

NEW SPECIES OF *XENOPHORA* AND *ANCHURA*
(MOLLUSCA: GASTROPODA) FROM THE CRETACEOUS OF
BAJA CALIFORNIA NORTE, MEXICO

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ABSTRACT—The new species *Xenophora willisi* (Xenophoridae) and *Anchura gibbera* (Aporrhaidae) are erected for gastropods from the Upper Cretaceous Rosario Formation at Arroyo Santa Catarina, Baja California Norte, Mexico.

PREFACE

WHEN Melvin L. Webster died, he left a manuscript concerning the Upper Cretaceous gastropod fauna at Arroyo Santa Catarina. At the request of his widow, I extracted the accompanying paper from his manuscript, making minor additions for unification. Mrs. LouElla Saul kindly read the paper and offered helpful suggestions.

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INTRODUCTION

Arroyo Santa Catarina is situated on the west coast of Baja California Norte midway between Punta Baja and Punta Blanca at approximately 29°31' north latitude and 115°15' west longitude (Figure 1). For several miles in both directions, the coast consists of mesas formed in Cretaceous and Paleocene sediments. The mesas are dissected by deep arroyos, many of which widen into broad valleys near the coast. Most of the arroyos are easily accessible only by sea, but Arroyo Santa Catarina once was used by trucks carrying onyx from inland quarries to the coast for shipment by boat. This road is sometimes passable between Mexico Highway 1D and the coastal terminus, variously called Playa Santa Catarina, Catarina Landing, or Ekaterina Landing. The arroyo mouth is about

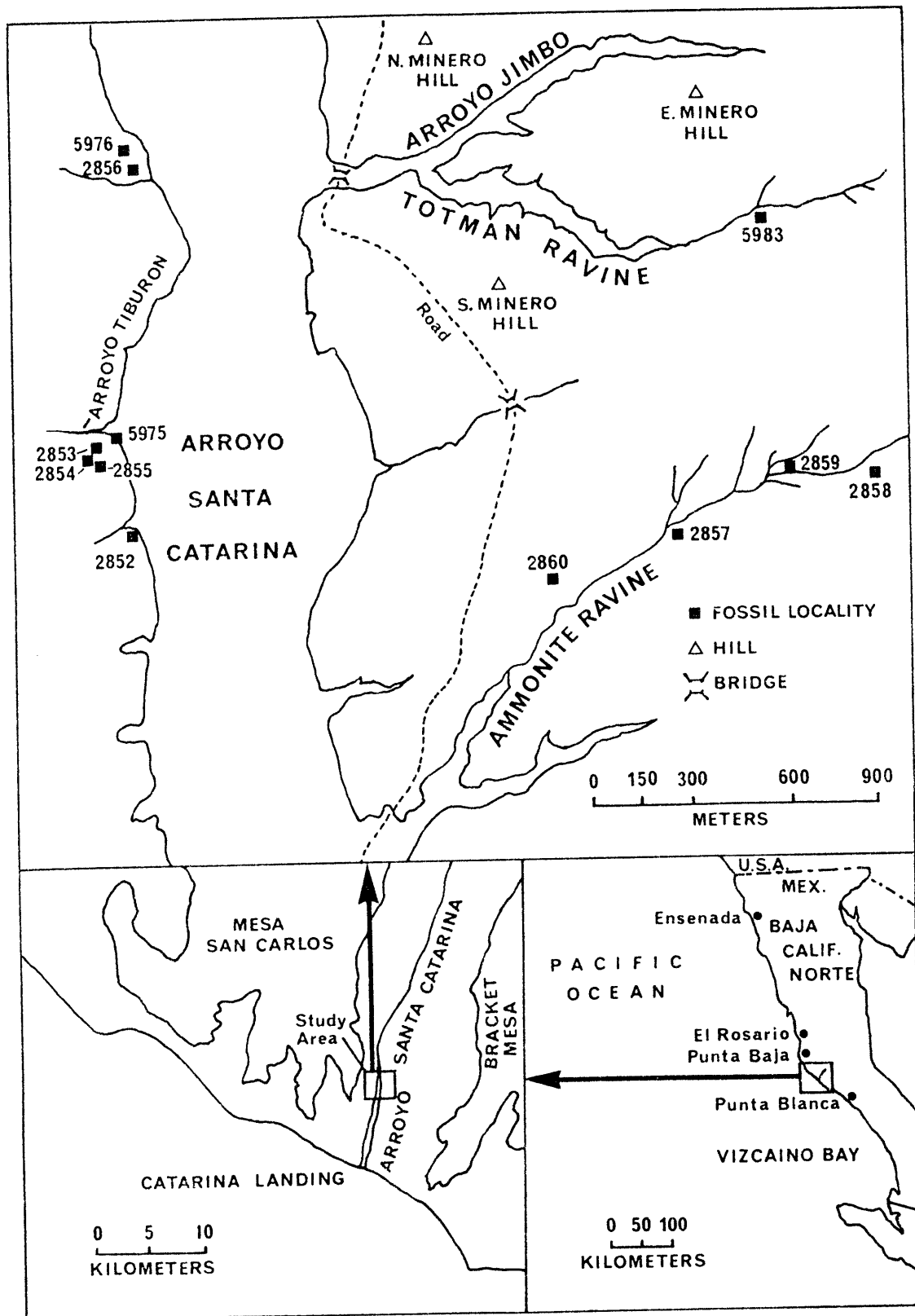
1.5 km in width and contains two usually dry stream beds that seasonally flood.

