

Illegal sea cucumber fisheries in the Chagos Archipelago

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The Chagos Archipelago

The Chagos Archipelago, in the central Indian Ocean, includes about 50 small islands with a total land area of only 53 km². These islands are distributed across a vast complex of shallow banks and atolls with nearly 11,000 km² of waters above 50 m depth (Sheppard and Seaward 1999) and some 1.3% of the world's coral reef area (Spalding et al. 2001).

The islands were first settled in the late eighteenth century. By the mid-twentieth century there was a small economy, based around copra, but the resident population was removed, mostly against their will, by the British in the early 1970s (legal challenges from the Chagossian people are still ongoing). With the exception of Diego Garcia, where there is now a large US military base, the islands have remained uninhabited for over 30 years (Curtis 2004; Edis 2004). Surveys of the coral reefs during the 1970s revealed a remarkably pristine reef fauna although overfishing had likely taken a toll on marine turtles. The island biota on the formerly inhabited islands was of course significantly altered, however a number of islands remain rat-free and offer some of the most important seabird nesting colonies in the Indian Ocean.

Fisheries patrols, largely to monitor the licensed tuna fishery, began in the 1990s, and a small licensed demersal fishery from Mauritius has also been ongoing. At the same time, the first observations of illegal fishing were made and since that

time, an unquantified number of vessels have been observed, mostly from South Asia and Indonesia (Mees et al. 1999; and pers. comm. with various UK government and fisheries officials). An expedition in 1996 revealed that reef shark populations had declined by some 85% and, given that sharks had not been a target for the licensed fisheries, this collapse was firmly linked to the illegal fisheries (Anderson et al. 1998).

UK government efforts to police these waters have increased since 1996 and the waters are now patrolled year-round by a Fisheries Protection Vessel while regular sorties to the islands are made by British military personnel. This has led to increases in capture of illegal fishing vessels and crew (Fig. 1), although rates of arrival of new illegal vessels remain high (Cdr. C. Davies, British Representative, Diego Garcia, pers. comm.). It seems likely that, as fish stocks become increasingly impacted elsewhere around the Indian Ocean margin, then the risks associated with illegal fishing in Chagos waters will become increasingly worth taking.

Illegal sea cucumber fisheries

Reports point to an illegal sea cucumber fishery in Chagos that has been operating out of Sri Lanka for several years. This is supported by direct observations and discussions with fishers. We were first informed of large quantities of sea cucumbers from Chagos waters in Sri Lankan ports in about 1999 (pers. comm. Arjan Rajusuriya; Sheppard et al. 1999). Meanwhile, Terney Pradeep Kumara et al.



Figure 1. Intercepted illegal fisheries impounded in Diego Garcia. A: Sri Lankan vessels (photo: M. Spalding); B: shark catch (photo: N. Hinch)

(2005) have recorded sea cucumber imports of some 23,609 kg in 2000 and list Chagos as a major source. The start of the fishery in the years leading up to 2000 would tie in well with the recorded decline in national stocks in Sri Lanka that began around this time (Terney Pradeep Kumara et al. 2005)

Given that many illegal fishers of other fish stocks have been caught, it is perhaps surprising that the first direct observations and arrests of sea cucumber fishers by the Chagos authorities are from 2005 (pers. comm, Tony Humphries, BIOT Administrator).

Fisheries regulations within Chagos do not allow for any unlicensed vessels to take fish from Chagos waters. The only exceptions are for recreational and personal consumptive uses by personnel on Diego Garcia and the few private vessels (mostly yachts) that pass through these waters (Sheppard and Spalding 2003). Additional restrictions are imposed to prevent damage within the existing fisheries. There are limits on the gear and total number of licences, with temporary closures, for example, of spawning aggregations, which are imposed on the Mauritian commercial fishery. A number of Strict Nature Reserves have also been declared. These are closed to all fishing, although a legal loop-hole prevents this being applied to the Mauritian fishery at the present time.

