

**Figure 5 :** Distribution leatherback tagged in French Guiana and recovered elsewhere in the Atlantic. White points are the position where Leatherbacks tagged in French Guiana have been caught.

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## Study of a Bimodal Nesting Season for Leatherback Turtles (*Dermochelys coriacea*) in French Guiana

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Between April and July, the beaches of the Guianas host the most important population of *Dermochelys coriacea* (Spotila *et al.*, 1996) of the world. A second nesting season, much shorter and with less nests than the main one, occurs around December but had never been clearly characterized. French Guiana and Suriname are, as far as we know, the only nesting sites where leatherback turtles

present two nesting seasons per year. The first goal of this study was to check the presence and describe the *small* nesting season. We also wanted to study the nesting ecology of the leatherbacks nesting during this season, the relationship between those turtles and other nesting groups, and the presence of a *small* nesting season for other marine turtle species.

**Material and Methods**

To study this *small* nesting season :

- the number of leatherback nests was counted every day from the 20th May 1986 to the 9th August 1987 on *Ya:lima:po* beach.
- from late December 1992 to early January 1993 Girondot reported the nesting activity on *Ya:lima:po* beach. However, counts were not performed on a daily basis.
- from late November to the end of January, several aspects of the *small* nesting season were studied. The number of nests was counted daily on *Ya:lima:po* beach and Cayenne Island beaches. Several other nesting beaches in French Guiana and Suriname were surveyed. Each leatherback observed nesting was identified with a PIT tag and blood was sampled for genetic studies.

**Results**

The *small* nesting season is specific to leatherbacks. The green turtles and the olive ridley turtles, also nesting in the Guianas, are not present during the December and January nesting season.

On *Ya:lima:po* beach, the main nesting beach of the Guianas (Girondot & Fretey, 1996), around 700 leatherback nests were laid in the 1986-87 *small* nesting season (Fig. 1). The repartition of the nestings present a clear bimodal annual pattern. During the 1998-99 *small* nesting season less than 40 nests were counted in *Ya:lima:po* (Fig. 2). This decline is certainly at least partly due the displacement of

nests to other nesting beaches for example in Cayenne Island (38 nests) (Fig. 2). Farez, or the Spit in Suriname (Fig. 3), but it mainly corresponds to a global decrease in all nesting zones of the Guianas (Chevalier & Girondot, 1999). The trend of the number of leatherback nests during the main and the *small* nesting seasons appears quite close, at least the important decline for the early 1990s (Fig. 4). The origins of both declines are still unknown, but the driftnets of the industrial fisheries occurring in the Maroni river estuary are the main suspects (Chevalier *et al.*, 1999).

**Discussion**

Since the turtles observed during this study had not been tagged prior to capture, the origin of the leatherbacks nesting during the *small* nesting season is unknown. Therefore, many questions remain :

- What are the relationships between the leatherbacks nesting in the *small* nesting season and during the main one? Do they have the same distribution area at sea?

- Are there relationships between the leatherbacks nesting in the *small* nesting season in the Guianas and the leatherbacks nesting at the same period in Brazil?

To try to answer these questions, a study of the mitochondrial DNA of 8 leatherbacks observed during the 1998-99 *small* nesting season will be performed soon. The study of this *small* nesting season will continue during the next few years to understand the unusual nesting ecology of the leatherbacks of the Guianas.

