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Trans-Boundary Bronze Whaler (*Carcharhinus brachyurus*) Tagging Program Between Namibia and Angola

(Elasmobranch Fisheries – Poster)

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Abstract

This popular sport-fishing species supports a growing tourism-based fishing industry in Namibia where all bronze whalers are tagged and then released again after capture. In contrast, since 2001, this species has been heavily exploited commercially by surface longliners in neighbouring Angola. Both countries do not have a management plan for this species.

Preliminary mark-recapture results indicate that one bronze whaler stock occurs in these waters and that these sharks move seasonally between the warm waters of the Angolan Front and the colder waters of the Benguela Current in central Namibia. It is postulated that shallow bays in the south of Angola are used as breeding and nursery areas whereas adults seasonally move to the northern and central waters of Namibia.

A 3-year research project on the biology, exploitation and economic importance of this bronze whaler population was implemented in the beginning of 2002 with a mark-recapture program as the core of the project. The main objective of this project would be to formulate separate management plans for the exploitation of this species for the two countries. Preliminary results and the aims of this project will be illustrated in the poster presentation.

Introduction

This common inshore shark species (also known as copper shark) with a circumglobal distribution is also the only member of the genus *Carcharhinus* that occurs in temperate waters. This shark is extremely popular as a fighting fish for local and overseas anglers in Namibia and in the south of Angola. In Namibia these sharks are currently only caught for recreational purposes from the shore and most are returned alive to sea. However, in Angola these sharks have also been harvested in an uncontrolled manner by pelagic longliners over the last 2 years. Therefore, Namibian anglers requested the Government to investigate the situation as preliminary tag-recapture results indicated one bronze whaler population ranging between the 2 countries. It has been shown globally that sharks can be easily overexploited and it could be that uncontrolled harvesting in Angola might negatively impact on the tourism industry in Namibia.

Therefore, the bronze whaler project was launched in 2002 with the one of the aims to implement a trans-boundary tagging program primarily to investigate the possibility of one bronze whaler population. As no bronze whalers have been tagged in the south of Angola, a priority is to tag as many as possible in that area.

Bronze whalers are easily overfished because of:

slow growth (slowest growing of all carcharhinid species)
low fecundity (± 16 pups/yr^{-1})

late maturity (m = 11yrs, f = 19yrs)
long lived (± 35-40yrs)
few enemies (mostly man)

Aims of the tagging program are:

To determine movements (trans-boundary, seasonal migration ?)
Determine stock identity with mark-recapture results (one population ?)
Verify stock identity with genetic study (mtDNA, microsatts)
Investigate population structure (Fig. 1 + 2)
Determine growth rates

Methods

Tagging surveys are undertaken by vehicle to areas where bronze whalers are likely to occur. Experienced anglers then catch these sharks from the shore with rods and reels. Standard measurements are then taken, the sex noted and the shark tagged with a barbed spaghetti tag with a coded number and an address imprinted on it. The tag is inserted with an applicator into the muscle posterior and on the top-left side of the dorsal fin. The shark is then returned without further delay to the water. (See above photos)

Additional to the tagging program, biological parameters to be determined (during this program) as required by fish stock assessment models are:

reproduction (eg. sex ratios, Fig. 3)
growth
natural mortality

Preliminary Results

Since 1983, 3294 bronze whalers have been tagged-and-released off Namibia. Of these, 84 (2.5%) have been recaptured of which 11 (1.5%) were recorded in southern Angola indicating a northern dispersion possibly for breeding at Baia dos Tigres. Maximum days of freedom was 3713 and the average 698 days. Maximum distance moved was 890 km (into Angola) and average distance moved was 133 km. (Fig. 4)

Since the launch of the current project, 2 tagging surveys have been undertaken. In February a survey to Angola was unsuccessful due to political problems. This survey was diverted to northern Namibia but only 6 bronze whalers where tagged due to logistical problems. In August 2002, 151 bronze whalers were tagged in northern Namibia. In November 2002. Another tagging survey to southern Angola will be undertaken.

