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FEATURE MATERIAL

ENCOURAGING PROGRESS REPORTED ON SUSQUEHANNA SHAD STUDY

American shad, which spend most of their lives in salt water and migrate into fresh water streams to spawn, have been barred from much of the historic Susquehanna River for more than fifty years because of dams and pollution. Young shad, however, were observed migrating down the river in 1964 from areas far upstream.

The little fish were not there by accident. They were part of a research project that could lead to the restoration of the big shad runs of the Susquehanna, according to the Department of the Interior's Fish and Wildlife Service.

A member of the herring family, the American or white shad is important to both sport and commercial fishermen. Shad once moved up the Susquehanna River in great numbers, but these began dropping in the early 1900's, primarily because of pollution from coal mine drainage, and dams that blocked the way to spawning areas.

In 1962, the Pennsylvania Fish Commission asked the Interior Department to request that the Federal Power Commission require fishways around four dams on the lower Susquehanna. Biologists of the Department's Fish and Wildlife Service, however, first wanted to know if the shad could spawn successfully in the river if access to ancestral spawning areas were provided. Since the fishways could cost as much as $10 million, a comprehensive study was planned to determine if the river would support restored runs of American shad.

The Susquehanna shad study is a cooperative endeavor by fishery agencies of New York, Pennsylvania, and Maryland, four electric power companies that have dams along the river, and the Fish and Wildlife Service.

The results so far have been gratifying, according to a recent quarterly report of the study. In June 1964, about 16 million shad eggs from the Columbia River in the Pacific Northwest were transplanted in the Susquehanna. By utilizing a jet flight to Baltimore and a light plane for shuttle service, biologists placed the eggs in hatching boxes in the Susquehanna within 24 hours after they

had been taken from the Columbia. An additional three and a half million eggs were taken from the Susquehanna Flats area of the Chesapeake Bay for use in the study.

Many of the young fish that hatched from these transplanted eggs have now successfully passed through the four dams on their way to the sea. The growth rate for these yearling shad averaged nearly one inch per month.

Shad eggs from the Columbia and from the Susquehanna Flats were also used in bio-assay studies of water from the Susquehanna. In bio-assay studies, water is tested under laboratory conditions to determine its effects on various kinds of organisms. James T. McBroom of the Fish and Wildlife Service, chairman of the administrative committee for the shad study said, "These bio-assays have helped substantiate field observations that waters of the Susquehanna River, except possibly one area polluted by mine drainage, are suitable for hatching of shad eggs and the rearing of young shad." Shad hatched in the upper waters of the river last spring were able to move down through this polluted area with little if any noticeable effect on the fish, according to the report.

The next objective of the study is to find out if adult shad will migrate upstream through the still waters behind the dams. To do this, construction of a fish trapping facility is planned at Conowingo Dam near the mouth of the Susquehanna River, to catch adult shad for transplanting upstream. It will be in operation when the shad runs come up from the Chesapeake Bay in the spring.

Adult shad trapped at Conowingo will be tagged and released in the forebay above Conowingo Dam and near Harrisburg, Pa. There will be two types of tags used, the regular numbered tags and a newer type that includes a sonar device. These sonar tags give off signals that can be picked up by biologists using hydrophones. Eavesdropping on the fish will indicate how well they orient themselves to continue the upstream migration. Sportsmen will be asked to help supply information with tags which they recover.

The four power companies volunteered to finance the $196,500 study. The power companies are Pennsylvania Power and Light Company, Allentown; Philadelphia Electric Company, Philadelphia; Metropolitan Edison Company, Reading; and Safe Harbor Water Power Corporation, Conestoga, all in Pennsylvania.

Other research activities to be continued in the spring of 1965 include further hatching box and bio-assay studies to define the tolerance of shad eggs and young to polluted water, and water chemistry analysis of the river in areas that are polluted by acid drainage from coal mines.

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