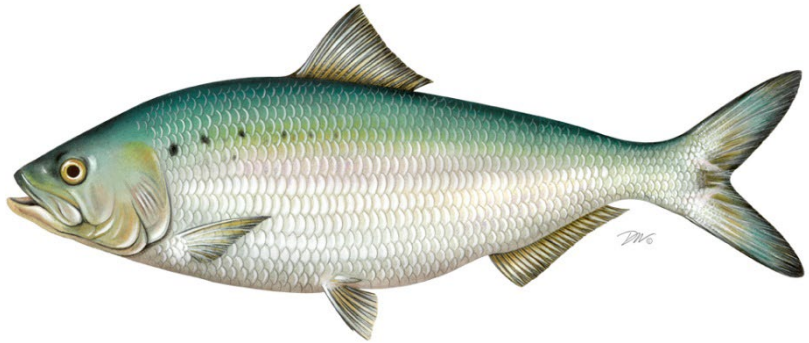
Shad Habitat Plan Updates



ASMFC Shad and River Herring Management Board

May 3, 2022

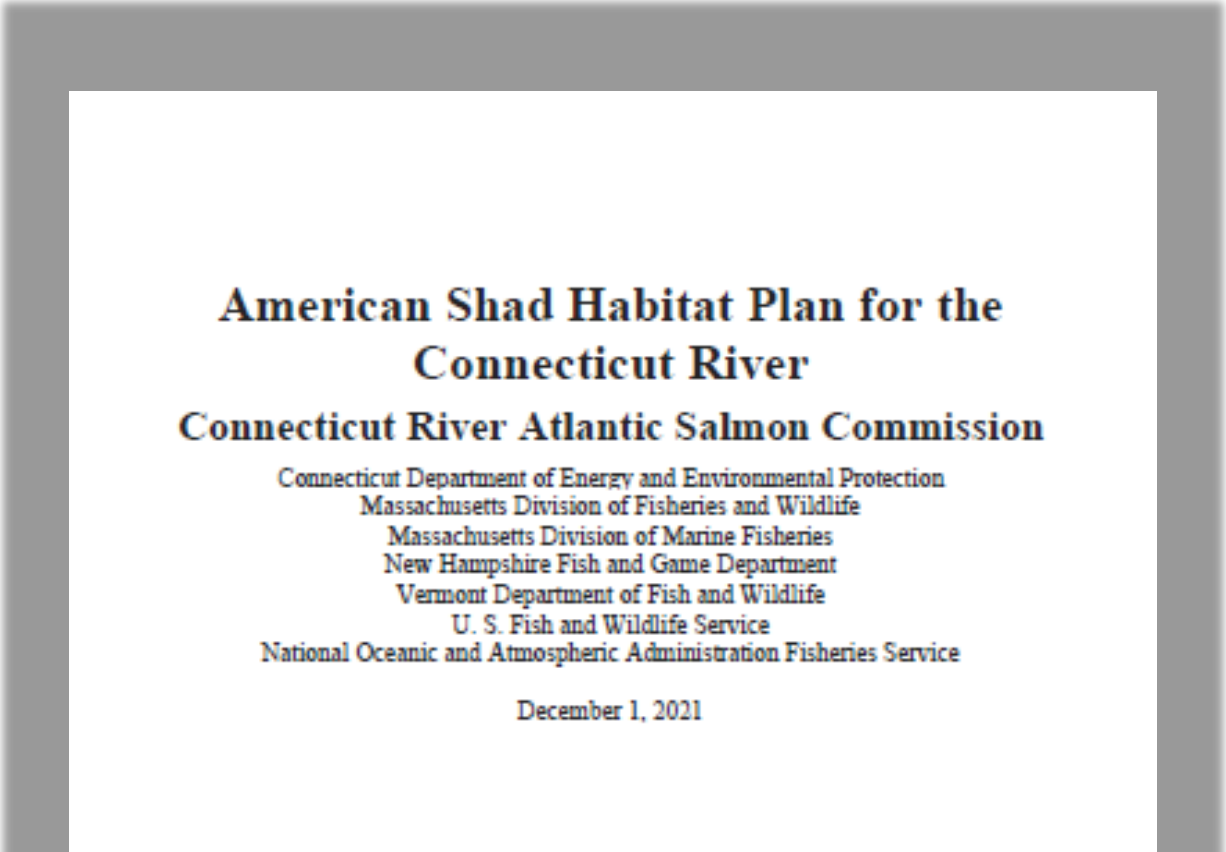
Background

- Amendment 3 requires all states and jurisdictions to submit a habitat plan for American shad
  - summary of current and historical spawning and nursery habitat, threats to those habitats, and habitat restoration programs
- In February 2020, the Board asked states to update/submit habitat plans for shad rivers in their state
- The Board has approved 15 plans/updates since then
  - ME, NH, Hudson River, MD, VA, DC, NC, Savannah River, GA, MA, RI, CT, Delaware Basin, SC, and FL

Plan Updates for Board Consideration

- April 2022: 1 habitat plan update and 1 new plan were evaluated by TC and submitted for Board consideration:
  - Connecticut River Plan Update
  - Merrimack River Initial Plan
- **The TC recommends approval of both plans**

Connecticut River Habitat Plan Update



American Shad Habitat Plan for the Connecticut River

Connecticut River Atlantic Salmon Commission

Connecticut Department of Energy and Environmental Protection
Massachusetts Division of Fisheries and Wildlife
Massachusetts Division of Marine Fisheries
New Hampshire Fish and Game Department
Vermont Department of Fish and Wildlife
U. S. Fish and Wildlife Service
National Oceanic and Atmospheric Administration Fisheries Service

December 1, 2021

