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First Report of *Callinectes sapidus* (Decapoda: Portunidae) in the Diet of *Lepidochelys olivacea*

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ABSTRACT. – **We report the crab species *Callinectes sapidus* (Decapoda: Portunidae) as a diet item for adult olive ridleys (*Lepidochelys olivacea*). This is the first-ever report of this species as part of the diet for olive ridley turtles and helps further our understanding of the foraging ecology of this species in coastal marine habitats.**

The olive ridley turtle (*Lepidochelys olivacea*) is widely distributed in the western Atlantic Ocean from Venezuela to Bahía, Brazil (Musick 2002). Principal threats faced by this species include accidental capture in trawling nets, gillnets, and longlines, as well as egg harvesting (Godfrey and Chevalier 2004). Olive ridleys are classified as vulnerable in the IUCN Red List (Abreu-Grobois and Plotkin 2008); however, the species has been classified as endangered in Venezuela since 1996 (Rodríguez and Rojas-Suárez 2008).

Adult olive ridleys usually present different foraging and feeding patterns depending on their foraging region. In the Pacific Ocean they are found generally in pelagic habitats (Bjorndal 1997), and some studies report diving behaviors in which they make long immersions up to 290-m depth (Lutcavage and Lutz 1997; Polovina et al. 2003, 2004). Populations in the western Atlantic aggregate principally in coastal habitats; and apparently also occupy oceanic habits (Marcovaldi 2001; Castilhos et al. 2011). Olive ridleys in these areas have been reported to feed in shallow waters with clay substrate, near highly productive estuarine ecosystems (Pritchard and Trebbau 1984; Reichart 1993). Their feeding strategy has been characterized as opportunistic, with a large variety of diet items such as fish, salps, crustaceans, and small invertebrates (Pritchard and Trebbau 1984; Reichart 1993; Bjorndal 1997). In the Pacific olive ridley turtles are known to consume crab species such as *Pleuroncodes planipes* (Márquez-M. et al. 1976), *Callinectes* sp., and individuals from the family Paguridae (hermit crabs) (Casas-Andreu and Gómez-Aguirre 1980). In addition, there are several studies that list crab species as dietary items for olive ridley turtles based on the presence of unidentified exoskeleton structures (Caldwell et al. 1969; Fritts 1981; Mortimer 1982; Montenegro Silva et al. 1986).

The Gulf of Venezuela (GV) represents an important feeding ground for the 5 turtle species reported in Venezuela: *Chelonia mydas*, *Eretmochelys imbricata*, *Caretta caretta*, *Dermochelys coriacea*, and *Lepidochelys olivacea*. In GV, the abundance of the olive ridley turtles is very low; there are only 4 reports of skeletons that establish their presence in the GV, consisting of subadults (Pritchard and Trebbau 1984; Sideregts et al. 1987; Montilla and Hernández 2005) and adults (Barrios-Garrido et al 2009). There is insufficient information about the feeding ecology of olive ridleys in the western Atlantic Ocean, and less is known about their life cycle in the GV. Therefore, in order to contribute to the knowledge of the feeding habits of this species, we described the diet items found in the stomach and intestinal content of an adult olive ridley found dead in a fishing port in the high Guajira, GV.

Methods. — We conducted the necropsy of an olive ridley turtle (curved carapace length [CCL]: 75.3 cm) incidentally captured in the fishing port of Porshoure, high Guajira, GV (lat 11°42′7.95″N, long 71°31′32.85″W) in June 2009. The turtle was captured with an artisanal gillnet that had been set approximately 6 km offshore at a water depth $>$ 15 m. We executed a longitudinal dissection of the digestive tract, preserving the content in ethanol (70%). The total volume of the sample was determined using the water displacement technique (Medin 1970). The structures were separated and identified to the lowest possible taxon (Rodríguez 1980).

