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Activities by Project TAMAR in Brazilian Sea Turtle Feeding Grounds

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The main sea turtle nesting sites in Brazil have been protected since 1980 by TAMAR (Brazilian Sea Turtle Conservation Program), a federal government initiative of IBAMA (Brazilian Institute for the Environment), co-managed by Fundação Pró-TAMAR, a non-governmental organization. Since then, TAMAR has collected information on dead and stranded turtles found along the Brazilian coastline. After the establishment of research stations at the main nesting areas (Figure 1), TAMAR began, in 1991, to work in the main feeding grounds, where the level of incidental capture reported is high (Marcovaldi 1991). The first efforts to increase protection of sea turtles found in these areas were at Ubatuba, São Paulo State (Figure 1).

The marine turtle species found in Brazilian waters are the loggerhead (*Caretta caretta*), green (Chelonia mydas), leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*) and olive ridley (*Lepidochelys olivacea*) turtles (Marcovaldi & Marcovaldi 1985). Detailed information on the fishing methods that most often capture marine turtles in Brazilian coastal waters, has been gathered, and are now being described and compiled in a manual (Fundação Pró-TAMAR, in prep.). Fishing methods are mostly artisanal, the most common being: floating weirs, set nets and fish traps. This census will help to identify the main threats to the turtles in their feeding grounds and also aid development of appropriate management and conservation strategies necessary to address their impacts.

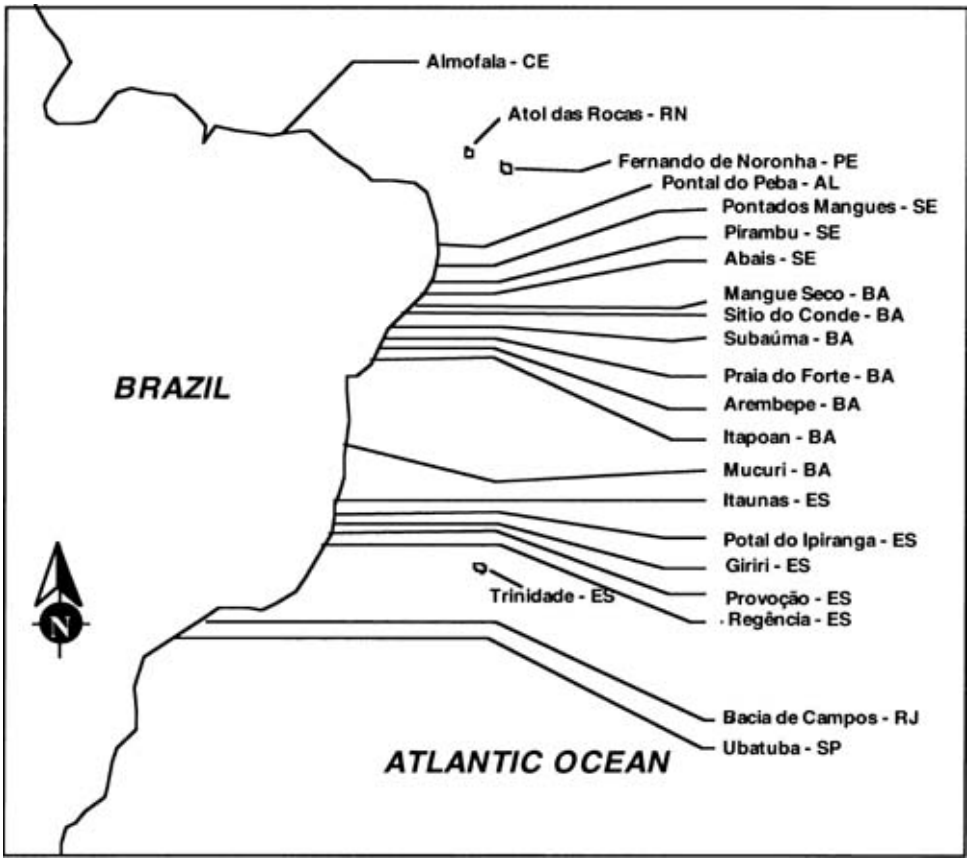

Figure 1. Research stations of the Brazilian Sea Turtle Conservation Program (TAMAR).

The work is divided into two major strategies: firstly, environmental education is undertaken at sites of high levels of incidental capture, mainly Ubatuba and Almofala; secondly, at-sea research studies are carried out on behaviour and growth parameters, at sites with good diving conditions, mainly Fernando deNoronha and Atol das Rocas (for more details, see Bellini & Sanches 1996). Through the campaign, "Not everything caught by the fishing net is fish", techniques helpful in minimizing mortality of incidentally captured turtles are taught to the fishermen and the coastal communities in general. Employing the people involved in fisheries activities to work for the protection of turtles, checking the nets for turtles, and creating new ecologically sound economic alternatives are all parts of the program.

Following the methodology applied in the nesting areas, a database has been created to organize and standardize the collection of information in the feeding grounds. Date, time of occurrence, condition of turtle (alive or dead), curved carapace length and width, species, sex (when possible), tag number and the final outcome (dead, released at sea or held in recovery tanks) are all recorded.

