NEW JERSEY ANADROMOUS FISH INVENTORY

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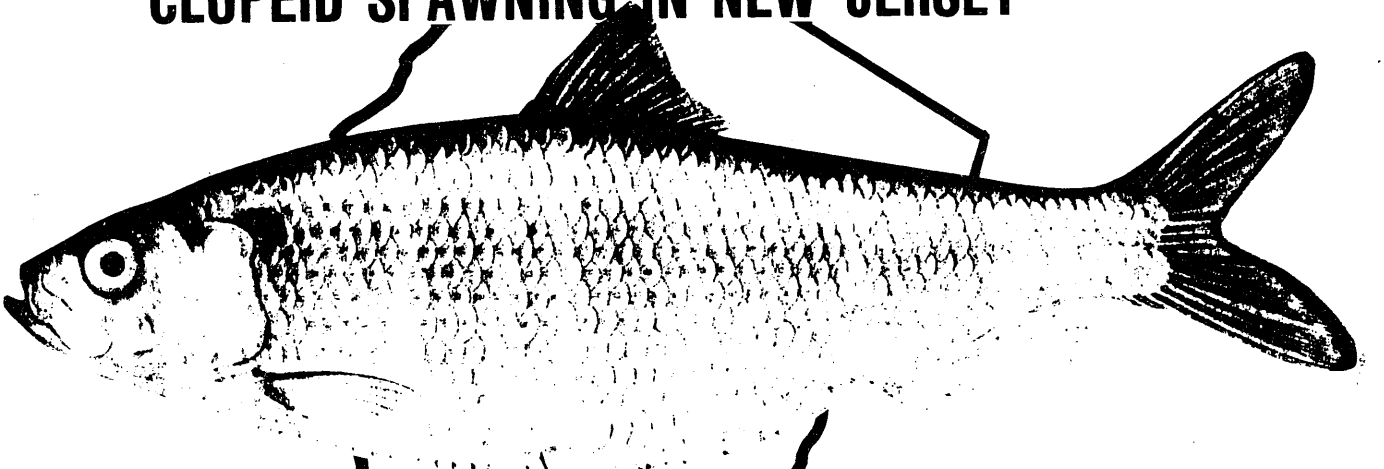
INFORMATION ON ANADROMOUS CLUPEID SPAWNING IN NEW JERSEY



By H.E. Zich
Project Leader

STATE OF NEW JERSEY

DEPARTMENT OF
ENVIRONMENTAL PROTECTION

DIVISION OF FISH, GAME
AND SHELLFISHERIES

Bureau of Fisheries
Lebanon, New Jersey 08833

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Miscellaneous Report No. 41

NEW JERSEY ANADROMOUS FISH INVENTORY

Existing Information on Anadromous Clupeid Spawning in New Jersey

Brendan Byrne
Governor

Department of Environmental Protection

Daniel J. O'Hern, Commissioner

Division of Fish, Game and Shellfisheries

Russell A. Cookingham, Director

Bureau of Fisheries

A. Bruce Pyle, Chief

Project Director

Walter S. Murawski, Ass't. Chief

Prepared by

H. E. Zich

Date Submitted

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Miscellaneous Report No. 41

Acknowledgements

The able assistance of Keith R. Lockwood and Robert G. Papson in the field investigations of this study is greatly appreciated.

Abstract:

In New Jersey, during the period from June 28, 1972 to December 31, 1976, 133 anadromous clupeid spawning runs were confirmed in 63 major drainages that are physically continuous with the marine environment. These confirmations included 108 alewife (Alosa pseudoharengus) runs, 24 blueback herring (Alosa aestivalis) runs and one American shad (Alosa sapidissima) run.

Ninety anadromous clupeid spawning runs were reported from historical information, file data and personal interviews, but 36 of these remain unconfirmed.

It is estimated that at least 28 anadromous clupeid spawning runs have become extinct in New Jersey watercourses, including 9 herring and 19 American shad.

Eighty-three man-made barriers were located on watercourses where spawning runs of clupeids have been reported or confirmed. These barriers were adjudged to be blocking or limiting fish passage and reducing spawning habitat.

Recommendations are made to protect and, where possible, enhance the populations of anadromous clupeids in the state.

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Introduction

New Jersey's anadromous fishery management program has been inadequate from the standpoint of protecting and enhancing spawning runs because of insufficient information on (1) the location of existing runs and (2) waters where runs have become extinct but with proper management could be re-established. This project was designed to fill these needs and provide the basis for a progressive anadromous fish management program.

The species of Clupeidae of primary concern are the alewife (*Alosa pseudoharengus*), the blueback herring (*Alosa aestivalis*), the American shad (*Alosa sapidissima*) and the hickory shad (*Alosa mediocris*) because of their sport fishing, commercial and ecological value.

Procedures

The approach taken in this study was to conduct a survey of existing information and then follow it up with field investigations.

A search of the literature and records was conducted at the following facilities:

Division of Fish, Game and Shellfisheries, Trenton
Bureau of Fisheries Laboratory, Lebanon
Charles O. Hayford Fish Hatchery, Hackettstown
Nacote Creek Research Laboratory, Absecon
Delaware River Anadromous Project Laboratory, Rosemont
Delaware River Basin Commission, Wilburtha
Tuckahoe Fish and Wildlife Management Area, Tuckahoe
Ichthyological Associates Laboratory, Absecon
New Jersey State Museum, Trenton
Rutgers, The State University, New Brunswick
    Central Library
    Medicine and Science Library
    Environmental Science Library
    Agricultural Library
Flemington Public Library, Flemington
Hunterdon County Library, Flemington
Hunterdon County Historical Society, Flemington
Monmouth County Library, Freehold
Division of Water Resources, Trenton
Stockton College, Egg Harbor City
Philadelphia Academy of Science, Philadelphia

A request for information on anadromous clupeid spawning runs was sent to all of the Division's administrative and field personnel in the Bureaus of Fisheries, Game, Law Enforcement and Information as well as to the N.J. Federation of Sportsmens Clubs, outdoor writers (newspapers), fisheries research groups, commercial fishermen and sporting goods dealers. In all, five hundred requests were distributed.

In addition, personal requests were made of the Division's Conservation Officers at their District meetings to canvas their respective assigned administrative areas for anadromous fisheries resources and information. Where necessary, Conservation Officers were personally contacted in their assigned areas and leads were investigated.

A list of all possible anadromous clupeid spawning run locations, regardless of existing physical and chemical limitations, was developed. These were plotted on U.S. Coast and Geodetic 7.5 minute topographic maps and included representation in 63 major fresh water drainage basins flowing to the Delaware River, Delaware Bay, the Atlantic Ocean and the Hudson River.

Physical barriers and related land use factors were identified and plotted. These included dams, floodgates, elevated culverts, spoil or other landfill sites, irrigation impoundments, commercial salt hay sites, mosquito control impoundments, and commercial muskrat and waterfowl impoundments. This information was cross referenced to reported or confirmed spawning runs and served as the basis for planning field investigations.

