

## Research Article

**First record of the Indo-Pacific whipfin ponyfish *Equulites leuciscus* (Günther, 1860) (Perciformes: Leiognathidae) in the Mediterranean**Turhan Kebapcioglu<sup>1,\*</sup> and Ilker Cinbilgel<sup>2</sup><sup>1</sup>Akdeniz University, Manavgat Tourism Faculty, Department of Recreation Management, 07600, Manavgat, Antalya, Turkey<sup>2</sup>Akdeniz University, Manavgat Tourism Faculty, Department of Tourism Guidance, 07600, Manavgat, Antalya, TurkeyAuthor e-mails: [turhank@akdeniz.edu.tr](mailto:turhank@akdeniz.edu.tr) (TK), [icinbilgel@akdeniz.edu.tr](mailto:icinbilgel@akdeniz.edu.tr) (IC)

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**Abstract**

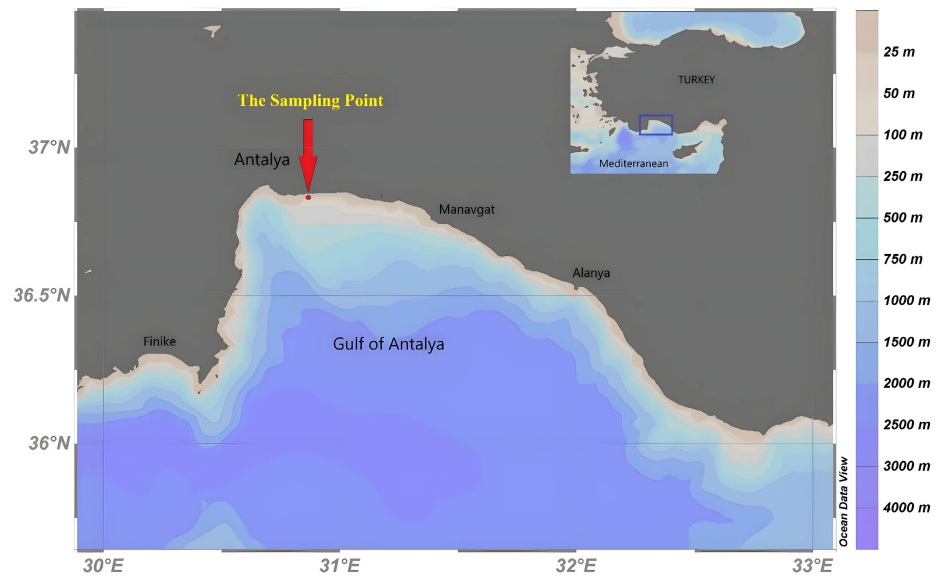
The whipfin ponyfish *Equulites leuciscus* (Günther, 1860) was recorded for the first time in the Mediterranean Sea. The species is widely distributed in the Indo-West Pacific and has been recognized as one of the most widespread species of ponyfishes. *E. leuciscus* has wide and oval body shape, very elongated second dorsal spine, and yellow dots adjacent to its lateral line. One specimen was caught at a depth of 28 m, on September 2021, in the Gulf of Antalya. The specimen was 101.6 mm in total length (TL). The length of second dorsal spine was 26.8 mm and the body depth (BD) to standard length ratio was 40.6%. The probable reason that *E. leuciscus* was not identified in the Mediterranean until now is that the species has no economic value and is very similar to *Equulites klunzingeri*.

**Key words:** alien species, Lessepsian migrants, Levantine Basin, Turkey**Introduction**

The Eastern Mediterranean has a very dynamic ichthyofaunal structure due to the continuous increase of Indo-Pacific species (Mavruk et al. 2017). Leiognathidae, commonly known as ponyfishes, consists of ten genera and 54 species (Sharifuzzaman et al. 2021). This family was previously represented by *Equulites klunzingeri* (Steindachner, 1898) and *Equulites popei* (Whitley, 1932) in the Mediterranean Sea.

