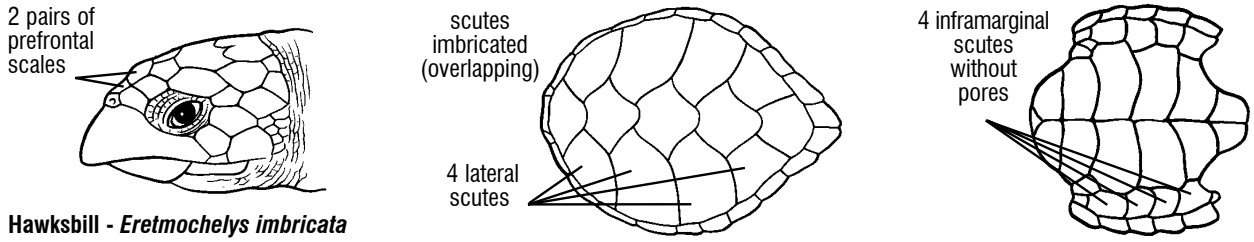
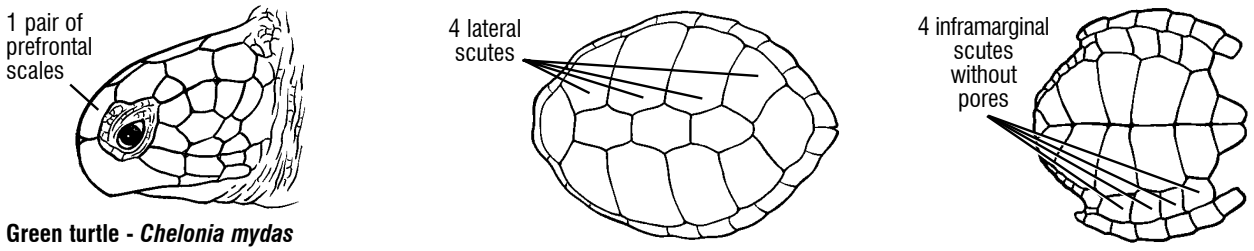
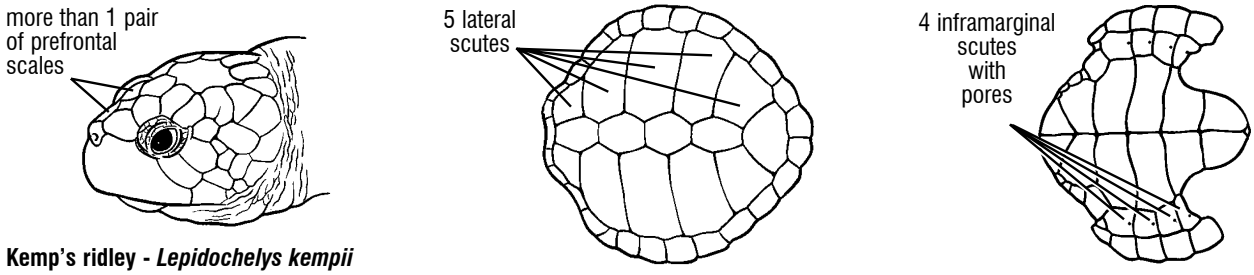
head | **carapace** | **plastron**



