

Diving Reconnaissance of 27 Western Indian Ocean Coral Reefs

On a voyage lasting from mid-April to mid-July 1973, from Seychelles to Madagascar (Fig. 1), we SCUBA dived on 27 different coral reefs of which 23 were in remote

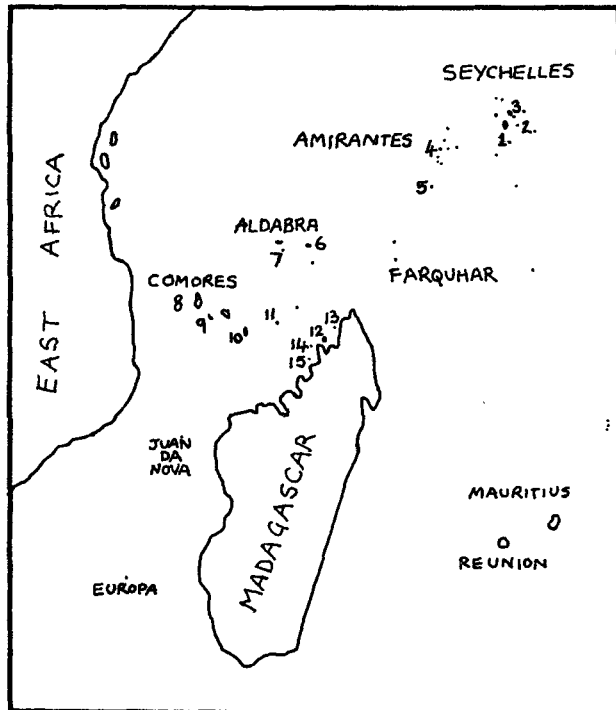


FIG. 1. Sketch-map of the part of the Western Indian Ocean traversed. 1, Mahé. 2, Frigate. 3, Praslin. 4, Poivre. 5, Alphonse. 6, Cosmoledo. 7, Assumption. 8, Grande Comore. 9, Moheli. 10, Mayotte. 11, Banc du Geyser. 12, Nossi Bé. 13, Nossi Mitsio. 14, Nossi Iranja. 15, Nossi Radam.

oceanic situations. A total of over 50 dives of about an hour each were made—always by the two of us together. Despite the isolation of many of these islands, there was nevertheless often a strong indication that the reef ecosystem had been much disturbed by Man. Thus large predatory species, particularly of Sharks (Carcharhinidae) and Groupers (Serranidae), were often notably absent, in spite of the fact that in historic times these areas were known to host vast numbers of such animals (Fauvel, 1909). Furthermore, the larger fishes were often very timid and ready to flee from a diver. Human interference with coral-reef ecosystems can be brought about in many ways besides direct destruction: well-known instances in this region are, spear-fishing, shark-fishing (cf. W. Travis, *Shark for Sale*, Allen & Unwin, London, 1961), bottom fishing, and the collection of marine molluscs—particularly Green Snail (*Turbo marmoratus*) (cf. W. Travis, *Beyond the Reefs*, Allen & Unwin, 1959) and pearl oysters (*Pinctada* spp.).

We would like also to record that oil-clots, both small (a few millimetres in diameter) and large (up to several cm),

were a consistent feature of the beaches on several of the atolls which we visited—including Alphonse, Cosmoledo, and Aldabra, while on Desnoeuvs (Amirante Islands) we found the remains of an oiled Frigate-bird (*Fregata* sp.).

Only two of the 27 coral reefs investigated were outstanding for their apparent lack of disturbance. One of these was the Banc du Geyser, a large horseshoe-shaped reef of which none is exposed above high-tide level, and which in origin, together with the Iles Glorieuses, is probably part of the Comoros volcanic chain (Guilcher *et al.*, 1965). The abundance there of fish life and, more significantly, the preponderance of large predators, was quite remarkable. Sharks (mainly Carcharhinidae), Snappers (Lutjanidae), Groupers, Jacks (Carangidae), and Dogtooth Tunny (*Gymnosarda* sp.), were all present in impressive numbers, and their behaviour, and that of most of the other fishes associated with the reef, indicated that they had not experienced any significant contact with Man. The 'curiosity' of these fishes, and the closeness to which they approached us, were quite uncanny (Fig. 2). On a reef

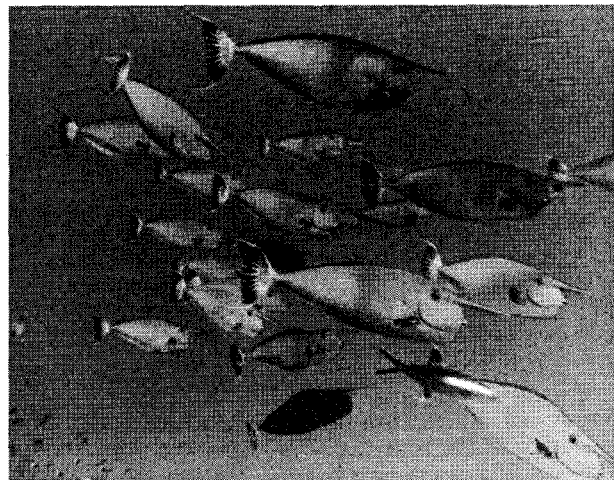


FIG. 2. A group of Unicorn-fish (*Naso* sp.), averaging ca 60 cm in length, at a depth of approximately 24 metres on a reef off Grande Comore, Comoro Islands. Below to right of middle is seen a single caesioidid. Many fishes, such as the Unicorn-fish, were wary of divers on most of the reefs visited in the Western Indian Ocean. Photo: N. V. C. Polunin.

that has been spear-fished, the fishes 'soon' develop a fear of spear fishermen, and of swimmers in general (Randall, 1969). Although it is situated in international waters, Banc du Geyser is afforded a degree of natural protection by its isolation and its notorious dangerousness to shipping. Our second seemingly unaffected reef is, however, not such a 'natural reserve,' and so it seems wiser not to mention its location.

While our observations on the prolific fish fauna of Banc du Geyser must be considered in the light of possible upwellings of nutrient-rich waters, such as occur off the



FIG. 3. A Butterfly-fish (*Chaetodon meyeri*) about 12 cm long in centre, and a 'forest' of branching corals, at a depth of ca 7 metres off Middle Island, Aldabra. A Surgeon-fish (*Ctenochaetus cf. striatus*) is prominent on right below, and others are visible to the left. A typical mixture of small fishes is seen in the background. Photo: N. V. C. Polunin.

island of Juan da Nova in the Mozambique channel, our discovery of the real paucity of remaining virgin reefs in this region is nevertheless notable. Clearly the coral reefs, with their great diversity of biota (Fig. 3 above), have at least a poor degree of homeostasis when it comes to the depredations of Man. The usual fishing method (a line, a weight, and a hook baited with a strip of fish flesh) by its very nature selects predatory species. The reduction in predators and thus of predation pressure due to continued use of this method, may have had far-reaching effects on reef ecosystems as a whole. Amongst such effects may have been a general reduction in species diversity (Paine, 1966). Indeed, in this age of earth-shrinking and earth-stinking, there can be few areas as virgin as these two that we were fortunate enough to visit.

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