The presence of gravid anadromous clupeids was the criteria for designating a body of water as supportive of an anadromous spawning run.

Sampling methods employed to identify streams containing anadromous spawning runs of clupeids were gill net, fish trap, dip net, fisherman creel check and electrofishing.

Monofilament gill nets of three-inch stretch mesh, varying from three to six feet deep and twenty to one hundred feet in length were usually set for fifteen minutes in small streams to two hours in large streams.

The fish traps were sixteen inches in diameter and five feet long with one inch mesh hardware cloth exteriors and funnels. They were designed and constructed to capture adult herring over an extended period of time under various stream conditions. Some of the traps were fished at the same location for up to twenty-nine continuous days.

Dip nets ranged in diameter from twelve to twenty-four inches and were used to collect samples in small streams or other locations where the fish could easily be cornered.

Fisherman creel checks were used as appropriate.

Electrofishing was not employed by the project and collections made thereby were incidental to field investigations by other Bureau of Fisheries personnel.

The approaches taken to the field investigation during the four years of the study were as follows:

1973 Information regarding the distribution of spawning runs was generally lacking. Therefore, a "broadbrush" approach was utilized and no set sampling schedule was established. Field activities started the last week of March and continued through the first week in June 1973. Emphasis was placed on watercourses in the southern counties of Cape May, Cumberland, Atlantic and Burlington because they represented the area where most runs were reported to occur. As the spring spawning season progressed field investigation activities were conducted in the more northern county areas of Salem, Gloucester, Camden, Ocean, Mo

During subsequent years of the investigation and prior to the spawning season, watercourses reported or suspected to be supporting anadromous clupeid runs were reconnoitered and sampling stations were selected. Fish traps were set thereafter and schedules were developed for tending the "traplines". Usually each station was checked several days each week.

1974 During the month of April four "traplines" were developed to regularly investigate stations or watercourses continuous with the Delaware River in the counties of Cumberland, Salem, Gloucester, Camden, Burlington and Mercer. During the month of May two "traplines" were developed to investigate stations on watercourses continuous with the Atlantic Ocean in the counties of Atlantic, Burlington, Ocean, Monmouth and Middlesex.

1975 During the spawning run season four regularly scheduled "traplines" were developed to investigate watercourses continuous with the Atlantic Ocean in Middlesex, Monmouth, Ocean and Burlington Counties and watercourses continuous with the Delaware River in Mercer, Burlington, Camden and Gloucester Counties. Additional stations on watercourses in Hunterdon, Salem, Cape May and Atlantic Counties were also investigated on a random basis as time permitted.

1976 Six "traplines" were developed and routinely maintained during this final year of field investigations. In the northeast counties of Passaic, Bergen, Hudson, Essex, Union and Middlesex two "traplines" were maintained. Four "traplines" were maintained elsewhere in the state on watercourses continuous with the Delaware River and Bay and Atlantic Ocean in the counties of Warren, Hunterdon, Mercer, Burlington, Camden, Gloucester, Cumberland, Cape May and Atlantic. Additional stations on watercourses continuous with the Atlantic Ocean in the counties of Burlington, Ocean and Monmouth were also investigated on a random basis as time allowed.

Findings

Historical Information on Anadromous Clupeid Spawning Runs

The Pennsylvania Report of the State's Commission of Fisheries 1896 indicated that the Delaware River was probably the best shad river on the Atlantic Coast. The best shad tributaries in New Jersey were reported to be Cooper's Creek (Cooper River), Rancocas Creek (shad runs 15-30 miles upstream of the confluence with the Delaware River), Big Timber Creek (best shad fisheries located 8-10 miles from the mouth--shad usually caught 7-10 days earlier than in the Delaware River), Salem Creek (Salem River), Raccoon Creek, Oldman's Creek and Woodbury Creek.

Evidence that shad utilized the lower Delaware River and tributaries for spawning can be extrapolated from two references in the 1896 Report: (1) Because of recognizable decline in the Delaware River fisheries in 1873 the N.J. Fish Commissioner, Dr. J. H. Clark, hatched and released one million shad fry at Point Pleasant, Pa. (Byran, N.J.) using Seth Green's hatching boxes at a cost of about $3,000.00. The N. J. Legislature did not appropriate money for 1874. (2) In 1887 the U. S. Fish Commissioners using the Steamer Fish Hawk hatched and distributed thirty-five million shad fry into the Delaware River and tributaries at Gloucester (Gloucester City). From these two accounts it is obvious that gravid female shad in the lower Delaware River had eggs ripe enough to fertilize and hatch either in the main stem or tributaries.

From the Second Annual Report of the U. S. Fish Commissioners 1872--- "it is feared that no spawning grounds for shad exist in the Raritan River because of waste material discharge in the New Brunswick area from gas works, India rubber works and the Delaware-Raritan Canal dam in the Raritan below Bound Brook."

"The Raritan River is supplied with young shad from the Delaware River through the Delaware-Raritan Canal but much mortality exists because of locks and eleven mill wheels at Lambertville. So called "fishway" in Raritan River dam below Bound Brook is ineffective for passing shad."

It was further reported (1872) the Crosswicks Creek was clear for fish passage for ten miles; Black's Creek was now worthless from breeding season robbery and gas tar defilement; English Creek was much impounded into ponds (Crystal Lake); Rancocas Creek was much defiled, and of little use; Cohansey Creek shad fishery averaged seven hundred catch.

In 1877 the U. S. Fish Commission reported that the Pennsgrove Shad Hatchery hatched out four million shad ova, one hundred and fifty thousand shad fry were planted in the Passaic River, fifty thousand in the Raritan River with the rest being returned to the Delaware River.

Again in 1881 the Commissioners reported that shad fry were planted in the Raritan and Hackensack Rivers.

In 1912 shad fry were planted in the Mullica River (250,000) at Green Bank and the Great Egg Harbor River (250,000) at Mays Landing.

In 1913 twenty-four million shad fry were planted in the Delaware from the Torresdale Hatchery.

In 1916 shad fry collected as ova from the Cohansey River were liberated at the mouth of the Rancocas Creek.

Although there were reported declines of the shad fisheries in the Delaware, Raritan and Passaic Rivers during this period of time, and attempts were made to restore these fisheries through restocking, no documentation has been found on why stocking programs were undertaken on the Hackensack, Mullica and Great Egg Harbor Rivers. It is postulated that either restoration of spawning runs or establishment of fisheries was the motivation.

In 1902 the U. S. Fish Commissioners reported that in the Township of Brick, Monmouth County, several tributary rivers (Metedeconk and Manasquan Rivers) and all creeks, streams and coves of Barnegat Bay had herring runs (probably Beaverdam Creek, Cedar Bridge Branch, Kettle Creek, Tunes Branch, Long Causeway Branch and many displaced water courses on Metedeconk Neck).

In 1904 the N. J. Board of Fish and Game Commissioners reported that in 1820 there was a shad fishery at the mouth of every creek and river between Bayside and Trenton which would consist of about fifty fisheries.

In Beck's Jersey Genesis (a history of the Mullica River) there is the report that in the old days herring ran far past Batsto almost to Atsion.

