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

__X__ declining ____increasing _____stable ____ unknown

ii. Distribution:

____ declining ____increasing _____stable __X__ unknown

Time frame considered: _____

b. Regional

i. Abundance

__X__ declining ____increasing ____stable ____ unknown

ii. Distribution:

____ declining ____increasing ____stable __X__ unknown

Regional Unit Considered: _____ Northeast**_____**
Time Frame Considered: _____

c. Adjacent States and Provinces

CONNECTICUT Not Present _____ No data _____

i. Abundance

__X__ declining ____ increasing ____ stable ____ unknown

ii. Distribution:

__X__ 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 _____**

d. NEW YORK **No data _____**

i. Abundance

__X__ declining _____ increasing _____ stable _____ unknown

ii. Distribution:

_____ declining _____ increasing _____ stable __X__ 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).

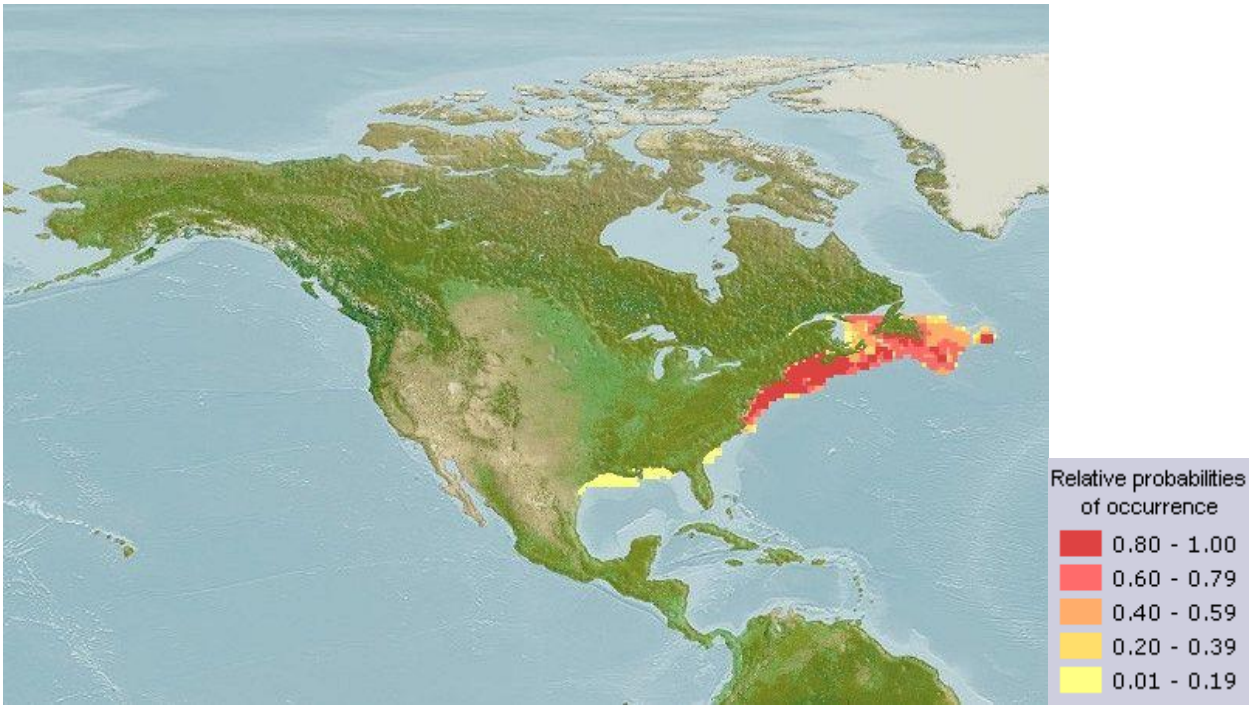

Figure 1. Distribution and relative probabilities of occurrence of the northern pipefish (Aquamaps 2010).

