Nile Carp (*Labeo niloticus*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, May 2012
Revised, May 2018
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Photo: Museum of Comparative Zoology, Harvard University. Licensed under Creative Commons BY-NC-SA. Available: http://eol.org/data_objects/26679302. (May 2018).

1 Native Range and Status in the United States

Native Range

From Azeroual et al. (2010):

"Native: Egypt; Ethiopia; South Sudan; Sudan"

"This species is common along the Nile, from Egypt to Sudan."

"Northern Africa: It is known from the river Nile in Egypt. It is present in Lakes Manzala, Burullus and Idku during flooding time, also in Wadi El Rayan Lakes and Nozha Hydrodrome [all in Egypt]."

"Northeast Africa: It occurs in the Baro and Omo Rivers and Rift valley lakes, Ethiopia, and Sudan Nile."

Status in the United States

This species has not been reported as introduced or established in the United States. There is no indication that this species is in trade in the United States.

Means of Introduction into the United States
This species has not been reported as introduced or established in the United States.

Remarks
From Froese and Pauly (2018a):

"Several dubious records from West Africa require validation."

"Most closely resembles *L*[*abeo*] *horie*, with which it has often been confused [Reid 1985]."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing
From Froese and Pauly (2018b):

"Biota > Animalia (Kingdom) > Chordata (Phylum) > Vertebrata (Subphylum) > Gnathostomata (Superclass) > Pisces (Superclass) > Actinopterygii (Class) > Cypriniformes (Order) > Cyprinidae (Family) > Labeoninae (Subfamily) > *Labeo* (Genus) > *Labeo niloticus* (Species)"

From Eschmeyer et al. (2018):

"**Current status:** Valid as *Labeo niloticus* (Linnaeus 1758). Cyprinidae: Labeoninae."

Size, Weight, and Age Range
From Froese and Pauly (2018a):

"Maturity: L_m ?, range 22 - 26 cm
Max length : 47.0 cm TL male/unsexed; [Lévêque and Daget 1984]"

Environment
From Froese and Pauly (2018a):

"Freshwater; benthopelagic."

Climate/Range
From Froese and Pauly (2018a):

"Tropical"

Distribution Outside the United States

Native

From Azeroual et al. (2010):

"Native: Egypt; Ethiopia; South Sudan; Sudan"

"This species is common along the Nile, from Egypt to Sudan."

"Northern Africa: It is known from the river Nile in Egypt. It is present in Lakes Manzala, Burullus and Idku during flooding time, also in Wadi El Rayan Lakes and Nozha Hydrodrome [all in Egypt]."

"Northeast Africa: It occurs in the Baro and Omo Rivers and Rift valley lakes, Ethiopia, and Sudan Nile."

Introduced

No introductions of this species have been reported.

Means of Introduction Outside the United States

No introductions of this species have been reported.

Short Description

From Günther (1868):

"Mouth rather broad. Lips thin, fringed, with an inner fold in their entire circumference, more distinct on the upper lip than on the lower. Snout obtuse, moderately projecting, with a very indistinct lobe on each side; maxillary barble [*sic*] minute, hidden in a lateral groove. Eye of moderate size, not much smaller than a scale, situated before or, in old examples, in the middle of the length of the head. There are four or five longitudinal series of scales between the lateral line and the ventral fin. Upper margin of the dorsal fin concave, the third and fourth rays being the longest. Body, and especially the tail, compressed, oblong, its depth being contained thrice and two-thirds or four times in the total length (without caudal). Coloration uniform."

Biology

From Azeroual et al. (2010):

"This is a predominantly herbivorous species, feeding mainly on diatoms, blue green algae, and to a lesser extent on crustaceans, rotifers, nemarodes [*sic*] and organic debris. It spawns in running water when about two years old. Spawning season runs May-June."

From el Moghraby and Abd el Rahman (1984):

"The structure of the feeding apparatus indicates that *Labeo niloticus* is a bottom feeder, depending on soft and decayed vegetation, organic debris and whatever small organisms found

within. However, juveniles and fry are prone to explore all layers and depths of the river selectively for plankton. There is little evidence of seasonal selection of food. Changes in diet quality are governed by the availability of type of food. Variability of feeding activity is connected with climate and breeding season."