In Fowler's N. J. State Museum - Fishes of New Jersey, 1900, 1905, 1906 and 1908, shad are reported in the tidewater of Great Egg Harbor River, Lower Crosswick Creek, Cedar Swamp Creek near Petersburg, Green Creek Ponds (Cape May County), Rancocas Creek at Centerton (8 miles upstream of the Delaware River) and Raccoon Creek. Fowler also reported alewife herring in Cedar Swamp Creek at Petersburg, Tuckahoe River at Tuckahoe, Middle River, South Branch of Timber Creek at Blackwood, Mantua Creek to Wenonah, Raccoon Creek at Bridgeport and Rancocas Creek to Hainesport. Several of these herring runs are reported to be existing today.

In 1872 it was feared that the Raritan River had been lost to shad spawning due to pollution and dam construction. It also appears (although not documented at this point) that the major spawning areas throughout New Jersey were also lost about the same time. In 1877 a shad hatchery was established at Penns Grove (Salem County) and shad fry were planted in the Delaware, Passaic, Raritan and Hackensack Rivers.

In 1912 shad fry hatched at the Torresdale Hatchery (Philadelphia, Pa.) were planted in the Delaware, Mullica (Burlington and Atlantic Counties) and the Great Egg Harbor River (Atlantic County).

In the 1916 New Jersey Board of Fish and Game Commissioners Annual Report it was reported that it appears certain that pollution in the Delaware River has practically destroyed great areas of shad spawning grounds immediately below Philadelphia.

In 1926 a state shad hatchery was established at Pennsville (Salem County) where eggs could be hatched and planted in streams of South Jersey where there was no pollution (particularly the Maurice River) and in streams remote from built up portions and industrial plants. The fish liberated could thus go to sea without going through the polluted portion of the Delaware River and rehabilitate the shad industry.

The shad hatchery was moved to Hancocks Bridge (Salem County) in 1927 and the practice of liberating fertilized shad eggs and shad fry was continued until 1941.

Since other anadromous clupeids (e.g., hickory shad, alewife and blueback herring) are inherently subjected to similar conditions of limited range and high water quality requirements it is reasonable to assume that much of their spawning and nursery habitat has also been lost over the years, and is still being lost due to problems of water pollution, stream blockage and habitat displacement.

From the combined effort of researching background information, feedback from the distributed information requests and personal interviews, a total of 90 reports of anadromous clupeid spawning runs were received from June 1972 to July 1976. Those that have since been confirmed by field investigation are identified by the designation (C).

Absecon Creek - Atlantic Ocean
Alexauken Creek
Alloway Creek (C)
Assicunk Creek
Bass River - Mullica River (C)
Big Timber Creek
Blacks Creek (C)
Bog Branch - Tuckahoe River (C)
Cedar Creek (C)
Cedar Creek - Delaware River (C)
Cedar Creek - Dividing Creek
Cedar Run - Manahawkin Bay
Cedar Swamp Creek - Tuckahoe River (C)
Cohansey River (C)
Cooper River
Crafts Creek
Crosswicks Creek (C)
Crystal Lake
Cub Swamp - Dividing Creek

Deal Lake (C)
Delaware River (C)
Dennis Creek
Dividing Creek
Double Creek - Barnegat Bay (C)
Doughty Creek - Atlantic Ocean (C)
English Creek - G.E.H. River
Flat Creek - Tuckahoe River (C)
Forked River
Fresh Creek - Barnegat Bay (C)
Gibson Creek - G.E.H. River (C)
Gravelly Run - G.E.H. River (C)
Great Egg Harbor River (C)
Green Creek
Gunning River - Barnegat Bay (C)
Hackensack River (C)
Halfway Creek - Tuckahoe River
Hammonton Creek - Mullica River (C)
Hawkins Creek - G.E.H. River (C)
Haystack Brook - Metedeconk River
Jefferys Creek - Toms River (C)
Lawrence Brook - Raritan River (C)
Lucas Branch - Mullica River
Manasquan River
Manumuskin River
Mantua Creek (C)
Maurice River (C)
Menantico Creek - Maurice River (C)
Merrygold Cove - Mullica River
Metedeconk River (C)
Middle River - Middle G.E.H. River
Mill Creek - Cohansey River (C)
Mill Creek - Dividing Creek
Mill Creek - Manahawkin Bay (C)
Mill Creek - Rancocas Creek (C)
Mill Creek - Toms River (C)
Mill Creek - Tuckahoe River (C)
Miry Run - G.E.H. River (C)
Moore Creek
Mullica River (C)
Nantuxent River
Nescochague - Mullica River (C)
Oldmans Creek (C)
Oyster Creek
Passaic River
Patcong Creek - Great Egg Harbor Bay (C)
Pennsauken Creek
Peters Run - G.E.H. River
Pomeston Creek
Raccoon Creek (C)
Rancocas Creek (C)
Raritan River
Repaupo Creek
Richmond Branch - Oldmans Creek (C)
Rocaps Run - Cohansey River

Salem River (C)
Shark River
South River - G.E.H. River (C)
South River - Raritan River (C)
Stouts Creek - Barnegat Bay
Stow Creek (C)
Swamp Brook - Navesink River (C)
Swimming River - Navesink River (C)
Takanassee Lake
Taylor Creek
Toms River (C)
Tuckahoe River (C)
Tuckerton Creek (C)
Woodbury Creek
Wreck Pond Creek (C)
West Creek - Delaware River (C)

From literature review, personal interviews and field investigations it is assessed that a relatively large number of clupeid spawning runs (especially American shad) have become extinct in New Jersey due to the combined effects of pollution, habitat displacement, man-made water course blockages, and possibly overfishing as well.

Extinct anadromous clupeid spawning:
shad = American shad (Alosa sapidissima)
herring = alewife (Alosa pseudoharengus) and blueback (Alosa aestivalis)

Absecon Creek	herring
Big Timber Creek	shad and herring
Blacks Creek	shad
Cedar Swamp Creek	shad
Cohansey River	shad
Cooper River	shad and herring
Crosswick Creek	shad
Dennis Creek	herring
Dividing Creek	herring
Great Egg Harbor River	shad
Green Creek	shad
Hackensack River	shad
Maurice River	shad
Mullica River	shad
N.B. Forked River	herring
Oldmans Creek	shad
Passaic River	shad
Pennsauken Creek	herring
Raccoon Creek	shad
Rancocas Creek	shad
Raritan River	shad
Repaupo Creek	shad and herring
Salem River	shad
Shark River	herring
Woodbury Creek	shad

From 63 major drainages containing 16 primary rivers, 41 secondary rivers, 310 tertiary streams, 253 quaternary water courses and 11 fresh water lakes (outer coastal plain) that are physically continuous with the marine environment, a total of 138 anadromous clupeid spawning runs were confirmed:

Confirmed Anadromous Clupid Spawning Runs

Key:

Method of confirmation:

(g) gill net - 49
(d) dip net - 35
(fc) fisherman creel - 33
(t) fish trap - 16
(e) electrofishing - 5

U.S.G.S. #63 - Lambertville Quadrangle e.c. refers to N. J. Bureau of Fisheries index number cross reference to the standard U. S. Geological Survey Quadrangle 7.5 minute series topographic maps.

