

A fossil siluriform spine (Teleostei, Ostariophysii)  
from the Miocene of Chile

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ABSTRACT

A fossil catfish spine of Siluroidei from fluviolacustrine upper beds of the Cura-Mallín Formation is described. This unit is assigned to the Miocene. The spine has generalized features that may preclude its precise identification, although it is possible to differentiate it from those of extant Siluriforms of Chile.

*Key words:* Siluriforms, Siluroidei, Spine, Miocene, Chile.

RESUMEN

**Una espina fósil de pez siluriforme (Teleostei, Ostariophysii) del Mioceno de Chile.** En esta nota se describe una espina fósil de Siluroidei encontrada en unidades sedimentarias superiores, fluviolacustres de la Formación Cura-Mallín, asignadas al Mioceno. El ejemplar tiene caracteres generalizados que impiden una identificación taxonómica precisa, aunque es posible diferenciarla de las espinas de siluriformes actuales que habitan en Chile.

*Palabras claves:* Siluriformes, Siluroidei, Espina, Mioceno, Chile.

INTRODUCTION

Siluriform fossil remains are known in South America from the Late Cretaceous in Argentina, Bolivia, and Brazil (Cione, 1987; De Muizon *et al.*, 1983; Gayet, 1992; Gayet and Brito, 1989) and numerous tertiary localities (Arratia and Cione, 1996). Most of the remains are fragments without diagnostic features for precise identification.

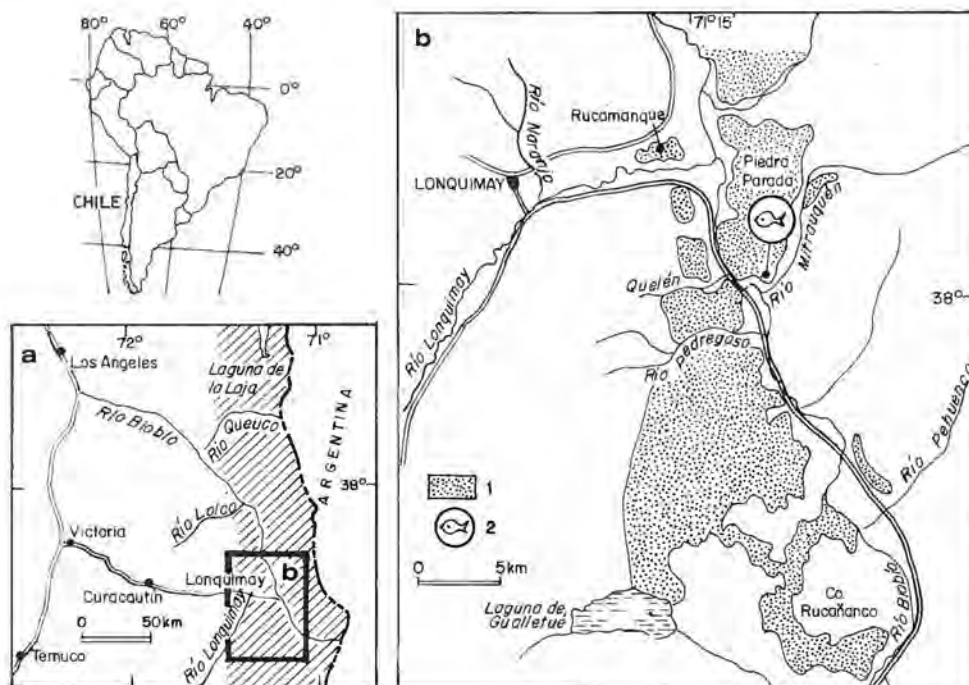
In Chile, the only known records of Siluriforms

come from Río Pedregoso Member of the Cura-Mallín Formation, assigned to the Miocene by Suárez and Empan (1988, 1995). Those remains were found in the fluvio-lacustrine facies that crop out in the northern slope of the Cerro Rucañanco (38°41'S; 71°11'W). They consist of an unidentified pair of frontals and two vertebrae (Rubilar and Wall, 1990) and an almost complete skull and two small frontals

of *Nematogenys* (Rubilar, 1992). At least, some of those fossil remains seem closely related to recent siluriform species.

The description of a catfish spine, which

was collected in outcrops of the Cura-Mallín Formation (Text-fig. 1) (Suárez and Emparan, 1988, 1995), is the purpose of the present contribution.



