



Top left: A section of eastern Salomon atoll rim, the arrow and box indicating the tooth-like spurs.

Top right: Western ocean side of Peros Banhos at low tide, showing the reddish algal ridge and algal spurs projecting seaward from it.

Bottom: On a northeast facing ocean shore of Diego Garcia, taken from in a groove, between relatively small spurs, on a particularly calm day. The pink nodules on the spurs are the *Porolithon*.

Spur and grooves, and the algal ridge.

Lining the ocean-facing edge of many coral reefs of Chagos atolls is a substantial ridge made of stony red algae, and a system of spurs of the same material projecting perpendicularly into deeper water. These are highly wave resistant structures, and it is because of them that the reefs, and the islands behind them, can exist in strong wave conditions. The algae are mainly of the genus *Porolithon*, which deposit limestone in the manner of corals, except that it is in the form of much harder and denser high-magnesium calcite.

They are crucial in enabling the reefs to resist erosion. They thrive in the shallowest, surf washed areas at the edge of the reef flat where little else can, and probably need the turbulence to survive. On well developed systems such as those of Peros Banhos and Salomon, the ridge may exceed 50 metres wide, and the perpendicular spurs may be more than 100 metres long, gradually descending into deeper water where they disappear at 5 metres depth or more. Between the spurs, the grooves are kept free of most living organisms by the abrasive action of waves. The spacing of the spurs is a curious and unexplained harmonic of the average wave period, such that the returning swash from each expended wave clashes and partly cancels out much of the energy of the incoming wave following behind it. It is this extremely effective energy dissipation which permits many islands and reefs to survive at all.

In Peros Banhos atoll, the southeastern side is fairly open to the southeast tradewinds, so that strong waves also strike the lagoon shores of the western side. Wave energy there is strong enough to cause development of simple spur and groove systems, with rudimentary algal ridges connecting them, along several parts of that lagoon shore. This is the only recorded example of such structures in atoll lagoons, and indicates the relatively strong wave energy in this lagoon.

Sheppard, C.R.C. 1981. The groove and spur structures of Chagos atolls and their coral zonation. *Estuarine Coastal and Shelf Science*, 12: 549-560.

The Chagos Conservation Trust is a charity (Registered in the UK No. 1031561) established in 1992 whose aims are to promote conservation, scientific and historical research and to advance education concerning the archipelago. The Trust is a non political association.

If you would like more information on the publications or membership, please contact the Secretary (simonhughes@hughes-mccormack.co.uk) or visit the web site www.chagos-trust.org.