Confirmer:

AFC = N. J. Anadromous Fish Inventory personnel
BF = N. J. Bureau of Fisheries personnel
AFS = Delaware River Anadromous Project personnel
ICH = Ichthyological Associates personnel

Alewife (Alosa pseudoharengus) and blueback herring (Alosa aestivalis):

Water and Location	Map Reference No.
Alloway Creek - alewife @ Alloway Lake Dam 4/17/74 @ 56°F. (g) AFC U.S.G.S. #133 Alloway Quadrangle	29
Assunpink Creek - alewife @ Warren Street 5/6/75 @ 56°F. (g) AFC U.S.G.S. #80 Trenton West Quadrangle	6
Atlantic County Impoundment #1 - alewife Gibson Creek - Great Egg Harbor River Drainage 6/1/76 @ 68°F. (d) AFC U.S.G.S. #160 Marmora Quadrangle	59
Back Brook - alewife @ Gropps Lake Dam 5/6/75 @ 56°F. (g) AFC U.S.G.S. #81 Trenton East Quadrangle	9

Water and Location	Map Reference No.
Back Run - alewife @ Leamings Pond Mill Creek - Tuckahoe River Drainage 4/29/75 @ 54°F. (d) AFC U.S.G.S. #159 Tuckahoe Quadrangle	54
Ballanger Creek - alewife above Pollys Ditch Mullica River Rrainage 5/11/76 @ 64°F. (g) AFC U.S.G.S. #140 New Gretna Quadrangle	69
Bass River - alewife @ Bass River State Forest Mullica River Drainage 5/11/76 @ 64°F. (g) AFC U.S.G.S. #140 New Gretna Quadrangle	72
Batsto River - alewife @ Batsto Lake Dam Mullica River Drainage 4/22/74 @ 62°F. (fc) AFC U.S.G.S. #125 Atsion Quadrangle	74
Beaver Creek - alewife @ Kay Gardens Oldmans Creek Drainage 5/6/70 @ 61°F. (e) BF U.S.G.S. #106 and #119 Marcus Hook and Penns Grove Quadrangles	22
Blacks Creek - alewife @ Rt. 301 4/13/76 @ 52°F. (g) AFC U.S.G.S. #81 Trenton East Quadrangle	13
Bog Branch - alewife @ Cape May Impoundment #2 Cedar Swamp Creek - Tuckahoe River Drainage 4/10/73 @ 54°F. (d) AFC U.S.G.S. #160 Marmora Quadrangle	51
Buckshutem Creek - alewife @ Laurel Lake Dam Maurice River Drainage 4/6/74 @ 52°F. (d) AFC U.S.G.S. #157 Dividing Creek Quadrangle	40
Cedar Creek - alewife @ Cedarville Lake Dam 4/16/74 @ 60°F. (t) AFC U.S.G.S. #156 Cedarville Quadrangle	37
Cedar Creek - alewife @ Rt. 9 5/6/75 @ 54°F. (fc) AFC U.S.G.S. #116 Forked River Quadrangle	87
Cedar Creek - blueback @ Cedarville Lake Dam 5/31/76 @ 73°F. (fc) AFC U.S.G.S. #156 Cedarville Quadrangle	36

Water and Location	Map and Reference No.
Cedar Swamp Creek - alewife @ Rt. 50 Tuckahoe River Drainage 4/19/75 @ 50°F. (g) AFC U.S.G.S. #160 and #167 - Marmora and Sea Isle City Quadrangles	52
Cohansey River - alewife @ Sunset Lake Dams (2) 4/8/74 @ 53°F. (g) AFC U.S.G.S. #146 Bridgeton Quadrangle	35
Cohansey River - blueback @ Sunset Lake Dams (2) 5/1/74 @ 66°F. (g) AFC U.S.G.S. #146 Bridgeton Quadrangle	34
Comptons Creek - alewife @ Broadway Avenue Raritan Bay Drainage 4/24/75 @ 53°F. (d) AFC U.S.G.S. #71 Sandy Hook Quadrangle	126
Crosswicks Creek - alewife @ North Crosswicks Dam 5/6/75 @ 58°F. (f) AFC U.S.G.S. #81 Trenton East Quadrangle	12
Crosswicks Creek - blueback above Rt. 206 5/7/75 @ 57°F. (g) AFS U.S.G.S. #81 Trenton East Quadrangle	10
Davenport Branch - alewife @ Silver Ridge Park Toms River Drainage 4/28/75 @ 58°F. (d) AFC U.S.G.S. #104 Toms River Quadrangle	97
Deal Lake - alewife @ Main Street 5/24/74 @ 68°F. (g) AFC U.S.G.S. #86 Asbury Park Quadrangle	118
Deal Lake - blueback @ dam 5/4/76 @ 66°F. (d) AFC U.S.G.S. #86 Asbury Park Quadrangle	117
Deep Run - alewife @ Elkinton Millpond Dam Alloway Creek Drainage 4/23/74 @ 61°F. (t) AFC U.S.G.S. #132 Salem Quadrangle	28
Delaware River - alewife @ Trenton Falls 4/20/74 @ 52°F. (fc) AFC U.S.G.S. #80 Trenton West Quadrangle	7

Water and Location	Map and Reference No.
Delaware River - blueback @ Trenton Falls 4/22/73 @ 56°F. (fc) AFC U.S.G.S. #80 Trenton West Quadrangle	8
Delaware River - alewife @ Lambertville Wing Dam 5/12/75 @ 59°F. (d) AFC U.S.G.S. #72 Lambertville Quadrangle	2
Delaware River - blueback @ Lewis' Fishery 5/3/77 @ 62°F. (d) BF U.S.G.S. #72 Lambertville Quadrangle	136
Doctors Creek - alewife @ Yardville - Groveville Road 5/10/75 @ 63°F. (fc) AFC U.S.G.S. #81 Trenton East Quadrangle	11
Double Creek - alewife above East Bay Avenue Barnegat Bay Drainage 5/24/76 @ 68°F. (g) AFC U.S.G.S. #129 Ship Bottom Quadrangle	84
Doughty Creek - alewife @ Brigantine East Pool Dam Grassy Bay - Atlantic Ocean Drainage 4/25/76 @ 58°F. (d) AFC U.S.G.S. #152 Oceanville Quadrangle	67
Doughty Creek - alewife @ Brigantine West Pool Dam Reeds Bay - Atlantic Ocean Drainage 4/25/76 @ 58°F. (d) AFC U.S.G.S. #152 Oceanville Quadrangle	68
Fenwick Creek - alewife @ R. R. Floodgates Salem River Drainage 5/4/76 @ 58°F. (d) AFC U.S.G.S. #132 Salem Quadrangle	25
Fiddlers Creek - alewife above Rt. 29 5/8/75 @ 62°F. (FC) AFC U.S.G.S. #72 Lambertville Quadrangle	3
Flat Creek - alewife @ Cape May Impoundment #3 Tuckahoe River Drainage 4/19/75 @ 54°F. (d) AFC U.S.G.S. #160 Marmora Quadrangle	53
Fresh Creek - alewife above Taylor Road Barnegat Bay Drainage 5/24/76 @ 68°F. (g) AFC U.S.G.S. #129 Ship Bottom Quadrangle	82

