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## CONFIRMATION OF THE PRESENCE OF *Zungaro jahu* (Ihering, 1898) FOR URUGUAY (SILURIFORMES: PIMELODIDAE) AND A REVIEW OF ASSOCIATED HISTORICAL RECORDS FOR THE COUNTRY.

*Confirmación de la presencia de Zungaro jahu (Ihering, 1898) para Uruguay  
(Siluriformes: Pimelodidae) y revisión de registros históricos*

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**Abstract.** *Zungaro jahu* is a siluriform fish well known from the Paraná river but also recorded from the Argentinean coast of the La Plata river, based on well confirmed and illustrated records. The presence of *Z. jahu* is confirmed for the Uruguayan territory, based on a single juvenile specimen collected in the La Plata river (Colonia county) in 1966. Other records associated with this species for the country are discussed and corrected. Species of the genera *Microglanis* and *Pseudopimelodus* were frequently misidentified in literature and museum records, thus leaving the present record as the first confirmed one. It is recommended to carry out similar reviews all along the putative distribution area of *Z. jahu*, insisting in the incorporation of potential specimens into biological collections.

**Key words.** La Plata river, freshwater, *Paulicea*, *Zungaro*.

**Resumen.** *Zungaro jahu* es un pez siluriforme bien conocido del río Paraná pero también registrado de la costa argentina del Río de la Plata, en base a material bien ilustrado y confirmado. Se confirma la presencia de *Z. jahu* para el territorio uruguayo, basado en un único ejemplar colectado en el Río de la Plata (Departamento de Colonia) en 1966. Otros registros referidos a esta especie para el país se discuten y corrigen. Especies de los géneros *Microglanis* y *Pseudopimelodus* fueron frecuentemente mal identificados en la literatura y en materiales depositados en museos, dejando el presente registro como el primero confirmado. Se recomienda llevar a cabo revisiones similares a lo largo de la supuesta área de distribución of *Z. jahu*, insistiendo en la incorporación de posibles ejemplares a colecciones biológicas.

**Palabras clave.** Río de la Plata, agua dulce, *Paulicea*, *Zungaro*.

## INTRODUCTION

Species of the genus *Zungaro* Bleeker, 1858 are among the largest catfishes in South America, reaching up to 140 cm length and 150 kg weight (Lundberg & Littmann, 2003; Ferraris, 2007; Pires *et al.*, 2017). There are two valid nominal species currently recognized: *Zungaro jahu* (Ihering, 1898) and *Zungaro zungaro* (Humboldt, 1821), and potentially one more undescribed, recognized by molecular analyses (Pires *et al.*, 2017). *Zungaro jahu* is well known from the Paraná river (e. g. Mac Donagh, 1937; Ringuelet *et al.*, 1967; Almirón *et al.*, 2015) but also recorded based on well confirmed and illustrated records from the Argentinean coast of La Plata river (e. g. Mac Donagh, 1937; Castello & Gosztonyi, 1972). The reference made by Larrañaga on December 24th 1814 when he was at Buenos Aires, published more than a century later (Larrañaga, 1922), remained relatively unnoticed and also clearly refers, on the basis of the size and the chromatic pattern described, to adults of that species present in La Plata river.

The genus has a complex taxonomical history (Mac Donagh, 1937; Koerber, 2019). In fact, species currently belonging to several genera in Pimelodidae and Pseudopimelodidae were misidentified, synonymized or named over time under *Zungaro zungaro*, *Pseudopimelodus zungaro* (Humboldt, 1821), *Paulicea luetkeni* (Steindachner, 1876) or other names and combinations, but actually belong either to *Z. jahu* or *Z. zungaro* (Fricke *et al.*, 2020). For Uruguay, some of these names were mentioned in literature since 1924 (Devincenzi, 1924), potentially belonging to true records of *Zungaro* sp., but the combination of the taxonomic complexity mentioned above, the frequent confusions with common names, some improbable habitats reported and the absence of data of

vouchers, leave all the records as doubtful. The aim of the present contribution is to clarify the identity of the records of *Zungaro* for Uruguay.

## MATERIALS AND METHODS

Mentions of *Zungaro* spp. and other associated names (see Introduction) in the literature for Uruguay, in any combination or synonymy, were searched, listed and analyzed. Records that (according to the discussion provided below) effectively or most probably correspond to *Zungaro* are marked in bold. Analyzed specimens are housed in the collection of the Museo Nacional de Historia Natural, Montevideo, Uruguay (MHNM). Measurements (nearest mm) are straight-line distances taken with a digital caliper. Standard length (SL) is measured from tip of snout to hypural joint. Identifications were based on Mac Donagh (1937) and Almirón *et al.* (2015). The latter book is especially useful for its pictures which illustrate the ontogenetic variation of the color pattern of *Z. jahu*.