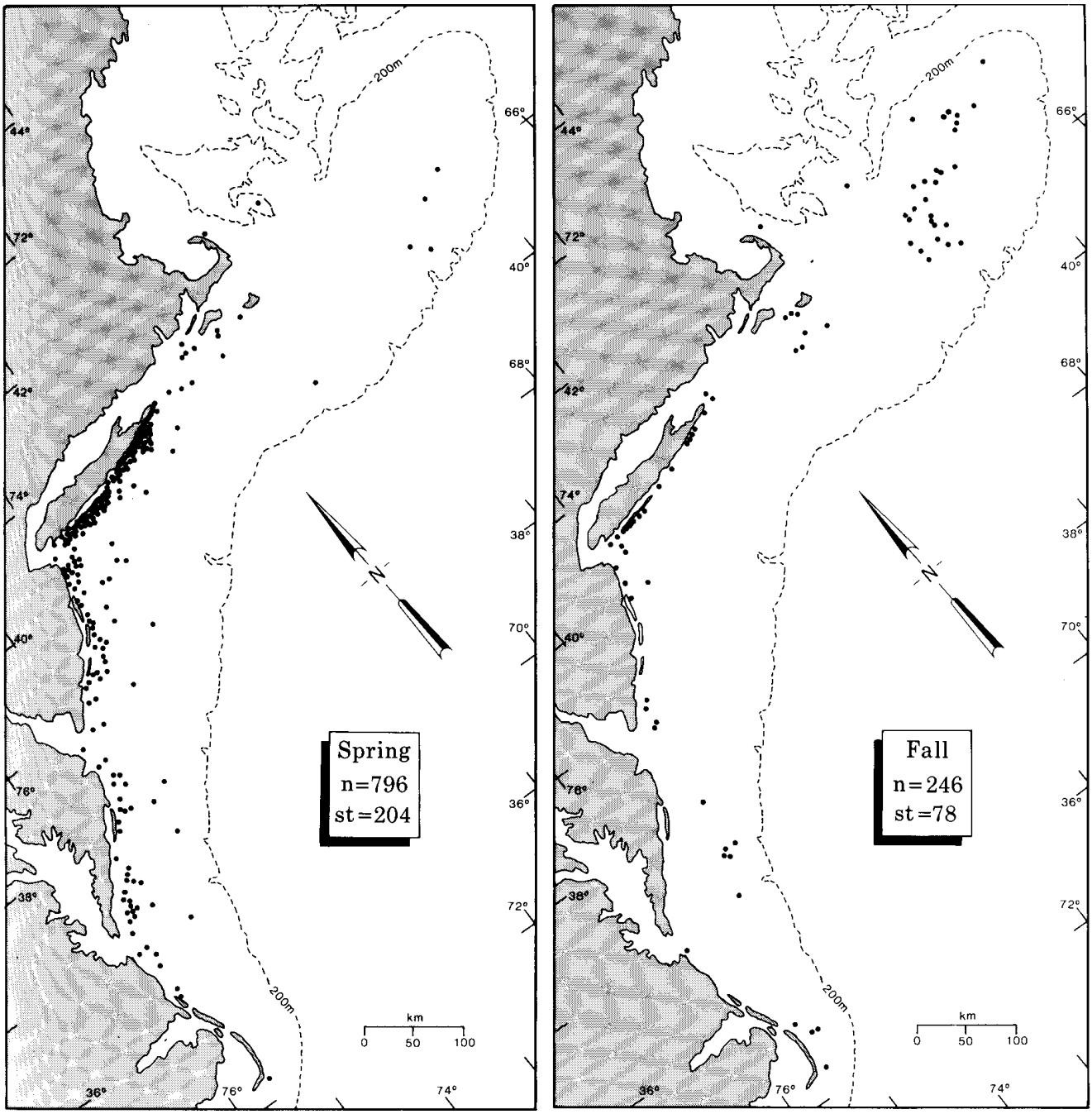

Figure 2. Locations of northern pipefish in spring and fall trawl collections in the Mid-Atlantic Bight by the National Marine Fisheries Service from 1963-1986 (Lazzari and Able 1990).

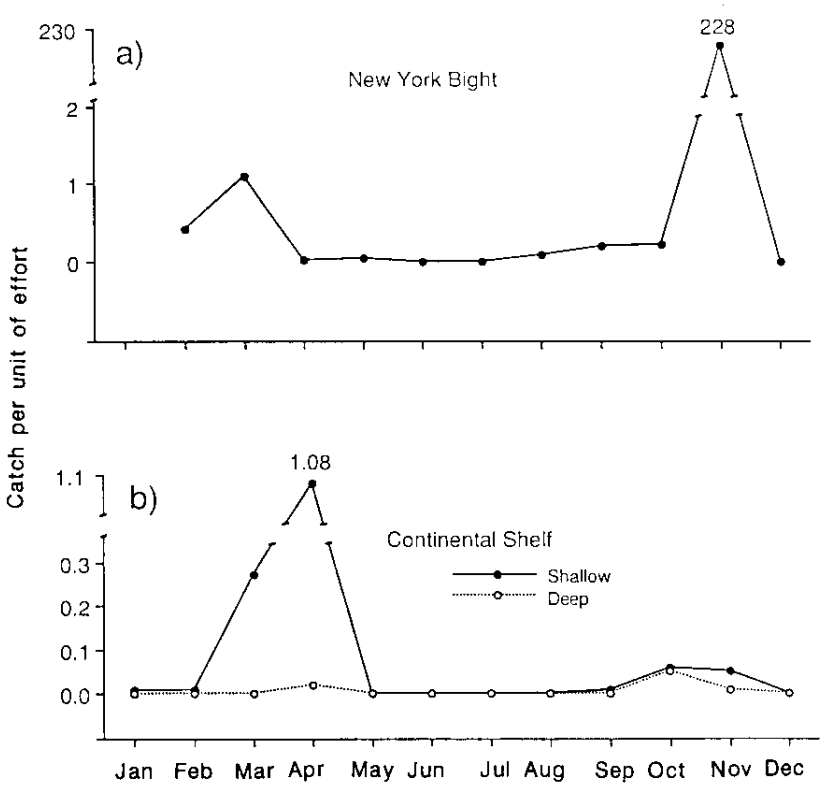

Figure 3. Catch per unit effort collected (a) in the New York Bight from June 1974-June 1975 (b) by the National Marine Fisheries Service in shallows (5-27m) and deep continental shelf (27-366m) regions from 1963-1986 (Lazzari and Able 1990).

III. New York Rarity, if known:

Historic	# of Animals	# of Locations	% of State
prior to 1970	_____	_____	_____
prior to 1980	8,541	_____	_____
prior to 1990	_____	_____	_____

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)	__X__ Core
____ 76-99	____ Peripheral
____ 51-75	____ Disjunct
____ 26-50	Distance to core population:
__X__ 1-25	_____

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:

__X_ Declining ____Stable ____ Increasing ____Unknown

Time frame of decline/increase: _____

Habitat Specialist? ___ Yes __X__ No

Indicator Species? _____ Yes __X__ 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 know 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 m, 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 14-17m 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

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Date last revised: January 29, 2014