Connecticut River Update

- This 2021 report updates information from the 2014 report and incorporates:
  - Habitat based production units by river segment and minimum adult annual population targets from the CRASC American Shad Management Plan Update (2017).
  - Defined passage performance metrics from the CRASC Fish Passage Performance Addendum (2020).
  - **Both of the above mentioned CRASC plans have been accepted by FERC as a Comprehensive Plan**
- Identified Threats
  - Fish passage is still the primary in-river habitat (access) concern
  - Hydropower flow re-regulation and habitat impacts.
  - Invasive hydrilla expansion and development impacts on water quality

Merrimack River American Shad Habitat Plan

Merrimack River Anadromous Fish Restoration Program

Massachusetts Division of Fisheries and Wildlife
Massachusetts Division of Marine Fisheries
New Hampshire Fish and Game Department
U. S. Fish and Wildlife Service
National Oceanic and Atmospheric Administration Fisheries Service

Merrimack River Plan

- **Habitat Assessment**

  - American shad currently have access to 38% of historical mainstem Merrimack River and major tribs from the mouth up to the Garvin's Falls Hydroelectric Facility

  - In the accessible reaches, passage inefficiencies due to poor facility design or seasonal flow regimes limit restoration goals and improvements must be made through FERC processes and engagement with dam owners

