

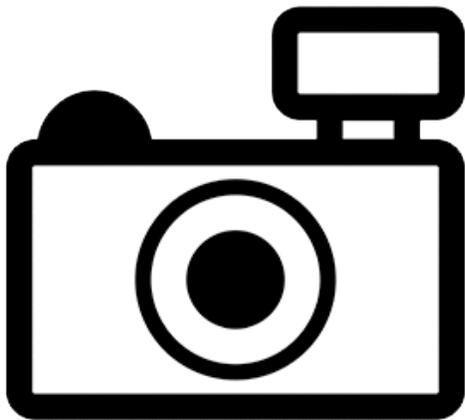
## ***Malapterurus minjiriya* (a catfish, no common name)**

### **Ecological Risk Screening Summary**

U.S. Fish & Wildlife Service, February 2012

Revised, July 2018, August 2018

Web Version, 8/31/2018



No Photo Available

## **1 Native Range and Status in the United States**

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### **Native Range**

From Froese and Pauly (2018):

“Africa: known from Niger River [Mali, Nigeria] and Volta River system [Burkina Faso, Ghana, Togo] [Norris 2002, 2003]. Also in the White Nile (Barro and Alvero Rivers) [Ethiopia], and Omo River [Ethiopia]; possibly also in Chad and Senegal basins but has not been collected here [Norris 2002].”

“[In Nigeria:] Occurs in the middle [Norris 2002, 2003] and lower Niger [Olaosebikan and Raji 1998; Norris 2002] and the Niger delta [Norris 2003], including the rivers Sokoto, Rima, Nun, Benue and Taraba [Norris 2002], and in lakes Kainji [Olaosebikan and Raji 1998; Norris 2002] and Okoso [Norris 2002]. Type locality: Lake Kainji [Eschmeyer 1998].”

According to Olaosebikan and Lalèyè (2010), *Malapterpurus mijiriya* is also located in Ouémé River in Benin.

## Status in the United States

No records of *Malapterurus minjiriya* in trade or in the wild in the United States were found.

The Florida Fish and Wildlife Conservation Commission has listed the electric catfish *M. minjiriya* as a prohibited species. Prohibited nonnative species (FFWCC 2018), “are considered to be dangerous to the ecology and/or the health and welfare of the people of Florida. These species are not allowed to be personally possessed or used for commercial activities.”

## Means of Introductions in the United States

No records of *Malapterurus minjiriya* in the wild in the United States were found.

## Remarks

No additional remarks.

## 2 Biology and Ecology

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### Taxonomic Hierarchy and Taxonomic Standing

According to Eschmeyer et al. (2018), *Malapterurus minjiriya* Sagua, 1987 is the valid name for this species; it is also the original name.

From ITIS (2018):

“Kingdom Animalia  
Subkingdom Bilateria  
Infrakingdom Deuterostomia  
Phylum Chordata  
Subphylum Vertebrata  
Infraphylum Gnathostomata  
Superclass Actinopterygii  
Class Teleostei  
Superorder Ostariophysi  
Order Siluriformes  
Family Malapteruridae  
Genus *Malapterurus*  
Species *Malapterurus minjiriya* Sagua, 1987”

### Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 51.0 cm SL male/unsexed; [Norris 2003]”

“Largest specimen encountered in museum collections was 320mm SL; Sagua (1987) reported sizes up to 510 mm SL [Norris 2003].”

## Environment

From Froese and Pauly (2018):

“Freshwater; benthopelagic.”

## Climate/Range

From Froese and Pauly (2018):

“Tropical”

## Distribution Outside the United States

Native

From Froese and Pauly (2018):

“Africa: known from Niger River [Mali, Nigeria] and Volta River system [Burkina Faso, Ghana, Togo] [Norris 2002, 2003]. Also in the White Nile (Barro and Alvero Rivers) [Ethiopia], and Omo River [Ethiopia]; possibly also in Chad and Senegal basins but has not been collected here [Norris 2002].”

“[In Nigeria:] Occurs in the middle [Norris 2002, 2003] and lower Niger [Olaosebikan and Raji 1998; Norris 2002] and the Niger delta [Norris 2003], including the rivers Sokoto, Rima, Nun, Benue and Taraba [Norris 2002], and in lakes Kainji [Olaosebikan and Raji 1998; Norris 2002] and Okoso [Norris 2002]. Type locality: Lake Kainji [Eschmeyer 1998].”

According to Olaosebikan and Lalèyè (2010), *Malapterurus mijiriya* is also located in Ouémé River in Benin.

## Introduced

No records of introduction were found for *Malapterurus minjiriya*.