*Equulites klunzingeri* (Steindachner, 1898) is the first ponyfish to have entered the Levantine Basin (Gruvel 1931), and is endemic from the Red Sea and Western Indian Ocean and was also the first Lessepsian migrant reported in Turkey (Erazi 1943). Although the Suez Canal opened on 17 November 1869, there was a total lack of alien fish species in Turkey until the 1940s (Bilecenoglu 2010). It is frequently caught by commercial trawlers in the Mediterranean (Golani et al. 2002).

*Equulites elongatus* (Günther, 1874) was the second reported ponyfish reported both in the Mediterranean (Golani et al. 2011), and Turkey (Irmak et al. 2015; Yokes 2015; Sakinan et al. 2017). However, Suzuki and Kimura (2017) recently reassigned this species to be *Equulites popei*, based



**Figure 1.** The fishing site where whipfin ponyfish was caught in the Gulf of Antalya.

on the distribution of *E. elongatus* being restricted to north of Australia, eastern Indonesia, and Myanmar, which are a long distance from the Suez Canal. The most recent records of *E. popei* from Turkish waters by Erguden et al. (2019) and Mavruk et al. (2019) from the Gulf of Antalya.

*Equulites leuciscus* is a tropical species, widely distributed in the Indo-West Pacific from northern Australia and Caledonia to East African shores, and is one of the most widespread ponyfish (Chakrabarty et al. 2010a). They are found in depths ranging from 5–70 m, and they characteristically have a deeper body (Pauly et al. 1996; Suzuki and Kimura 2017). The second dorsal spine elongation and yellow markings below the lateral line are the main features that distinguish this species from the other species in its family (Sharifuzzaman et al. 2021).

Whipfin ponyfish was present in the checklist of the marine ichthyofauna of Egypt, in the Red Sea (Akel and Karachle 2017); however this data needs to be confirmed by further evidence. There have been so subsequent records on this species' entrance into the Mediterranean. This first Mediterranean record of *E. leuciscus* was caught in the Gulf of Antalya, southern Turkey.

## Materials and methods

One specimen of *E. leuciscus* was caught in the Gulf of Antalya on September 2021 by angling at a depth of 28 m. The coordinates of the fishing site was 36.831210°N and 30.894339°E (Figure 1). Morphometric and meristic characters were measured and counted, respectively. The species was identified according to Fischer and Bianchi (1984), Sharifuzzaman et al. (2021) and Chakrabarty et al. (2010b).

## Results

The specimen had 101.6 mm TL and 86.8 mm SL (Table 1). The ratio of body depth to standard length was calculated as 40.6%. The mouth was protractile

**Table 1.** Morphometric characters of *Equulites leuciscus* captured from Gulf of Antalya, Turkey in September 2021.

Morphometric characteristics	mm
Total length	101.6
Fork length	91.7
Standard length	86.8
Pre-dorsal length	34.9
Pre-anal length	42.1
Head length	22.8
Eye diameter	6.7
Snout length	10.5
Body depth	35.2
Second dorsal spine length (longest)	26.8
No. Fin rays	
Dorsal spines	8
Dorsal rays	16
Anal spines	3
Anal rays	14
Pectoral rays	17
Pelvic spine	1
Pelvic rays	5



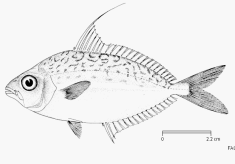
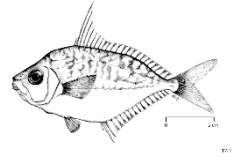
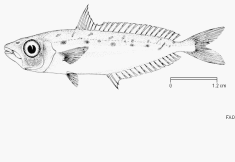
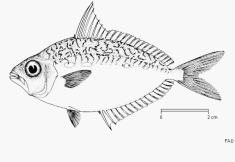
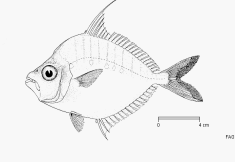
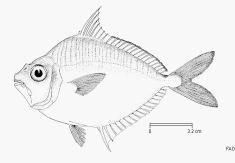
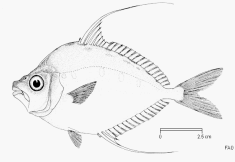
**Figure 2.** *Equulites leuciscus* specimen collected from Gulf of Antalya (Photo by Resul Mohul).