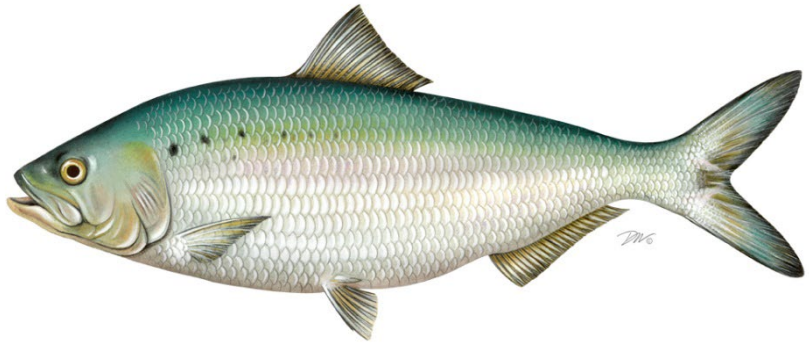
Merrimack River Plan

- **Threats Assessment**
  - The Plan identifies threats to American shad spawning and nursery habitat including:
    - Barriers to Upstream and Downstream Migration
      - There are nearly 3,000 documented dams in the watershed. In addition to dams, there are numerous other barriers or potential barriers, in the form of crossings, culverts, and natural features
    - Hydropower Facility Operations
      - There are currently 49 actively hydroelectric plants in the watershed with varying degrees of fish passage efficiency and associated thermal, flow management, and impingement and entrainment effects.
    - Anthropogenic Habitat Changes
      - Poor land use practices may affect shad habitat either directly or indirectly. Riparian zone vegetation protection and bank protection are examples of concerns that insufficient land use (e.g., agriculture, residential, commercial uses) regulation or enforcement may result in degraded habitat and impact water quality.
    - Climate Change
      - The Merrimack River stock will be vulnerable to climate change due, in part, to changes in water temperatures (run timing and passage facility operation), water quality, and lost nursery habitat as storm intensity and frequency carry sediments that hinders the growth of submerged aquatic vegetation

Merrimack River Plan

- Habitat Restoration Programs
  - Within the Merrimack River system there are significant and ongoing efforts to understand and reduce the impacts of threats to American shad and shad spawning and nursery habitats identified in the Plan
  - Recent restoration efforts include:
    - The targeting of seven dams for removal/passage installation which will nearly double the accessible diadromous fish spawning and rearing habitat within the next decade. Many other dams are coming up on their scheduled FERC re-licensing
    - Since 2009 the MRTC has maintained an active hatchery supplementation program that has been combined with the transfer of gravid fish from the Essex Dam to upriver mainstem spawning habitats. These efforts are spearheaded by USFWS and NHFGD
    - Coordinated water quality monitoring on the mainstem and tributaries respective state agencies, federal agencies (e.g., U. S. Geological Survey) non-profit watershed groups, power companies and others.

Shad and River Herring Sustainable Fishery Management Plan Updates



ASMFC Shad and River Herring Management Board

May 3, 2022

Background

- Amendments 2 & 3 of the Shad and River Herring FMP require states wishing to have a fishery must submit a Sustainable Fishery Management Plan that will:
  - "demonstrate their stock could support a commercial and/or recreational fishery that will not diminish the future stock reproduction and recruitment."
- Plans are updated and reviewed every 5 years to reassess stock status and sustainability

Plan Updates for Board Consideration

- April 2022: Two updated sustainable fishery management plans were evaluated by the TC and submitted for Board consideration:
  - Delaware Basin Shad SFMP
  - Hudson River Herring SFMP
- **The TC recommends approval of both plans**

Delaware Basin American Shad Sustainable Fishery Management Plan Update

2022-2026

Delaware Basin Plan Update

- The updated plan proposes a new female mortality benchmark and more conservative thresholds and triggers to current metrics already in use

- Proposed changes to management include:

  - Implementation of a commercial harvest quota for the states of NJ and DE representing a 33% reduction from the most recent 10-years, excluding an anomalously high 2014 harvest.

  - Reduction in recreational creel limit from 3 fish down to 2 fish

- The new metrics were developed in response to the 2020 Benchmark Stock Assessment, which indicated an unsustainable mortality rate for the Delaware River stock.

Future Potential Management Actions

- If one or more of the benchmarks are exceeded, the Co-op will implement management action(s) commensurate with the benchmark exceedance:

Commercial Fishery:

- Reduce commercial fishery landings through implementing one or more of the following:
  - gear restrictions
  - area restrictions
  - seasonal restrictions
  - escapement periods
  - trip limits
  - quota with in-season closure in Delaware
  - reduced quotas in Delaware and New Jersey
- Closure of the commercial fishery
- Other measures to be determined

Recreational Fishery:

- Reduce recreational fishery landings through implementing one or more of the following:
  - creel limit reduction to 1 fish per day
  - recreational catch and release only
  - seasonal closures
  - area closures
  - gear restrictions
- Closure of the recreational fishery
- Other measures to be determined

Hudson River Herring Sustainable Fishery Management Plan Update 2022-2026

Hudson River Plan

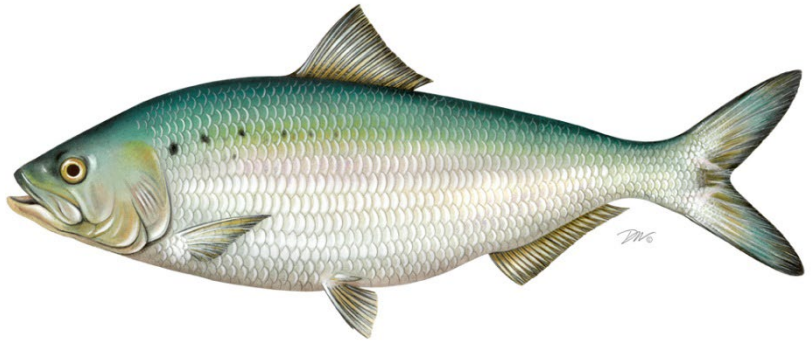
- **Stock Status**
  - Mortality estimates: stable or decreasing; below new sustainability targets
  - Mean length and mean length at age: increasing or stable
  - Frequency of repeat spawning: increasing
  - YOY index erratic but no recruitment failure
- **New sustainability threshold proposed**
  - Adult female total mortality using a Z40 threshold
    - Female Alewife Z=1.26
    - Female Blueback Z=1.19
  - This is in addition to the already in use YOY index, commercial CPUE, repeat spawning, and mean length/length at age benchmarks/metrics

Hudson River Plan

- **Status Quo Regulations Proposed**
  - Restricted fishery in the Hudson River
  - Regulations implemented in 2013
  - No nets in tributaries (including Mohawk River)
  - Gear, mesh and area restrictions
  - 36-hour escapement period for all commercial gears
  - Recreational possession limit of 10 fish per person
  - Moratorium in all other state waters
- **Proposed Management Actions**
  - New York will take immediate management action following recruitment failure or unsustainable adult female mortality
    - Potential management actions include but not limited to:
      - Gear restrictions, area restrictions, permit system restructuring

Questions?

Shad Passage Prioritization



ASMFC Shad and River Herring Management Board

May 3, 2022

Background

- The 2020 American Shad Stock Assessment examined fish passage performance and its effects on American shad production potential
  - Using standardized data and simulation modelling, the analysis determined that overall, dams completely or partly block nearly 40% of the total historical American Shad habitat.
- In May 2021, at the TC's recommendation, the Board tasked the TC with prioritizing systems for shad recovery and developing an inventory of available data that would support development of fish passage criteria

TC Task Development

- In response to the Board task assigned in May 2021, the TC formed a task group to develop information and draft recommendations for TC review.
- Steps taken in development of the task:
  - A query of FERC projects currently, or soon to be in the relicensing process in the next decade
    - USFWS and NOAA have Section 18 Fish Passage Prescription Authority, a legal tool to have FERC direct hydroproject owners to implement and evaluate passage and protection measures.
  - A total of 158 FERC projects were identified from Maine to Florida based only on FERC license status/schedule.

TC Task Development

- TC members from each state were asked to decide whether a project in their state was a priority based on
  - Does the system have an Existing Recovery Plan?
  - Does the system have exisiting Performance Standards?
  - Does the system have exisiting Upstream Fish Passage?
  - Does the system have exisiting Downstream Fish Passage?
  - Is Alosine Passage Needed?
  - Is the system a state priority?
- Ultimately, the TC developed a list of 34 priority FERC licensed projects based on the above criteria (Table 1).