## Means of Introduction Outside the United States

No records of introduction were found for *Malapterurus minjiriya*.

## Short Description

From Froese and Pauly (2018):

“Dorsal spines (total): 0; Dorsal soft rays (total): 0; Anal spines: 0; Anal soft rays: 9 - 12; Vertebrae: 43 - 47. Diagnosis: tooth patches broad [Roberts 2000; Norris 2002]. Pectoral fin placed ventrally; 8-12 anal-fin rays; 19 caudal-fin rays (ii-7-8-ii); 43-47 vertebrae [Norris 2002]. Body and head marked with large blotches [Robert 2000; Norris 2002]. Spotting and blotching concentrated posteriad; caudal and anal fins unmarked or lightly spotted; paired fins rarely spotted [Norris 2002].”

From Sagua (1987):

“The head, snout and mouth are wide in contrast with *M. microstoma* [...] which has a relatively narrower mouth and snout. In these latter two characters, *M. minjiriya* is intermediate between the other two species [...].”

“The maxillary and outer mandibular barbels are of almost equal length and are shorter than the head length, while the inner mandibular barbels are the longest and may exceed or equal the head length.”

“The pectoral fins have rounded edges with 1 simple ray and 9 branched rays-the ventral fins have 1-5 rays; the anal fin has III,8 (III,7-9).”

“The modal numbers of gill rakers on the first gill arch are 3 + 1 1, with a range of (2-3 f9-14). The gill rakers are short and decrease in size anteriorly on the ceratobranchial. There are no gill rakers on the ventral third of the lower limb of the first ceratobranchial [...].”

“There is a distinct lateral line which runs from the posterior margin of the head, well above the pectoral fin, to the base of the caudal fin.”

“There is such a great deal of intraspecific variation in body spotting and pattern of skin blotches in *Malapterurus* from different localities that body colour pattern alone is not a reliable criterion for separating the species. However, where *M. minjiriya* and *M. electricus* occur sympatrically, as in Kainji, they are distinguish- able by their body colouration, the intensity and distribution of the skin blotches and spots, [...]. The dorsal surface of the head and body is slate grey or dark grey while lateral and ventral surfaces are creamy or silvery white. Large, black, circular or irregular blotches occur plentifully on the caudal peduncle (above the anal fin and along the lateral line) on the caudal fin and at the base of the adipose fin: the adipose fin is uniformly dark. Black spots and blotches are absent on the head and on the ventral and pectoral fins; they are also absent or few, on the ventral body surface. The anal fin has a few black blotches especially at its base. The black blotches sometimes merge to form large dark patches resembling ink smears especially on the caudal peduncle. The margins of the anal and caudal fins have a lighter colour and are devoid of black spots or blotches.”

## **Biology**

From Olaosebikan and Lalèyè (2010):

“This is a benthopelagic species with a strong electric discharge to stun its prey of small fishes. [...] Commonly found offshore in open waters. Commonly breeds in September to November. It is non-migratory.”

## **Human Uses**

From Froese and Pauly (2018):

“Fisheries:”

From Olaosebikan and Lalèyè (2010):

“This species is collected for international research.”

## **Diseases**

No information on diseases of *Malapterurus minjiriya* was found.

## **Threat to Humans**

From Froese and Pauly (2018):

“Other”

No information describing what ‘other’ refers to was found but it is probably related to the electrical charges used for predation by this species. Some species in this genus are able to produce electric discharges in the range of hundreds of volts (Alves-Gomes 2001), which have the potential to inflict harm.

