New species and records of phreatic snails (Caenogastropoda: Cochliopidae) from the Holocene of Coahuila, Mexico

ALEXANDER CZAJA¹, JOSÉ LUIS ESTRADA-RODRÍGUEZ¹, ULISES ROMERO-MÉNDEZ¹, VERÓNICA ÁVILA-RODRÍGUEZ¹, IRIS GABRIELA MEZA-SÁNCHEZ¹ & ALAN P. COVICH ²

1 Faculty of Biological Sciences, Juárez University of the State of Durango, 35010 Gómez Palacio, Durango, Mexico. 2 Institute of Ecology, Odum School of Ecology, University of Georgia, Athens, GA 30602-2202, USA. • Corresponding author: J.L. Estrada-Rodríguez (drjlestrada@ujed.mx).

Abstract. This paper describes 2 new species of phreatic gastropods from the Holocene deposits of Parras and Viesca, Coahuila, northern Mexico. Both new fossil species belong to genera that today are known living only from the Cuatro Ciénegas basin, Coahuila, Mexico, one of the hotspots of extant freshwater gastropod diversity on the North American continent, frequently called the “Mexican Galapagos”. Paludiscala thompsoni n. sp. was found in spring-deposited sediments at the outlet of caves near Viesca, Coahuila, and is the first record of fossil shells of this genus. Our second new species, Coahuilix parrasense n. sp., was collected in sediments of a dry channel near the town El Molino, Parras de la Fuente, Coahuila, and its shell morphology has affinities with that of extant endemic cave snails from Cuatro Ciénegas. Additionally, we present a new record from Parras de la Fuente of Phreatoceras taylori (Hershler & Longley, 1987), previously known only from 2 sites in south-central Texas and Cuatro Ciénegas.

Key words. Subterranean snails, systematics, Paludiscala, Coahuilix, Phreatoceras, North America.

DOI. https://doi.org/10.1127/arch.moll/146/227-232

Introduction

Little is known regarding extant freshwater subterranean snails of Mexico and until now there has been only one fossil record from this region (Czaja et al. 2014b). Of the 15 genera of North American extant phreatic snails, 5 occur in Mexico: Paludiscala Taylor, 1966, Coahuilix Taylor, 1966, and Phreatoceras Hershler & Longley, 1987 in Cuatro Ciénegas Valley, Coahuila and Emmericella Pilsbry, 1909 and Pterides Pilsbry, 1909 in San Luis Potosí, northern Mexico. From the Holocene deposits of 2 sites in Coahuila we here report shells belonging to 3 of these genera: Paludiscala, Coahuilix, and Phreatoceras (Fig. 1). The species of Paludiscala and Coahuilix are new to science: the shells of Phreatoceras taylori (Hershler & Longley, 1987) are the first fossil record of this enigmatic extant genus.

The present investigations form part of a broader study of fossil and extant land and freshwater mollusks from northern Mexico, which began in 2013 and includes research on systematics, ecology, and evolution (Czaja et al. 2014a, 2014b, Czaja & Estrada-Rodríguez 2015, Czaja et al. 2015, 2017).

Material and Methods

The new species of fossil subterranean snails were collected in 2 karst regions of southern Coahuila, Mexico. Shells of Paludiscala thompsoni n. sp. were found in spring-deposited sediments at the outlet of caves near Viesca, Coahuila (Fig. 2A). The Holocene age of the superficial deposits is confirmed by several reports and photographs which document the desiccation of the Viesca springs during the drought of 1958/59 (Czaja et al. 2015).

Shells of Coahuilix parrasense n. sp. and Phreatoceras taylori were collected from a stream-bank profile exposed on both sides of a dry channel (arroyo) near the town El Molino (Boca de San Francisco), Parras de la Fuente, Coahuila (Fig. 2B). These sediments with several tufa/travertine zones and 6 paleosoils were dated by Butzer et al. (2008) as Holocene deposits with radiometric calibrated 14C ages between 755±65 years BP at the top of the section and 7890±130 years BP at the bottom. Our samples were taken from the same section approximately 100 m away, where the beds were richer in fossils (Fig. 2B). Four samples of 1 kg each were taken using a geological pick. The sediments from both sites