Water and Location	Map and Reference
Gibson Creek - Alewife above Gibson Landing Great Egg Harbor River Drainage 6/1/76 @ 68°F. (g) AFC U.S.G.S. #160 Marmora Quadrangle	60
Gravelly Run - alewife above Rt. 559 Great Egg Harbor River Drainage 4/21/73 @ 55°F. (fc) AFC U.S.G.S. #150 Mays Landing Quadrangle	64
Great Egg Harbor River - alewife @ Lenape Lake Dam 4/21/73 @ 56°F. (fc) AFC U.S.G.S. #150 Mays Landing Quadrangle	66
Greenies Sandwash - alewife Maurice River Drainage 4/29/74 @ 70°F. (d) AFC U.S.G.S. #147 Millville Quadrangle	42
Gunning River - alewife below Collinstown Road Barnegat Bay Drainage 5/24/76 @ 68°F. (g) AFC U.S.G.S. #129 Ship Bottom Quadrangle	83
Hackensack River - alewife @ Oradell 6/3/76 @ 69°F. (e) BF U.S.G.S. #31 Hackensack Quadrangle	132
Hackensack River - blueback @ Oradell 6/3/76 @ 69°F. (e) BF U.S.G.S. #31 Hackensack Quadrangle	131
Hammonton Creek - alewife @ Nescochague Lake Dam Mullica River Drainage 4/16/76 @ 58°F. (fc) AFC U.S.G.S. #125 Atsion Quadrangle	76
Hankins Brook - alewife @ Rt. 47 Maurice River Drainage 4/6/74 @ 54°F. (d) AFC U.S.G.S. #147 Millville Quadrangle	43
Hawkins Creek - alewife @ Atlantic County Impoundment #2 Great Egg Harbor River Drainage 5/16/76 @ 64°F. (d) AFC U.S.G.S. #160 Marmora Quadrangle	58
Hooks Creek - blueback @ Hooks Creek Lake Dam Cheesequake Creek - Raritan Bay Drainage 5/16/75 @ 70°F. (t) AFC U.S.G.S. #69 South Amboy Quadrangle	127

ce No.

Water and Location	Map and Reference No.
Jacobs Creek - alewife above Rt. 29 5/17/75 @ 66°F. (g) AFC U.S.G.S. #73 Pennington Quadrangle	5
Jakes Branch - alewife above Flint Road Toms River Drainage 5/8/74 @ 59°F. (g) AFC U.S.G.S. #104 Toms River Quadrangle	93
Jakes Branch - blueback above Flint Road Toms River Drainage 5/8/74 @ 59°F. (g) AFC U.S.G.S. #104 Toms River Quadrangle	92
Jeffreys Creek - alewife @ Lily Pond Toms River Drainage 5/6/75 @ 56°F. (g) AFC U.S.G.S. #104 Toms River Quadrangle	89
Jobs Creek - alewife below Rt. 9 Bass River - Mullica River Drainage 5/11/76 @ 63°F. (g) AFC U.S.G.S. #140 New Gretna Quadrangle	71
Kettle Creek - alewife @ Brick Boulevard Barnegat Bay Drainage 4/16/74 @ 57°F. (g) AFC U.S.G.S. #94 Lakewood Quadrangle	102
Kettle Creek - blueback @ Brick Boulevard Barnegat Bay Drainage 5/15/75 @ 68°F. (fc) AFC U.S.G.S. #94 Lakewood Quadrangle	101
Lake of the Lillies - alewife Metedeconk River Drainage 4/26/76 @ 56°F. (t) AFC U.S.G.S. #95 Point Pleasant Quadrangle	111
Lawrence Brook - alewife @ Westons Mill Pond Dam Raritan River Drainage 5/31/73 @ 62°F. (fc) AFC U.S.G.S. #68 New Brunswick Quadrangle	129

Water and Location	Map and Reference No.
Little Silver Lake - alewife Manasquan River Drainage 4/9/76 @ 53°F. (d) AFC U.S.G.S. #95 Point Pleasant Quadrangle	112
Lockatong Creek - alewife above Rt. 29 6/10/76 @ 68°F. (d) AFC U.S.G.S. #63 - Lambertville Quadrangle	1
Long Swamp Creek - alewife below Washington Avenue Toms River Drainage 4/18/75 @ 54°F. (d) AFC U.S.G.S. #104 Toms River Quadrangle	91
Mannington Creek - alewife @ Rt. 540 Salem River Drainage 4/19/74 @ 59°F. (g) AFC U.S.G.S #132 - Salem Quadrangle	26
Mantua Creek - alewife @ N.J. Turnpike Bridge 5/19/76 @ 70°F. (g) AFS U.S.G.S. #108 Woodbury Quadrangle	18
Mantua Creek - blueback @ N.J. Turnpike Bridge 5/19/76 @ 70°F. (g) AFS U.S.G.S. #108 Woodbury Quadrangle	17
Manumuskin River - alewife @ R.R. Bridge Maurice River Drainage 4/23/74 @ 62°F. (g) AFC U.S.G.S. #158 Port Elizabeth Quadrangle	39
Maurice River - blueback @ Union Lake Dam 4/30/74 @ 70°F. (g) AFC U.S.G.S. #147 Millville Quadrangle	45
Maurice River - alewife @ Union Lake Dam 4/6/74 @ 52°F. (g) AFC U.S.G.S. #147 Millville Quadrangle	47
McNeals Branch - alewife @ Aetna Road Tuckahoe River Drainage 4/23/73 @ 53°F. (d) AFC U.S.G.S. #159 Tuckahoe Quadrangle	56
Menantico Creek - alewife @ R.R. Bridge Maurice River Drainage 4/7/74 @ 62°F. (G) AFC U.S.G.S. #148 and #157 - Five Points and Dividing Creek	41
Mill Creek - alewife @ Clarks Pond Dam Cohansey River Drainage 5/16/73 @ 61°F. (fc) AFC U.S.G.S. #146 Bridgeton Quadrangle	33

