

Overwintered hatchling of
Emys orbicularis (LINNAEUS, 1758)
observed in Turkey

The European Pond Turtle, *Emys orbicularis* (LINNAEUS, 1758), is distributed over a wide range spanning from Morocco and the Iberian Peninsula over a large part of Europe to Anatolia, Iran, and Lake Aral (FRITZ 2001, 2003). The species occurs in suitable habitats in almost all regions of Turkey (BARAN & ATATÜR 1998). While its reproductive biology has been well-studied in many European regions (see reviews in FRITZ 2001, 2003), little information is available for Anatolian populations (AYAZ 2003). In Europe, mating takes place as of the end of March until June depending on the latitude. Generally, female Pond Turtles lay eggs between late May and mid-July in Europe. After approximately 90 to 117 days of incubation, young hatch from August to late October, depending on the latitude as well as seasonal conditions (LEBBORONI & CHELAZZI 1991; ANDREAS & PAUL 1998; SCHNEEWEISS et al. 1998; SERVAN 1998; RÖSSLER 1999; SCHNEEWEISS & JABLONSKY 2000). Some late neonates may overwinter in their nest chambers or on land and not emerge before the following spring (BANNIKOV 1951; ZEMANEK & MITRUS 1997; MITRUS & ZEMANEK 1998, 2003; SERVAN 1998; KOTENKO 2000, SCHNEEWEISS & JABLONSKY 2000; NOVOTNÝ et al. 2004; THIENPONT et al. 2004). Whether overwintering occurs also in embryonic stages is still under debate. Here we present the first Turkish record of a hatchling of *E. orbicularis* found active in the wild as early as in April.

Our field studies in the Lake Uluabat region (Province of Bursa, Marmara Region) are part of a project on Turkey's hard-shelled fresh water turtles *E. orbicularis*, *Mauremys caspica* (GMELIN, 1774), and *M. rivulata* (VALENCIENNES, 1833). On this occasion we captured an apparently neonate *E. orbicularis* at an altitude of 9 m a.s.l. in a creek connected to Lake Uluabat (=Apolyont Gölü) [40°12' N, 28°39' E] on April 07, 2006 (Fig. 1). The flow rate of the water was slow and the average depth was 15 cm in this stream which ran at a distance of 700

meters from the lake. The bottom of the stream was covered with silt and contaminated with household waste. *Salix alba* (white willow), *Populus alba* (white poplar), *Rubus canescens* (blackberry), *Phragmites australis* (common reed), and *Tamarix smyrnensis* (tamarisk) constituted the dominant vegetation. Air temperature was 22°C during the field study.

Description of hatchling: Straight-line maximum carapace length 22.3 mm; median keel on the carapace distinct; edges of marginal plates light yellow; maximum carapace height 10.8 mm. Midline plastron length 18.3 mm; plastron plates displaying a shade of yellow coloration on the edges. Head conspicuously big, its width (measurement between tympanums) 9.0 mm; tail length 22.0 mm from cloacal vent to tail tip, almost as long as the carapace itself. Ground color of soft parts blackish with light yellow spots. No abnormalities were encountered regarding the keratin plates on carapace and plastron. Any carapacial horny plate was completely covered by granules, no growth marks were present. The latter features along with the small body size and the relatively big head are clear indicators of a very early posthatching developmental stage.

One adult male *E. orbicularis* and two adult males of *M. rivulata* were captured in the same place; in addition, 18 *M. rivulata* were observed, indicating that *M. rivulata* is by far the more common turtle species here. Moreover, *Natrix natrix* (LINNAEUS, 1758) and *Rana ridibunda* PALLAS, 1771 were recorded.

Information on the reproductive biology of Turkish populations of *E. orbicularis* is solely based on observations provided by AYAZ (2003). This author observed the mating behavior of *E. orbicularis* in the Aegean Region (Menemen, Province of Izmir) at the beginning of May and discovered eggs in a nest built at a distance of about 16 meters from the water at an altitude of 963 m a.s.l. in Turkey's Lake District (north of the Taurus Mountains) on July 2, 2001. He reported that these turtles had laid their eggs in captivity between early June through the first week of July, moreover he presented measurements of hatchlings from early July.

Considering these findings, it can be concluded that hatching in Turkish populations starts early in July and continues through the end of summer.

Studies on the reproductive cycle of *E. orbicularis* report that more than one egg deposition can occur per female and year in many European populations and that young from late clutches which hatch at the end of summer spend their first winter in the nest (RÖSSLER 2000a, 2000b; see also the reviews in FRITZ 2001, 2003). The neonate we captured probably hatched from an egg deposited towards the end of the reproductive period and exhibited overwintering behavior due to unfavorable climatic conditions. The climate of the Marmara Region (Table 1) is partly continental, partly Mediterranean (TURKISH ECOLOGY FOUNDATION 1993). In areas where the dominant climate is continental, environmental conditions can change significantly in a very short period of time. The Uludağ Mountain (2543 m a.s.l.), located in the east of Lake Ulubat (about 15 km away), is likely to have an important impact on changing environmental conditions.

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Figure 1: Dorsal (left) and ventral (right) view of a neonate of *Emys orbicularis* (LINNAEUS, 1758) from Lake Ulubat (Province of Bursa, Turkey) observed active in the wild as early as on April 7.

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Table 1: Average monthly temperatures (AMT, °C, January through December) from Mustafakemalpaşa (Province of Bursa), representative of the area under study (mean annual air temperature of Mustafakemalpaşa = 14.6°C) (Data source: Mustafakemalpaşa Meteorology Station).

Month	J	F	M	A	M	J	J	A	S	O	N	D
AMT (°C)	6.4	6.5	9.0	13.8	17.3	20.6	24.8	25.0	20.5	13.8	9.8	8.0

Emys orbicularis w województwie radomskim.-
Chróńmy Przyrodę Ojczysta, Kraków; 53: 67-83.

KEY WORDS: Reptilia: Testudines: *Emys orbicularis*, reproduction, overwintering of neonate, hatching, behavior, ecology, biology, Turkey

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