Current Research to Assess the Status of American Eel in Gulf Coast Drainages of Texas

2019 CRP Basin Steering Committee Meeting
Guadalupe Blanco River Authority – Seguin, TX
March 19, 2019

Stephen Curtis
Inland Fisheries – River Studies Program
Meet the American Eel

- Long, snake-like body
- Length: Females up to 5 feet; males up to 3 feet
- Age: 3-40+ years
- Diet: fish, mollusks, crustaceans & carrion
American Eel

- Greenland to South America
- Facultative catadromous species
  - Spawn in saltwater
  - Migrate to estuarine or freshwater
- Panmictic population
  - One single population
  - Ability to breed with every individual
Life History of American Eel

American Eel Life Cycle

- Sargasso Sea
- Larva, or "leptocephalus"
- Eggs
- Glass Eel
- Yellow Eel
- Silver Eel
- Eel
- Stages spent in freshwater
- Stages spent at sea

Sargasso Sea
Spawning location unknown

Bluenose Coastal Action Foundation; Natural History Illustration
Commercial Harvest
Economic Value

• Maine Fishery in 2017
  • Quota: 9,600 pounds of glass/elver eel
  • Sold for ~$1,300 per pound (2015: ~$2,100)
  • 12 million dollar industry (2012: 40.3 M)

Bangor Daily News; Tokyo Dinner Ticket; Portland Press Herald; The Ellsworth American
Northern Gulf of Mexico Status

• Commercial species
  • YES – Louisiana, Mississippi & Florida
  • NO – Texas & Alabama
  • Petitioned for listing in Texas (2014)

• Conservation status
  • Not federally listed as Threatened or Endangered
  • Species of Greatest Conservation Need (TX, LA & FL)

• Research & Monitoring
  • All Northern GOM states
  • Caribbean & Central America
Need

• Population is depleted in US waters (ASMFC 2012 & 2017)
• Demand for American Eel is increasing
• Effective management recommendations = DATA
• Coordinated effort in the GOM
Data Collection

1. Distribution & Abundance
2. Life History
   • Habitat Use
   • Movement Patterns
   • Parasites & Diet
3. Population Structure
   • Genetics
   • Age
   • Sex
4. Assess collection methods

Anguillicoloides crassus
Project Components

1. Yellow Eel Sampling
2. Yellow Eel Processing
3. Fyke Net Sampling (glass/elvers)
4. Eel Mop Sampling (glass/elvers)
Field Sampling: Yellow Eel

**LOCATION**
- Statewide
- Below instream barriers (e.g., dams, weirs, SW barriers)

**METHODS**
- Electrofishing

* Begging for donations *
Public Outreach

• Presentations
• Public Meetings
• Professional Conferences & Workshops
• TPWD Press Release

Biologists seek assistance from anglers in tracking American Eel in Texas waterways

AUSTIN — Every now and then, anglers fishing Texas waterways may reel in something unexpected: the slimy, secretive American Eel.

“[The American Eel] is just such a unique species that you don’t see that often, and so when you catch one or you see one, you remember it,” said Texas Parks and Wildlife Department (TPWD) aquatic biologist Stephen Curtis. “It’s going to leave an impression.”

Please report specimens or observations to Melissa Casarez or Adam Cohen, the Fishes of Texas Project
fshesoftexas@gmail.com
512-475-8171 (Melissa) / 512-471-8845 (Adam)
Maintain specimens alive if possible, or put on ice and give us a call. See links below for more information:

[QR Code]

[Website Links]
Public Outreach

• Social Media
• News Coverage
Public Response

Doug-Tammy Isaacs: The San Bernard river, upstream of the freshwater dam in Brazoria County is loaded with them.

Jeff Zeal Stefanoff: Talk to San Marcos city utility crews. They are always getting them.

Tina Park: May 26 at 6:02pm •
Logan caught an eel!!!
Specimens Collected

- 101 individuals
- 31 sites
- All yellow eel (one possible silver)
- Received in various conditions
Yellow Eel Processing

- Muscle tissue (Genetics & Mercury)
- Otoliths (Aging & Microchemistry)
- Swimbladders (Parasites)
- Stomachs (Diet)
## Yellow Eel Processing

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<td>Muscle Tissue (Genetics)</td>
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<td>Otoliths (Aging &amp; Microchemistry)</td>
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<td>Swimbladders (Parasites)</td>
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<td>Stomachs (Diet)</td>
<td>82</td>
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<tr>
<td>Muscle Tissue (Mercury)</td>
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**Total Length (mm)**

Min = 157 (6.2 in)

Max = 1,054 (41.5 in)
Parasites

- 10 infected eels (out of 95)
- Site infection rates:
  - 66% - (2/3)
  - 100% - (1/1)
  - 70% - (7/10)
Project Components

1. Yellow Eel Sampling
2. Yellow Eel Processing
3. Fyke Net Sampling (glass/elvers)
4. Eel Mop Sampling (glass/elvers)
Field Sampling: Elver & Glass

**LOCATION**

- Mid-Upper Coast
- Site Characteristics
  - Tidally influenced
  - Freshwater inflow
Field Sampling: Elver & Glass

**METHODS**

- Eel Mops
- Small-mesh fyke nets
Eel Mop Sampling

- Sampling since Feb 2018
- Continuous deployment
- Checked every two weeks at a minimum
- Data reported via field datasheet or Google Form
Fyke Net Sampling

- Sampling since July 2018
- Deploy nets at night; fish incoming tide
- Conduct sampling events every 2 weeks
Fyke Net Sampling Sites

July 2018 – Feb 2019

85 Sites
132 Sets
## Expected Timeline

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<tr>
<th>Activity</th>
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<th>2019</th>
<th>2020</th>
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**Yellow Eel Collection** ➔ Mar 2019  
**Glass/Elver Eel Collection** ➔ Mar 2020
Toledo Bend Dam

Figure 8. Toledo Bend Project Spillway, S3, trap installation
Questions?

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