Human Uses

From Azeroual et al. (2010):

"This is a well marketabe [*sic*] fish. It contributed about 2% (1441 tons) of the total Nile catch in Egypt in 1996 (Bishai and Khalil 1997)"

Diseases

Eiras et al. (2005) report *L. niloticus* as type-host of *Myxobolus imami* (infects kidneys), *M. labiae* (infects gills), *M. naffari* (infects gills), *M. niloticus* (infects fin rays).

From Froese and Pauly (2018a):

"*Sciaenophilus* Infestation, Parasitic infestations (protozoa, worms, etc.)"

From Abdel-Baki et al. (2010):

"We describe the ultrastructural characteristics and histological impacts of *Myxobolus naffari* Abdel-Ghaffar et al., 1998, which infects the Nile fish *Labeo niloticus*. The prevalence of infection was 65%, with the maximum rate occurring during winter and a lower rate during summer."

From Abdel-Ghaffar et al. (2015):

"Myxosporidian parasites infecting fish are very dangerous parasites causing severe damage to a large number of economically important fishes especially in aquaculture. A survey of myxosporean parasites infecting four species of fishes from the River Nile in Egypt is conducted. […] *Myxidium* sp.nov. a coelozoic species inhabiting the gallbladder of *Labeo niloticus* with its mature spores float[ing] free in bile was detected."

From Abdel-Ghaffar et al. (2013):

"In the present study, the morphology and morphometric characterization of *Thelohanellus niloticus* sp. nov., a new myxozoan belonging to genus *Thelohanellus* Kudo, 1933 (Myxosporea, Bivalvulida) infecting the gills of *Labeo niloticus* (Osteichthyes, Cyprinidae), were described for the first time from the River Nile at El-Minia Governorate, Egypt. Forty-one out of 78 (52.6 %) of the examined fish were infected. The infection was observed as irregular, milky whitish, cyst-like plasmodia (up to 0.8 mm in diameter) attached to the gill filaments of the host fish."

No OIE-listed diseases have been documented for *L. niloticus*.

Threat to Humans

From Froese and Pauly (2018a):

"Harmless"

Goja (2013) recorded *E. coli salmonella* in 40% of a sample of 15 *L. niloticus* from shore fish markets in Ed Duiem, Sudan. In the same sample, they recorded *Shigella* in 27% of *L. niloticus*.

From Goja (2013):

"Good fish quality should have a total count of bacteria less than 10 per gram and coliforms and faecal coliforms should not exceed 100/gm and 10/gm, respectively (FAO, 1979). Based on our findings it can be concluding that, although the bacterial load, coliform and faecal coliform counts were come within the limit standard. [*sic*] However, the detection of *Salmonella* and *Shigella* in fresh fish samples will cause health risks to the fish consumers. The presence of *Salmonella* and *Shigella* in these fishes indicates the contaminant environment habitats of fish and poor personal hygiene of sellers and fishermen."

3 Impacts of Introductions

No information available. No introductions of this species have been reported.

4 Global Distribution

Figure 1. Known global distribution of *Labeo niloticus*, reported from northeastern Africa. Map from GBIF Secretariat (2017).

5 Distribution within the United States

No occurrences of *L. niloticus* have been reported from the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was high in Arizona and southern Nevada into southern inland California. The climate match was medium in southwestern Texas into the Southwest and in isolated patches in the Interior West. The remainder of the contiguous United States had a low climate match. Climate 6 score indicated that the contiguous United States has a medium climate match overall. Scores between 0.005 and 0.103 are classified as medium match; Climate 6 score for *L. niloticus* was 0.027.

