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A new Early Miocene genus of the family Sciaenidae (Teleostei, Perciformes) from the eastern Paratethys

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Abstract

A new genus of sciaenid fish *Caucasisciaena* is erected to accommodate the Early Miocene eastern Paratethys species *Perca ignota* Smirnov, 1936, which, subsequently, was variously attributed to the modern genera, either *Larimus* or *Otolithoides*. The materials examined include 32 specimens from four Caucasian and Crimean localities of Sakaraulian age (Lower Burdigalian). The new genus is based on a unique combination of features, including: parasphenoid with a dorsal rounded bony flange; basisphenoid present; premaxilla with short ascending process forming obtuse angle with alveolar process and ascending/alveolar process ratio about 0.17; anterior premaxillary teeth enlarged; posttemporal with few robust spines along its posterior margin; presence of 25 vertebrae; presence of three tiny supraneurals; dorsal fin with 11 spines plus 22–24 soft rays; anal fin with two spines and 7–8 soft rays; second anal-fin spine long and massive; pectoral fin elongate; scales ctenoid on body and cycloid on head (except for one or two rows of ctenoid scales on the cheek). Paleoecological considerations suggest that *Caucasisciaena* probably was a predatory fish that inhabited the coastal waters of the eastern sector of the Paratethyan basin. ***To cite this article: A.F. Bannikov et al., C. R. Palevol 8 (2009).***

Résumé

Un nouveau genre de la famille des Sciaenidae (Téléostéens, Perciformes) du début du Miocène de la Parathéthys orientale. Un nouveau genre de poisson sciaenidé *Caucasisciaena* apparaît pour prendre la place de l'espèce Miocène précoce de la Parathéthys orientale *Perca ignota* (Smirnov 1936), qui a été, par la suite, attribuée tour à tour aux genres modernes *Larimus* ou *Otolithoides*. Le matériel examiné comporte 32 spécimens en provenance de localités du Caucase ou d'Ukraine, d'âge Sakaraulien (Burdigalien inférieur). Le nouveau genre est fondé sur une unique combinaison de carctéristiques incluant : parasphénoïde avec un bourrelet osseux arrondi dorsal ; basisphénoïde présent ; prémaxillaire avec un court processus ascendant formant un angle obtus avec le processus alvéolaire et un rapport processus ascendant/processus alvéolaire d'environ 0,17 ; dents du prémaxillaire antérieur élargies ; post-temporal avec quelques épines robustes le long de la marge postérieure ; présence de 25 vertèbres ; présence de trois minuscules supraneuraux ; nageoire dorsale avec 11 épines et 22–24 rayons mous ; nageoire anale avec 2 épines et 7–8 rayons mous ; seconde épine de la nageoire anale longue et massive ; nageoire pectorale allongée ; écailles cténoïdes sur le corps et cycloïdes sur la tête (excepté une ou deux rangées d'écailles cténoïdes sur la joue). Des considérations paléoécologiques suggèrent que *Caucasisciaena*

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était vraisemblablement un poisson prédateur qui habitait les eaux côtières du secteur oriental du bassin de la Parathéthys. ***Pour citer cet article : A.F. Bannikov et al., C. R. Palevol 8 (2009).***

Keywords: Teleostei; Sciaenidae; *Caucasisciaena* gen. nov.; Miocene; Sakaraulian; Caucasus; Crimea; eastern Paratethys

Mots clés : Téléostéens ; Sciaenidae ; *Caucasisciaena* gen. nov. ; Miocène ; Sakaraulien ; Caucase ; Crimée ; Paratéthys orientale

1. Introduction

Fishes of the family Sciaenidae are widespread in tropical and subtropical coastal and estuarine waters throughout the world. A number of species of this family also inhabit rivers, in south-eastern Asia, India, and North and South America. The family Sciaenidae is one of the largest within the perciforms, with approximately 270 species in about 70 genera [19]. Many of these fishes are of commercial or sport-fishery relevance. The sciaenids are commonly called croakers or drums because of their ability to produce a variety of sounds by means of muscles attached to the swimbladder. The history of the sciaenids is relatively well documented in the stratigraphic record, primarily by their large and thick otoliths, whereas articulated skeletal remains are rare. Sciaenid otoliths are rather abundant in Oligocene and Neogene terrigenous deposits of Europe and America [22,27]. The oldest representative of the family was reported by Nolf [21] from the Ypresian Bashi Marls, Mississippi.

In the Early Miocene, sciaenids appeared in the epicontinental basin of eastern Paratethys. Smirnov [28] first described croakers from the Chernaya Rechka locality in North Ossetia (northern Caucasus) as a new species of perch, *Perca ignota*. He regarded the Upper Maikopian deposits as the Oligocene in age. Danilchenko [8] corrected both the systematic position of Smirnov's species and the age of the rocks of the Chernaya Rechka locality. He assigned *Perca ignota* Smirnov to the sciaenid genus *Larimus*, and dated the Upper Maikopian deposits by the Lower Miocene: "Zuramakent Horizon" [8,9] or "Voskovaya Gora Horizon" [10]. Up to date, *Larimus ignotus* is recorded from at least four localities of the eastern Paratethys, in Azerbaijan (Apsheron peninsula), Russia (Apsheronsk district, North Ossetia) and Ukraine (Kerch peninsula) (Fig. 1). Certain differences in the composition of the Late Maikopian fish assemblages of different localities in the Caucasus and Crimea led to suppositions about their different age. These localities have been tentatively assigned to the Upper Caucasian [2] (or Aquitanian [23,29]) or the Sakaraulian [2] (or Burdigalian [23,29]). However, it seems more correct to suppose the same (Sakaraulian) age for these localities and the compositional structure of the fish assemblages

Fig. 1. Sketch map of southern portion of European Russia and adjacent countries (modified from [4]). The fish skeletons indicate the location of the fossiliferous localities of *Caucasisciaena ignota* (Smirnov).
Fig. 1. Carte schématique de la portion méridionale de la Russie d'Europe et régions adjacentes (modifié selon [4]). Les squelettes de poisson indiquent la localisation des sites fossilifères de *Caucasisciaena ignota.* (Smirnov).

of Late Maikopian localities are probably related to different depositional environments. The Sakaraulian of the eastern Paratethys is correlated with the Lower Burdigalian [20].

Recently, Bannikov [3] noted that the Early Miocene sciaenid species lacks the autapomorphies of the amphi-American genus *Larimus* Cuvier [25], and referred it as *Otolithoides* (?) *ignotus*. Indeed, the fossil Paratethyan species strongly resembles the Recent species of the Indo-Pacific genus *Otolithoides* by identical jaw dentition, a slender and cylindrical body, a relatively small orbit, and similar meristic counts. However, a detailed morphological revision of this Early Miocene croaker clearly shows that it does not fit the diagnosis of *Otolithoides* in many characters; therefore a new genus *Caucasisciaena* is erected here to accommodate it.

2. Methods

The specimens were examined using a Leica MS5 stereomicroscope equipped with a camera lucida