The study area (Figure 1) is about 6.4 km inland from the sea and is bounded on the west by Mesa San Carlos, which rises steeply to an elevation of about 360 m. This mesa is capped by Cenozoic basalt flows that protect the softer underlying beds from erosion. On the east side of the study area, rolling terrain slopes up to Bracket Mesa, which here has an elevation of about 330 m. The classic fossil site "Ammonite Ravine" is a series of wide gullies entering Arroyo Santa Catarina from the east. Collections by earlier workers have been generally restricted to Ammonite Ravine and the bluffs at Catarina Landing.

A thickness of 960 m of siltstone, shale, sandstone, and conglomerate overlain by Cenozoic basalt comprises the section at Arroyo Santa Catarina. The base of the Cretaceous Rosario Formation is not exposed. Sedimentary rocks of Paleocene age, capped by the younger basalt flows, unconformably overlie the Rosario Formation at San Carlos and Bracket Mesas.

Although the Rosario Formation has been studied for many years (Gastil, Phillips and Allison, 1975, p. 43-48), its important megainvertebrate fauna still is poorly known. This paper proposes two new species for gastropods collected by the writer from the formation at Arroyo Santa Catarina as a contribution towards fuller understanding of the fauna.

FIGURE 1—Index maps of Baja California Norte and Arroyo Santa Catarina area with fossil localities of this study.



SYSTEMATIC PALEONTOLOGY

Class GASTROPODA Cuvier, 1797
 Order MESOGASTROPODA Thiele, 1925
 Family XENOPHORIDAE Philippi, 1853
 Genus XENOPHORA Fischer
 von Waldheim, 1807
 XENOPHORA WILLISI n. sp.
 Figures 2A-F, 3A

Holotype.—Los Angeles County Museum of Natural History, Invertebrate Paleontology Section (LACMIP) holotype 6453. Height (incomplete) 46 mm; width 82 mm. Type locality LACMIP locality 2852 (see Locality Register for description).

Figured paratypes.—LACMIP paratypes 6454 (LACMIP loc. 2852), 6455 (LACMIP loc. 2853), 6456–6457 (LACMIP loc. 2855).

Unfigured paratypes.—LACMIP paratypes 6458–6460 (LACMIP loc. 2852), 6461–6463 (LACMIP loc. 2855), 6464 (LACMIP loc. 2856). University of California Museum of Paleontology (UCMP) paratype 10087 (UCMP loc. 6790 = LACMIP loc. 2852). Instituto de Geologia, Universidad Nacional Autonoma de Mexico (IG-UNAM) paratypes IGM 3279–IGM 3282 (LACMIP loc. 2852), IGM 3283 (LACMIP loc. 2855).

Occurrence and age.—*Xenophora willisi* presently is known only from the west side of the study area at LACMIP locs. 2852–2856 and 5975–5976. (?)late Campanian to (?)early Maestrichtian.

Etymology.—This species is named for Willis Parkinson Popenoe, in recognition of his contributions to the study of the Cretaceous of the west coast of North America.

Species diagnosis.—Large xenophorids with very low whorls, a concave base, closed umbilicus, ovate aperture, and thickened labrum.

Description.—Shell large for the genus, broadly conical with five to seven low, flat-sided whorls; apical angle about 85° to 90°; anterior margin of whorl keeled, overlapping the suture, undulate on lower whorls; average whorl height/diameter ratio of 0.26; shell surface lamellose, with low axial folds curved

convexly to the aperture; no fine surficial ornamentation preserved; base broad, concave, umbilicus completely closed; aperture holostomatous, ovate, about four times wider than high, inclined at about 115° from shell axis; outer lip thickened, bordered by pronounced concentric growth lines; inner lip thinly caloused.

Remarks.—*Xenophora willisi* is the most common large gastropod in the study area, but was collected only from beds on the west side of Arroyo Santa Catarina. Of the more than fifty specimens collected, most are fragments of natural casts consisting of one to three whorls. The shell surface is poorly preserved and sculptural details have been lost. Low, somewhat distant, curved axial folds, resembling those in the Recent *X. pallidula* (Reeve, 1842) can be observed on the better specimens. Many shells are bored by unknown organisms and a few are encrusted with large serpulid (?) worm tubes. A small specimen of *Gyrodes* was the only possible accreted object noted on any of the shells (LACMIP paratype 6462), but the embayed whorl margins of the body whorl and deep cicatrices in the early whorls are suggestive of typical xenophorid agglutinating habits.

This species is particularly noteworthy for its large size, with a diameter as great as 110 mm, exceeding any other known Cretaceous xenophorid. The genus is recognized here for the first time in the Cretaceous of the west coast of North America. Tertiary species are known from California and Mexico.

The only other fossil *Xenophora* reported from Baja California was cited by Beal (1948, p. 50) from an Eocene or Paleocene Tepetate Formation locality north of San Ignacio Lagoon and identified as *X. zitteli* Weaver, 1905. This species was erected for specimens from the Paleocene Martinez Formation of Contra Costa County, California and the assignment of the unfigured and undescribed Tepetate specimen to it is questionable. *Xenophora willisi* has a much larger shell with a more concave base, a more ovate aperture, and fewer objects accreted to it than *X. zitteli*.

FIGURE 2—*Xenophora willisi* n. sp. A, F, holotype (LACMIP 6453). A, apical view, ×1. F, lateral view, ×1. B, C, paratype (LACMIP 6454). B, apical view, ×3. C, lateral view, ×3. D, paratype (LACMIP 6455), apical view, ×1. E, paratype (LACMIP 6457), basal view, ×1.