Species Status Assessment

Class: Actinopterygii
Family: Syngnathidae
Scientific Name: Syngnathus fuscus
Common Name: Northern pipefish

Species synopsis:

The northern pipefish occurs along the Atlantic Coast of North America from the Gulf of St. Lawrence, Canada to Jupiter Inlet, Florida and in the northwestern portion of the Gulf of Mexico. In New York, they inhabit the Long Island Sound and Hudson River Harbor, occurring in sea grass beds and estuaries with a strong reliance on submerged aquatic vegetation (SAV). Evidence shows that pipefish migrate seasonally out of northern Mid-Atlantic Bight estuaries into shallow continental shelf waters during fall and back into estuaries during spring (Lazzari and Able 1990).

I. Status

a. Current and Legal Protected Status

i. Federal  Not Listed  Candidate?  No

ii. New York  Not Listed; SGCN

b. Natural Heritage Program Rank

i. Global  G5

ii. New York  S3  Tracked by NYNHP? No

Other Rank:

Status Discussion:
Population abundance has not been recently assessed throughout most of the northern pipefish distribution so determining status is unfeasible.
II. Abundance and Distribution Trends

a. North America
   i. Abundance
      \( \times \) declining \( \_\) increasing \( \_\) stable \( \_\) unknown
   ii. Distribution:
      \( \_\) declining \( \_\) increasing \( \_\) stable \( \times \) unknown

Time frame considered: ___________________________________________

b. Regional
   i. Abundance
      \( \times \) declining \( \_\) increasing \( \_\) stable \( \_\) unknown
   ii. Distribution:
      \( \_\) declining \( \_\) increasing \( \_\) stable \( \times \) unknown

Regional Unit Considered: _______ Northeast ______________________
Time Frame Considered: _________________________________________

c. Adjacent States and Provinces

CONNECTICUT Not Present _____ No data _____

i. Abundance
   \( \times \) declining \( \_\) increasing \( \_\) stable \( \_\) unknown

ii. Distribution:
   \( \times \) declining \( \_\) increasing \( \_\) stable \( \_\) unknown

Time frame considered: __________________________________________
Listing Status: \_S3A-depressed in abundance and declining or stable at low
abundance____________________________________________________ SGCN? \_Yes_
MASSACHUSETTS  Not Present  _____  No data  X

i. Abundance
   ____ declining  ____ increasing  ____ stable  ____ unknown

ii. Distribution:
   ____ declining  ____ increasing  ____ stable  ____ unknown

Time frame considered: ________________________________
Listing Status: ___________________________  SGCN?  No

NEW JERSEY  Not Present  _____  No data  X

i. Abundance
   ____ declining  ____ increasing  ____ stable  ____ unknown

ii. Distribution:
   ____ declining  ____ increasing  ____ stable  ____ unknown

Time frame considered: ________________________________
Listing Status: ___________________________  SGCN?  No

PENNSYLVANIA  Not Present  _____  No data  X

i. Abundance
   ____ declining  ____ increasing  ____ stable  ____ unknown

ii. Distribution:
   ____ declining  ____ increasing  ____ stable  ____ unknown

Time frame considered: ________________________________
Listing Status: ___________________________  SGCN?  No
### QUEBEC
- Not Present: ___
- No data: X

i. Abundance
   - ___ declining
   - ___ increasing
   - ___ stable
   - ___ unknown

ii. Distribution:
   - ___ declining
   - ___ increasing
   - ___ stable
   - ___ unknown

Time frame considered: __________________________________________________________
Listing Status: ________________________________________________________________

### VERMONT
- Not Present: X
- No data: ___

### ONTARIO
- Not Present: X
- No data: ___

### NEW YORK
- No data: ___

i. Abundance
   - X declining
   - ___ increasing
   - ___ stable
   - ___ unknown

ii. Distribution:
   - ___ declining
   - ___ increasing
   - ___ stable
   - ___ unknown

Time frame considered: __________________________________________________________

**Monitoring in New York.**

There are no current monitoring activities conducted in New York.

**Trends Discussion:**

Data from NYSDEC fishery independent surveys show a general decline from the mid-1980s for the northern pipefish, but these surveys were not directed toward SAV dependent species and therefore they may not be sampled well (NYSDEC 2005). In a 1974-1975 survey by Wilk et al. (1977), 8,541 individuals were collected at depths of 5-366 m in the New York Bight (Lazzari and Able 1990).
Figure 1. Distribution and relative probabilities of occurrence of the northern pipefish (Aquamaps 2010).
Figure 2. Locations of northern pipefish in spring and fall trawl collections in the Mid-Atlantic Bight by the National Marine Fisheries Service from 1963-1986 (Lazzari and Able 1990).
Figure 3. Catch per unit effort collected (a) in the New York Bight from June 1974-June 1975 (b) by the National Marine Fisheries Service in shallows (5-27m) and deep continental shelf (27-366m) regions from 1963-1986 (Lazzari and Able 1990).

III. New York Rarity, if known:

<table>
<thead>
<tr>
<th>Historic</th>
<th># of Animals</th>
<th># of Locations</th>
<th>% of State</th>
</tr>
</thead>
<tbody>
<tr>
<td>prior to 1970</td>
<td>____________</td>
<td>____________</td>
<td>__________</td>
</tr>
<tr>
<td>prior to 1980</td>
<td>8,541</td>
<td>____________</td>
<td>__________</td>
</tr>
<tr>
<td>prior to 1990</td>
<td>____________</td>
<td>____________</td>
<td>__________</td>
</tr>
</tbody>
</table>

Details of historic occurrence:
Pipefish were documented in the New York Bight during the 1970s and from 1963-1986.
Current # of Animals # of Locations % of State

Details of current occurrence:

While there are no current sources of survey data, the species is known to still occur in the waters off Long Island.

