

How Rare Are Hybrid Sea Turtles, Really?

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By DR. LUCIANO SOARES E SOARES

In a continuing effort to keep our community well informed, we have been keeping an eye on sea turtles in the news and reaching out to experts in our community to add depth and detail on timely topics. You may have seen *Smithsonian Magazine's* [recent news story](#) about the first green-hawksbill turtle hybrid that is “competing” in the [Sea Turtle Conservancy's Tour de Turtles](#) this year, and we thought this provided a great launching point to dig a little deeper into this fascinating topic. So, we reached out to *SWOT Report* contributor and hybrid turtle expert, Dr. Luciano Soares e Soares, with a few questions to help us better understand this rare phenomenon.

SWOT: How rare are hybrid sea turtles?

Luciano: Sea turtle hybrids are very rare worldwide, but on some nesting grounds in Brazil a high incidence of hybridization has been reported. At Brazil's main nesting grounds where loggerheads and hawksbills overlap, as well as the beaches where loggerheads and olive ridleys overlap, genetic sampling has shown signs of hybridization in more than 25% of the nesting females.

SWOT: What is known about the behavior of hybrids – which of their parent species do we expect them to behave like?

Luciano: Very little is known about the behavior of hybrids, precisely because they are so rare. Satellite telemetry studies have shown that loggerhead-hawksbill hybrids (nesting females) traveled to loggerhead foraging areas (the maternal lineage of the hybrids). The same sort of

behavior (linked to maternal heritage) has also been observed in juvenile loggerhead-hawksbill, loggerhead-olive ridley, and loggerhead-green hybrids.

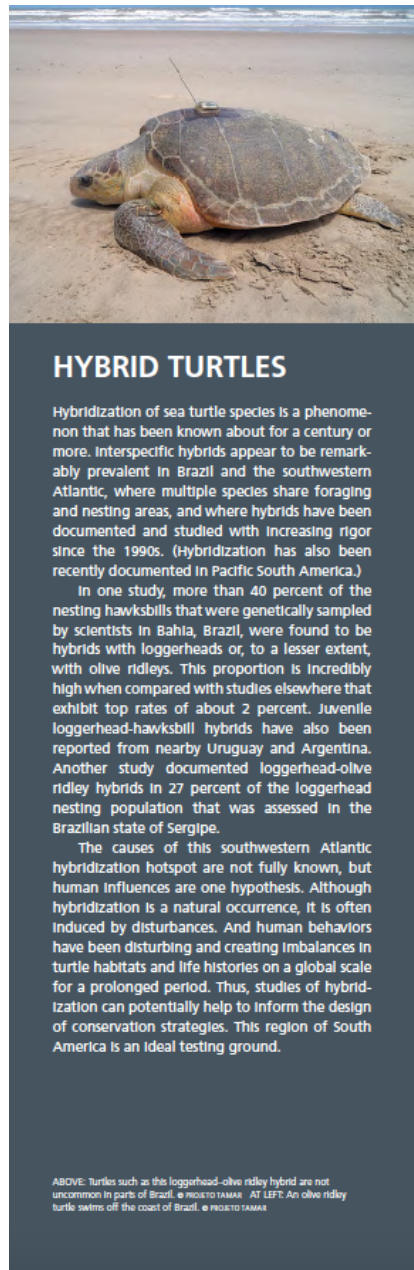
SWOT: Can hybrids reproduce? And what does it mean for the species?

Luciano: First-generation hybrids were confirmed reproducing in Brazil. The study looked at several reproductive parameters as well as hatchling viability and showed that hybrids do not have a reproductive disadvantage relative to the parental, or “pure” species. It is not known if second-generation hybrids are capable of reproducing. Hybridization in many taxa is known to cause outbreeding depression (decreased survival and/or reproductive fitness). But on the other hand, hybridization can also lead to hybrid vigor where hybrids benefit from strong characteristics of both the parental species.

SWOT: Are there any conservation issues specific to hybrids, and specifically to green-hawksbill hybrids?

Luciano: The specific conservation issues to hybrids are related to potential reproductive output and fitness in future generations. Hybrids overall are exposed to the same conservation pressures as their parental species. I do not believe that there are any specific concerns to the green-hawksbill, given that this hybridization event seems to be very rare.

SWOT: Any other interesting comments or perspectives?



An excerpt written by Dr. Luciano Soares e Soares for *SWOT Report*, vol. 11 (2016).

Luciano: Hybridization among sea turtle species is rare, poorly understood, and likely dependent on anthropogenic pressures on nesting populations. Many hybrids do not show a mixed morphological type that would suggest hybridization, so this phenomenon may be underestimated. To shed more light on this phenomenon, genetic studies including nuclear DNA analysis (bi-parentally inherited genes) should be conducted in areas where different species overlap either temporally and geographically.



Dr. Luciano Soares e Soares is an Assistant Research Scientist at the Marine Turtle Nesting Program / FWRI (Florida Wildlife Research Institute), and a courtesy Assistant Scientist at the Department of Biology, University of Florida. During his PhD (University of Florida), Luciano's research focused on the biology of sea turtle hybrids in Brazil, in particular their foraging ecology, reproductive output, and migratory patterns.

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