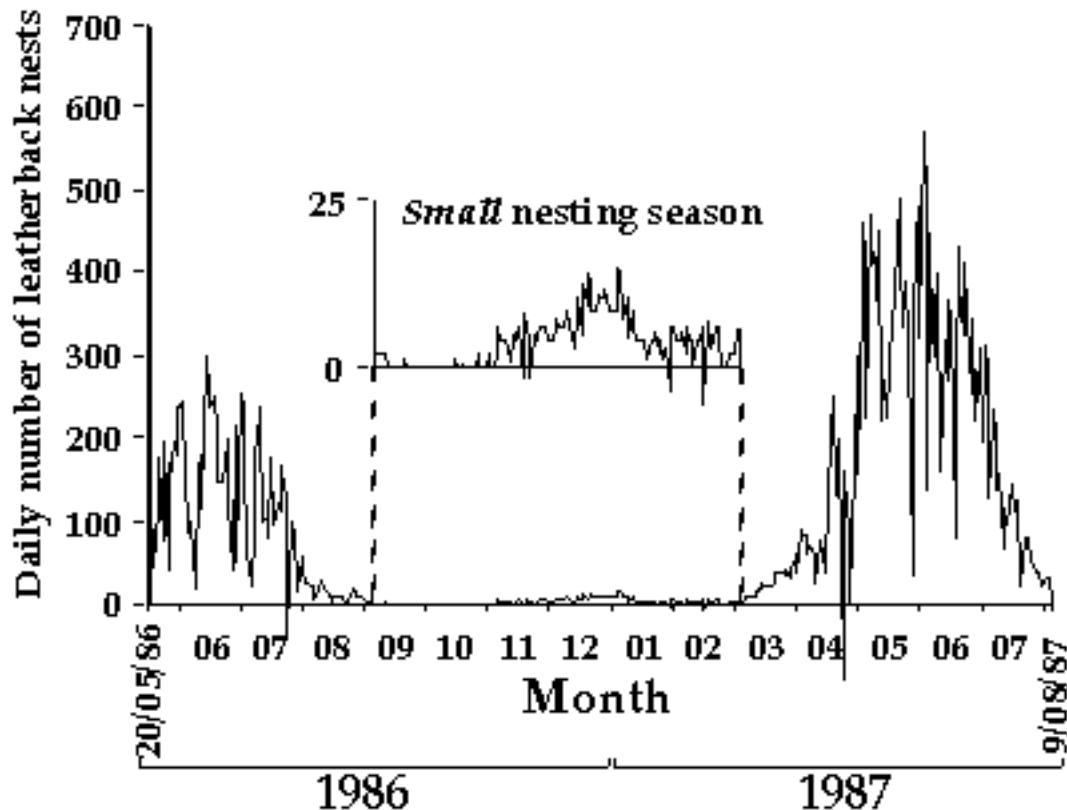
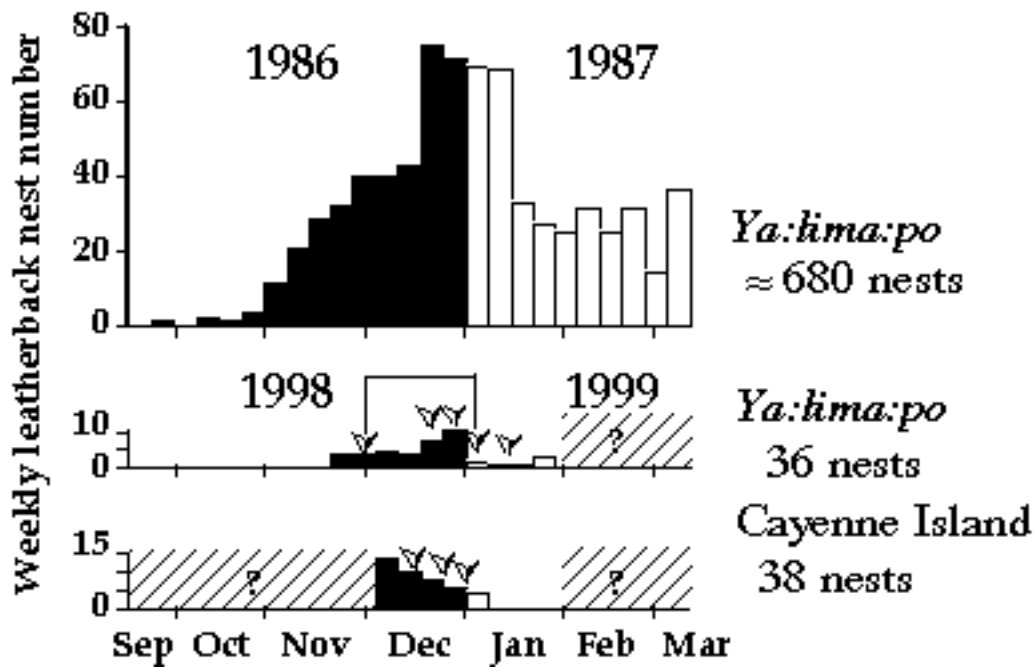