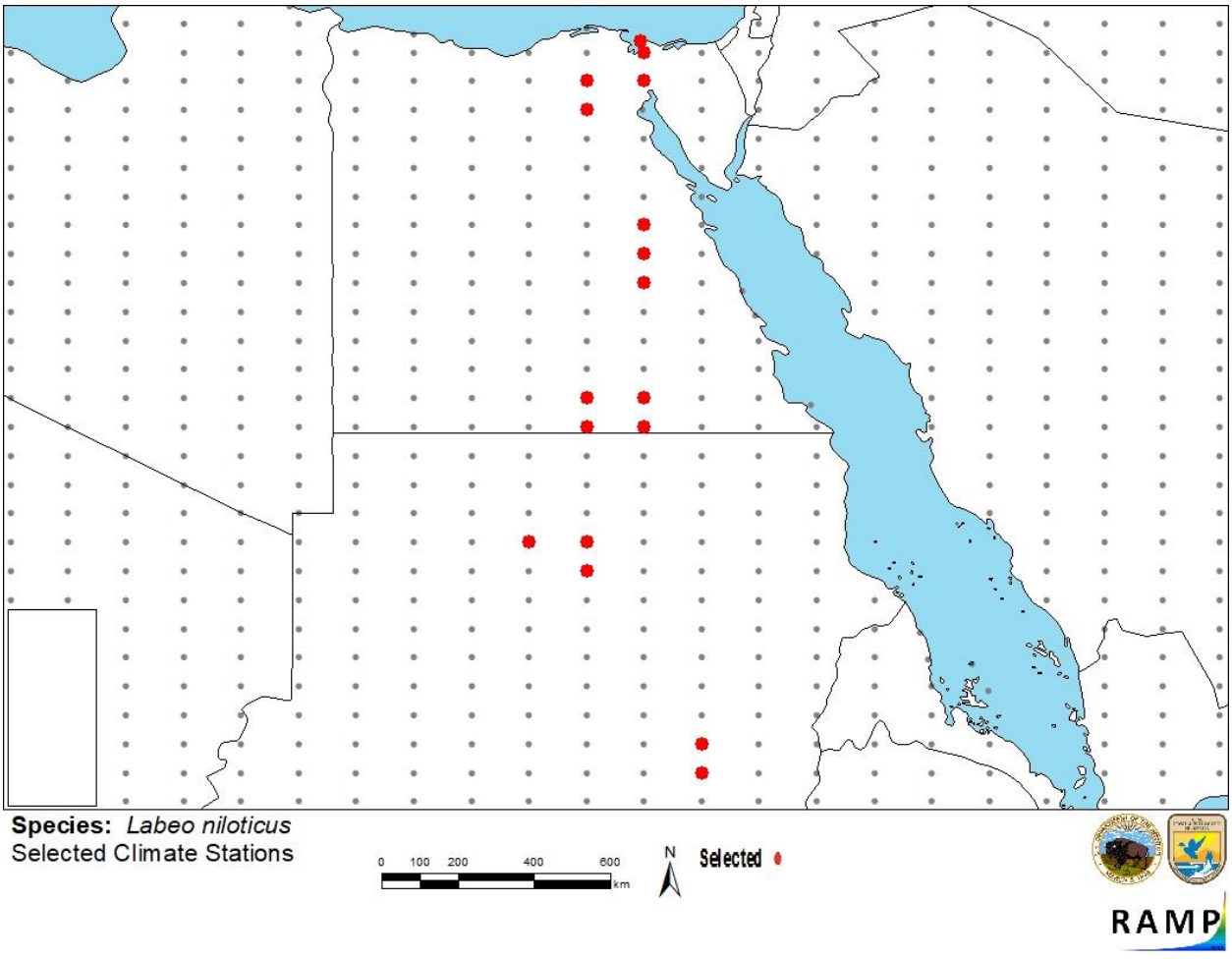

Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations in northeastern Africa selected as source locations (red; Egypt and Sudan) and non-source locations (gray) for *L. niloticus* climate matching. Source locations from GBIF Secretariat (2017).