Overall objective of the bronze whaler project "Title: Migratory Behaviour and Assessment of the Bronze whaler (*Carcharhinus brachyurus*)" is: to formulate a joint management plan for the bronze whaler resource between the Governments of Namibia and Angola that will ensure its sustainable utilisation and protection.

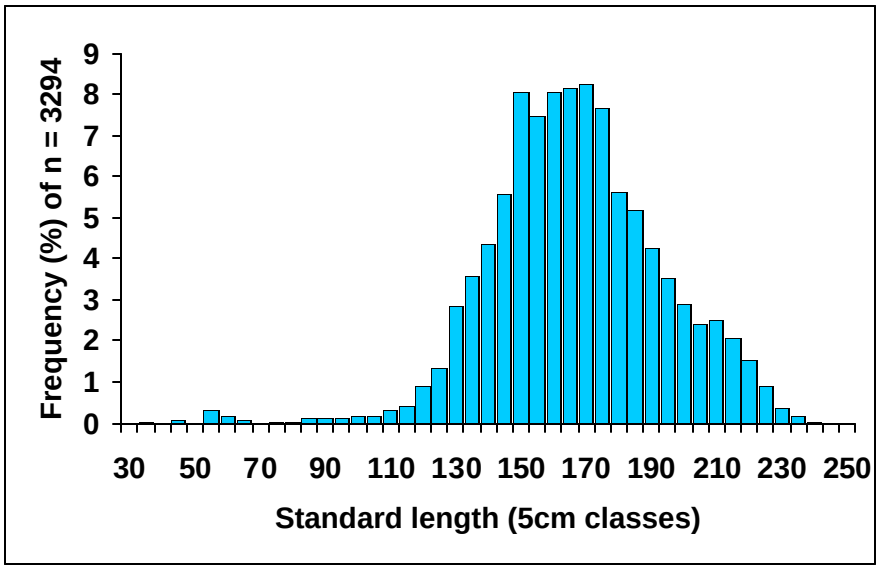

Fig. 1. Length distribution of all bronze whalers tagged off Namibia since 1983 to the present.

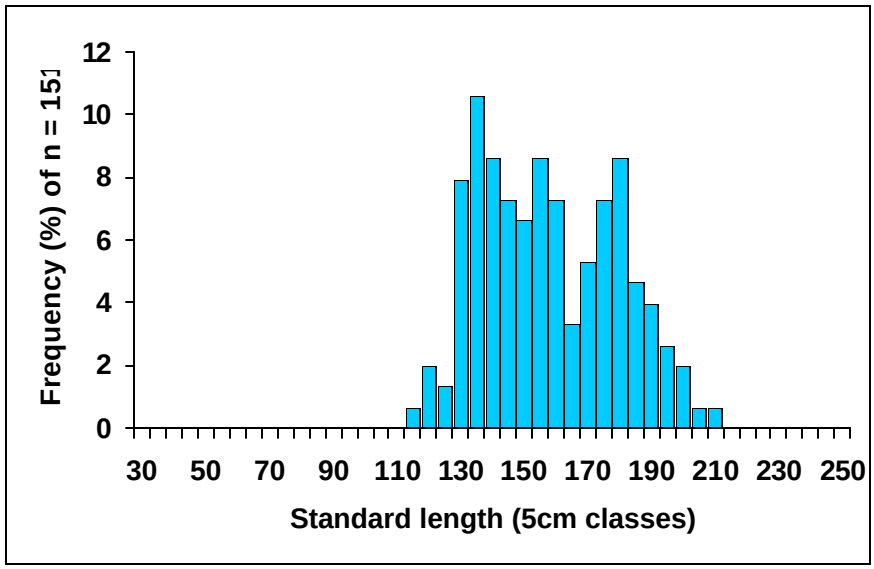

Fig. 2. Length distribution of one school of bronze whalers tagged off northern Namibia in August 2002. Bimodal peaks are evident.