## RESULTS AND DISCUSSION

**Order Siluriformes Cuvier, 1816**  
**Family Pimelodidae Bonaparte 1835**  
**Genus *Zungaro* Bleeker, 1858**  
***Zungaro jahu* (Ihering, 1898)**

- Devincenzi, 1924: 152 – *Pseudopimelodus zungaro* Humb. [record and description]
- Devincenzi & Barattini, 1926: Lám. VIII – *Pseudopimelodus zungaro* (Humb.) [illustration]
- Devincenzi & Teague, 1942: 42 – *Pseudopimelodus zungaro* [description]
- Fowler, 1943: 318 – *Zungaro zungaro* (Humboldt) [record]
- De Buen, 1950: 71 – *Zungaro zungaro* (Humboldt, 1833) [mention]



**Figure 1** - *Zungaro jahu* in lateral, dorsal and ventral views: MHNM 1503, 168,3 mm SL, La Plata River near Limetas Stream, Conchillas, Colonia, Uruguay.

- Ringuélet *et al.*, 1967: 325 – *Zungaro zungaro* (Humboldt, 1833) [mention]
- Castello & Gosztonyi, 1972: 279 – *Paulicea lutkeni* [comments about juveniles]
- Carrera, 1976: 41 – *Zungaro zungaro* [list]

- Carrera, 1976: 42 – *Paulicea lutkeni* [list]
- Sierra *et al.*, 1977: 100 – *Zungaro zungaro* [record]
- Nión *et al.*, 2002: 14 – *Zungaro zungaro* (Valenciennes, 1821) [list]

- Nión *et al.*, 2002: 15 – *Paulicea luetkeni* (Steindachner, 1876) [list]
- Reichert, 2002: 29, 156 – *Paulicea luetkeni* (Steindachner, 1876) [illustration]
- Carnevia, 2007: 55 - *Zungaro zungaro* [mention]
- Litz & Koerber, 2014: 20 – *Zungaro jahu* (Ihering, 1898) [list and comments]
- Nión *et al.*, 2016: 34 – *Zungaro zungaro* (Valenciennes, 1821) [list]
- Nión *et al.*, 2016: 34 – *Zungaro jahu* (Humboldt, 1821) [list]

**Examined material.** *Zungaro jahu*: MHNM 1503, 1 ex. 168,3 mm SL, La Plata River near Limetas Stream (34°10'29"S 58°06'31"W), Conchillas, Colonia, Uruguay, Coll. Ricardo Carrera, II/1966. Labelled as "*Paulicea luetkeni*" in its container and as "*Manguruyú negro – Paulicea luetkeni*" in the collection catalog.

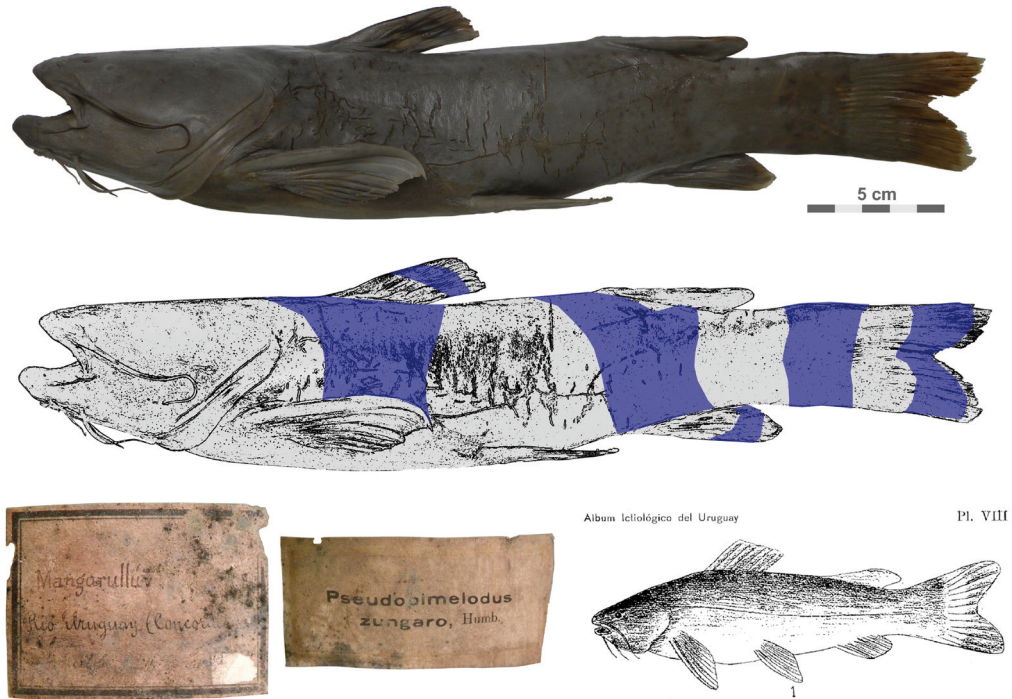
The juvenile specimen analyzed (Figure 1) is distinguished from all the other species of pimelodids recorded in Lower Uruguay, Lower Paraná and La Plata river basins by its color pattern that consist in irregular obscure spots not aligned on all the body and fins, the short adipose fin and its robust head not strongly depressed.