## **3 Impacts of Introductions**

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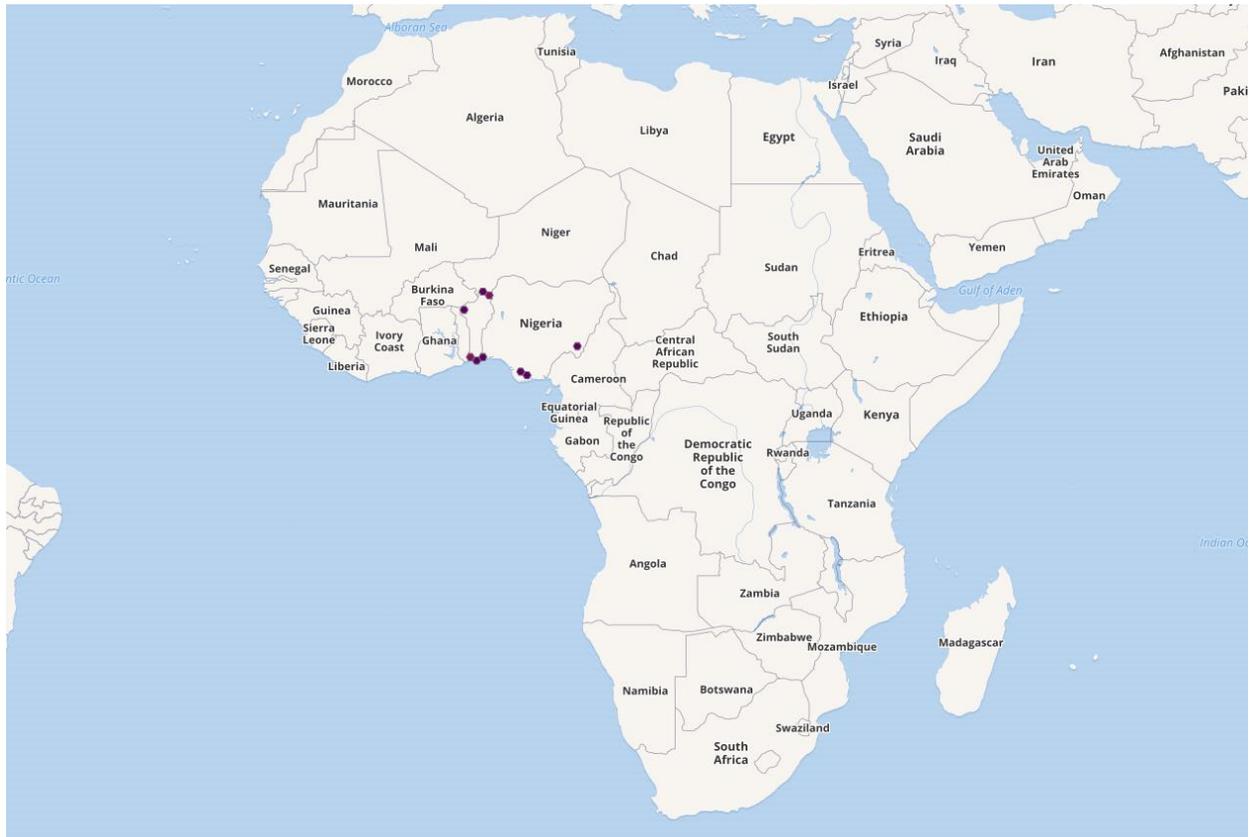
No records of introduction were found for *Malapterurus minjiriya*, therefore there is no information on impacts of introduction.

The Florida Fish and Wildlife Conservation Commission has listed the electric catfish *M. minjiriya* as a prohibited species.

Members of the genus *Malapterurus* use electric discharges to stun prey and for defense (Alves-Gomes 2001). It is unknown how that would impact native fish.

## 4 Global Distribution

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**Figure 1.** Known global distribution of *Malapterurus minjiriya*. Locations are in Nigeria and Benin. Map from GBIF Secretariat (2018).

Froese and Pauly (2018) lists *Malapterurus minjiriya* as present also in Burkina Faso, Ethiopia, Mali, Togo, and Ghana but there are no georeferenced observations available for climate matching.

