

Status of olive ridley sea turtles (*Lepidochelys olivacea*) in the Western Atlantic Ocean

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Introduction

Olive ridley sea turtles are distributed in all tropical and subtropical ocean basins. On a global scale, the olive ridley is probably the most abundant species of sea turtle, with some nesting beaches receiving more than half a million turtles during a nesting season (up to 800,000 on Gahirmatha beach, in Orissa, India - Anonymous, 1994; more than 700,000 on Escobilla beach, in Pacific Mexico - Marquez, 1995). Ironically, it is also the least abundant sea turtle in the Western Atlantic.

Biology and Behavior:

The olive ridley is one of the smallest of the marine turtle species, and one of the two species of the genus *Lepidochelys*. The other species, *L. kempii*, also occurs in the Western Atlantic, and is discussed by XX (this volume). The basic morphological differences between the 2 species includes a smaller head in the olive ridley, differences in jaw structure, and variable and uneven numbers of lateral scutes on the carapace of olive ridley's (detailed in Pritchard and Plotkin, 1995).

Generally, adult *L. olivacea* are olive colored, although the hatchlings are dark brown when they emerge from their nests. As adults, they can weigh up to 45kg, with average weights around 35 kg (Schulz, 1975). Their carapaces are distinctive in that they have a variable and often uneven number of lateral scutes, between 6 and 10 pairs. Olive ridley's are also unique in that they have 4 pairs of pores in the infra-marginal scutes of the plastron. Their function is unknown. Olive ridley's are carnivorous, generally eating crustaceans and invertebrates. Very little is known about the behavior of this species at sea, including migratory paths.

One spectacular feature of some populations of olive ridley's is the nesting behavior known as an "arribada." During these events, from tens to hundreds of thousands of olive ridley turtles emerge from the ocean to nest on the same beach over a period of a few days. The stimuli which precipitate the beginning of an arribada may include environmental factors such as wind speed and direction and phases of the tide and moon, and gravid females apparently can delay nesting for several weeks, despite the presence of fully shelled eggs. Arribada nesting continues during daylight hours also, in contrast to most other marine turtle species, which prefer to lay their eggs under the cover of darkness. Olive ridley's lay 2-3 nests per year, and often nest in consecutive years.

The arribada behavior is not fully understood. It has been suggested that this a form of predator saturation, thereby by increasing the likelihood of survival of the hatchlings produced (Pritchard, 1969). Evidence from Pacific Costa Rica suggests that, on average, a nest laid during an arribada is less likely to suffer predation than a nest laid by a solitary female (Eckrich and Owens, 1995). However, gains made in

terms of predation rates may be negated by losses in hatching rates: typically, the hatching success of nests laid during arribadas is terribly small; for example, only around 5% of the eggs laid on Nancite beach, in Costa Rica actually produce viable hatchling (Cornelius, 1986). This is largely due to turtles digging into previously laid nests, and the high levels of bacteria and other microorganisms present in the sand.

After the arribada, individual turtles migrate to other areas independently, rather than in flotillas or groups. This is based on data collected while tracking individual turtles with satellite transmitters, following nesting during an arribada in Costa Rica (Plotkin et al., 1995).

Occurrence in Western Atlantic:

In the western Atlantic, there are only 3 countries in which significant numbers of olive nests are laid each year:

- Suriname: Principally Eilanti beach, and secondarily Matapica beach
- French Guiana: Ya:lima:po beach and others, both east and west of Cayenne
- Brazil: the beaches of Pirambu, Abais, and Ponta dos Mangues in the state of Sergipe, in northern Brazil)

There are few, if any, records of olive ridley nests outside these areas in the western Atlantic. Incidental capture of olive ridley sea turtles has been recorded mostly near the Guianas and in northern Brazil, although there are records of animals caught in the waters of Venezuela, Trinidad & Tobago, and Brazil (Schulz, 1975; Marcovaldi et al., in press).

Suriname:

In Suriname, the local name for olive ridley is *warana*. The yearly total of *warana* nests laid each year in Suriname has been declining for the past 20 years (Figure 1). The principal nesting beach for olive ridley's in Suriname is Eilanti beach, close to the border with French Guiana. Small-scale arribadas were seen in the late 60s and 70s on Eilanti beach, but have not occurred since. Reasons for this decline are not known, but the natural erosion cycle of Eilanti beach is probably one cause. All nests laid by olive ridley's are excluded from the legal egg harvest program in Suriname (Reichart, 1993).