and caudal fin was forked. Body color was silvery with characteristic yellow markings on its body and fins, especially adjacent to its lateral line. The second dorsal fin spine was very elongated, while the first spine was very short (Figure 2). The ratio of second dorsal spine to body depth was 76.1%.

### Discussion

The common TL of whipfin ponyfish is 10.0 cm, and its maximum reported TL is 25.0 cm (Sommer et al. 1996; Kuitert and Tonozuka 2001). In a study on its taxonomic revision, the SL of 134 *E. leuciscus* individuals obtained from Indonesia, Australia, Philippines, Myanmar, Japan and Papua New Guinea ranged from 51 to 117 mm (Suzuki and Kimura 2017). Similarly, Sharifuzzaman et al. (2021) reported that the SL of the two specimens

**Table 2.** Distributions and distinguishing characteristics of *Equulites leuciscus* and other similar species.

Species		Mediterranean	Red Sea	Elongated 2 <sup>nd</sup> Dorsal Fin	Body Depth (% of SL)	Fin Formation
<i>Equulites leuciscus</i> (Günther, 1860) Whipfin ponyfish		✓ <sup>a</sup>	? <sup>b</sup>	✓	40.6 <sup>a</sup> 34–47 <sup>c</sup>	D. VIII, 16; A. III, 14; C. 23; P1.17; P2. I, 5 <sup>d</sup>
<i>Equulites klunzingeri</i> (Steindachner, 1898) Klunzinger's ponyfish		✓ <sup>e</sup>	✓ <sup>e</sup>	X	39.20 <sup>e</sup>	D. VII, 15; A. III, 15; P1. 16; P2. I, 5 <sup>e</sup>
<i>Equulites popei</i> (Whitley, 1932) Pope's ponyfish		✓ <sup>f</sup>	✓ <sup>f</sup>	X	25.2–26.5 <sup>f</sup>	D. VIII, 16; A. III, 14; P1. 15; P2. I, 5 <sup>f</sup>
<i>Leiognathus berbis</i> (Valenciennes, 1835) Berber ponyfish		✓ <sup>g</sup>	✓ <sup>g</sup>	X	35.5–43.1 <sup>h</sup>	D. VIII, 16; A. III, 15 P1.16; P2. I, 5 <sup>g</sup>
<i>Aurigequula fasciata</i> (Lacepède, 1803) Striped ponyfish		X	✓ <sup>d</sup>	✓	48.7–51.4 <sup>d</sup>	D. VIII, 16; A. III, 14; C. 18; P1. 19; P2. I, 5 <sup>d</sup>
<i>Leiognathus equula</i> (Forsskål, 1775) Common ponyfish		X	✓ <sup>i</sup>	✓	52.6–58.8 <sup>j</sup>	D. VIII, 16; A. III, 14; P1. 20; P2. I, 5 <sup>i</sup>
<i>Leiognathus longispinis</i> (Valenciennes, 1835) Longspine ponyfish		X	X	✓	52.3–61.5 <sup>d</sup>	D. VIII, 16; A. III, 14; C. 20; P1. 19; P2. I, 5 <sup>d</sup>

<sup>a</sup> Present study, <sup>b</sup> Akel and Karachle (2017), <sup>c</sup> Suzuki and Kimura (2017), <sup>d</sup> Sharifuzzaman et al. (2021), <sup>e</sup> Dulčić and Pallaoro (2002), <sup>f</sup> Mavruk et al. (2019), <sup>g</sup> Alshawy et al. (2016), <sup>h</sup> James (1975), <sup>i</sup> Soars and Leis (2010), <sup>j</sup> Woodland et al. (2001). Fish drawings from FishBase ([www.fishbase.org](http://www.fishbase.org)).

caught in Bangladesh were 93.4 and 102.0 mm. Similar to the related articles, the TL and SL of the individual sampled in this study were found to be in the same range, which were 101.6 mm and 86.8 mm, respectively.