## 5 Distribution Within the United States

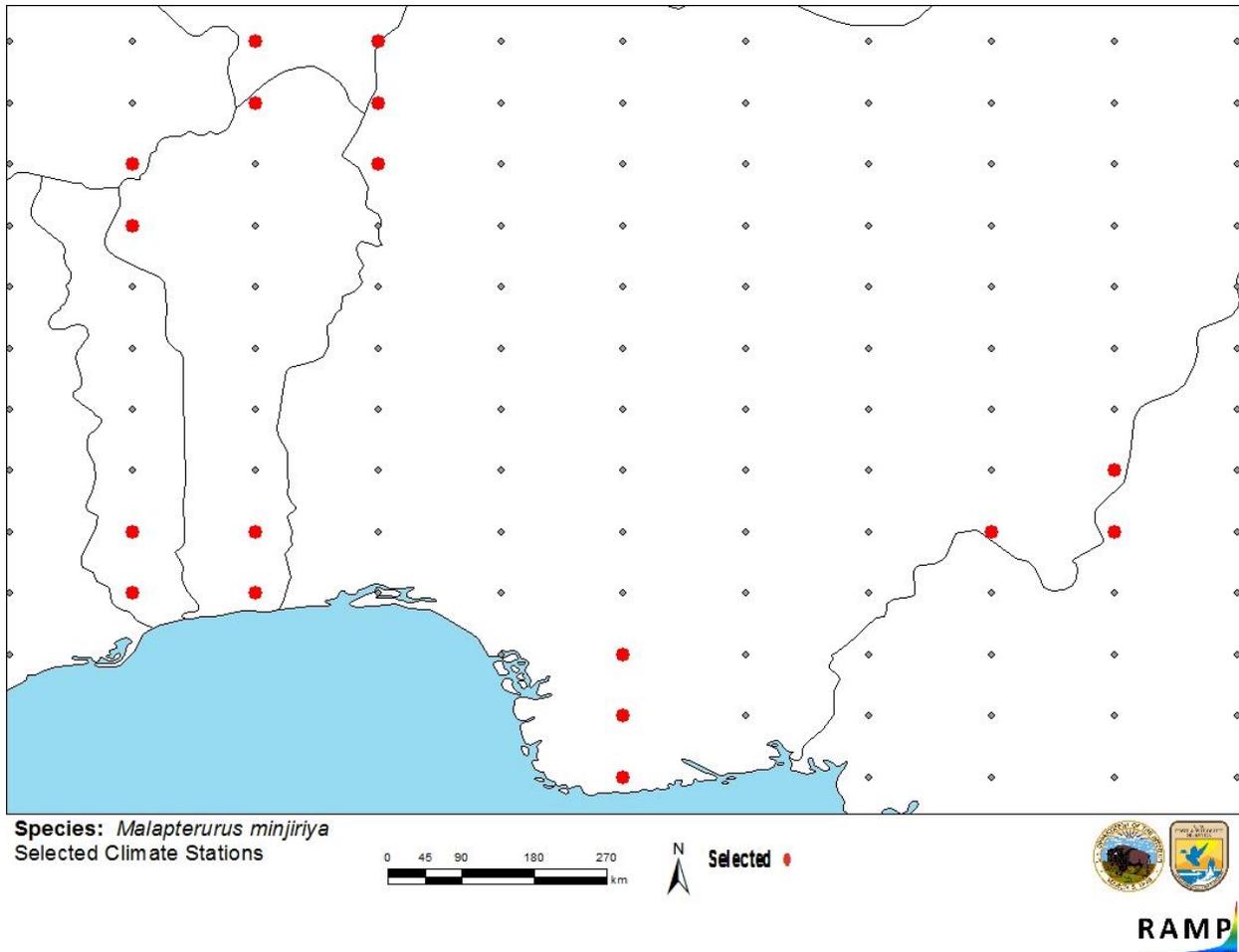
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No records of *Malapterurus minjiriya* in the United States were found.