ce No.	Water and Location	Map and Reference No.
	Mill Creek - blueback @ Clarks Pond Dam Cohansey River Drainage 5/31/76 @ 72°F. (fc) AFC U.S.G.S. #146 Bridgeton Quadrangle	32
	Mill Creek - alewife @ Beach Haven West Manahawkin Bay Drainage 5/26/76 @ 64°F. (g) AFC U.S.G.S. #129 Ship Bottom Quadrangle	81
	Mill Run - alewife @ Allaire State Park Manasquan River Drainage 4/3/76 @ 52°F. (d) AFC U.S.G.S. #85 Farmingdale Quadrangle	114
	Mill Creek - alewife @ Pine Beach Toms River Drainage 4/16/74 @ 56°F. (g) AFC U.S.G.S. #104 Toms River Quadrangle	90
	Mill Creek - alewife @ Magnolia Lake Dam Townsend Sound Drainage 4/11/73 @ 51°F. (d) AFC U.S.G.S. #167 Sea Isle City Quadrangle	49
	Millstone River - blueback @ Weston Causeway Dam 5/21/78 @ 61°F. (fc) AFS-6 U.S.G.S. #59 Bound Brook Quadrangle	137
	Millstone River - blueback @ Rt. 518 Raritan River Drainage 5/23/75 @ 68°F. (e) BF U.S.G.S. #66 Monmouth Junction Quadrangle	130
	Miry Run - alewife above Rt. 559 Great Egg Harbor River Drainage 4/21/73 @ 55°F. (fc) AFC U.S.G.S. #150 Mays Landing Quadrangle	63
	Mullica River - alewife @ Constable Bridge 4/16/76 @ 58°F. (fc) AFC U.S.G.S. #125 Atsion Quadrangle	78
	Muskee Creek - alewife @ Rt. 47 Maurice River Drainage 5/1/74 @ 70°F. (g) AFC U.S.G.S. #158 Port Elizabeth Quadrangle	38
	Nacote Creek - alewife @ Mill Pond Dam Mullica River Drainage 1973 (g) Ich U.S.G.S. #140 New Gretna Quadrangle	70

Water and Location	Map and Reference No.
Negro Creek - alewife above Rt. 563 Mullica River Drainage 4/22/74 @ 63°F. (d) AFC U.S.G.S. #139 Green Bank Quadrangle	74
Nescochague Creek - alewife above old dam site Mullica River Drainage 4/16/76 @ 56° F. (fc) AFC U.S.G.S. #125 Atsion Quadrangle	77
North Branch Beaverdam Creek - alewife @ Rt. 88 Metedeconk River Drainage 5/17/74 @ 68°F. (t) AFC U.S.G.S. #95 Point Pleasant Quadrangle	103
North Branch Rancocas Creek - alewife @ Mill Dam Park 4/17/75 @ 53°F. (fc) AFC U.S.G.S. #9 Mt. Holly Quadrangle	16
North Branch Metedeconk River - alewife @ Rt. 88 Metedeconk River Drainage 5/23/74 @ 62°F. (g) AFC U.S.G.S. #94 Lakewood Quadrangle	107
Oldmans Creek - alewife @ Rt. 74 4/29/74 @ 64°F. (g) AFC U.S.G.S. #120 Woodstown Quadrangle	24
Parkway Pond - alewife N. B. Metedeconk River - Metedeconk River Drainage 4/21/74 @ 61°F. (fc) AFC U.S.G.S. #94 Lakewood Quadrangle	106
Patcong Creek - alewife @ Bargaintown Lake Dam Great Egg Harbor Bay Drainage 4/25/74 @ 59°F. (fc) AFC U.S.G.S. #161 Ocean City Quadrangle	50
Pine Brook - alewife @ Riverdale Avenue Swimming River - Navesink River Drainage 4/28/75 @ 57°F. (t) AFC U.S.G.S. #79 Long Branch Quadrangle	123
Pine Brook - blueback @ Riverdale Avenue Swimming River - Navesink River Drainage 5/13/75 @ 66°F. (fc) AFC U.S.G.S. #79 Long Branch Quadrangle	122
Polhemus Creek - alewife @ Hooper Avenue Barnegat Bay Drainage 5/6/75 @ 55°F. (t) AFC U.S.G.S. #94 Lakewood Quadrangle	99

ice No.	Water and Location	Map and Reference No.
	Potter Creek - alewife @ Bluejay Avenue Barnegat Bay Drainage 5/27/76 @ 73°F. (g) AFC U.S.G.S. #104 Toms River Quadrangle	88
	Raccoon Creek - alewife @ Rt. 322 4/29/74 @ 66°F. (g) AFC U.S.G.S. #121 Pitman West Quadrangle	21
	Raccoon Creek - blueback @ Swedesboro 5/28/75 @ 75°F. (g) AFS U.S.G.S. #107 Bridgeport Quadrangle	19
	Raccoon Ditch - alewife @ Davis Mill Dam Stow Creek Drainage 5/1/74 @ 67°F. (g) AFC U.S.G.S. #144 and #145 - Canton and Shiloh Quadrangle	30
	Raceway - alewife @ Sharp Street Maurice River Drainage 4/7/74 @ 52°F. (g) AFC U.S.G.S. #147 Millville Quadrangle	46
	Raritan River - blueback @ Calco Dam 4/25/78 @ 52°F. (e) AFS-6 U.S.G.S. #59 Bound Brook Quadrangle	135
	Richmonds Branch - alewife @ Porches Mill Dam Oldmans Creek Drainage AFC 4/29/74 @ 68°F. (g) U.S.G.S. #120 Woodstown Quadrangle	23
	Salem River - alewife @ Beaverdam 5/3/76 @ 64°F. (d) AFC U.S.G.S. #119 - Penns Grove Quadrangle	27
	Shenandoah Lake - alewife S.B. Metedeconk River - Metedeconk River Drainage 5/5/74 @ 58°F. (t) AFC U.S.G.S. #94 Lakewood Quadrangle	109
	Shenandoah Lake - blueback S.B. Metedeconk River Drainage 5/6/74 @ 61°F. (t) AFC U.S.G.S. #94 Lakewood Quadrangle	108
	Silver Bay Creek - alewife @ Hooper Avenue Barnegat Bay Drainage 4/30/75 @ 57°F. (d) AFC U.S.G.S. #94 Lakewood Quadrangle	98

Water and Location	Map and Reference No.
South Branch Beaverdam Creek - alewife @ Lenape Terrace Metedeconk River Drainage 4/14/75 @ 56°F. (d) AFC U.S.G.S. #95 Point Pleasant Quadrangel	105
South Branch Beaverdam Creek - blueback @ Lenape Terrace Metedeconk River Drainage 4/6/76 @ 54°F. (d) AFC U.S.G.S. #95 Point Pleasant Quadrangle	104
South Branch Double Creek - alewife below East Bay Avenue Barnegat Bay Drainage 5/24/76 @ 71°F. (g) AFC U.S.G.S. #129 Ship Bottom Quadrangle	85
South Branch Raccoon Creek - blueback @ Hill Street 5/9/73 @ 58°F. (fc) AFC U.S.G.S. #120 Woodstown Quadrangle	20
South Branch Rancocas Creek - alewife @ Rancocas Heights 4/15/75 @ 50°F. (g) AFS U.S.G.S. #99 Mt. Holly Quadrangle	15
South Branch Rancocas Creek - blueback at Rancocas Woods 4/30/75 @ 55°F. (g) AFS U.S.G.S. #99 Mt. Holly Quadrangle	14
South Branch Stouts Creek - alewife @ Bayview Parkway Barnegat Bay Drainage 4/30/75 @ 56°F. (d) AFC U.S.G.S. #116 Forked River Quadrangle	86
South River - alewife @ Duhernal Lake Dam Raritan River Drainage 5/16/74 @ 65°F. (fc) AFC U.S.G.S. #69 South Amboy Quadrangle	128
South River - alewife @ 11th Street Great Egg Harbor River Drainage 4/21/73 @ 54°F. (fc) AFC U.S.G.S. #150 Mays Landing Quadrangle	62
South River - alewife in claypits below Forty Wire Road off Rt. 40 4/28/77 @ 58° F. (d) BF U.S.G.S. #150 Mays Landing Quadrangle	133A
Steel Run - alewife @ Washington Crossing State Park 5/8/75 @ 62°F. (d) AFC U.S.G.S. #73 Pennington Quadrangle	4
Stephan Creek - alewife @ Stephan Lake Dam Great Egg Harbor River Drainage 4/26/74 @ 58°F. (g) AFC U.S.G.S. #150 Mays Landing Quadrangle	61

