Species Status Assessment

Class: Osteichthyes (bony fishes)
Family: Cyprinidae (minnow)
Scientific Name: Lythrurus umbratilis
Common Name: Redfin shiner

Species synopsis:
The redfin shiner occurs in the Great Lakes and Mississippi River Basin, western New York to Minnesota, and south to Louisian and Gulf drainages west to Texas. Several tributaries on the north shore of Lake Erie contained this species, and it has been classified as rare in Ontario (Noltie 1989). It lives in small to medium low-gradient streams with clean gravel and some submerged aquatic vegetation. It is native to 4 of 18 watersheds in western and central New York but has declined to levels below detection in the Oswego watershed and there are also major declines in tributaries in the Ontario watershed. Its distribution mimics that of northern sunfish because both species use the same nesting sites. Despite declines, it retains a limited distribution in the Ontario, Erie, and Allegheny watersheds.

I. Status

a. Current and Legal Protected Status

   i. Federal  Not Listed  Candidate:  No
   ii. New York  Special Concern, SGCN

b. Natural Heritage Program Rank

   i. Global  G5
   ii. New York  S2  Tracked by NYNHP  Yes

Other Rank:
Committee on the Status of Endangered Wildlife in Canada (COSEWIC): Not at Risk (01Apr1988)

Status Discussion:
The global rank for the redfin shiner is Secure because it occupies a wide distribution with a large number of subpopulations; it appears to be secure in the majority of its range. The New York rank is Imperiled (NatureServe 2012) and it is listed as threatened in Wisconsin.
II. Abundance and Distribution Trends

a. North America
   i. Abundance
      ___ declining ___ increasing  X stable ___ unknown
   ii. Distribution:
      ___ declining ___ increasing  X stable ___ unknown

   Time frame considered: ___ Based on G5 NatureServe rank

b. Regional
   i. Abundance
      X declining ___ increasing ___ stable ___ unknown
   ii. Distribution:
      X declining ___ increasing ___ stable ___ unknown

   Regional Unit Considered: ___ Region 5 - Northeast

   Time Frame Considered: ________________________________
### c. Adjacent States and Provinces

<table>
<thead>
<tr>
<th>State</th>
<th>Presence</th>
<th>Status</th>
<th>Data Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONNECTICUT</td>
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<td>X</td>
<td>No data</td>
</tr>
<tr>
<td>MASSACHUSETTS</td>
<td>Not Present</td>
<td>X</td>
<td>No data</td>
</tr>
<tr>
<td>NEW JERSEY</td>
<td>Not Present</td>
<td>X</td>
<td>No data</td>
</tr>
<tr>
<td>QUEBEC</td>
<td>Not Present</td>
<td>X</td>
<td>No data</td>
</tr>
<tr>
<td>VERMONT</td>
<td>Not Present</td>
<td>X</td>
<td>No data</td>
</tr>
<tr>
<td>ONTARIO</td>
<td>Not Present</td>
<td></td>
<td>No data</td>
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</tbody>
</table>

#### i. Abundance

<table>
<thead>
<tr>
<th>Declining</th>
<th>Increasing</th>
<th>Stable</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

#### ii. Distribution:

<table>
<thead>
<tr>
<th>Declining</th>
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<th>Stable</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Time frame considered: Last reviewed in 2004

Listing Status: Not at Risk (S4)

#### PENNSYLVANIA

<table>
<thead>
<tr>
<th>Presence</th>
<th>Status</th>
<th>Data Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Present</td>
<td></td>
<td>No data</td>
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<table>
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</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### ii. Distribution:

<table>
<thead>
<tr>
<th>Declining</th>
<th>Increasing</th>
<th>Stable</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Time frame considered: Lost from 1 historic drainage; now limited to 2 streams

Listing Status: Endangered

SGCN? Yes
d. NEW YORK

No data ______

i. Abundance

_____ declining   _____increasing  __X__ stable  __unknown

ii. Distribution:

__X__ declining  ____increasing  ____stable  __unknown

Time frame considered: ___Since 1977___________________________

Monitoring in New York.

Monitoring programs carried out by the NYSDEC Rare Fish Unit, 1998-2012.

Trends Discussion:

In New York, redfin shiner has historically been found in 4 waters (now in 4) and is declining (or gone or dangerously sparse) in 3 of the 4 watersheds. The population appears stable in very small areas of three streams, and the status in areas like the Niagara River and Twelvemile Creek is unknown. This trend causes concern.

The differences in frequency occurrence in comprehensive stream surveys from these watersheds shows no evidence of decline, and there were low levels in all watersheds, usually <2%.

The distribution of this species among sub-basins (HUC 10) within the 4 watersheds has changed in a more obvious pattern, with records from fewer units in the recent period. Overall there are records from 9 of the units for all time periods, and from recent times there are 4 units, or a loss of its former range. Statewide, the number of individual site records for this species has been 54 for all time periods, 27 in the last 30 years, and 26 since 1993.
Figure 1. U.S. distribution of redfin shiner by watershed (NatureServe 2012).