Results and Recommendations

- For each priority project, the TC recommends that the relevant state and federal agencies determine the extent to which their existing Shad Restoration or Management Plan(s) are current and relevant for information to best address upstream and downstream passage for specific goals and/or objectives.
- This includes considering the following:
  - If existing plan information does not suitably address fish passage, the plan should be updated with state and federal participation with staff familiar with both Section 18 Authorities and Water Quality Certificates.
  - Specific passage performance criteria should be discussed and developed by the agencies.
    - Criteria should rely on a diverse set of information for supporting rationale including but not limited to, plan goals and objectives,
  - Performance targets should address rates of passage success that include; percent passage success for fish arriving at a project area, a time component to address delay as part of passage success, and survival rates with project passage.
  - **Plans should be submitted to FERC for status as Comprehensive Management Plans, requiring FERC licensee's to address these plans.**

Table 1

Summary totals for identified priority FERC Projects by state with questionnaire responses

State	# of Priority Projects	Existing Recovery Plan?	Passage Performance Standards?	U/S Passage in System?	D/S passage in system?	Is Alosine Passage Needed?	Any Issues for Existing Passage structure/ops?
Maine	8	Yes = 8	Attempting = 2 No = 6	Yes =5 No = 3	Yes = 8	Better passage = 3 Yes = 3	Yes = 7
New Hampshire	10	Yes = 7 No = 3	Yes = 7 No = 3	Yes = 3 No = 7	Yes = 3 No = 7	Yes = 10	Yes = 3
Massachusetts	3	Yes = 3	Yes = 3	Yes = 3	Yes = 3	Yes = 3	Yes = 3
Rhode Island	1	Yes = 1	Yes = 1	No = 1	No = 1	Yes = 1	No = 1
Connecticut	4	Yes = 4	No = 4	No = 4	No = 4	Yes = 4	No = 4
New York	4	Unk = 4	Unk = 4	Unk = 4	Yes = 3 Unk = 1	Unk = 4	Yes = 4
Pennsylvania	2	Yes = 2	Yes = 1 No = 1	Yes = 2	No = 2	Yes = 2	Yes = 1 No = 1
Virginia	1	Unk = 1	Unk = 1	Yes = 1	Yes = 1	Yes = 1	Yes = 1
Georgia	1	Yes = 1	No = 1	No = 1	No = 1	Yes = 1	Unk = 1
Total	34	Yes = 26 No = 3 Unk. = 5	Yes = 12 No = 15 Unk. = 5 Attempting = 2	Yes = 14 No = 16 Unk. = 4	Yes = 18 No = 15 Unk. = 1	Yes/better = 26 Unk. = 4	Yes = 19 No = 6 Unk. = 1

Table 2

River basin locations of priority FERC projects by state

State	Priority Projects	River Systems [Tributary and/or Main Stem (#))
Maine	8	Kennebec; Androscoggin (3); Little Androscoggin, Androscoggin; Penobscot; Saco.
New Hampshire	10	Salmon Falls (3); Nashua, Merrimack; Contoocook, Merrimack (3); Piscataquog, Merrimack; Connecticut; Ashuelot, Connecticut.
Massachusetts	3	Merrimack.
Rhode Island	1	Connecticut (2).
Connecticut	4	Quinebaug (2); Moosup, Quinebaug; Housatonic.
New York	4	East; Mohawk, Hudson (3).
Pennsylvania	2	Susquehanna (2).
Virginia	1	Appomattox.
Georgia	1	Savannah.

Questions?

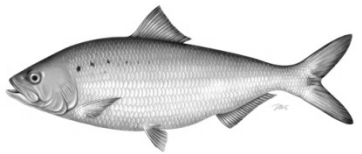
2020 Shad and River Herring FMP Review and Compliance