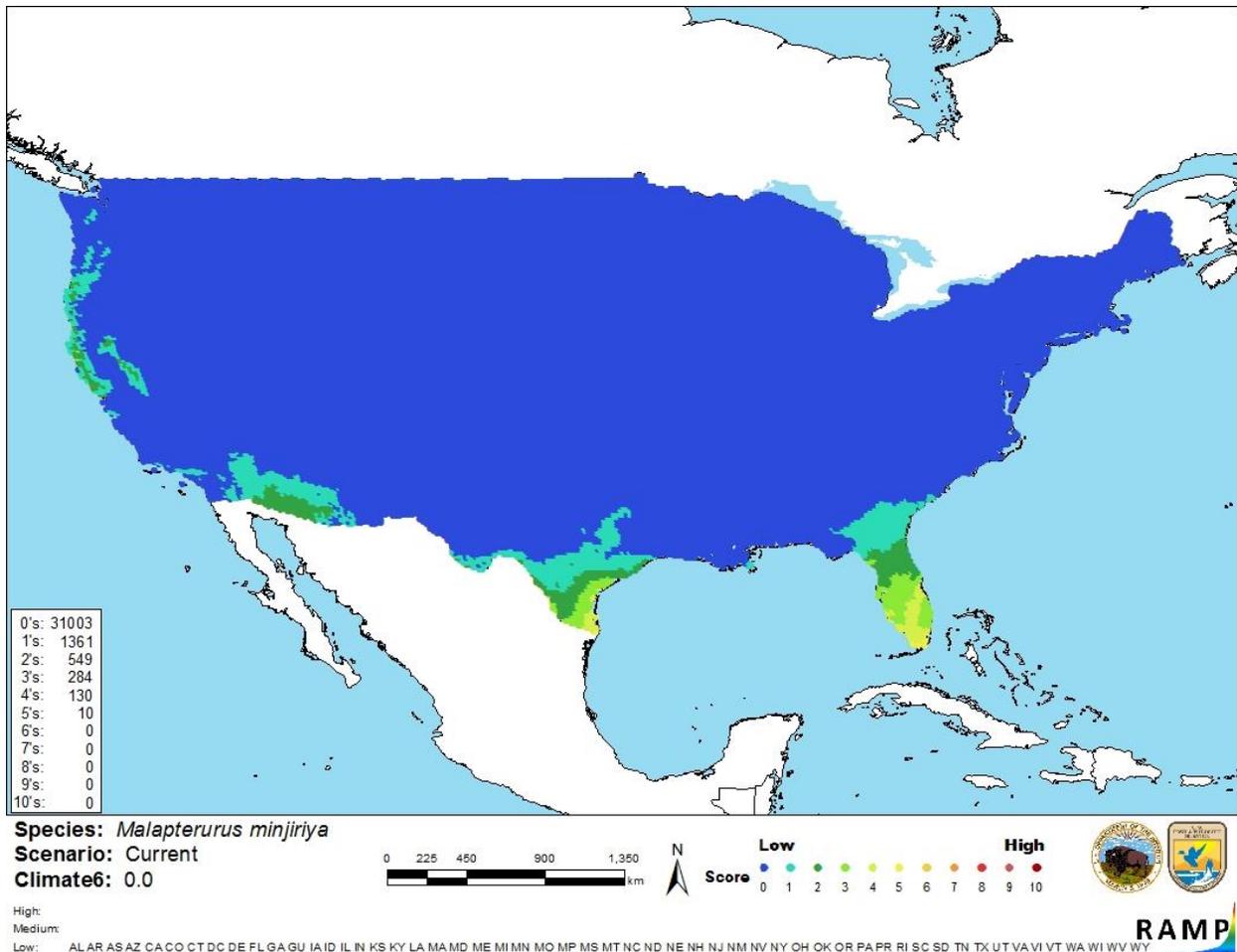
## 6 Climate Matching

### Summary of Climate Matching Analysis

The climate match for *Malapterurus minjiriya* was low for the majority of the contiguous United States with a small patch of medium match in southern Florida and southern Texas. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, low. The range for a low climate score is from 0.0 to 0.005, inclusive. All states have low individual climate scores.



**Figure 2.** RAMP (Sanders et al. 2018) source map showing weather stations in western Africa selected as source locations (red; Burkina Faso, Niger, Benin, Togo, Nigeria, Cameroon) and non-source locations (gray) for *Malapterurus minjiriya* climate matching. Source locations from GBIF Secretariat (2018). Weather stations within 100km of a known occurrence were selected as source points for the climate match and do not necessarily represent the locations of occurrences themselves (Sanders et al. 2018).



**Figure 3.** Map of RAMP (Sanders et al. 2018) climate matches for *Malapterurus minjiriya* in the contiguous United States based on source locations reported by GBIF Secretariat (2018). 0 = Lowest match, 10 = Highest match.

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
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
$\geq 0.103$	High

## 7 Certainty of Assessment

The certainty of assessment is low. There was minimal biological information available for this species. There were no records of introductions found and, therefore no information on impacts of introductions.

## 8 Risk Assessment

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### Summary of Risk to the Contiguous United States

*Malapterurus minjiriya* is an electric catfish native to western Africa. It is used in fisheries and scientific research. It poses a risk to humans, which may be related to its ability to create electrical discharges. Some species in this genus are able to produce electric discharges in the range of hundreds of volts to stun prey and for defense. The history of invasiveness is uncertain. No records of introductions were found. The Florida Fish and Wildlife Conservation Commission has listed *M. minjiriya* as a prohibited species. The climate match is low for the contiguous United States, with patches of medium match in southern Florida and southern Texas. The certainty of assessment is low because of a lack of information on potential invasiveness. The overall risk assessment category is uncertain.

### Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information:** No additional information.
- **Overall Risk Assessment Category: Uncertain**

## 9 References

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

Alves-Gomes, J. A. 2001. The evolution of electroreception and bioelectrogenesis in teleost fish: a phylogenetic perspective. *Journal of Fish Biology* 58:1489–1511.

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## 10 References Quoted But Not Accessed

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**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.**

Eschmeyer, W. N., editor. 1998. *Catalog of fishes*. California Academy of Sciences, Special Publication, San Francisco.

Norris, S. M. 2002. A revision of the African electric catfishes, family Malapteruridae (Teleostei, Siluriformes), with erection of a new genus and descriptions of fourteen new species, and an annotated bibliography. *Annales du Musée Royal de l'Afrique Centrale: Sciences Zoologiques* 289:1–155.

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Roberts, T. R. 2000. A review of the African electric catfish family Malapteruridae, with descriptions of new species. *J. L. B. Smith Institute of Ichthyology, Occasional Paper* 1:1–15.