ice No.	Water and Location	Map and Reference No.
	Stow Creek - alewife @ Buckhorn Road 5/1/74 @ 68°F. (g) AFC U.S.G.S. #145 Shiloh Quadrangle	31
	Swamp Brook - alewife @ Shadow Lake Dam Navesink River Drainage 5/31/73 @ 64°F. (fc) AFC U.S.G.S. #79 Long Branch Quadrangle	121
	Swamp Brook - blueback @ Shadow Lake Dam Navesink River Drainage 5/31/73 @ 64°F. (fc) AFC U.S.G.S. #79 Long Branch Quadrangle	120
	Swimming River - alewife @ Swimming River Reservoir Dam Navesink River Drainage 4/22/76 @ 68°F. (d) AFC U.S.G.S. #79 Long Branch Quadrangle	125
	Swimming River - blueback @ Normandy Road Navesink River Drainage 5/23/75 @ 74°F. (t) AFC U.S.G.S. #79 Long Branch Quadrangle	124
	Third River - blueback @ Yantecaw Lake Dam 4/2/77 @ ?°F. (fc) U.S.F. & W.S. U.S.G.S. #41 Orange Quadrangle	134
	Toms River - alewife above Rt. 9 4/16/74 @ 54°F. (fc) AFC U.S.G.S. #104 Toms River Quadrangle	95
	Toms River - blueback above Rt. 9 5/8/74 @ 60°F. (fc) AFC U.S.G.S. #104 Toms River Quadrangle	94
	Tuckahoe River - alewife @ the Peaslee Tract 4/23/73 @ 55°F. (d) AFC U.S.G.S. #159 Tuckahoe Quadrangle	57
	Tuckerton Creek - blueback @ Pohatcong Lake Dam Little Egg Harbor Bay Drainage 5/7/75 @ 58°F. (d) AFC U.S.G.S. #141 Tuckerton Quadrangle	80
	Tunes Branch - alewife @ Brick Boulevard Barnegat Bay Drainage 4/28/75 @ 60°F. (g) AFC U.S.G.S. #94 Lakewood Quadrangle	100
	Twilight Lake - alewife Metedeconk River Drainage 4/26/76 @ 56°F. (fc) AFC U.S.G.S. #95 Point Pleasant Quadrangle	110

Water and Location	Map and Reference No.
Wading River - alewife above Rt. 542 Mullica River Drainage 5/7/76 @ 63°F. (g) AFC U.S.G.S. #140 New Gretna Quadrangle	73
Warner Mill Stream - alewife @ Aetna Road Tuckahoe River Drainage 5/15/76 @ 65°F. (g) AFC U.S.G.S. #159 Tuckahoe Quadrangle	55
Watering Race Branch - alewife @ Babcock Creek Great Egg Harbor River Drainage 4/22/73 @ 54°F. (fc) AFC U.S.G.S. #150 Mays Landing Quadrangle	65
Watson Creek - alewife @ Stockton Lake Manasquan River Drainage 4/21/76 @ 53°F. (g) AFC U.S.G.S. #95 Point Pleasant Quadrangle	113
West Creek - alewife @ Rt. 47 Delaware Bay Drainage 5/1/74 @ 70°F. (g) AFC U.S.G.S. #165 Heislerville Quadrangle	48
Whale Pond Creek - alewife @ Lake Takanassee Flume 4/29/76 @ 56°F. (d) AFC U.S.G.S. #79 Long Branch Quadrangle	119
White Marsh Run - alewife @ Silver Lake Dam Maurice River Drainage 4/5/74 @ 53°F. (d) AFC U.S.G.S. #147 Millville Quadrangle	44
Willis Creek - alewife @ Radio Road Little Egg Harbor Drainage 5/15/75 @ 67°F. (g) AFC U.S.G.S. #141 Tuckerton Quadrangle	79
Wrangle Brook - alewife @ Gem Street Toms River Drainage 4/18/75 @ 52°F. (g) AFC U.S.G.S. #104 Toms River Quadrangle	96
Wreck Pond Creek - alewife @ Old Mill Pond Dam 5/8/74 @ 57°F. (g) AFC U.S.G.S. #86 Asbury Park Quadrangle	116
Wreck Pond Creek - blueback @ Old Mill Pond Dam 5/11/74 @ 62°F. (g) AFC U.S.G.S. #86 Asbury Park Quadrangle	115

ice No.

American shad (Alosa sapidissima):

Delaware River at Phillipsburg 133
4/26/69 @ 54°F. (g) AFS
U.S.G.S. #44 Easton Quadrangle

The Delaware River Anadromous Project reported taking one ripe running female American shad by gill net in Raccoon Creek at Swedesboro, Gloucester County, U.S.G.S. #107 Bridgeport Quadrangle on 6/5/75 at 73°F., but it was judged that this was insufficient evidence to confirm a spawning run.

Hickory shad (Alosa mediocris):

No hickory shad spawning runs were confirmed. The one hickory shad run reported in Alloway Creek was assessed to be misidentified and it is thought that the species is the gizzard shad (Dorosoma cepedianum). It is likely that New Jersey is out of the natural spawning range for hickory shad. Reports have been received that sport fishermen catch adult hickory shad in the lower tidal waters of Great Egg Harbor Bay and the Mullica River in the fall of the year.

Barriers to Anadromous Clupeid Spawning Runs

During field investigations 83 constructed barriers were located on watercourses where spawning runs of clupeids have been reported or confirmed. These barriers were assessed to be blocking or limiting fish passage and reducing spawning habitat.