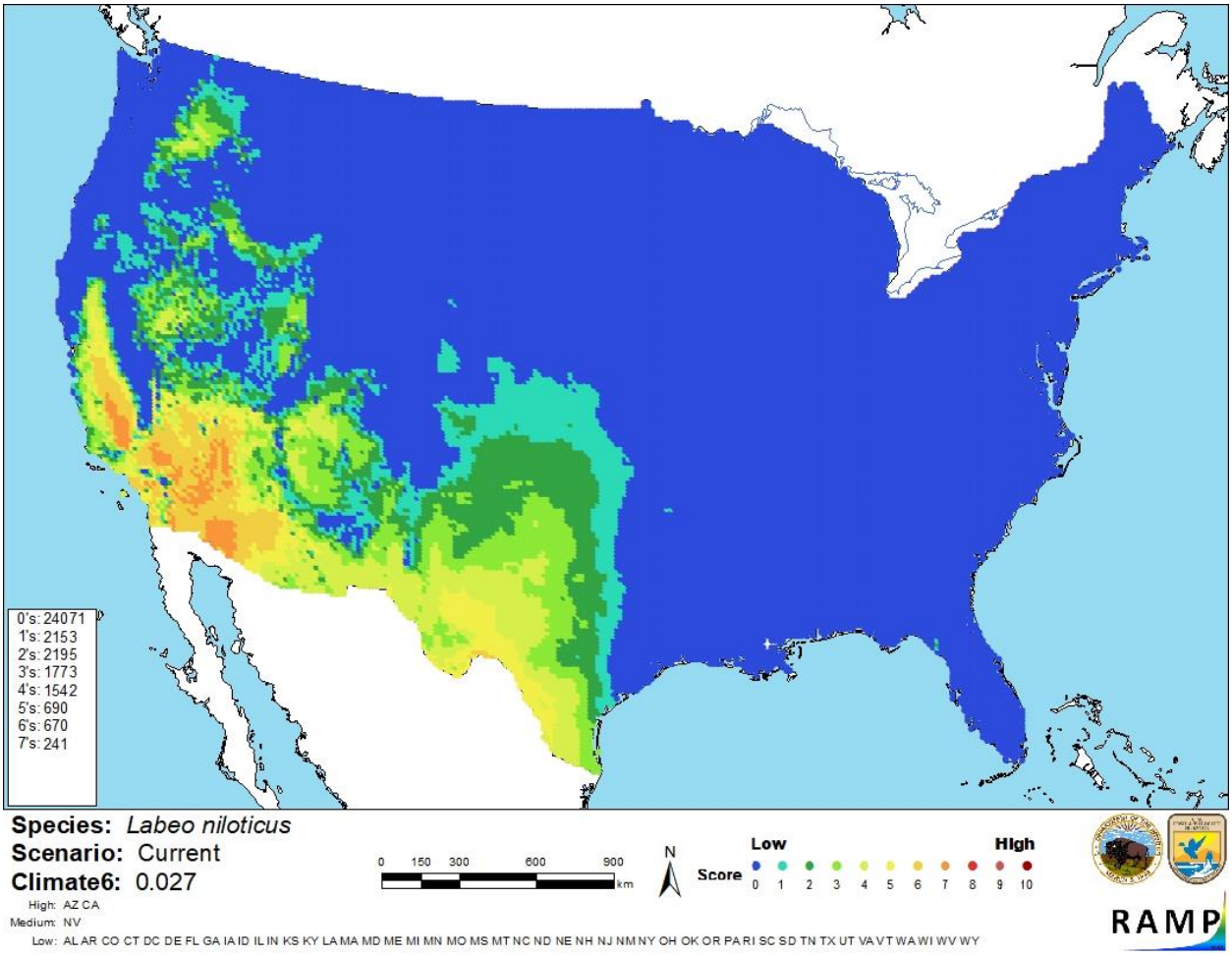

Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *L. niloticus* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

The "High", "Medium", and "Low" climate match categories are based on the following table:

Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)	Climate Match Category
0.000≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

7 Certainty of Assessment

Information is available on the biology, ecology, and distribution of *Labeo niloticus*. However, no introductions have been reported, so the impacts of introduction remain unknown. For that reason, certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Nile Carp (*Labeo niloticus*) is a cyprinid fish native to the inland waters of northeast Africa. There are no reports of introduction or establishment in the United States or elsewhere outside the native range. *L. niloticus* comprises a notable percentage of the commercial catch in the Nile in Egypt. *L. niloticus* is host to a number of parasites. Climate match to the contiguous United States was medium overall, with high match in southern California and the Southwest. Because of the lack of introduction history, certainty of assessment is low and the overall risk posed by *L. niloticus* is currently uncertain.

Assessment Elements

- **History of Invasiveness: Uncertain**
- **Climate Match: Medium**
- **Certainty of Assessment: Low**
- **Overall Risk Assessment Category: Uncertain**

9 References

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.

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Goja, A. M. 2013. Microbiological assessment of three types of fresh fish (*Tilapia niloticus*, *Labeo niloticus* and *Hydrocynus spp.*) sold in Ed Dueim, Sudan. New York Science Journal 6(4):49-54.

Günther, A. 1868. Catalog of the fishes in the British Museum, volume 7. Taylor and Francis, London.

Sanders, S., C. Castiglione, and M. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.

10 References Quoted But Not Accessed

Note: The following references are cited within quoted text within this ERSS, but were not accessed for its preparation. They are included here to provide the reader with more information.

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