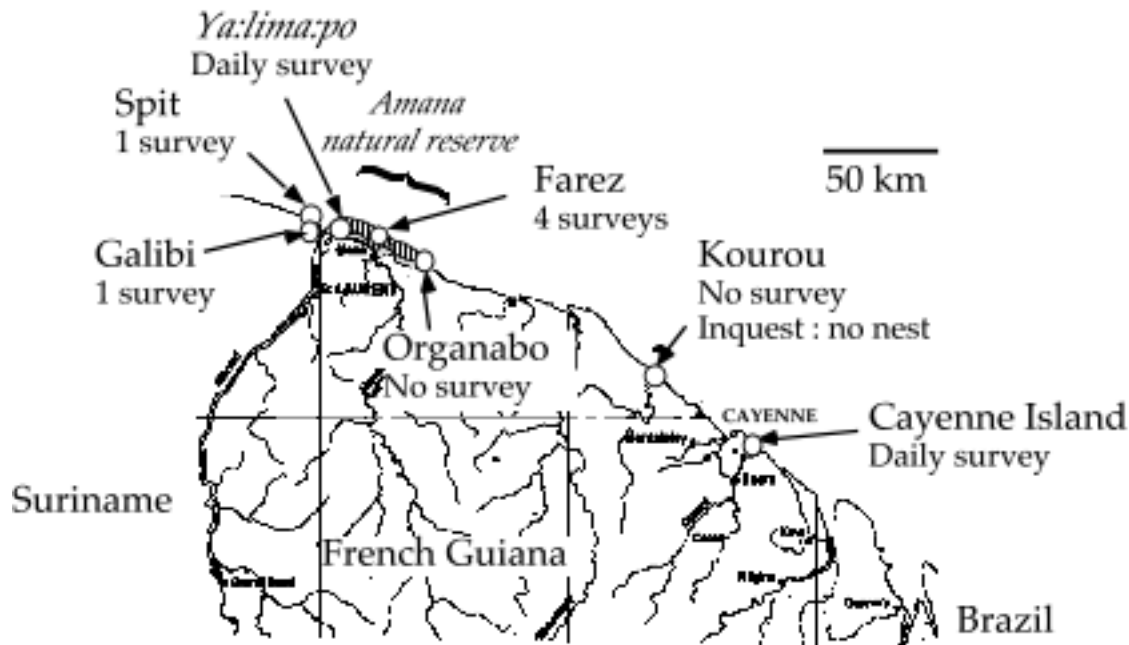