**Other material examined.**

*Pseudopimelodus mangurus*: MHNM 514, 1 ex. 272,7 mm SL, Uruguay River, Concordia, opposite from Salto (31°23'11"S 57°59'02."W), Entre Ríos Province, Argentina, Coll. H. Figueira, captured in 1905 or earlier. Labelled as "*Pseudopimelodus zungaro*" in its container and in the collection catalog. MHNM 1687, 1 ex. 196,3 mm SL, Uruguay River, Paysandú (32°18'31"S 58°05'53"W), Paysandú Department, Uruguay, Coll. W. Teague, 1939. Labelled as "*Zungaro zungaro*" in its container, as "*Rhamdia*" in the collection catalog, apparently analyzed for first time and cataloged during 1970's.

According to the literature, first mentions of *Zungaro* for Uruguayan territory were based on a single specimen collected in Uruguay River "opposite of Salto" city by Juan H. Figueira, and donated to the Museo Nacional de Historia Natural de Montevideo in 1905 (Devincenzi, 1924; Devincenzi & Barattini, 1926). Devincenzi identified this specimen as *Pseudopimelodus zungaro* based on the description offered by Miranda Ribeiro (1911), who worked on a specimen of *Cephalosilurus fowleri* (see Plate 43 Figure 1 in his work) collected in the São Francisco River basin. Later, Devincenzi & Teague (1942) included the same record in their "Ictiofauna del Río Uruguay Medio", but as collected in Concordia (Entre Ríos, Argentina), not in Salto. We reviewed the specimen recorded by Devincenzi (MHNM 514), and confirm that it belongs to *Pseudopimelodus mangurus* (Pseudopimelodidae). This specimen has a dark coloration (probably due to problems in fixation) which may have been the reason why Devincenzi associated this specimen with *Z. zungaro*. However, as shown in Figure 2, this specimen has the distinctive color pattern of *P. mangurus*, i. e. three dark zones along the trunk plus and a dark band on each fin. Furthermore, this specimen possesses small eyes entirely covered by skin without free orbital rim, and large body size (compared with specimens of *Microglanis*). Fowler (1943) mentioned *Zungaro zungaro* for Canelones Stream and Santa Lucía River (Canelones Department), based on specimens collected by Felippone in 1933 and Barattini in 1935 respectively, and housed in the collection of the Academy of Natural Sciences of Drexel University (ex. Academy of Natural Sciences of Philadelphia, ANSP, USA). According to the online collection catalog, specimens recorded by Fowler (ANSP 67787 and ANSP 70338) belong to the genus *Microglanis* (Pseudopimelodidae). This





**Figure 2** - *Pseudopimelodus mangurus*, MHNM 514, 272,7 mm SL, Uruguay River, Concordia, Entre Ríos Province, Argentina. Above, specimen recorded by Devincenzi (1924); middle, schematic picture of the specimen highlighting the dark areas; bottom left, labels on its container; bottom right, drawing from the same specimen published in Devincenzi & Barattini (1926).

agrees with the type of habitat for these localities, i.e. not the large and deep rivers that *Z. jahu* inhabits (see Almirón *et al.* 2015). Next chronological records belong to De Buen (1950) and Ringuelet *et al.* (1967), who compiled in their works all previous literature records but without a revision of the vouchers or analyzing new specimens from Uruguay.

