

Chapter 2

Coral reef fish diversity

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SUMMARY

- An underwater survey to study the diversity of coral reef fish was undertaken on 48 sites spread over the three communes of Touho, Poindimié and Ponérihouen in Province Nord. A total of 433 species of fish was identified. This value is less in comparison to the 1695 species reported to occur in the 0-100m zone of New Caledonia by Ron Fricke and Micheal Kulbicki.
- The number of fish species recorded during this RAP ranged from 39 to 143 for the least rich to richest site respectively. A mangrove site with only seven species and where no reefs were present was not taken into account in determining an average mean per site. The mean number of species per site was 83.36 for the 47 sites sampled.
- Over the area studied, the three most dominant families present were Labridae with 68 species, Pomacentridae with 61 species and Chaetodontidae with 29 species.
- The highest diversity coral reef fish was mainly observed on the outer reef slopes with an average of 113.57 species. The other habitats samples had mean values of species as: passes with 92.57 species; intermediate reefs with 87.31 species; back reefs with 85.66 species and fringing reefs with 50.25 species per site.
- The Coral Fish Diversity Index (CFDI) formula by Gerard Allen was applied for this study, allowing a more accurate count of the number of species. With more than 729 species presumed to be in this area, species richness was slightly lower than that of the two previous RAP surveys. This difference may be due to the lower average counting time of 70 min instead of 85 min during the previous RAPs. Also, the number of sites surveyed was fewer than for the Mount Panié and Koumac to Yandé RAPs. Many additional factors could explain these minute differences, like tides, different time of day, observer vision accuracy and others.
- One new fish, *Chlorurus japanensis* (Bloch, 1789) was observed, recorded and photographed for the first time in New Caledonia during this survey. The presence of *Hali-choeres richmondi* Fowler and Bean, 1928, another species not listed in the official IRD inventory but previously recorded during the Mount Panié RAP by Richard Evans, is certainly confirmed by several observations. Additionally, ten other fish could not be identified; some may be new species.
- Overall, observations from this study indicate that majority of the fringing reefs are already damaged, host few fish and have a lower species diversity of fish. Fortunately, it appears that the greater majority of the barrier reefs and their surrounding areas show excellent fish diversity. Intermediate reefs were observed to have good to medium fish