Figure 1. Number of leatherback nests on *Ya:lima:po* beach from May 1986 to August 1987.



**Figure 2.** Number of leatherback nests per week during the *small* nesting season on the beaches of *Ya:lima:po*, in 1986-87 and 1998-99, and Cayenne Island in 1998-99. Arrowheads correspond to the leatherbacks observed and PIT tagged. The 2 joined arrows represent the turtle seen twice. (?) are weeks without data.

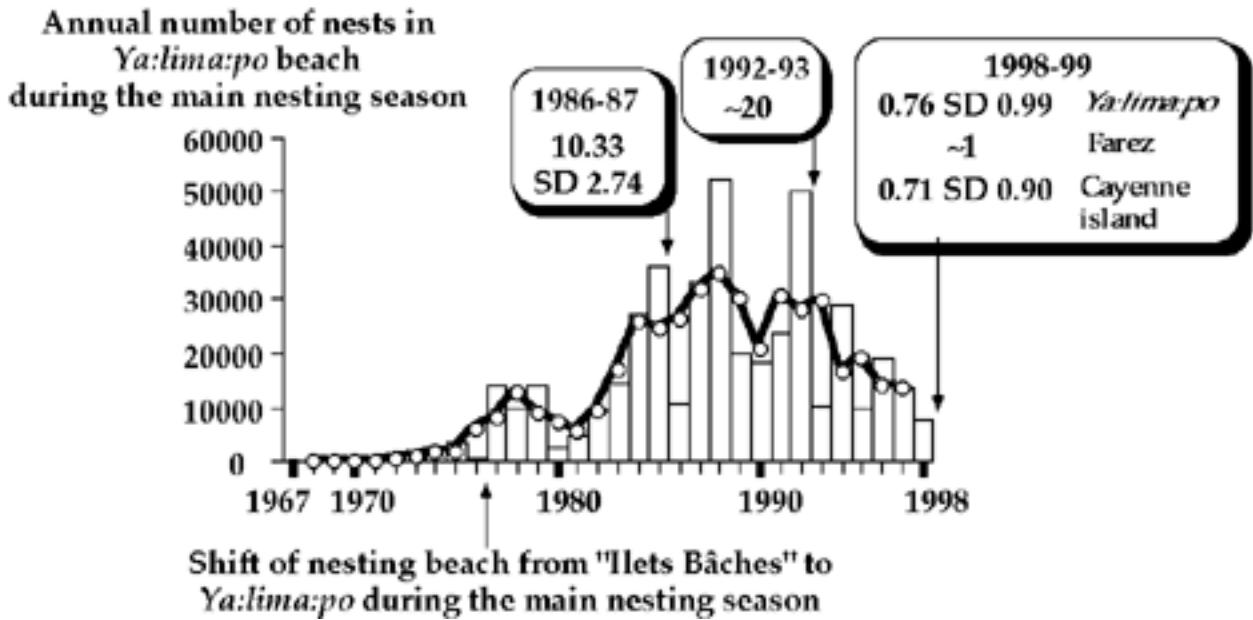


**Figure 3.** The nesting beaches of French Guiana and east Suriname during the 1998 main nesting season and the number of leatherback nests observed during the 1998-99 *small* nesting season surveys. (Results of beach surveys: Farez: 19 Nov. 98-1 nest, 6 Dec. 98-7 nests, 10 Dec. 98-13 nests, and 20 Dec. 98-10 nests; Galibi: 11 Jan. 99-1 nest; and Spit: 11 Jan. 99-1 nest)

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**Figure 4.** Evolution of the leatherback nest number per year on *Ya:lima:po* beach. Histogram corresponds to the number of nests during the main nesting season. The upper panels present the mean number of leatherback nests from the 20th December to the 10th January for the three years with data. SD indicates standard deviation.

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### Preliminary Results of a Survey of Sea Turtles in the Gulf of Venezuela

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After reviewing the existing reports on the sea turtles in the Gulf of Venezuela, surveys were conducted on beaches in the Miranda, Insula Padilla, Mara and Paez Districts of Zulia State, along the west side of the Gulf of Venezuela. Some surveys were made in the daytime to observe the tracks left by the turtles and/or by hunters. Some observations were also made at night to observe nesting females. Interviews were carried out with fishermen and local inhabitants to get more detailed information on the presence and abundance of sea turtles in the area. Based on

the discovery of remains (shells and skulls) a prevalence of *Chelonia mydas*, *Caretta caretta*, *Eretmochelys imbricata* and *Lepidochelys olivacea* was observed, in decreasing order. No *Dermochelys coriacea* were observed, but the interviews do indicate the presence of this species in the area. The Paez District had the highest density of turtles and turtle consumption. Intentional capture appears to be the main cause of mortality due to the presence of indigenous hunters and the commercial use of the meat and shells. The project will be extended until May, 1999.