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Connectivity between reef fish populations estimated by complementary otolith analysis techniques and management application to *Mulloidichthys flavolineatus* (Mullidae) on the SW Indian Ocean.

Karine Pothin¹, Raymonde Lecomte-Finiger² & Pascale Chabanet³

¹-Ecomar, Université de la Réunion, karine-marie-pothin@univ-reunion.fr

²- FRE2935 CNRS-EPHE, Université de Perpignan, 66860 Perpignan Cedex

³- UR 128 COREUS. IRD de Noumea, BP A5. Noumea Cedex; New Caledonia

The degree of connectivity between populations explains partly the biodiversity observed in a given area. For the majority of coral reef fishes, their potential of dispersion could be researched by studying the otoliths, which reveal their larval pelagic phase. The objective of this study is to determine, on different sites in the SW Indian Ocean (2 sites in Reunion Island, 1 site of Mauritius Island), if the recruitment of *Mulloidichthys flavolineatus* (Mullidae) is sustained by local self-recruitment or from external sources. The first otolith analyses showed that juveniles sampled were not significantly different by their age and larval life duration, while morphometric measures allowed separating the three sampling sites. Furthermore, microchemical analyses did not show significant difference between larval and settlement phases on all individuals sampled. However, they allowed the discrimination between the first site (Etang-Salé, Reunion Island) and the two other sites (St-Leu, Reunion Island and Pointe-aux-Roches, Mauritius Island) because of differences on Mg concentration. This result could be explained by the link between the digging food behaviour of the species and the composition of sand: the volcanic sand of the first site being richer in Mg than the two other coral sand sites, richer in C and Ca. Thus, in normal hydrodynamic context, the hypothesis of self-recruitment is favoured. These results are of major importance for fishery management as *M. flavolineatus* is extensively exploited in the SW Indian Ocean and point out the vulnerability of their stocks.