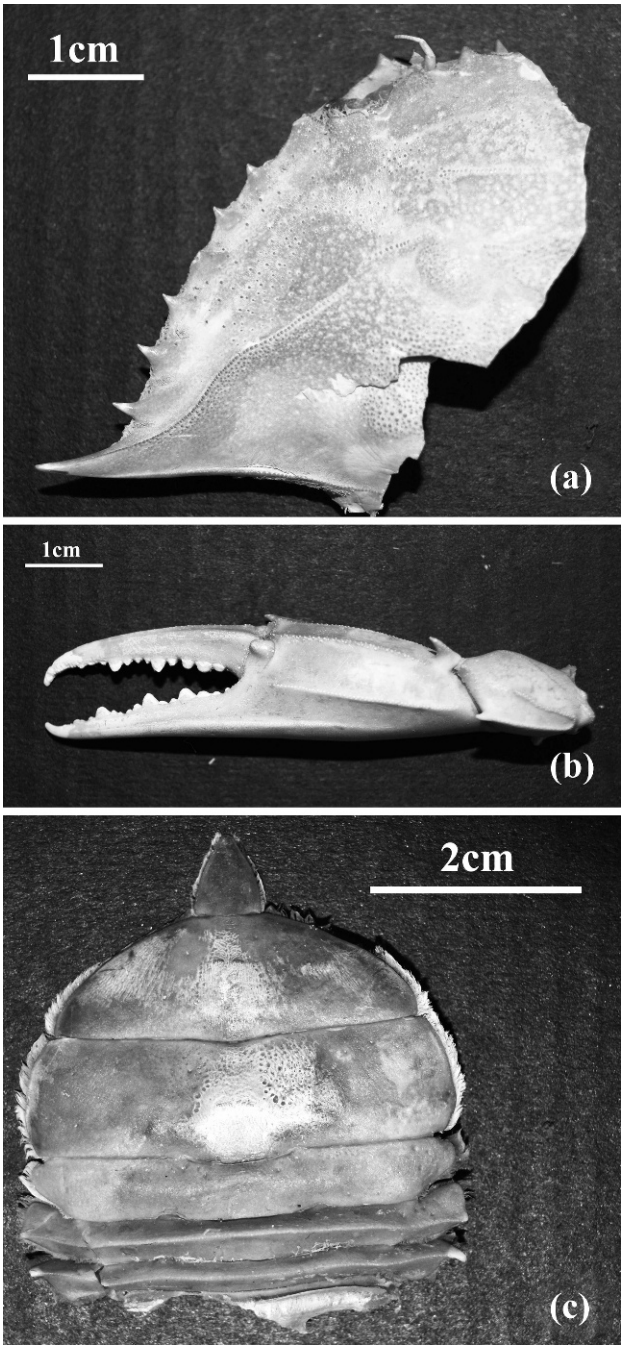

Figure 1. Identifiable pieces of *Callinectes*: (a) carapace, (b) chela, and (c) female abdomen.

The olive ridley and the structures found in the stomach and intestinal tract were deposited in the aquatic fauna collection of the ''Laboratorio de Ecología General de la Universidad del Zulia'' (LEG-LUZ). Likewise, there are reference specimens of the genus *Callinectes* (including *C. sapidus*) in the collection of the ''Laboratorio de Sistemática de Invertebrados Acuáticos de la Universidad del Zulia'' (LASIA-LUZ), codes MBLUZ 1730–1746.

Results and Discussion. — We analyzed the stomach and intestinal content of an olive ridley turtle, identified as a postnesting adult female based on the CCL and presence of a distended oviduct (Wyneken 2001). The total gut content was 1005 ml, from which 57.2% (575 ml) could not be identified due to its degree of degradation and 7.5% (75 ml) was muscle tissue. The remaining 24.4% (245 ml) comprised identifiable exoskeletal pieces that corresponded to crabs of the genus *Callinectes*, based on the consistency, shape, and blue color of the pieces (Fig. 1a–c). Furthermore, the size of the structures and the presence of several female abdomens (Fig. 1c) and eggs suggested that adult female *Callinectes* sp. individuals comprised a major proportion of the sample.

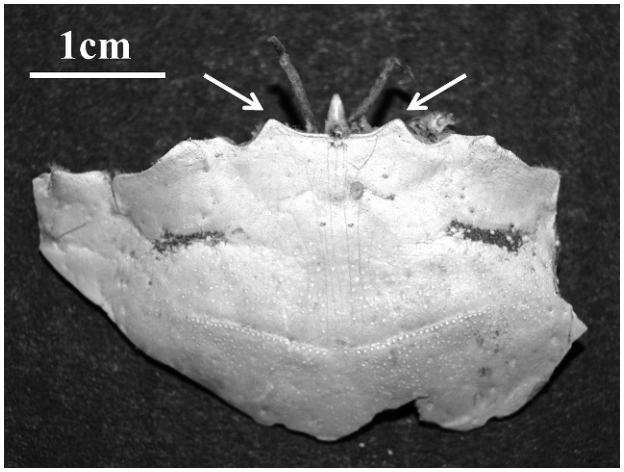

Figure 2. Carapace of *Callinectes sapidus* with 2 frontal teeth (arrows).

Although not all pieces were useful for identifying species, we documented the presence of 2 frontal teeth between the internal orbital teeth (Fig. 2), which is a specific characteristic of the benthic species *Callinectes sapidus* or blue crab (Rodríguez 1980; García Pinto. *pers. comm.*, October 2010).

This is the first report of an olive ridley feeding on the blue crab species *C. sapidus*, supporting the evidence of benthic feeding habits for this species. Previous studies about stomach content in olive ridleys indicate the presence of other crab species and invertebrates (Bjorndal 1997). The consumption of this blue crab species has been reported for the Kemp's ridley turtle (*Lepidochelys kempii*) (Marquez-M. 1994; Seney and Musick 2005); however, to our knowledge this is the first report of *C. sapidus* as a diet item for olive ridley turtles.

The total proportion of crab structures in the stomach and intestinal content of the studied olive ridley coincide with the reproductive behavior of the genus *Callinectes*. These crabs are typically estuarine, and they represent a very important economic resource due to their high population abundance and densities (Alió 2000). Blue crab females tend to congregate and migrate to spawning areas where saline concentrations are higher than 20‰ (Pereira et al. 2009; Tilburg et al. 2009; García Pinto et al. 2011). In this sense, the GV presents favorable salinity

conditions all year long, enabling crab spawning during all months, although spawning typically peaks from July to September (García Pinto et al. 2011). During this period, ovigerous females account up to 75% of the total capture in the crab fisheries (Alió 2000) an insight that supports the presence of larger groups of adult females of blue crab by the time the sea turtle was feeding.

In conclusion, the GV has formerly been described as an important feeding ground for sea turtles, with a mosaic of seagrass beds, coral reef banks, sand, and muddy benthic substrates (Montiel-Villalobos et al. 2008), the latter being the predominant habitat type where the olive ridley examined in this study was captured (6 km offshore, $>$ 15-m water depth). Based on our findings, it is possible that olive ridleys may be more common in GV than formerly reported. Our data also suggest that olive ridley turtles forage benthicly in this foraging area and perhaps elsewhere in the Western Atlantic Ocean.

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RESUMEN

Se reporta la especie de cangrejo *Callinectes sapidus* (Decapoda: Portunidae) como nuevo ítem alimenticio para tortugas Lora adultas (*Lepidochelys olivacea*). Este trabajo es pionero en el conocimiento de los hábitos alimenticios de la tortuga Lora en Venezuela.

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