Observations of predaceous diving beetles (Insecta, Coleoptera, Dytiscidae) attacking Terecay, *Podocnemis unifilis*, (Reptilia, Testudines, Pelomedusidae) in Ecuador

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ABSTRACT — Cases of adults of *Megadytes* (*Megadytes*) sp. and of *M*. (*Trifurcitus*) *robustus* (Insecta, Coleoptera, Dytiscidae) attacking young of *Podocnemis unifilis* in headstarting pools in the Ecuadorian Amazon are recorded. The possible causes of this behaviour are briefly discussed. *Megadytes* (*Trifurcitus*) *robustus* is new to Ecuador.

THE Dytiscidae (Insecta, Coleoptera) is a fairly large family of beetles distributed over most of the world. Both adults and larvae are carnivorous, feeding on small aquatic invertebrates (e.g. molluscs, crustaceans, insects), while the larger species feed also on amphibians (chiefly tadpoles) and small fish. The adults are also scavengers, feeding on dead or injured animals (cf. Larson *et al*., 2000). Some large Dytiscidae species have a fundamental role in the demographic control of amphibian populations (e.g. Ideker, 1979; Formanowicz, 1986; Holomuzki, 1986). Moreover, one case of predation upon a reptile has been reported: a neonate of *Thamnophis elegans* (Reptilia, Serpentes, Colubridae) killed by a larva of *Dytiscus* sp. (Drummond & Wolfe, 1981).

Two of the authors observed in the Ecuadorian Amazon many adults of the tribe Cybistrini (Dytiscinae) attacking young of *Podocnemis unifilis* (Reptilia, Testudines, Pelomedusidae). Such behaviour has never been recorded, and is the subject of this note.

The observations were made in January 1999 at the 'Reserva de produccion faunistica de Cuyabeno' (Sucumbios province) in four artificial pools in three villages (one in Playas, two in Zabalo and one in Zancudo) along the Aguarico River banks. The young turtles were reared for their first year of life in these pools, and were later released along the rivers (headstarting) with the aim of reducing the high natural mortality of neonate turtles (cf. Caputo *et al*., 2005; Townsend *et al*., 2005). The pools were specially dug

prismatic hollows (from 12 to 20 m^2) lined with PVC and filled with motor pumped water from the Aguarico River. Three pools (the two at Zabalo and the one at Zancudo) were badly managed (scarce food, dirty water, competition for the basking site, excessive vegetation and mud, overcrowding, presence of young caimans), so in these pools the accretion of *P. unifilis* after one year was lower than that observed in the well-managed one (Playas). Moreover many of the turtles in the badly managed pools showed health problems (dwarf disease, posterior legs paralysed, etc.) (Bertolani & Caputo, unpubl. data).

The three badly managed pools were infested by large adults of Dytiscidae. Four specimens were collected (Zacundo, UTM 0452750 9937724, 6th January 1999), belonging to two species: *Megadytes* (*Trifurcitus*) *robustus* (Aubé, 1838) and *Megadytes* (*Megadytes*) sp. The first species was represented by two males and its identification was confirmed by examinaton of the genitalia (cf. Tremouilles & Bachmañn, 1980; Tremouilles, 1989). Given that *Megadytes* (*Megadytes*) sp. was represented by two females, it was not possible to identify it with certainty. *Megadytes* (*Trifurcitus*) *robustus* is new to Ecuador, having been previously recorded in Argentina, Brazil, Paraguay and Uruguay (cf. Tremouilles & Bachmañn, 1980; Tremouilles, 1989).

The Cuyabeno natives named these beetles 'bichos que chupan la tarta' (beetles that suck the turtle), considering them to be hematophage animals. For this reason they were eliminated by the people responsible for the pools, albeit somewhat haphazardly.

Dytiscidae, including those collected, were observed attached to turtles' inner thighs, close to the conjunction of the carapace and plastron. Their grip was so tight that even removing the turtle from the water, did not loosen it. All the turtles thus observed (from 4.4 to 4.7 cm in plastron length) were moribund (probably due to poor environmental conditions) and died shortly afterwards, despite the removal of the insect. Dytiscidae were never observed eating dead turtles, though this may be due to the fact that corpses were removed from the pools as soon as they were seen. Both dytiscid species belong to the tribe Cybistrini, which includes some of the largest members of the family. No literature data are available on the feeding behaviour of the collected species, but it is known that other congeneric species (Tucker, 1940; Motta & Uieda, 2004) and those of the close genus *Cybister* Curtis, 1827 are predators of small vertebrates (e.g. Goidanich, 1943; Ideker, 1979; Johnson *et al*., 2003) or scavengers (Johnson & Jakinovich, 1970). Our observations suggest that also *Megadytes* (*Trifurcitus*) *robustus* and *Megadytes* (*Megadytes*) sp. are predaceous of small vertebrates. The observed attacks on turtles are very probably attributable to the abundance of prey and to their bad health; similar situations have been observed also in fish-breeding (cf. Larson *et al*., 1990; Balke *et al.*, 2004).

We suppose that similar behaviour occurs also in nature. This would take place during the dry season when some turtles, due to falling water levels, are confined to isolated muddy, low-oxygen pools (Vogt & Soini, in press). In a such situation availability of food may be reduced, exposing the young turtles to risk of Dytiscidae attack.

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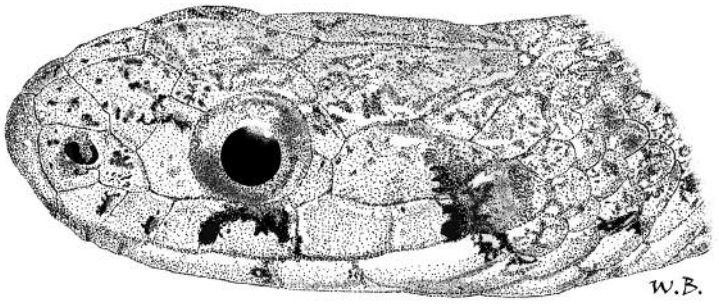

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