Presented to Shad and River Herring Management Board

May 3, 2022

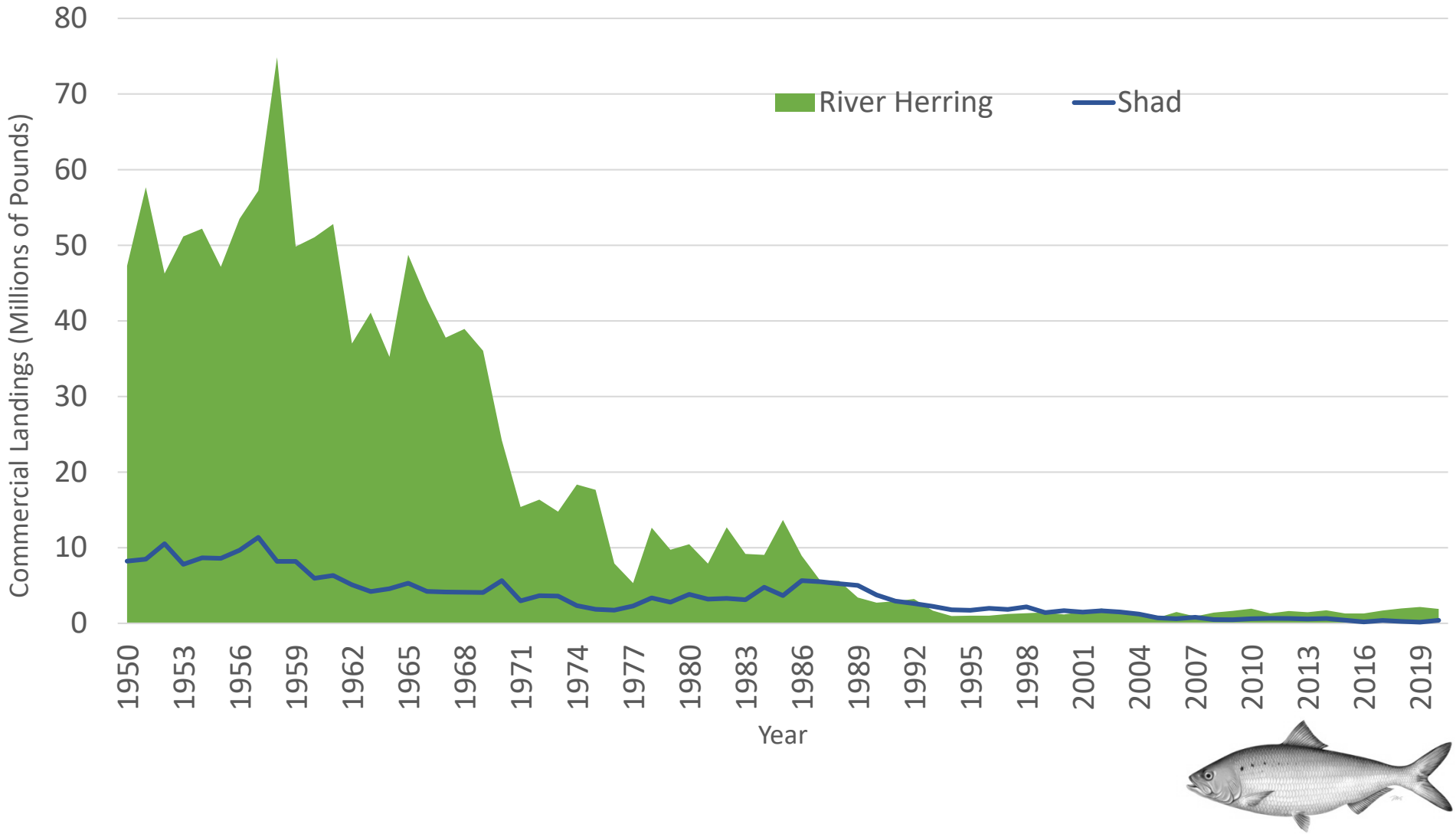
Outline

1. Landings
2. Fish Passage
3. Stocking Efforts
4. Sturgeon Interactions
5. *De minimis* requests
6. PRT Report