Castello & Gosztanyi (1972), in a work where they recorded juvenile specimens of *Paulicea luetkeni* from coastal areas of Buenos Aires, commented that Carrera (1971, pers. com.) collected one juvenile specimen from the Uruguayan coast of the La Plata River, but without comments about where it was housed. During the process of revision and relocation of the Ichthyological Collection

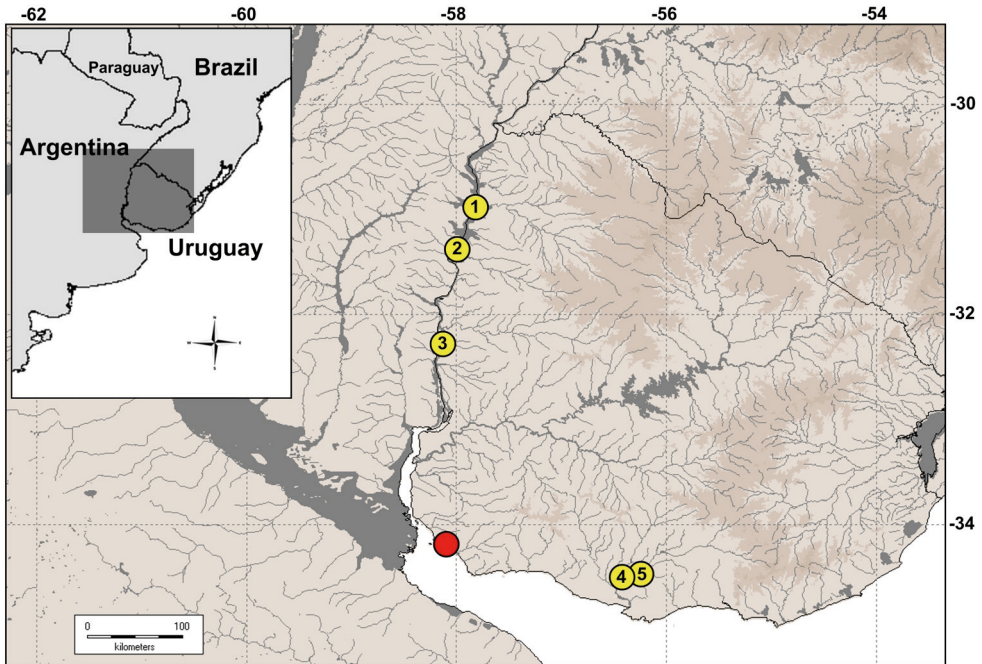
of the Museo Nacional de Historia Natural (Montevideo) to its new building (2019), we found the specimen mentioned by Castello & Gosztanyi (MHNM 1503) and originally identified by Carrera as *P. luetkeni*. Despite its poor condition, morphology and color pattern it clearly identifies as *Zungaro jahu* according to Almirón *et al.* (2015), thus representing the first (and the yet the only) confirmed record for this genus from the Uruguayan territory (Figure 3).

Carrera (1976) mentioned in his list of fishes of Uruguay "*Zungaro zungaro* - manguruyú amarillo" and "*Paulicea luetkeni* - manguruyú negro", but did not provide any information about vouchers. Considering the combinations of common and scientific names it is a very plausible

hypothesis that *Z. zungaro* referred to *Pseudopimelodus mangurus* and *P. luetkeni* to *Zungaro jahu*, this last one surely based on the specimen collected and deposited in the MHNM by Carrera and mentioned by Castello & Gosztonyi (1972). Sierra *et al.* (1977) also mentioned a “*Zungaro*” specimen captured during the fieldworks before the construction of Salto Grande dam in Uruguay River, but listed it as “*Zungaro zungaro* - Manguruyú amarillo”. No voucher specimens were found in collections of the MHNM or Facultad de Ciencias de la Universidad de la República (ZVC-P) (Montevideo, Uruguay). However, given the above mentioned confusions and that other material of *P. mangurus* from this zone has been collected before and after the construction of Salto Grande dam, we

tentatively assign this record to the latter species.

Other authors like as Nión *et al.* (2002, 2016), Carnevia (2007), and Litz & Koerber (2014), did not provided any evidence about the identity of what they indicated as “*Zungaro*” for Uruguay. Litz and Koerber (2014) interpreted Devincenzi’s *Pseudopimelodus zungaro* and *Paulicea luetkeni* from Nión *et al.* (2002) as *Zungaro jahu*, considering that *Z. zungaro* has an Amazonian distribution as indicated by Lundberg & Littmann (2003) and Ferraris (2007). Finally, Nión *et al.* (2016) maintained *Z. zungaro* in their list and switch *P. luetkeni* for *Z. jahu*, possibly based on Litz and Koerber (2014). Apart from these, Reichert (2002) illustrated a “*Paulicea luetkeni*” as part of his pictorial work “Atlas ilustrado de los peces de agua dulce del