Text-FIG. 1. a- geographical distribution of the Cura-Mallín Formation, between 37-39° S and access to the fossiliferous locality. b- 1, Sedimentary units of the Cura-Mallín Formation; 2, Collecting site, confluence of Biobío and Mitrauquén rivers (modified from Suárez and Emparan, 1988).

## DESCRIPTION

### Superorder Ostariophysii *sensu* Fink and Fink, 1981

#### Order Siluriformes *sensu* Grande, 1987

#### Suborder Siluroidei *sensu* Grande 1987

#### Siluroidei indet.

#### Text-figs. 2 and 3a

**Material:** fragment of one pectoral catfish spine (about 52.0 mm standard length), without the articular region (housed at Paleontological Collection of the University of Concepción, Chile: CPUC Long (Mq)/3; text-figs. 2, 3a). The spine is not completely free from the tuffaceous sediment, in which the base of the spine is imprinted. Collector: R. Wall.

**Locality:** confluence of Biobío and Mitrauquén Rivers

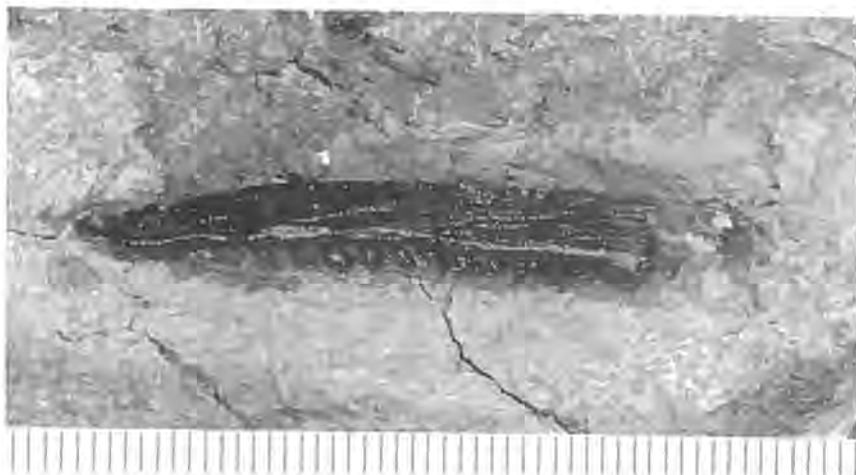
(38°30'S; 71°12'W), near 10 km SE from Lonquimay, Chile (Text-fig. 1).

**Age and stratigraphy:** Miocene, Cura-Mallín Formation, Río Pedregoso Member (Text-fig. 1).

**Description:** the fossil is a straight shaft of a pectoral spine, tapering to a distal point, dorsoventrally compressed (Text-figs. 2, 3a). The articular spine base is broken, although part of its outline is imprinted in

the sediment. Both dorsal and ventral surfaces have deep longitudinal striae and one surface has a strongly marked groove running along the spine, near its anterior margin. The anterior margin is very

weakly indented in its middle region. The posterior margin has fifteen well developed serrae, which are placed in a posterior groove. The tips of the four basal serrae are directed outwards.



Text-FIG. 2. Siluroidei indet., fossil pectoral spine (CPUC, Lonq (Mq)/3).

## DISCUSSION

Siluriforms are world-wide in distribution, present on all continents except Antarctica (Grande, 1987). Only three families -Diplomystidae, Nematogenyidae, and Trichomycteridae- are represented by a few genera in southernmost South America.