In April 2005, a camp of illegal Sri Lankan fishers was observed on the northern end of Eagle Island, a Strict Nature Reserve. About 10 fishermen were pre-



Figure 2. Part of the haul of sea cucumbers on Eagle Island, April, 2006. Although not positively identified, it seems likely that the species include: **A:** some valuable teat fish *Holothuria (nobilis?)* and **B:** probably *Actinopyga* or *Bodaschia* spp. (Photos: M. Spalding)

sent. They had arranged a series of drying platforms on a wide sandy beach area at this end of the island, with strong black plastic sheeting to cover the sea cucumbers when it rained. An estimated 5000–7000 sea cucumbers were observed drying. These were not identified to species, although it would appear that there are several species present (Fig. 2). The mother vessel was not seen, but there was a small boat with an outboard. There was also no sign of diving equipment, although again it should be noted that this may have been held elsewhere.

These observations were reported to the British officials on Diego Garcia and the Fisheries Protection Vessel, with military personnel, was sent to intercept. The fishers were arrested, duly tried and fined, and on payment of the fine were allowed to return (without their catch) to Sri Lanka.

Since then, over a period of five months, a further three vessels and crew have been caught and each fined amounts ranging from USD10,000–17,000. Some, but not all vessels, were found with diving equipment, which would greatly extend their harvesting capability and would allow them to access some of the higher value species. To be added to the cost of these fines must be considered the costs of mounting an expedition to fish in Chagos waters. The journey is made in relatively small vessels, using considerable quantities of fuel. An expedition would take on the order of one to two months.

Such an expedition is clearly worth undertaking when the chances of success are high. This is heightened by the growing market value of sea cucumbers. The total value of the haul observed drying in April could have been as much as USD 60,000–80,000, and this by no means represents the complete intended catch. Perhaps the capture of four such ventures in the last five months will begin to have a deterrent effect.

Impacts on the natural population

There have been no surveys of sea cucumbers in the Chagos Archipelago and the author is unaware of any species lists. Figure 3 includes photos taken in the northern atolls of Chagos, including two spawning observations, as requested by Conand in her editorial in the SPC *Beche-de-Mer Information Bulletin* #22. Natural population sizes for the archipelago are unknown, which present a challenge to any efforts to assess the impacts of the fishery. Given the geography of the region, it is likely that most effort would have been focussed around the islands of Peros Banhos, the Great Chagos Bank and perhaps Egmont. Visitors to Solomon, and military on Diego Garcia, would likely prevent intensive collection in these places, while the very re-

mote and exposed nature of some of the non-islanded banks and atolls would likely reduce collecting pressure on these.

Nonetheless there is reason for concern. The Chagos archipelago represents one of the few remaining wilderness areas of the Indian Ocean. It provides an invaluable reserve of natural reef communities, and may well play a wider regional role in the movements of species and genetic material to other reefs across the ocean. It will be extremely valuable to maintain these reefs in healthy and near-pristine conditions in order to have a baseline, both for scientific study and, perhaps, to support recovery of damaged ecosystems elsewhere across the region. There is a considerable additional concern that the presence of persons onshore in the nature reserve islands could have consequences on their ecology. The accidental introduction of alien invasive species would have a devastating impact on some of the last vestiges of oceanic island hardwood forests as well as on the vast seabird nesting colonies that use the islands. The UK government has expressed its concern to the author and will be further seeking to halt this fishery through improved detection and arrest as well as through diplomatic approaches with other Indian Ocean countries.

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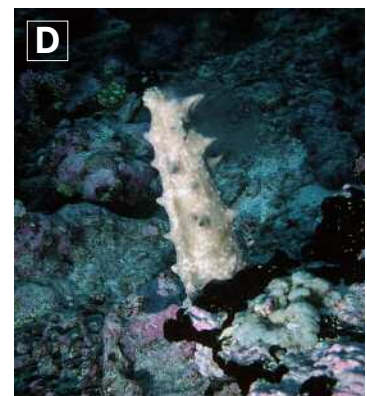


Figure 3. Underwater images of sea cucumbers in Chagos. A and B: probably *Pearsonothuria graeffei*; C: *Thelonota ananas*; D: unidentified. Both spawning observations were in early March 2001. (Photos: M. Spalding)