eel

American Eel Young-of-Year Survey Part of Fisheries Management Plan

By Heather Corbett, Assistant Fisheries Biologist

Patcong Creek, a quiet tidal tributary of Great Egg Harbor Bay in Atlantic County, flows gently through salt-marsh and peat-bank habitats. The creek is home to a wide assortment of marine, estuarine and wildlife species. Local residents use it for fishing, crabbing, boating and other recreational activities. Patcong Creek is also the site of a very important survey New Jersey Department of Environmental Protection's Division of Fish and Wildlife's Bureau of Marine Fisheries is conducting to collect information on American eels.

As a result of growing concerns about the status of American eel populations, the Atlantic States Marine Fisheries Commission (ASMFC) implemented a fishery management plan for American eel in 1999. As part of that plan, ASMFC required that, beginning in 2000, states conduct a survey of glass eels to collect information on the number of eels (young-of-year) recruiting to the population each year. (See *Species Profile: American Eel*, page 20.) New Jersey already had been sampling for several years to identify a suitable sampling site and to determine the best method to capture glass eels. By 2000, after experimenting with various sampling techniques at several locations, Patcong Creek was selected as our permanent sampling location.

The gear used to collect glass eels is a modified Japanese elver fyke net set under a bridge, just downstream of a spillway at Bargaintown Pond. A fyke net is a funnel-shaped net with two "wings" extending forward from the opening of the net. The wings help to guide the eels into a series of funnels in the net to the codend (a bag at the end of the net with very small mesh), where they are retained until the net is tended. The net is set with the opening

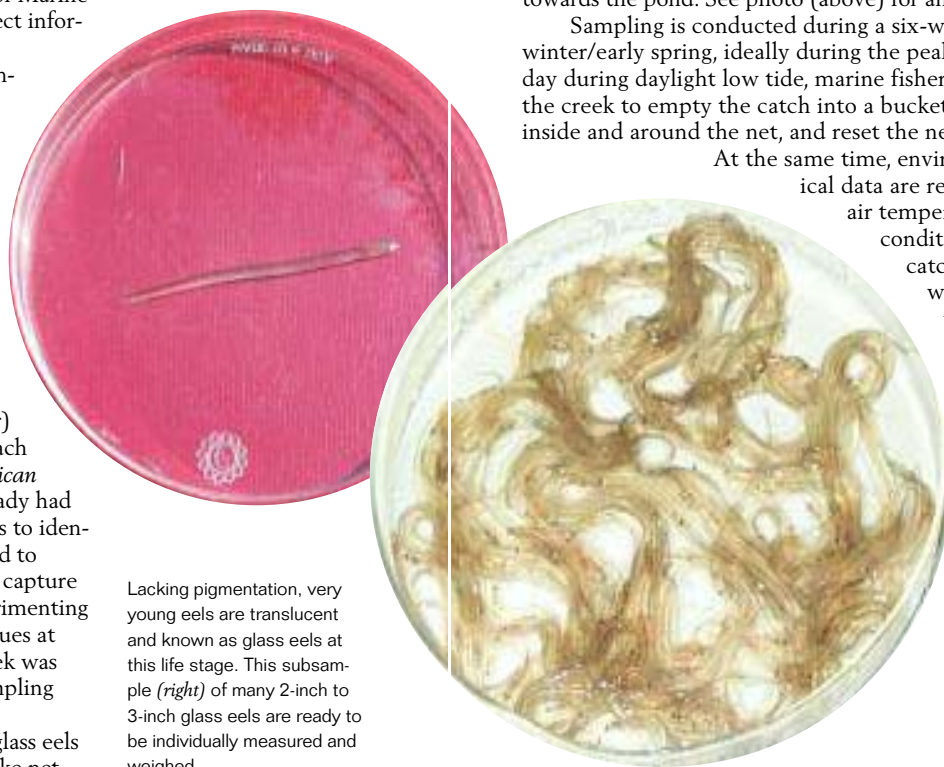
facing downstream in order to catch eels swimming upstream towards the pond. See photo (above) for an upstream view of the net.

Sampling is conducted during a six-week period in the late winter/early spring, ideally during the peak run of glass eels. Every day during daylight low tide, marine fisheries biologists waded into the creek to empty the catch into a bucket, remove debris from inside and around the net, and reset the net for the next day's catch.

At the same time, environmental and climatological data are recorded such as water and air temperatures, water depth, gear condition and more. The day's catch is brought to the lab where biological data on the eels is collected.

Although the goal is to collect information from every eel caught, when the catch is large data is collected only on a subsample.

Processing includes individually

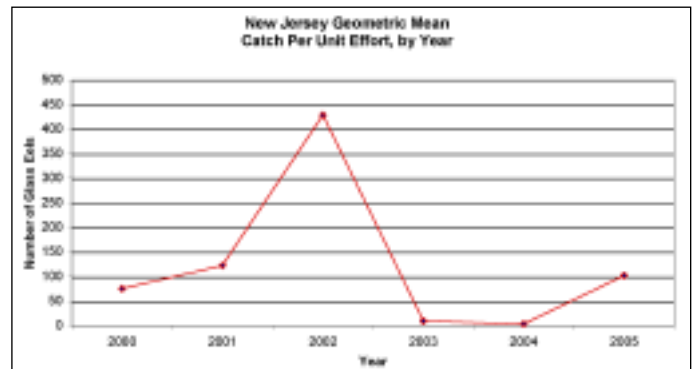


Lacking pigmentation, very young eels are translucent and known as glass eels at this life stage. This subsample (*right*) of many 2-inch to 3-inch glass eels are ready to be individually measured and weighed.

Photos: Heather Corbett,
NJ Division of Fish and
Wildlife



Fyke net placed under a bridge to catch glass eels.



Average number of eels caught per day by year.

measuring, weighing and determining the pigmentation stage of each eel. Stages of pigmentation range from one to seven, with seven characterizing a fully pigmented eel. Green eels and other non-target species caught are separated from the glass eel catch then individually measured and weighed. These are not included in the total catch weight of the glass eels. All aquatic life caught is returned upstream of the net after processing to avoid recapture. Fish species caught incidentally include banded killifish and tessellated darters.

During the six years of the survey, a total of 41 pounds of glass eels have been captured on 225 days of sampling. The largest catch of 4.4 pounds, approximately 13,400 eels, was caught in February of 2002. In April 2005, there was a one-day catch of nearly 3 pounds, even though the codend broke and a large portion of the catch escaped. It is likely that this would have been our largest catch during the survey. The graph (above) shows the average number of eels caught per day for each year of the survey.

With current data showing that American eel populations are at an all-time low, more research like this survey must be conducted to monitor population fluctuations. The American Eel Young-of-Year Survey allows marine researchers to learn the status of eel recruitment so informed management decisions can be made. 