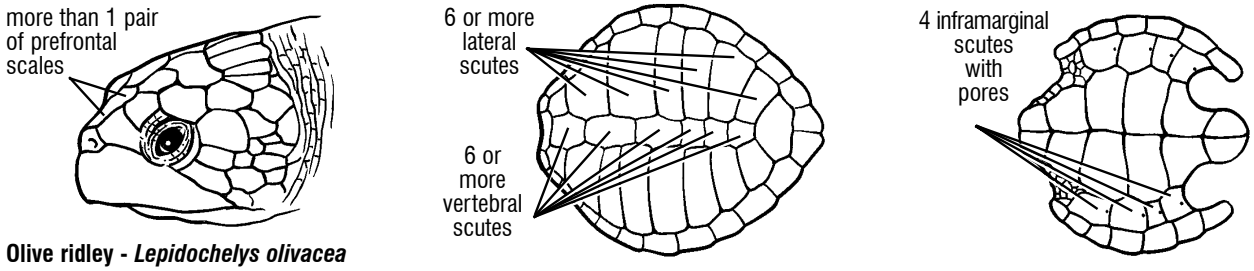
Hawksbill - *Eretmochelys imbricata*



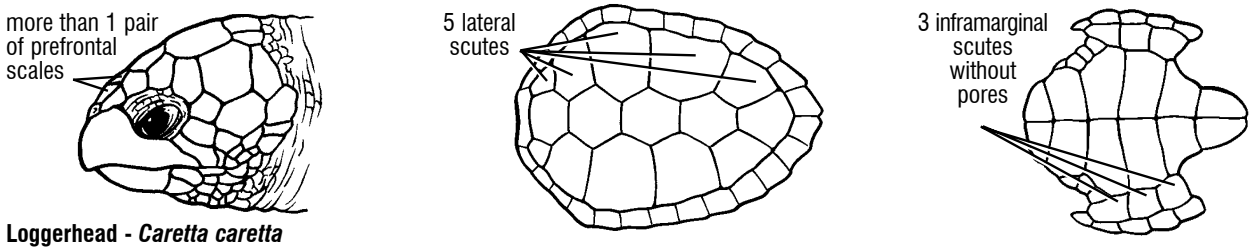
Green turtle - *Chelonia mydas*



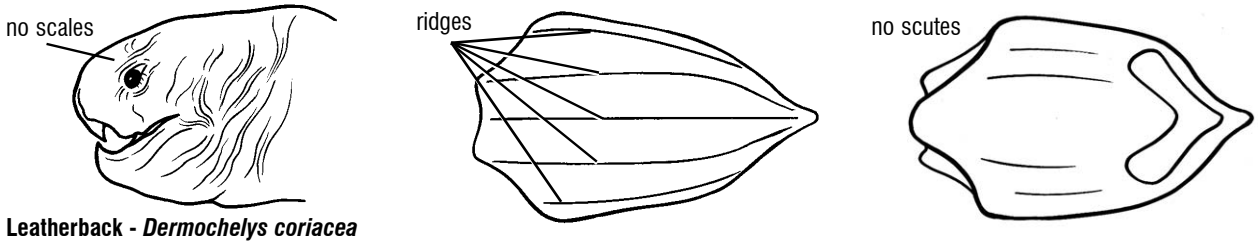
Kemp's ridley - *Lepidochelys kempii*



Olive ridley - *Lepidochelys olivacea*



Loggerhead - *Caretta caretta*



Leatherback - *Dermochelys coriacea*

Species Identification

Sea turtles can be separated into the hard-shelled (cheloniid) and the leathery-shelled (dermochelyid) species. There is just one dermochelyid species, the leatherback, *Dermochelys coriacea* (Figs. 9-10). It is black with white speckling. Five dorsal ridges run the length of the carapace, two ridges form the margins, and few ridges occur ventrally. A notch occurs in each side of the upper jaw and the limbs lack claws.

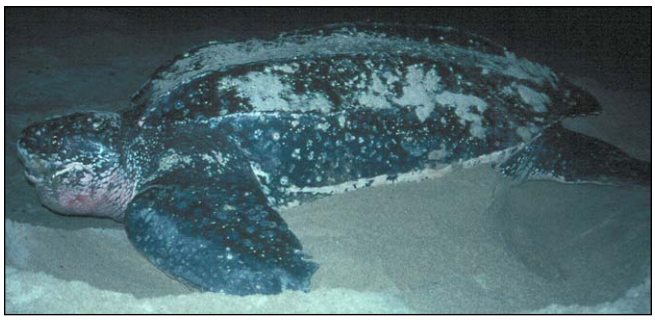


Fig. 9. *Dermochelys coriacea, adult.*

Fig. 10. *Dermochelys coriacea, hatchling.*

The cheloniids can be distinguished from one another by the scales on top of the snout, called the prefrontals and by the scutes on the carapace. The green turtle, *Chelonia mydas* (Figs. 11-13), has one pair of prefrontal scales (Fig. 12). The carapace is smooth with 4 pairs of lateral scutes. Carapace color changes with age. It is black in hatchlings, then turns brown and tan in juveniles, and in adults, it is olive or gray-green, sometimes with speckles of yellow and brown. The plastron is white in hatchlings. It turns creamy yellow, sometimes temporarily pink or gray depending on the population. Adults have a creamy yellow plastron except in the more melanistic green turtles (referred to as black turtles) found in some Pacific waters. The green turtle has one claw on each limb. There are 4 inframarginal scutes on each side and two Rathke's pores, one each in the axillary and inguinal scales (see Glands, pp. 122-123).