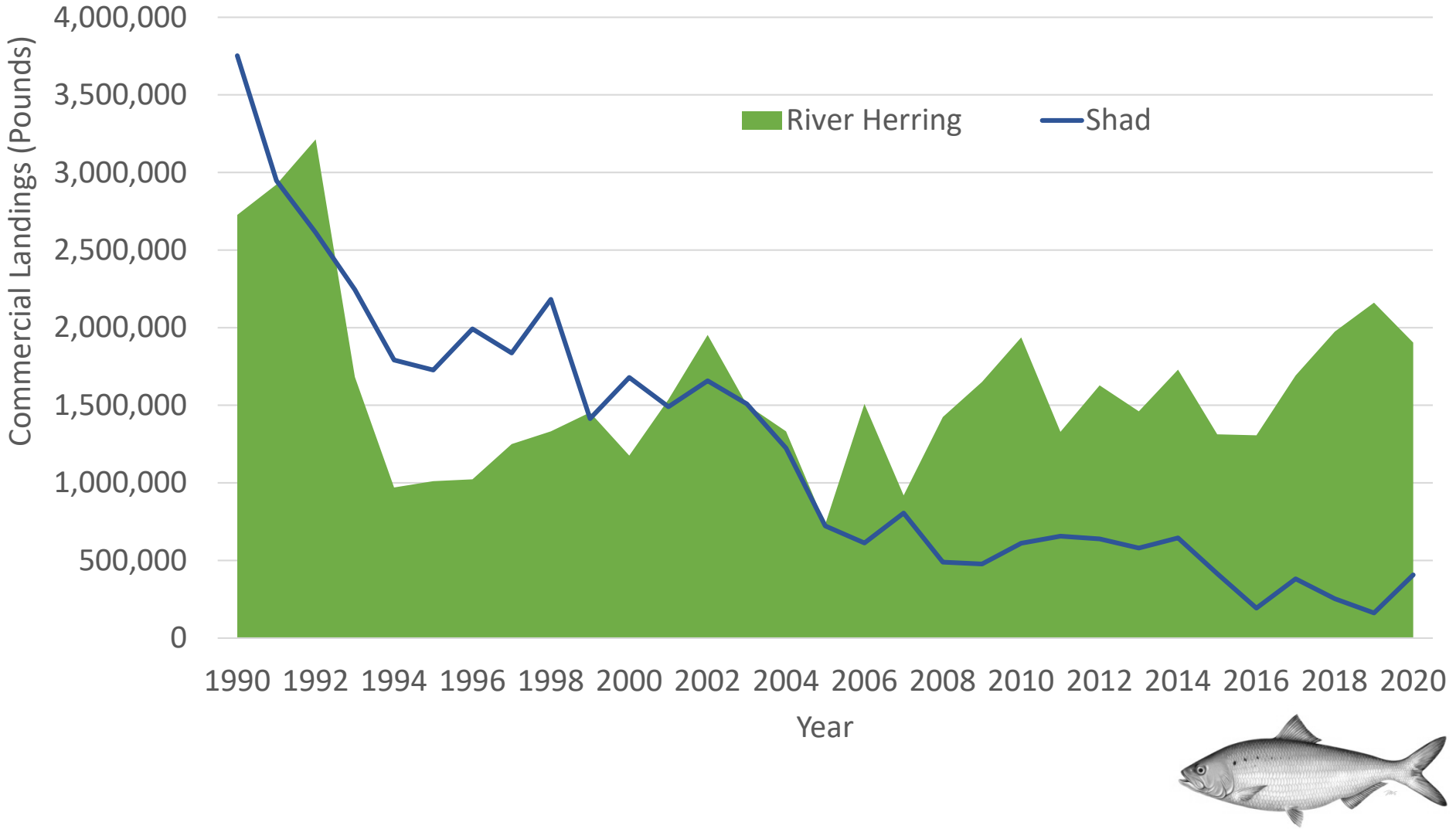


Shad & River Herring Commercial Landings 1950-2020

Source: ACCSP and ASMFC Compliance Reports



Shad & River Herring Commercial Landings 1990-2020
Source: ACCSP and ASMFC Complinace Reports