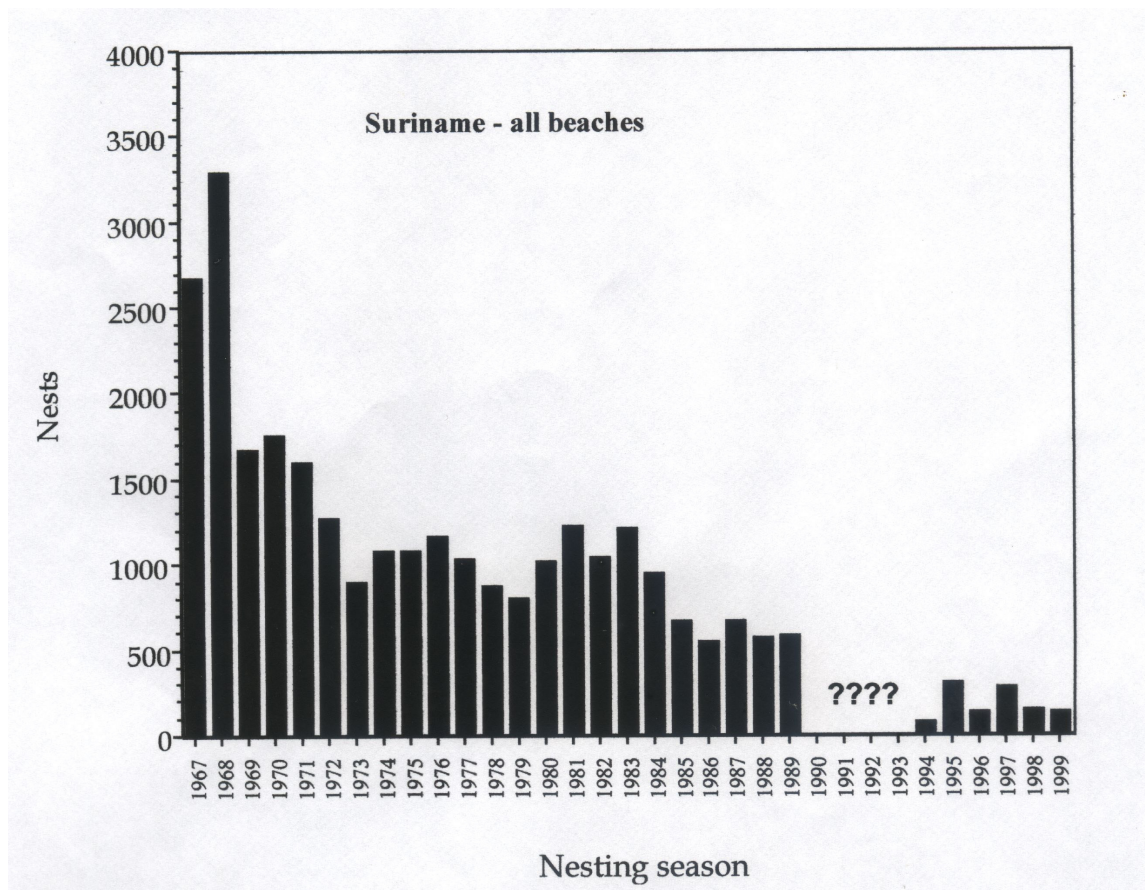


Figure 1. Annual number of olive ridley nests laid per nesting season, in all of Suriname. Data for 1990 through 1993 were not obtained. Sources of data include Reichart (1993) and Kris Mohadin of STINASU/LBB in Suriname (personal communication).

French Guiana.

The local name for olive ridley in French Guiana is *tortue olivâtre*. Until recently, the focus of monitoring in French Guiana was Ya:lima:po beach, which is frequented by enormous numbers of leatherbacks each year (Girondot and Fretey, 1996). There are numerous beaches in the western half of the country, from the border with Suriname until Cayenne, some with as many as 25 olive ridley nests laid per night; 500 is a rough estimate for the annual number of nests in 1999 (Johan Chevalier, personal communication). East of Cayenne, until the border with Brazil, the beaches were regularly monitored for the first time in 1999; around 500 nests were encountered in this region (Jean-Christophe Vie, personal communication). Due to the lack of consistent data, it is not known if these large numbers are the result of displacement of females from Suriname, or reflect a population increase, or simply is due to increased monitoring effort. Indeed, all these factors may be at play in this situation. Certainly, regular monitoring is needed in French Guiana in order to better characterize the status of the population.

Brazil.