(C) Confirmed spawning
(R) Reported spawning

Alloway Lake Dam - Alloway Creek (C)
Atlantic City Reservoir Dam - Absecon Creek (R)
Bargaintown Lake Dam - Great Egg River (C)
Basgalore Lake Dam - Raccoon Creek (R)
Batsto Lake Dam - Mullica River (C)
Bayside Parkway Culvert - S.B. Stouts Creek - Barnegat Bay (C)
Beaver Creek Floodgate - Oldman's Creek (C)
Brick Boulevard Culvert - Nettle Creek - Barnegat Bay (C)
Brigantine East Pool Dam - Doughty Creek - Grassy Bay (C)
Brigantine West Pool Dam - Doughty Creek - Reeds Bay (C)
Canton Drain Floodgates - Stow Creek (R)
Cedar Lake Dam - Cedar Creek - Delaware River (C)
Clarks Pond Floodgate and Dam - Cohansey River (C)
Cooper River Dam (R)
Corbin City Imp. #1 - Gibson Creek - Great Egg River (C)
Corbin City Imp. #2 - Hawkins Creek - Great Egg River (C)
Corbin City Imp. #3 - Peters Run - Great Egg Harbor River (R)
Cotoxen Lake Dam - Rancocas Creek (R)
Crafts Creek Dam - Delaware (R)

Crystal Lake Dam - Delaware River (R)
Davis Mill Dam - Stow Creek (C)
Deal Lake Dam - Atlantic Ocean (C)
Duhernal Lake Dam - South River - Raritan Bay (C)
Dundee Dam - Passaic River (R)
East Lake Dam - Cohansey River (R)
Elkinton Mill Dam - Alloway Creek (C)
Fenwick Creek Floodgates - Salem River (C)
Fieldsville Dam - Raritan River (R)
Fire Pond Dam - Oyster Creek - Barnegat Bay (R)
Green Creek Mosquito Impoundment (R)
Gropps Lake Dam - Backs Creek - Crosswicks Creek (C)
Harrisonville Lake Dam - Oldmans Creek (R)
Harrisville Lake Dam - Oswego River - Mullica River (R)
Hogans Pond Dam - English Creek - Great Egg River (R)
Hooks Lake Dam - Cheesequake Creek - Raritan Bay (C)
Lake of the Lillies Dam - Metedeconk River (C)
Larkspur Lake Dam - Stow Creek (R)
Laurel Lake Dam - Alloway Creek (R)
Laurel Lake Dam - Maurice River (C)
Leamings Pond Dam - Mill Creek - Tuckahoe (C)
Lenape Lake Dam - Great Egg River (C)
Little Silver Lake Dam - Manasquan River (C)
Lockatong Creek Feeder Dam - Delaware River (C)
Lower Lake Dam - North Branch - Forked River (R)
Magnolia Lake Dam - Mill Creek - Townsend Sound (C)
Manahawkin Lake Dam - Mill Creek - Manahawkin Bay (R)
Mannington Creek Floodgates - Salem River (R)
Middle Pond Dam - Nantuxent River (R)
Mill Park Dam - Rancocas Creek (C)
Mill Pond Dam - Nacote Creek - Mullica River (C)
Mullica Hill Pond Dam - Raccoon Creek (R)
Narraticon Lake Dam - Raccoon Creek (R)
Nescochague Lake Dam - Mullica River (C)
N.J. Route 130 Culverts - Blacks Creek - Delaware River (C)
North Crosswicks Creek Dam - Crosswicks Creek (C)
Old Mill Pond - Wreck Pond Creek (C)
Pickle Factory Pond Dam - West Creek - Delaware River (R)
Pohatcong Lake Dam - Tuckerton Creek - Little Egg Bay (C)
Porches Mill Dam - Oldmans Creek (C)
Remsen Mill Dam - Shark River (R)
Repaupo Creek Floodgates - Delaware River (R)
Salem Canal Floodgates - Salem River (R)
Shadow Lake Dam - Navesink River (C)
Shaws Mill Dam - Nantuxent River (R)
Shenandoah Lake Dam - Metedeconk River (C)
Silver Lake Dam - Maurice River (C)
Stephans Lake Dam - Great Egg River (C)
Strawbridge Lake Dam - Pennsauken Creek (R)
Sunset Lake Dams - Cohansey River (C)

Swimming River Reservoir Dam - Navesink River (C)
Takanassee Lake Dam - Atlantic Ocean (C)
Tuckahoe Imp. #1 Halfway Creek - Tuckahoe (R)
Tuckahoe Imp. #2 Bog Branch - Tuckahoe (C)
Tuckahoe Imp. #3 Flat Creek - Tuckahoe (C)
Union Lake Dam - Maurice River (C)
U.S.G.S. Gage Dam - Cedar Creek - Barnegat Bay (C)
U.S.G.S. Gage Dam -Manasquan River (R)
U.S.G.S. Gage Dam - Tuckahoe (C)
Vincentown Lake Dam - Rancocas Creek (R)
Warners Mill Dam - Tuckahoe (R)
Wenonah Lake Dam - Mantua Creek (R)
Weston Mill Dam - Lawrence Creek - Raritan River (C)
Willis Creek Dam - Little Egg Bay (C)

Recommendations

1. The results of this inventory should be made available to the natural resource management and protection agencies of New Jersey, and to federal and interstate agencies and others involved in fisheries management and/or environmental review of proposed water and related land development projects. These agencies should give priority planning consideration to projects affecting existing and potential fish propagation of identified spawning streams.

2. The present inventory should be built upon regularly. Priority should be given to those watercourses where reported or potential runs have not been confirmed, especially in areas of expanding domestic populations and watershed developments where stream alterations are likely to occur.

3. Fishways should be recommended when an existing or proposed obstruction of a river, stream, brook or impoundment outlet is or will exclude or inhibit the upstream movement or migratory run of clupeids or other desirable fish in cases where there is insufficient spawning and nursery area below the obstruction and where the fishway will provide access to an upstream spawning and nursery area that will appreciably increase natural propagation and escapement.

4. Legislation and regulations should be developed and implemented to protect and enhance the anadromous fish resources of New Jersey.

5. Consideration should be given to the restoration of anadromous clupeid spawning in watercourses that are now devoid of the species.

6. A program of public information and education should be developed and implemented to emphasize the benefit of the anadromous clupeid species in the New Jersey aquatic ecosystem and offshore fisheries, and their importance in the food web as well as their esthetic, sport fishing and commercial values.

Conclusions

The search of literature and records for information on historical clupeid spawning runs was found to be fragmentary and isolated. Most clupeid information refers to commercial American shad fisheries rather than spawning runs. Information on herring was found to be almost non-existent. It is speculated that New Jersey has lost far more anadromous clupeid spawning runs than the record indicates.

The confirmation of anadromous clupeid spawning runs by field investigation and the identification of physical conditions that inhibit existing and potential spawning runs has provided a broad base upon which to develop and conduct an effective anadromous fish management program in New Jersey.

References

Annual Reports of the New Jersey Board of Fish and Game Commissioners 1916 - 1942.

Beck, Henry. Jersey Genesis pp. 1-155 incl.

Ferrigno, Widjeskog and Toth. Wetland Ecology, Marsh Destruction, Job Progress Report-W-53-R-1 pp. 1-20.

Fowler, Henry, W. New Jersey State Museum, Fishes of New Jersey - 1905 and 1908.

Pennsylvania Report of the State Commissioners of Fisheries 1896 - pp. 1-444 incl.

United States Fish Commissioners Annual Reports - 1871-1924, pp. 1-1,193 incl.