Figure 2. Redfin shiner distribution in New York, depicting fish sampled before 1977 and from 1977 to current time, shown with the corresponding HUC-10 units where they were found and the number of records.

<table>
<thead>
<tr>
<th>Watershed name</th>
<th>Total # HUC10</th>
<th>Early only</th>
<th>Recent only</th>
<th>both</th>
<th>Watershed status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allegheny</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>First-time record 2005</td>
</tr>
<tr>
<td>Erie-Niagara</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Ontario</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Oswego</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>loss</td>
</tr>
<tr>
<td>sum</td>
<td>9</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Records of rare fish species in hydrological units (HUC-10) are shown according to their watersheds in early and recent time periods (before and after 1977) to consider loss and gains. Further explanations of details are found in Carlson (2012).
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 1977</td>
<td></td>
<td>27</td>
<td>4/18 watersheds</td>
</tr>
<tr>
<td>prior to 1980</td>
<td></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:

In the 1920-30s this species was rare in New York and known from only eight waters. Tributaries of Lake Ontario included the Barge Canal near Lockport, Carlton Lake or part of Oak Orchard River, Eighteenmile Creek, Twelvemile Creek, Johnson Creek, and tributaries of Lake Erie included Muddy and Little Sister creeks near Angola. Smith reported this species from a Lake Erie tributary near Sturgeon Point in 1949. Montezuma Marsh also contained this species prior to 1900.

<table>
<thead>
<tr>
<th>Current</th>
<th># of Animals</th>
<th># of Locations</th>
<th>% of State</th>
</tr>
</thead>
<tbody>
<tr>
<td>(since 1977)</td>
<td></td>
<td>27</td>
<td>3/18 watersheds</td>
</tr>
</tbody>
</table>

Details of current occurrence:

The only catches since the 1970s were in Tonawanda Creek near Millersport (2003), Murder Creek (1999 & 2003), Johnson Creek (1999 & 2003), Cassadaga Creek (2005) the Niagara River (1975) and Hadley's report from Twelvemile Creek (1975). The earliest Allegheny watershed record was 2005 and it is assumed they were there earlier but were below detection levels.
New York’s Contribution to Species North American Range:

<table>
<thead>
<tr>
<th>% of NA Range in New York</th>
<th>Classification of New York Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>___ 100 (endemic)</td>
<td>___ Core</td>
</tr>
<tr>
<td>___ 76-99</td>
<td>X Peripheral</td>
</tr>
<tr>
<td>___ 51-75</td>
<td>___ Disjunct</td>
</tr>
<tr>
<td>___ 26-50</td>
<td></td>
</tr>
<tr>
<td>X 1-25</td>
<td></td>
</tr>
</tbody>
</table>

Distance to core population: 500 mi

IV. Primary Habitat or Community Type:

1. Small River, Low-Moderate Gradient, Moderately Buffered, Neutral, Warm

Habitat or Community Type Trend in New York:

| ___ Declining | ___ Stable | ___ Increasing | ___ Unknown |

Time frame of decline/increase: ________________________________

Habitat Specialist?  

X Yes  No

Indicator Species?  

X Yes  No

Habitat Discussion:
Redfin shiner lives in small to medium-sized streams in a variety of ecological settings, from a slow-flowing bay to high-gradient upland reaches. It is typically found in pools, but also prefers moderate or low-gradient streams with sand and gravel bottoms with some vegetation.
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:

This species has a relatively short life span, seldom exceeding 3 summers in Wisconsin, 1.5 years in Mississippi. Sexual maturity is reached usually in the second or third summer in Wisconsin and in 1 year in Mississippi. Spawning occurs in spring and summer (Becker 1983, Matthews and Heins 1984).

VI. Threats:

The species is not highly sensitive to environmental change in other parts of its range, but it is listed as threatened in Wisconsin. In Iowa it has been used as a bait minnow and in central Missouri it is the most common minnow (Scott and Crossman 1973, Pflieger 1997). The loss of quality habitats when Montezuma Marsh was drained in the early 1900s was poorly documented, but this elimination of species was echoed with bigeye chub, pugnose shiner and sauger from the same areas.
Are there regulatory mechanisms that protect the species or its habitat in New York?

_____ No  _____ Unknown

X____ Yes

The Protection of Waters Program provides protection for rivers, streams, lakes, and ponds under Article 15 of the NYS Conservation Law. However, non-trout supporting waters and those classified as Class C and below are not subject to Article 15 regulation. Additionally, agricultural activities are exempt from article 15 regulation.

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:
The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for the redfin shiner.

**Habitat Research:**

___  Inventory and assess losses of habitat and of this species in tributaries of Western Lake Ontario. This would be followed by considering remediation efforts.

**Population Monitoring:**

___  Its status in New York needs to be determined. The circumstance of one of the recent records for both the redfin shiner and the longear sunfish being from the same locations, Tonawanda Creek near Millersport and Johnson Creek near Kuckville, deserves further study.

**VII. References**


Carlson, D.M. 2012 (draft). Species accounts of inland fishes of NYS considered as imperiled, 2012. NYDEC, Watertown, NY.


**Date last revised:** August 6, 2013