

Clonal structure through space and time in Reunion Island: high stability in the holothurian *Stichopus chloronotus* (Echinodermata)

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Sea cucumbers are more and more exploited for human consumption and for their curative properties, and many wild populations are now depleted and in danger of extinction. While aquaculture is seen as an alternative to fisheries and as a mean to restore wild populations, more knowledge is needed on their strategies of reproduction to render this practice efficient, notably for fissiparous holothurians, which are some of the mobile animals able of asexual reproduction. Little information is available on their population genetic diversity and structure. Here, the clonal structure of populations of the fissiparous sea cucumber *Stichopus chloronotus* has been investigated using nine microsatellite loci and a random sampling, at different spatial (intra- and inter-reef) and temporal (inter-season and inter-year) scales. It allowed to highlight the importance of asexual reproduction to maintain these populations, and the prevalence of the "initial seedling recruitment" strategy (ISR), leading to a high stability of clonal composition over seasons and years. It also seemed that clonal propagation was limited to the reef scale (< 10 km) while reefs were connected by sexual dispersal. This is the first time that clonal structure in sea cucumbers has been studied at such a fine scale, with a specific sampling strategy. It provides key findings on the genetic diversity and structure of fissiparous sea cucumbers, which will be useful for the management of wild populations and aquaculture.