Although individuals of Leiognathidae are similar, they can be easily distinguishable by comparing certain aspects. The main characteristics of *E. leuciscus* are summarized in Table 2, along with the characteristics of similar species.

*Equulites klunzingeri*, which was the first alien species in Turkey, and one of the two other ponyfish species reported from the Gulf of Antalya. This alien species was defined as invasive, since it was the most abundant lessepsian species found in bottom trawl surveys in the Gulf of Antalya, it was observed there up to 75 m in depth in 2009 (Ozgur Ozbek et al. 2010). Its maximum depth was increased to 200 m in the study carried out after about 15 years in the Gulf of Antalya (de Meo et al. 2018). The most identifiable difference between *E. klunzingeri* and *E. leuciscus* is the elongated second dorsal ray of *E. leuciscus*.

*Equulites popei* is also considered to be an effective invasive species in the Mediterranean Sea (Golani et al. 2011; Irmak et al. 2015; Yokes 2015). This species has been reported from 38 m to 150 m depth in the Gulf of Antalya (Erguden et al 2019; Mavruk et al. 2019). *Equulites popei* lacks an elongated second dorsal spine and is clearly distinguishable from other ponyfishes by having a slender body, along with *E. elongatus*.

The whipfin ponyfish closely resembles *Leiognathus berbis* (Valenciennes, 1835), which is reported from the Red Sea to the Mediterranean (Alshawy et al. 2016). Both species have an almost similar shape of body and colouration, but *E. leuciscus* is easily distinguished again by its elongated second dorsal fin spine.

The ponyfish that are comparable with their elongated second dorsal spines, *Aurigequula fasciata* (Lacepède, 1803) and *Leiognathus equula* (Forsskal, 1775), have been reported from the Red Sea, but not yet from the Mediterranean (Table 2). There is no record of *Leiognathus longispinis* (Valenciennes, 1835) from either sea up to date. All three species are distinguished from the whipfin ponyfish by having deeper bodies. Also, *A. fasciata* has vertical dark bars on its upper parts, *L. equula* also has many parallel close-set faint bars on its back side, and *L. longispinis* has a markedly elongated second dorsal and anal fin spines (92.9–126.8% BD and 69.6–76.9% BD, respectively) (Sharifuzzaman et al. 2021). The ratio of second dorsal spine to BD of *E. leuciscus* was reported as 55% by Sharifuzzaman et al. (2021). In this study, the rate was calculated as 76.1%.

In conclusion, this is the first record for *E. leuciscus* in the Mediterranean, and third record for ponyfish in the Mediterranean. The lack of other records of this species is likely due to being a commonly discarded taxa which is evaded fishermen attention. Also, it may have been thought to be *E. klunzingeri*, which is abundantly caught on commercial trawlers and directly discarded (Yemiskan et al. 2014). This study will also contribute to improving the checklists of alien species both in the Mediterranean and in Turkey, and also increase the awareness about *E. leuciscus*. Perhaps further studies dedicated to this species can focus on its ecology and biology and improve on the knowledge about interactions and competition between the native and lessepsian species. Therefore, longer-term approaches are required for monitoring the effects alien species have on native biodiversity.

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## Authors' contribution

Turhan Kebapcioglu: research conceptualization, sample design and methodology, investigation and data collection, data analysis and interpretation, writing. Ilker Cinbilgel: sample collection, writing.

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