Initiating Pop-Up Satellite Tagging of White Sharks (*Carcharadon carcharias*) in South Africa

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Following the protective legislation afforded to the white shark (*Carcharadon carcharias*) in 1991, South Africa initiated an intensive research program to establish data on the white shark. The objectives were to investigate the life history and population status of the white shark in South Africa, identify and manage threats to the white shark and produce effective and comprehensive conservation and management plans for this much-maligned species.

South Africa possibly represents the healthiest regional population of white sharks in the world. In a recent research expedition, 69 individual white sharks were observed during only five days of chumming, while our photographic identification program identified over 600 individual white sharks in its inaugural two years. Despite these positive findings, a number of real concerns still exist regarding the sustainability of this population locally and globally.

Satellite tagging of white sharks is one of the technological advances that would enable us to resolve a number of issues for management and conservation of this species. Recent genetic studies have indicated the possibility of migration of male white sharks between Australia and South Africa, while suggesting female are philopatric. If true, this discovery potentially necessitates multilateral management and conservation agreements between states regarding this species. A further issue that can be resolved using this technology is the comparative rarity of mature white sharks observed during research expeditions. Is this scarcity of mature white sharks a result of a young population, or is it due to observation of a nonrandom sample of the population?

The world conservation union has identified fisheries (such as targeted bather protection nets and accidental capture in purse seine netting or on long lines) as potentially non-sustainable harvesting of the white shark stocks. This harvesting still exists in South Africa despite protection. Through satellite tagging, we can understand the spatial and temporal patterns in habitat utilization of white sharks. If areas where white sharks aggregate to breed, nurse or feed can be identified, then these areas can be afforded some protection from those identified fisheries.

Following protection in 1991, a white shark cage diving industry began in South Africa. The pop-up satellite tag technology, as part of an ongoing impact assessment of this industry, enables us to investigate the movement of white sharks between cage diving locations as well as to estimate the overall exposure of individual sharks to this industry.

The study of the movement and habitat utilization of the white shark presents a number of unique logistical

Due to concern over a strongly suspected decrease in numbers of white shark populations, South Africa was the first country to institute protective legislation for the white shark (1991).

Photo courtesy of Michael Scholl

The Pop-up tag is attached using a modified spear gun.

Photo courtesy of Michael Scholl

Aerial picture of Mossel Bay, South Africa. The "X" marks the spot where the white shark was tagged on 24 July 2001. Just to the right is a recreational area where bathers and great whites swim!

Photo by Euward Louw

For regular updates on the progress of this and other research programs we are conducting on the white shark in South Africa visit www.sharkresearch.org