# Acoustic tracking of fish suggests high connectivity between a marine reserve and two unprotected reefs of New Caledonia

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Marine reserves have been promoted extensively as a popular alternative to traditional coral reef fisheries management. A potential benefit of marine reserves is an increase of the abundance and the biomass in adjacent unprotected areas by the net emigration of fish from the reserve. Within this context, information about movement patterns of fish is necessary to estimate the effectiveness of marine reserves as a fisheries management tool.

This study presents preliminary results on the movement of four commercial species between three reefs using acoustic telemetry. The studied area included a marine reserve (Laregnere islet) and two unprotected reefs (Laregnere reef and Crouy reef) located respectively 900 m and 2000 m from the reserve. Twenty three omnidirectional hydrophones were deployed around the three studied reefs. Fish were caught in the studied area and surgically implanted with ultrasonic transmitters. Important movements were observed for *Epinephelus maculatus*, *Plectropomus leopardus*, *Chlorurus microrhinos* and *Scarus ghobban*.

At least one individual by species have moved between reefs during the monitored period (11 months). Surprising movements were observed for *Epinephelus maculatus*. One individual moved between the three reefs at least 5 times during the first month of survey.

These unexpected observations suggest high connectivity between the three studied reefs in spite of their isolation by lagoon soft bottoms.