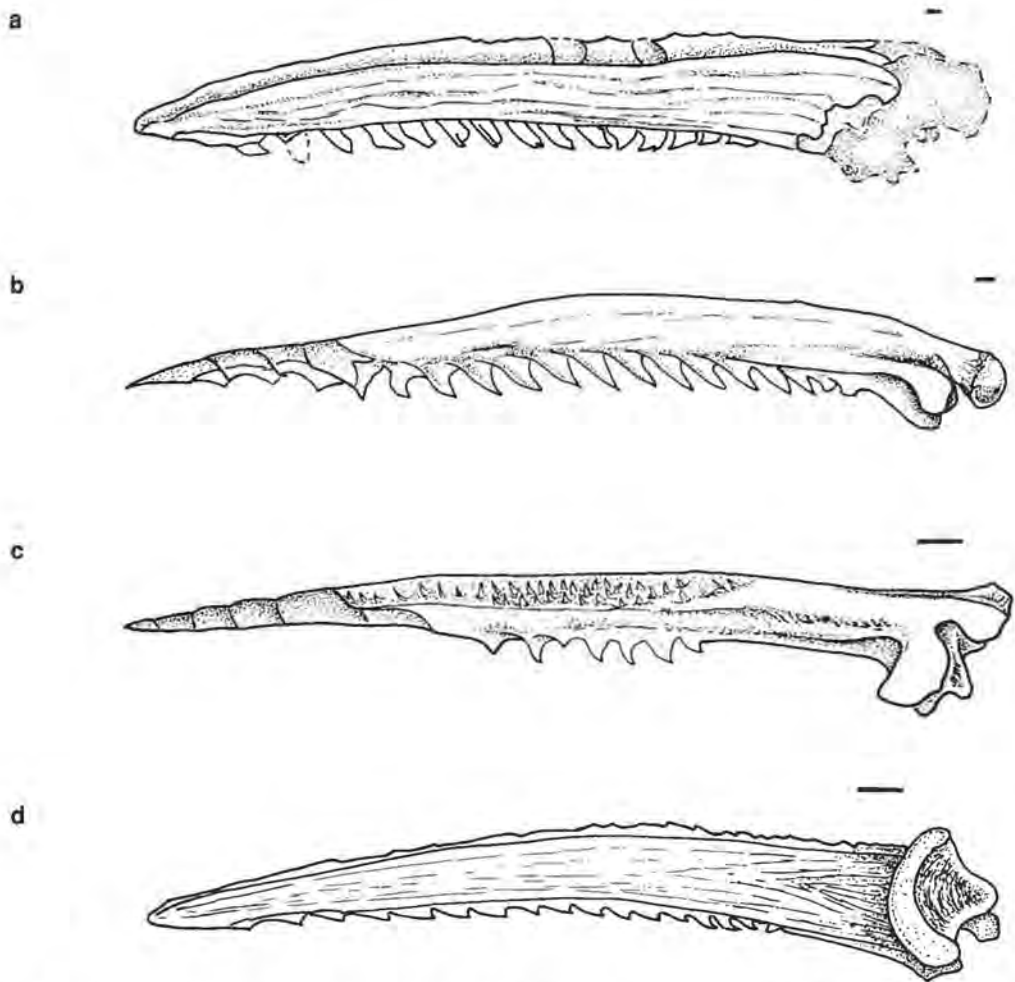
Among the extant catfish species in Chile, only diplomystids have well developed pectoral spines (Arratia, 1987). Spines are absent in trichomycterids and *Nematogenys* has a reduced ossified pectoral spine with few serrae and small odontodes (Text-fig. 3). The deep groove parallel to the anterior margin and the weak indentations of that margin, differentiate the fossil spine from that of diplomystids (Text-figs. 3a, b). Also, the longitudinal striae on the dorsal and ventral surfaces of the fossil spine are very well marked, whereas they are, comparatively, poorly developed, yet in large diplomystids.

Since the fossil spine has generalized features, accurate identification even at family level, may not be possible. However, the groove parallel to the anterior margin, the development of the superficial

longitudinal striae, and the posterior groove of the fossil spine resemble a pimelodid spine (Text-figs. 3a, d).

Rubilar (1994) described several characiform teeth in coeval deposits of the Lonquimay area. He indicated affinities of those teeth with those of Brazilian species. Nonetheless, the presence of generalized features in the spine does not allow determination of relationships. The similarities of the spine with pimelodids do not indicate that the new fossil record undoubtedly belongs to the neotropical family Pimelodidae, because the characters are plesiomorphic. Several families share those generalized features, although none of them lives in the western slope of the Andes today, and some of them, such as Bagridae, had never been found in South America.

The fossil spine is significant, however, in documenting the former presence of a more diverse catfish assemblage in Chile, west of the modern Andean drainage divide.



Text-FIG. 3. Pectoral spines. **a**- Siluroidei indet., CPUC, Long (Mq)/3. **b**- *Diplomystes mesembrinus*, 200 mm SL, right spine, ventral view. **c**- *Nematogenys inermis*, 163 mm SL, right spine, ventral view. **d**- *Pimelodus maculatus*, 120 mm SL, left spine, dorsal view. Solid bars are 1 mm long.

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