**Figure 3** - Geographic distribution of “*Zungaro*” records in Uruguay. In red the only locality confirmed for Uruguayan specimen of *Zungaro* (*Z. jahu*, MHNM 1503, la Plata River, near Limetas Stream). Misidentified historical records in yellow: 1) Sierra *et al.*, 1977 (surely a *P. mangurus*); 2) Devincenzi, 1924 (*P. mangurus*, MHNM 514); 3) Castello & Gosztonyi, 1972 and Carrera, 1976? (*P. mangurus*, MHNM 1687); 4 and 5) Fowler, 1943 (*Microglanis* sp., ANSP 67787 and ANSP 70338).

**Table 1** - Redetermination of names associated to *Z. jahu* mentioned for Uruguay in the literature. \* = voucher not traceable.

| Name in literature –by chronological order | Reference   | Redetermination   |
|--|---|---|
| <i>Pseudopimelodus zungaro</i>             | Devincenzi, 1924; Devincenzi & Barattini, 1926; Devincenzi & Teague, 1942   | <i>Pseudopimelodus mangurus</i>                             |
| <i>Zungaro zungaro</i>                     | Fowler, 1943;   | <i>Microglanis</i> sp.                                      |
|  | De Buen, 1950; Ringuélet <i>et al.</i> , 1967   | <i>Pseudopimelodus mangurus</i><br>+ <i>Microglanis</i> sp. |
|  | Carrera, 1976*; Sierra <i>et al.</i> , 1977*;<br>Nión <i>et al.</i> , 2002*; Carnevia, 2007*;<br>Nión <i>et al.</i> , 2016* | <i>Pseudopimelodus mangurus</i>                             |
| <i>Paulicea luetkeni</i>                   | Castello & Gosztonyi, 1972; Carrera, 1976; Nión <i>et al.</i> , 2002*; Reichert, 2002                                       | <i>Zungaro jahu</i>   |
| <i>Zungaro jahu</i>                        | Litz & Koerber, 2014; Nión <i>et al.</i> , 2016*  | <i>Pseudopimelodus mangurus</i><br>+ <i>Zungaro jahu</i>    |

Uruguay”, that effectively looks like an adult of *Zungaro jahu*. However, he did not provide any information about the specimen shown in his drawing.

Several technical reports published by the Comisión Administradora del Río Uruguay (e.g. CARU 2010, 2013, 2014) mention *Zungaro*, *Paulicea*, *Pseudopimelodus* and *Microglanis* for Uruguay river, but no clear correlation can be made between these and the mentions of just “manguruyú” for Uruguayan localities detailed in tables of the same documents. Moreover, a similar report (e.g. CARP-CARU, 2016) that refers and illustrates a true *Z. jahu* for the La Plata river fails to indicate the precise locality, i. e. the Argentinean or Uruguayan coast.

Prigioni *et al.* (2020) suggested a possible attack of *Zungaro jahu* to humans at the mouth of Daymán river into the Uruguay river (Salto Department, 1987), but no specific evidence was given to sustain this. Moreover, the large fishes recorded in deep surrounding areas of the incident and mentioned by these authors are most likely *Pseudoplatystoma corruscans* (Spix & Agassiz,

1829). In fact, for this precise locality Foti *et al.* (2010) recorded specimens of the latter species exceeding 1.5 m length.

In summary, the genus *Zungaro* has a long and complex taxonomic history, involving erroneously several species of different genera and families misidentified under it. Specifically, for Uruguay, the name *Zungaro zungaro* (or *Pseudopimelodus zungaro*) has been mainly and incorrectly applied to specimens of *Pseudopimelodus mangurus* and to a lesser extent to species of the genus *Microglanis*, while *Paulicea luetkeni* was incorrectly applied to *Zungaro jahu* (see Table 1). The latter has only one confirmed record for the Uruguayan coast of the La Plata river, where in spite of all the above discussed identification problems, it seems to be a very rare species.

The case discussed above is paradigmatic of the lack of attention to several basic scientific and ichthyological aspects concerning a species supposedly well know and with potential for aquaculture. This stresses the need of checking original sources of information and especially



highlights the relevance of biological collections. It is recommended to carry out similar reviews all along the putative distribution area of *Z. jahu*, insisting in the incorporation of potential specimens into biological collections, the latter being a particularly elusive practice concerning this misunderstood species.

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