

Reproductive Disorders and Perinatology of Sea Turtles

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KEYWORDS

• Sea turtles • Nest • Reproduction • Hatchling • Newborns

KEY POINTS

- Veterinary management is of paramount importance in the conservation of sea turtle species.
- Several disorders by virus, bacteria, parasites, or traumatic causes can affect the reproductive tract of sea turtles. The most common are the infections by herpesvirus and the cloacal prolapse.
- Useful diagnostic techniques are ultrasound, computed tomography, and cloacoscopy.
- Veterinary nest management and pediatrics of sea turtles includes several methodologies, such as nest translocation or captive hatchlings.

INTRODUCTION

Sea turtles are taxonomically part of the superfamily Cheloniodea and divided in 2 families (Dermochelyidae and Cheloniidae) and 7 species. The first family has just one species, the leatherback sea turtle (*Dermochelys coriacea*). The Cheloniidae family comprises the following species: the loggerhead sea turtle (*Caretta caretta*), the Kemp's ridley sea turtle (*Lepidochelys kempii*), the olive ridley sea turtle (*Lepidochelys olivacea*), the green sea turtle (*Chelonia mydas*), the hawksbill sea turtle (*Eretmochelys imbricata*), and the flatback sea turtle (*Natator depressus*). Cheloniidae species are

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hard-shelled turtles with paddlelike limbs and a depressed body but streamlined. The shell is covered with horny scutes, and the limbs and head are partially covered with rather thin scales.

Species recognition is of paramount importance for a sea turtle veterinarian practitioner. Apart from the unique morphology of *D coriacea*, Cheloniidae species possess distinguishable anatomic features. An elliptical carapace covered by imbricate scutes and a hawklike beak tomium is typical of the hawksbill sea turtle, whereas a nearly oval carapace with no imbricate scutes, blunt head, and the preorbital distance visibly smaller than the orbital length are typical morphologic features of the green sea turtle. The flatback sea turtle has a round and flattened carapace, with an upward-folded edge. In the loggerhead sea turtle, the carapace is cardiform; its length is always greater than the width because of the presence of one more lateral scutes (5 lateral scutes). Five lateral scutes are also reported in *Lepidochelys* spp; these species have a round carapace with length similar to the width, and they possess a unique cutting tomium provided with an internal alveolar rim. Obviously the body color is grey-olive or olive-yellowish. Because of the worldwide distribution and the authors' experiences, the loggerhead sea turtle is used as a model for the present article.

The species of this family have a pantropical distribution, with periodic or occasional migrations into temperate waters for feeding. In detail, apart from loggerhead and green sea turtles having a worldwide distribution, Kemp's ridley sea turtle is present just in the Gulf of Mexico, with some aberration findings,¹ whereas the olive ridley sea turtle occurs in all tropical waters² but never in the Mediterranean Sea. Flatback sea turtles can be found just along the coastal waters of Northern Australia and Papua New Guinea.³

The leatherback sea turtle is one of the largest living reptiles, with spindle-shaped huge bodies and leathery, unscaled carapaces. Furthermore, *D coriacea* has unique anatomic and physiologic features, such as the presence of vascularized growth, epiphyseal cartilages and a kind of endothermy similar to that of marine mammals.⁴ Thanks to this exclusive feature, adult leatherbacks are more adapted to colder water than other sea turtles; as a result of this, the leatherback is the most widely distributed of all sea turtles, covering most all the salt-water surfaces.⁵

Sea turtle species have different diets: the loggerhead, Kemp's ridley, olive ridley, hawksbill, flatback, and leatherback sea turtles are omnivorous; but some species may specialize on certain prey, depending on the living area (for example, the hawksbill sea turtle is highly specialized on sponge eating). Green sea turtles are exclusively herbivorous during the adult ages, with omnivorous stages during the juvenile phases.⁶ The leatherback turtles feed almost exclusively on jellyfish.

LIFE BIOLOGY

Because the loggerhead is the most widely distributed sea turtle, detailed data found in the literature regard mainly this species. It is used here as a model for the life biology. However, the life biology of the others species are similar without excessive differences. Loggerhead sea turtles, during their life, may inhabit several different ecosystem based on life phases: the terrestrial zone, the coastal waters, and the oceanic area. The terrestrial phase is typical of the nesting female turtles and of the hatchlings. After the hatch, newborn loggerheads start a swim frenzy for several days. In this phase the posthatchlings, carried by the currents, reach the oceanic area where they spend several years in seaweed (*Sargassum* spp) zones.⁷ When they reach the 40 cm of curved carapace length (CCL; length of the turtles carapace measured from the notch at the anterior of the carapace to the tip of the last posterior

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