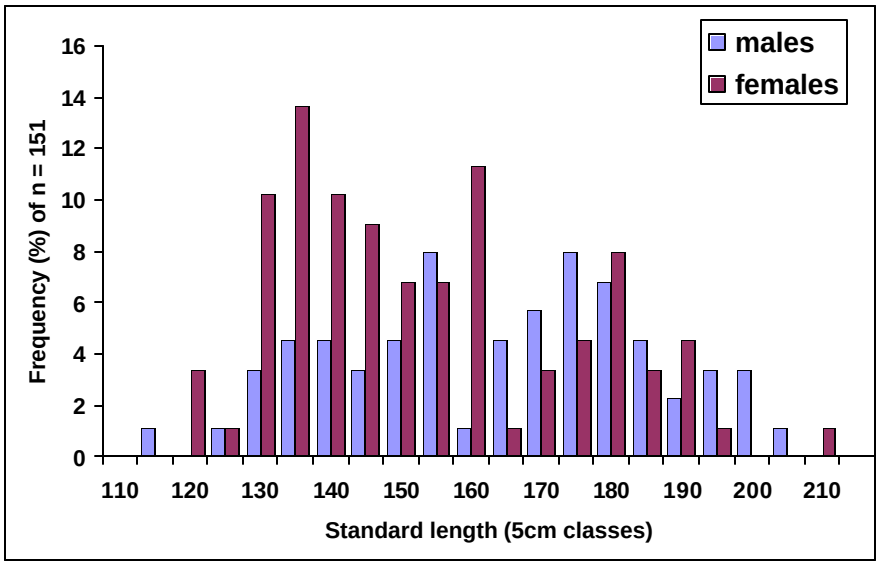

Fig. 3. Proportion of males to females tagged in August 2002. Females dominate in the smaller size range with males dominant in the larger size range. The bimodal peaks for both sexes can be ascribed to immature and mature specimens.

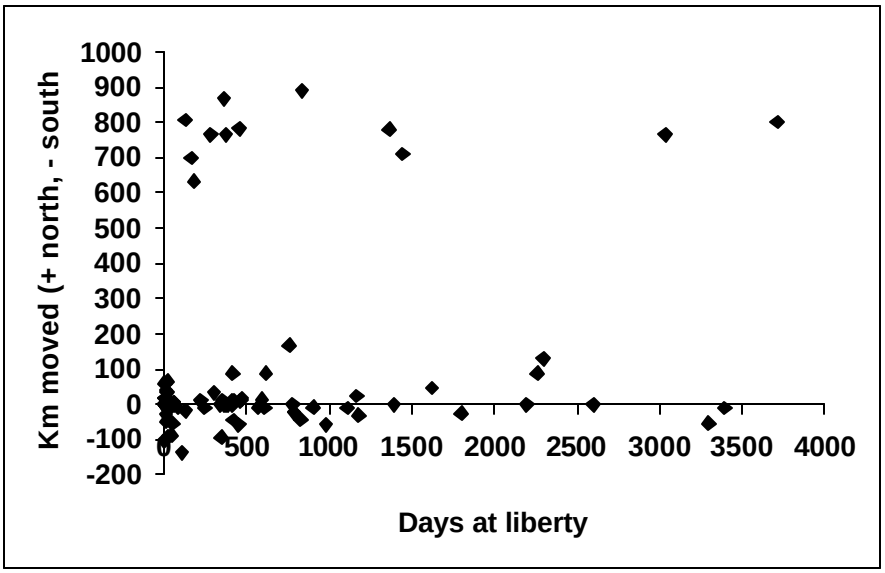

Fig. 4. Kilometres moved versus days at liberty of 84 bronze whalers recaptured off Namibia and Angola. No recaptures were recorded between 200 and 600 km as this area is closed for recreational angling. 600 km+ indicates southern Angola with –150 km being central Namibia.