Embryo and larval development of Iranian Near Eastern Brown Frogs, *Rana macrocnemis pseudodalmatina* Eiselt & Schmidtler, 1971 (Amphibia: Ranidae), in Alang Dareh Forest, north-eastern Iran

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Abstract. In 2001 we studied the morphological development of the Near Eastern Brown Frog, *Rana macrocnemis pseudodalmatina*. 327 egg clutches were found at low water depths on the edges of Alang Dareh pond on 14 January 2001. The surface water of the pond was frozen on some days, and we also observed several egg clutches and males of *R. m. pseudodalmatina* which were frozen. The first larvae hatched on 23 January 2001. Cannibalism was observed among these tadpoles. Metamorphosis takes place from early April to late June. The external morphology, variations in ontogeny, and scanning electron microscopy of the oral disc were studied in tadpoles of *Rana macrocnemis pseudodalmatina*. Tadpoles in all stages possess a labial tooth row formula (LTRF) of 3(2)/4(1). Small denticles were present on the distal portion of each tooth in the oral disc. There were also some abnormal denticles on some teeth. In addition, 8 embryo stages, 10 larval stages and the oral disc were drawn. Morphological larval data were provided to help diagnose this closely related complex of Brown Frogs (*R. macrocnemis*).

Key words. Morphology, embryo, larvae, *R. m. pseudodalmatina*, Iran, Middle East.

Introduction

Among Western Palaearctic amphibians, the genus *Rana* is the most speciose. Most species are western members of the Palaearctic subgenus *Rana*, the so-called brown frogs (VEITH et al. 2003a). In contrast to the semi-aquatic water frogs, brown frogs are largely terrestrial, with an aquatic larval stage (VEITH et al. 2003a). Brown frogs of the complex *Rana macrocnemis* demonstrate various degrees of differentiation between the two widespread forms, *macrocnemis* s.str. and *camerani*, in different part of Anatolia, the Caucasus Isthmus and northern Iran (TARKHNISHVILI et al. 2001). These species are very common in the northern and eastern Caucasus, western and northern Anatolia in Turkey as well as northern Iran (UĞURTAŞ et al. 2004). Within *R. macrocnemis,* three subspecies are distinguished on morphological grounds: *R. m. macrocnemis* Boulenger, 1885, *R. m. pseudodalmatina* Eiselt & Schmidtler, 1971, and *R. m. tavasensis* Baran & Atatür, 1986. *R. m. tavasensis* is known only from a single brook at the Akdağ Mountain in southern Turkey at an elevation of 1,650 m a.s.l. (VEITH et al. 2003b) and the distribution of *R. m. pseudodalmatina* is confined to the Hyrcanian corridor (= Hyrcania) of Northern Iran (BALOUTCH & KAMI 1995). This corridor is a "unique relict biogeographic area", which is "well defined as the south-western and southern shores of Caspian sea…" and is "one of the most clearly defined and delineated

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