New York's Contribution to Species North American Range:

% of NA Range in New York Classification of New York Range

100 (endemic) Core
76-99 Peripheral
51-75 Disjunct
26-50

Distance to core population:

IV. Primary Habitat or Community Type:

1. Estuarine, Shallow Subtidal
2. Marine, Brackish Shallow Subtidal
3. Marine Eelgrass Meadow
4. Marine, Deep Subtidal
Habitat or Community Type Trend in New York:

- Declining
- Stable
- Increasing
- Unknown

Time frame of decline/increase: ________________________________

Habitat Specialist?
- Yes
- No

Indicator Species?
- Yes
- No

Habitat Discussion:

The northern pipefish occurs in seagrass beds in bays and estuaries, but may enter freshwater rivers and streams. Evidence suggests that northern pipefish undertake seasonal inshore-offshore migrations, occurring in estuaries in the summer and migrating out to shallow continental shelf waters for the winter (Lazzari and Able 1990). They were abundant in the Mid-Atlantic Bight during spring through early fall before their winter migration to depths no greater than 366 m (Lazzari and Able 1990). Most spring collections of northern pipefish occurred in bottom waters where temperatures ranged 4-6°C, while winter fall collections were in waters of 12-15°C, both at depths between 10-24 m (Lazzari and Able 1990). The U.S. Fish and Wildlife Service completed a 2009 survey of eelgrass beds in eastern Connecticut and the North Fork of Long Island, locating 172 eelgrass beds in eastern Long Island Sound totaling 1,980 acres (46 acres fewer than identified in the 2006 survey) (Tiner et al. 2010).
V. New York Species Demographics and Life History

___X___ Breeder in New York

___X___ Summer Resident

___X___ Winter Resident

___ Anadromous

___ Non-breeder in New York

___ Summer Resident

___ Winter Resident

___ Catadromous

___ Migratory only

___ Unknown

Species Demographics and Life History Discussion:

Breeding in the Mid-Atlantic Bight occurs from early March to October, with peaks during May-June (Campbell 1998). The mode of reproduction is one with reversed sex roles; the male carries fertilized eggs throughout the gestation period in his brood pouch, with an estimated incubation time of 10 days. Northern populations are thought to have shorter mating and brooding seasons than southern areas. Brood size is variable, ranging from 45 to 1380 embryos, but it is not known if northern pipefish can have more than one brood per year (Campbell 1998). Ripley and Foran (2006) found females to mature at 125 mm and males at 99 mm, reaching sexual maturity within one year. Maximum age is estimated at 2 years (Ripley and Foran 2006). Winter behavior was described by Wicklund et al. (1968) off Long Island at bottom temperatures averaging 10.6°C over a ridged coarse-sand substrate in 14-17 m of water. The northern pipefish appeared in a torpid state with its head buried in the sand or lying motionless on the bottom with no noticeable respiratory movements, indicating a winter resting period (Lazzari and Able 1990). Lazzari and Able (1990) also determined there is little growth occurring during the winter months, which is common for many temperate estuarine fishes, but this may increase susceptibility to overwinter mortality.
VI. Threats:

Loss of salt marsh and SAV beds from tidal flow restrictions and habitat degradation has reduced the amount of habitat available for the northern pipefish (NYSDEC 2005). Drastic declines of SAV beds have been observed recently in the summer of 2012, possibly due to Hurricane Irene and Tropical Storm Lee washing out the seeds of 2011’s plants. Invasive species such as the water chestnut also damage SAV beds by changing the oxygen levels of waters they inhabit. Pollution from runoff of agricultural operations in coastal marshes and tidal estuaries may also degrade pipefish habitat. Pollution and hypoxia in estuaries have the potential to cause severe stress, population declines, altered behavior, disrupted endocrine function, and other interference with physiological activities (Ripley and Foran 2007). Ripley and Foran (2007) detected declines in feeding activity and sound production under hypoxic conditions in the Chesapeake Bay, which may ultimately impact growth, health, and reproduction as resources are shifted to survival. Climate change is expected to have significant effects on coastal ecosystems, on which northern pipefish are highly dependent. Changes in temperature of shallow coastal waters may cause distribution shifts and possibly alter pipefish migratory behavior (Ripley and Foran 2006).

Are there regulatory mechanisms that protect the species or its habitat in New York?

   _X_ No  ___ Unknown
   ___ Yes

In 2012, a Seagrass Protection Act was established through the Environmental Conservation Law, requiring the New York State Department of Conservation (NYSDEC) to designate seagrass management areas and to regulate marine and coastal activities that threaten these areas. The DEC can restrict types of mechanically powered fishing gear in seagrass areas that may be harmful to the grass and they may also develop a seagrass management plan, after consulting with stakeholders, to protect beds while preserving traditional recreational activities. Tidal wetlands, where seagrass typically grows, are regulated under the Tidal Wetland Permit Program, but this did not give DEC authority to specifically restrict activities that may negative affect seagrass.

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

Submerged aquatic vegetation habitat protection and restoration are critical elements in conservation of this species. Updated information on utilization of seagrass, life history characteristics and distribution of pipefish are needed (NYSDEC 2005).
VII. References


Date last revised: January 29, 2014