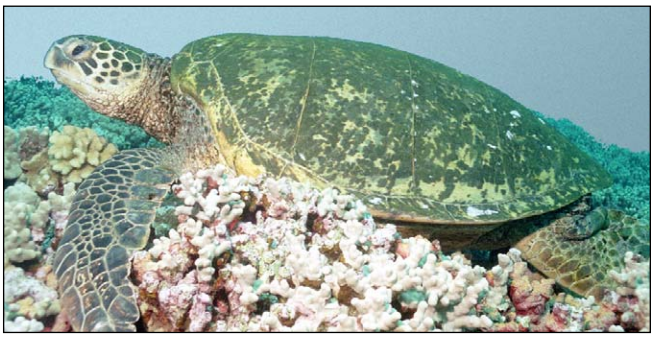


Fig. 11. *Chelonia mydas, adult.*

Fig. 12. *Chelonia mydas, juvenile.*

Fig. 13. *Chelonia mydas, hatchling.*

The remaining species have 2 pairs of prefrontal scales (Fig. 8) and, as young, they have keels (ridges) on their shells. The loggerhead, *Caretta caretta* (Figs. 14-17), has a large head and brown carapace with 5, or sometimes 4, lateral scutes. The nuchal scute (the marginal just dorsal to the neck) is in contact with the first lateral scute. In hatchlings, the carapace is brown with various shades of grey (Fig. 14). The plastron of hatchlings is creamy to brown. In juveniles to adults it is creamy and tan. The carapaces of juveniles (Fig. 16) develop streaks of yellow and tan. Sometimes the scutes of juveniles slightly overlap one another at their margins. In adults, there is no overlap of scutes. The carapace is primarily brown with occasional individuals retaining some tans or even black (Fig. 17). The shells of loggerheads often host large epibiont communities. Loggerheads have two claws on each limb.

Fig. 14. *Caretta caretta, hatchling.*

Fig. 15. *Caretta caretta, plastron. Loggerheads often have 3 inframarginals however, this characteristic is variable.*

Fig. 16. *Caretta caretta, immature. Immature loggerheads often have sharp keels on their vertebral scutes and posterior marginal. These recede with larger size and age so that loggerheads found in coastal waters often bear little of or no signs of the keels.*

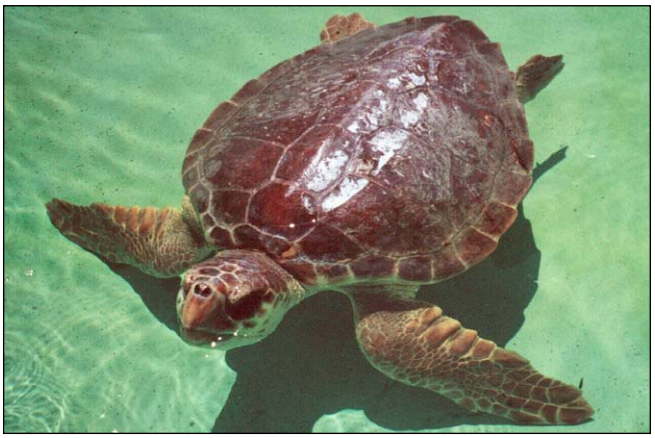


Fig. 17. *Caretta caretta, adult. The jaws have thick, robust rhampotheca (beak-like structures) for crushing food.*

The hawksbill, *Eretmochelys imbricata*, as a hatchling, is dark mahogany brown on both the carapace and the plastron (Fig. 18). As the turtle grows, the head elongates and the carapace develops a distinctive pattern of yellow, black, tan and brown radiating through the scutes (Fig. 19). This color persists though adulthood. The nuchal scute does not touch the first lateral scute in hawksbills. This distinguishes the hawksbill carapace from the loggerhead pattern. The head of the hawksbill is nearly twice as long as it is wide and has a long narrow beak or **rhamphotheca** (Fig. 20). Hawksbills have two claws on

Fig. 18. *Eretmochelys imbricata hatchling (left) and Caretta caretta hatchling (right). Note that the nuchal scute touches the first lateral in loggerheads but not in hawksbills.*

Fig. 19. *Eretmochelys imbricata, immature. The narrow head and imbricate (overlapping) scutes of the hawksbill are clear.*

Fig. 20. *Eretmochelys imbricata, adult.*

The last two species that occur in U.S. waters are the ridleys (Figs. 21-24). These turtles are mostly gray in color. The Kemp's ridley, *Lepidochelys kempii,* occurs in east coast waters. The olive ridley, *Lepidochelys olivacea* occurs in Pacific and South Atlantic waters (but occasionally strays into tropical North Atlantic regions). The hatchlings of both species are gray-brown.