In Sergipe, on the northern coast of Brazil, regular monitoring was begun in 1982 at Pirambu beach, the principle-nesting site of olive ridley's in Brazil. Since 1989, nests have been protected in 3 areas in Sergipe: Abais, Pirambu, and Ponta dos Mangues. Despite the fluctuations in annual numbers of nests, the overall pattern seems to be steady, with a yearly mean of 200-400 nests (Figure 2). There is no evidence that arribadas previously existed in Sergipe. Indeed, the lack of a common name for this species in Brazil suggests that its relative scarcity has been long-term.

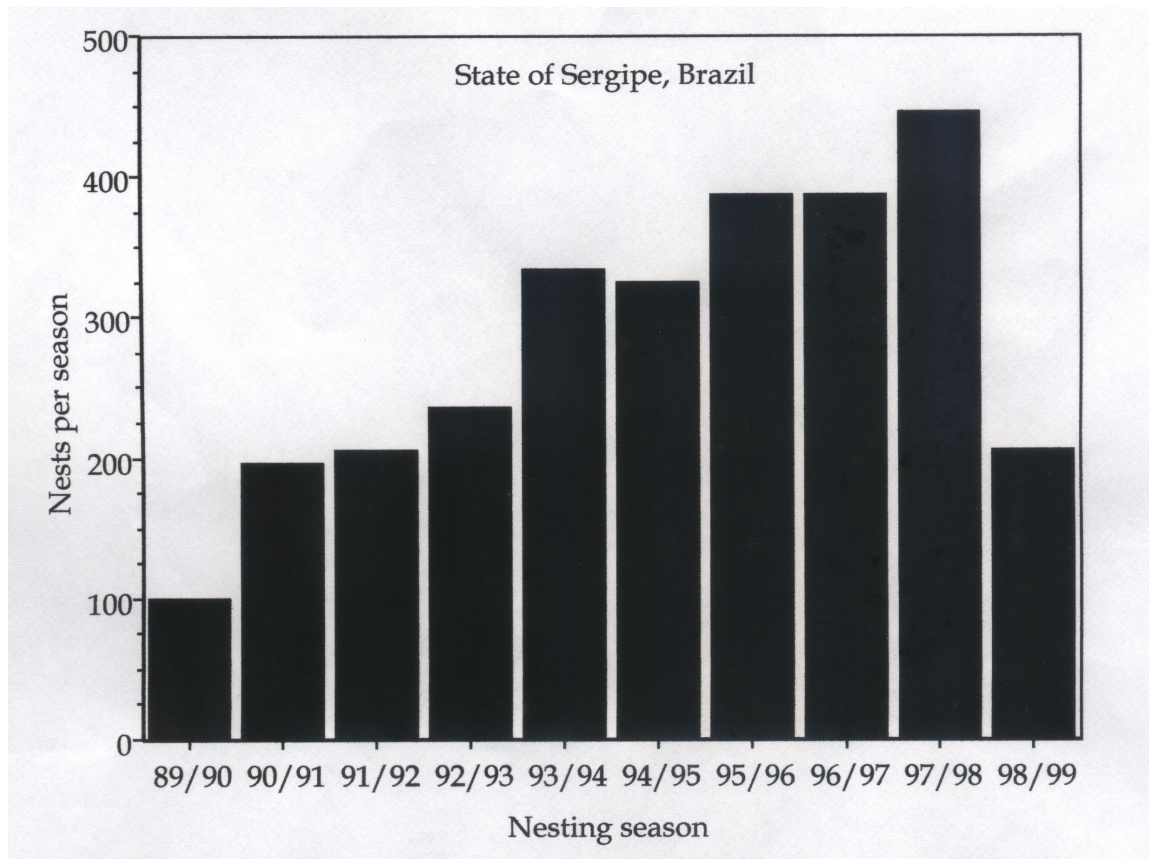


Figure 2. Annual number of olive ridley nests laid per nesting season, in the state of Sergipe, in Brazil. Scattered nesting of this species also occurs in the states of Bahia and Espírito Santo, but in low numbers (<50 per year). Source of data: Projeto TAMAR-IBAMA.

Threats:

The principle threat to olive ridley's is incidental capture by both artisanal and industrial fisheries, with the largest number of incidental captures occurring off the coast of the Guianas. Indeed, Reichart and Fretey wrote in 1993 that incidental capture is the "largest unaddressed problem in turtle conservation" in these countries. Other threats include habitat destruction and poaching.

Conclusions:

The overall situation of olive ridley's in the western Atlantic is mixed. In Suriname, their numbers have seriously declined, while in French Guiana, they may be increasing, or the population is larger than previously thought. In Brazil, the

population is small but steady. In any event, at-sea mortality due to incidental capture is a serious problem that needs to be addressed for the successful conservation of these populations in the western Atlantic.

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