

Second Record of Alligator Gar *Atractosteus spatula* (Lacepède, 1803) (Teleostei, Lepisosteidae) in Java, Indonesia

Abdul Rahem Faqih^{1*}, Septi Anitasari¹ and Dian Samitra²

¹Universitas Brawijaya, Fisheries and Marine Science Faculty, Aquatic Resources Management Department, Veteran Malang, 65145, East Java, Indonesia

²Generasi Biologi Indonesia Foundation, Zoology Division, Gresik 61171, East Java, Indonesia

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ABSTRACT

Alligator gar *Atractosteus spatula* (Lacepède, 1803) is native to North America, with introductions reported from many countries worldwide. In 2020, specimens of *A. spatula* was collected from Rawa Besar, is one of reservoir in the west of Java. This record is among the second of this species from open waters in Java Island. A description of morphometric and mersitic characters of a specimen are provided.

Key words: Alien fish, Freshwaters, Non-native fish

Introduction

Alligator gar *Atractosteus spatula* (Lacepède, 1803) is a predator fish native to North America (Raz-Guzmán *et al.*, 2018) and now introduced to many countries for the sport fishing and aquarium trade (Salnikov, 2010). Besides in North America as its natural habitat, *A. spatula* was found in open waters such as Malay Paninsula, Malaysia (Chong *et al.*, 2010), Zrebar Lake, Iran (Esmaeili *et al.*, 2017). In Indonesia, this species was found in coastal pond, Sumatra (Muchlisin, 2012), Nyanyi estuary, Bali, and Brantas river, Java (Hasan *et al.*, 2020). *Atractosteus spatula* exhibits tolerance to new habitats, the eggs are poisonous, highly predatory habits, and the maximum recorded length is 305 cm (McClanes, 1974). Because of this, *A. spatula* has the potential to become an invasive species (Mutlak *et al.*, 2017).

Atractosteus spatula is generally sold in the ornamental fish market (Cohen *et al.*, 2007) and main-

tained in several ponds (Alfaro *et al.*, 2008). Rawa Besar, is one of reservoirs in the west of Java, but there were no records of the aquarium trade and sport fishing center there. The presence of *A. spatula* in Rawa Besar reservoir constituted a second record of this species in open waters, Java Island.

Materials and Methods

We collected fish using casting net on 21 April 2020 in Rawa Besar reservoir, west of Java. The fish was documented and photographed, although the specimen was not retained, as we did not have enough space because the specimen was too large to be stored in the laboratory. No voucher specimen was retained. Morphometric characters refers to the quantitative analysis of total length, standard length, head length, body depth, eye diameter, and snout length, while meristic characters refers to the number of dorsal fin rays, pectoral fin rays, anal fin rays, ventral fin rays and lateral line scales

(Bigelow *et al.*, 1963). Water quality measurements are carried out directly at each location after *A. spatula* are caught.

Results

Second record (Fig. 1). Indonesia: Java Island: west of Java: Depok city (6°23'43"S; 106°48'55"E), 21 April 2020, single specimen, total length 102 cm. Specimens collected in Rawa Besar reservoir was identified as *A. spatula*. *Atractosteus spatula* can be distinguished from the other members of the family Lepisosteidae in having a large size and broad, elongated and triangular short snout with two rows of sharp teeth in their mouths. Specific morphological characters are as follows: cylindrical body with an obvious rounded tail, dark olivaceous brown above and white to yellowish beneath, light dorsal stripe, dark brown blotches on all fins (Fig. 2).



Fig. 1. Records of *Atractosteus spatula* in Java. Black square is the previous record of the species in Brantas river, east of Java. Black circle is the second record in Rawa Besar reservoir, west of Java.



Fig. 2. *Atractosteus spatula* caught on 21 April 2020 from the Rawa Besar reservoir, west of Java.

Water conditions in Rawa Besar reservoir, namely temperature 27–29 °C; depth 3–4 m and current velocity 5.5–6.7 cm/s. Water conditions in location is ideal for *A. spatula* survival and growth

(Garcia de Leon *et al.*, 2001).

We assumed that *A. spatula* was released by the fish’s owner, who frequently got rid of unwanted predator fish by releasing them into open water bodies. It was also likely that *A. spatula* was released, because their sizes was too big for pets and the owner was unable to maintain it (Chang *et al.*, 2019; Bize and Fernandez, 2019). As the area does not have an aquarium trade and fishing sports pond, further investigation is warranted to determine the source of alien species in Indonesia (Hasan *et al.*, 2020a; Hasan *et al.*, 2020b) such as Rawa Besar reservoir. In the future, further introductions should be prevented to reduce the impact of invasive fishes on the open waters on do not disturb on native aquatic ecosystems (Hasan and Tamam, 2019; Hasan *et al.*, 2019a; Hasan *et al.*, 2019b; Wijayanti *et al.*, 2021). *Atractosteus spatula* prey on almost all types of aquatic animals in the Rawa Besar reservoir so that it can damage the food chain in these waters. If not captured, alien species can cause the loss of native aquatic animals (Hasan *et al.*, 2020c; Insani *et al.*, 2020; Serdiati *et al.*, 2021).

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