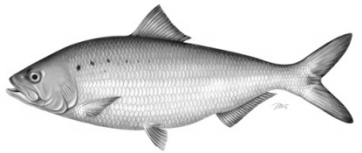


Commercial Landings

	River Herring	American Shad	Hickory Shad
Maine^		C	C
New Hampshire		0	0
Massachusetts		9	0
Rhode Island		0	5,362
Connecticut		21,414	0
New York^		1,150	C
New Jersey		337	0
Pennsylvania		0	0
Delaware		387	0
Maryland^		0	0
D.C.		0	0
PRFC		17,019	0
Virginia		3,378	1,234
North Carolina		213,724	75,182
South Carolina		111,848	C
Georgia		37,913	9,661
Florida		0	0
Total Directed	1,879,029	306,465	C
Total Bycatch	167,445	100,714	C
Total	**2,046,474**	**407,179**	**92,023**

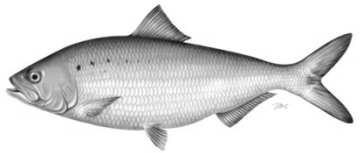
Required Passage Counts

- Counts required in ME, NH, MA, RI, CT, PA, MD, and SC
- Coastwide total passage in 2020:
  - 6.25 million river herring
  - 713,520 shad
- Some monitoring not completed due to Covid-19



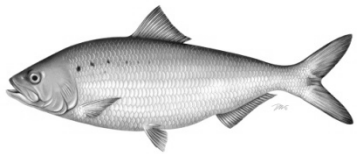
Coastwide Stocking

- 2020: shad fry stocked in RI and SC
- Total shad stocked in 2020: 14.7 million



Sturgeon Interactions

- 73 interactions were reported in 2018
  - NJ gill netters reported 2,921 lbs of discarded sturgeon
- Reported by CT, NJ, PRFC, VA, NC, SC, GA
- RI 2020 data not yet available
  - 9 interactions in 2019



De minimis Requests

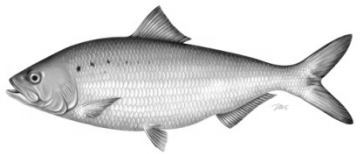
Shad

- ME, NH, MA, FL

River herring

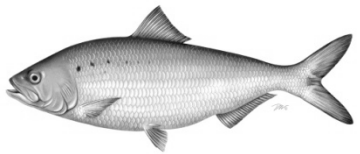
- NH, FL, GA

- These states meet the requirements for *de minimis*.



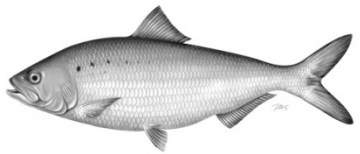
PRT Report

- Several states did not report on all monitoring requirements listed under Amendments 2 and 3.
  - The primary reason for these omissions was the Covid-19 pandemic, which prevented states from conducting the required surveys.
- Minor issues
  - Not all states provided a copy or link to their current fishery regulations.
  - Not all states provided a section for law enforcement reporting.
  - Not all states included a section for hickory shad reporting.



Board Action

- Consider approval of the 2020 Shad and River Herring FMP Review, state compliance reports, and *de minimis* status for Maine, New Hampshire, Massachusetts, Georgia, and Florida



PRT Report

Questions?

2023 River Herring Benchmark Stock Assessment

Katie Drew

ASMFC Spring Meeting Week 2022

Assessment Timeline

→Assessment Presented to Board: **Annual Meeting 2023**

- Data Submission Deadline: July 1, 2022
- Data Workshop (virtual): July 12-14, 2022
- Methods Workshop: October 2022
- Assessment Workshop: March 2023
- Peer Review: August 2023

SAS Update

- Request for Stock Assessment Subcommittee nominations due **May 20, 2022**

- Looking for expertise in river herring biology and/or stock assessment, especially data poor methods