Fig. 21. *Lepidochelys kempii, adult*

The carapace assumes a nearly round appearance as the turtle grows and the marginal scutes become wide (Fig. 21). There are 4 (sometimes 3) inframarginal scutes. Characteristic pores are found within each inframarginal scute (Fig. 22) in both ridley species. Ridley turtles have two claws on each limb.

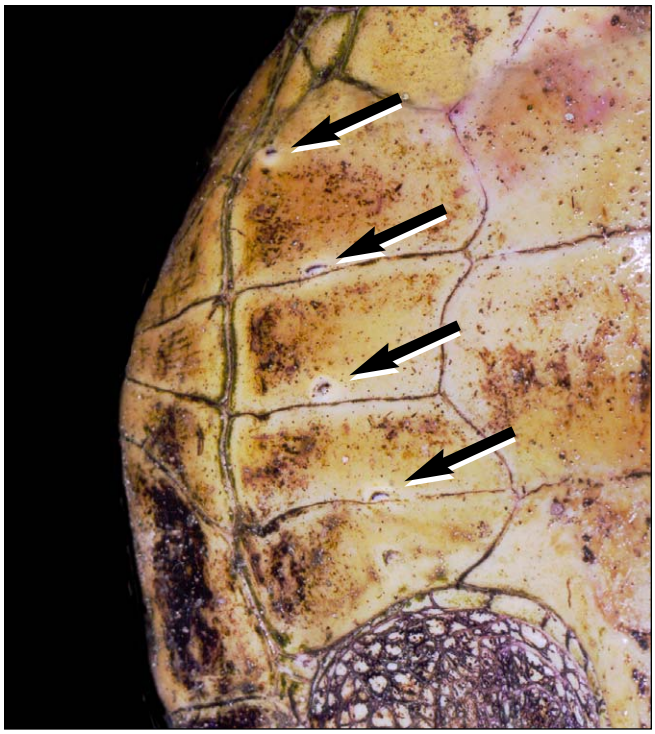


Fig. 22. *Lepidochelys inframarginals with Rathke's pores.*

Kemp's ridley turtles are dark grey to grey-green in color. They have 5 lateral scutes (4-6 is common).

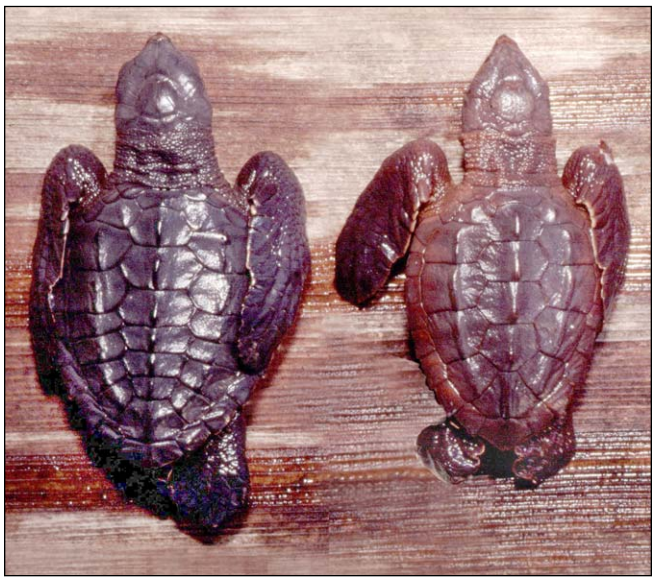


Fig. 23. *Lepidochelys hatchlings. L. kempii (right) has just 5 lateral and vertebral scutes while L. olivacea (left) has 6 or more lateral and vertebral scutes.*

Olive ridleys turtles are dark grey. They typically have more than 6 normally aligned lateral scutes, 6 or more normally aligned vertebral scutes (Fig. 23) and many supraoccular scales (Fig. 24).

Fig. 24. *Lepidochelys olivacea, adult*

Skull Anatomy

The skull is organized into an inner braincase, the **neurocranium,** which houses the brain and an outer bony superstructure, the **splanchnocranium**. The anterior splanchnocranium along with the mandibles form the jaws. The splanchnocranium also houses the sense organs and provides the muscle attachment sites for jaw, throat and neck muscles. The braincase is found along the midline, internal to the skull roof, snout, and jaw bones of the splanchnocranium. The external bones of the splanchnocranium (Fig. 25) are the same in all species, however their specific form and some articulations differ. Skull shape and the patterns of bones of the palate (roof of mouth; Figs. 26-27) are diagnostic for species identification. Lateral bones (Fig. 28) are important landmarks for locating internal structures. The jaws (Fig. 26) and the neurocranium (Fig. 29), also are composites of several bones.