The number of turtles saved and released at sea have increased annually at TAMAR stations (Figure 2). Of 2,000 turtles captured by fisheries participating in the scheme since 1991, 1,848 (92.4%) were safely released, mainly in the fishing communities of Ubatuba and Almofala. At Ubatuba, most (99.3%) of the turtles captured were juveniles, as well as in Almofala (70.1%),

where the greatest majority of individuals were *Chelonia mydas* (97.7% in Ubatuba and 92.8% in Almofala). At Atol das Rocas and Fernando de Noronha, 1,087 captures of sea turtles were recorded as part of the underwater studies. The species most frequently found were hawksbill (83.9% at Fernando de Noronha and 59.2 % at Atol das Rocas) and green turtles (15.5% at Fernando de Noronha and 40.8% at Atol das Rocas). All individuals at Atol das Rocas were juveniles versus 81.7% at Fernando de Noronha, where a proportion were adult green turtles.

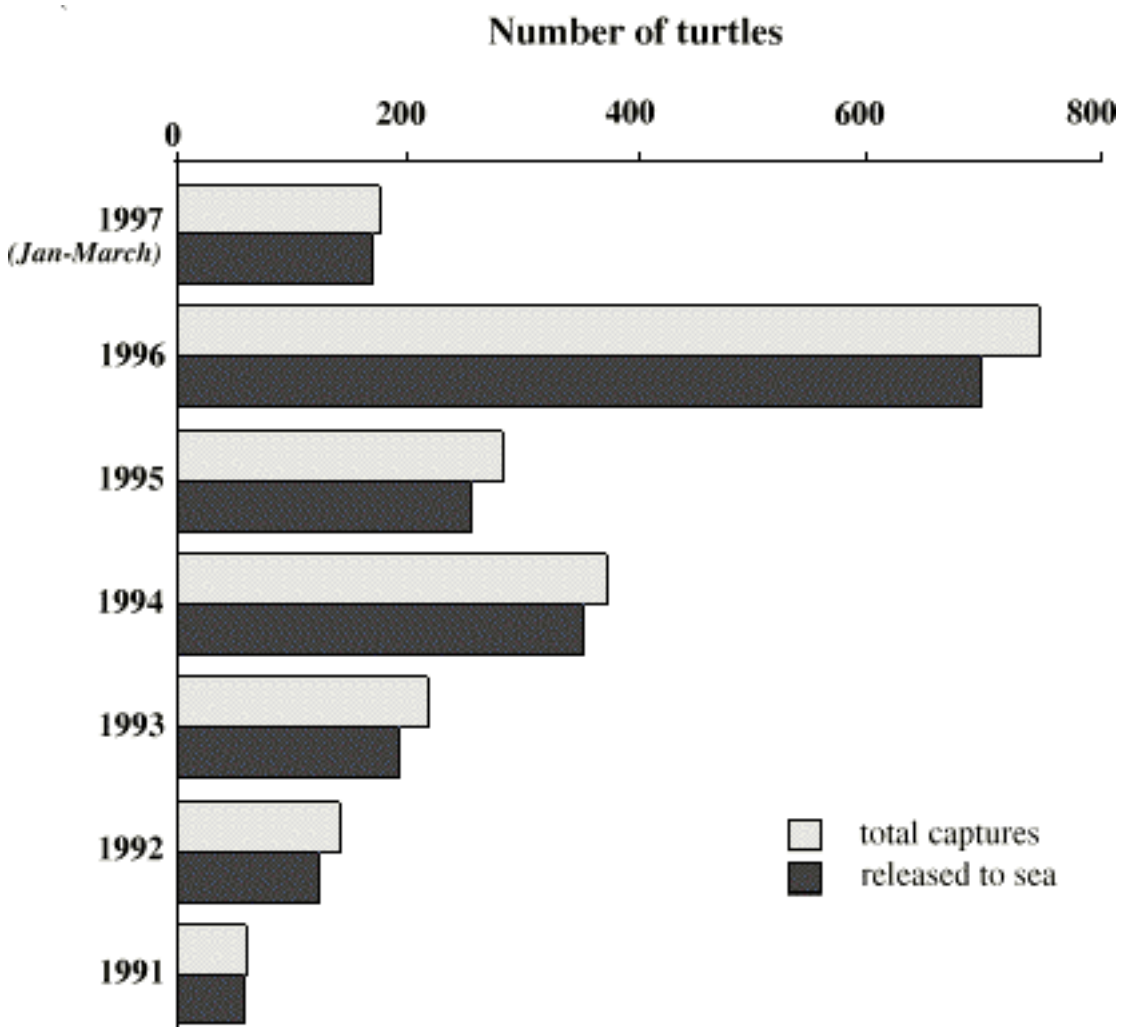

Figure 2. Number of turtles captured and in fisheries and released as part of work carried out at TAMAR stations.

Because individuals are tagged before release, upon recapture, data can be obtained on growth rates and behaviour. Through these research and conservation activities, TAMAR is gaining a better understandingof sea turtles at different life history stages and working to protect them as well as their habitats. All work is carried out with due consideration of the environmental, social, economic and cultural conditions of the local communities.

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