

Chapter 2

Coral Reef Fish Diversity of the Northwestern Lagoon of Grande-Terre New Caledonia

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SUMMARY

- A list of fish species was compiled from observations while scuba diving at 57 of the 62 sites assessed in the northwest lagoon (Yandé to Koumac) of New Caledonia. The survey involved approximately 90 hours of scuba dive to a maximum depth of 30m.
- There are currently 1,019 known reef associated reef species. This study observed 526 species in total, representing 52% of the known diversity. Species numbers at the 57 sites for which data was analyzed varied from 46 to 172, with an overall mean value of 117.
- Wrasses (Labridae), Damselfishes (Pomacentridae), and Gobies (Gobiidae) were the dominant groups in the survey area. In these dominant families, 75, 71 and 31 species respectively were observed across the entire survey.
- Outer barrier reef front or outer slope sites had the highest fish diversity with a mean of 141 species per site. Outer barrier reef back sites had a mean of 117 species per site. Outer barrier reef pass sites had a mean of 124 species, intermediate lagoon reefs had a mean of 127 species and inner lagoon reefs had a mean of 81 species recorded. Fish surveys at most sites on inner lagoon and, to a lesser degree, intermediate lagoon reefs were affected by poor visibility.
- Two range extension records for New Caledonia reef fish species were obtained in the survey. These included *Asterropteryx striatus* from the Gobiidae family and *Plectroglyphidodon phoenixensis* from the Pomacentridae family.
- A formula for predicting the total number of reef fish species that could be expected to be found in the survey area was applied to our results, indicating that approximately 773 fish species could be expected to be present. This may be contrasted with the figure of known reef fish species for the entire New Caledonia lagoon and reefs which stands at 1,019.
- Our study indicated relatively high reef fish diversity over an extensive area of the reef sites assessed, supporting the conclusion that the northwest lagoon and reef system is a regionally if not internationally important site in biodiversity terms. The development of a network of marine protected areas to conserve and manage this region is well justified and critical.

INTRODUCTION

This chapter presents the reef fish diversity investigation conducted as part of Conservation International's RAP survey of northwestern lagoon of New Caledonia, December 2007. General information on the survey and survey site descriptions are provided elsewhere in this report.

The objective was to produce a comprehensive list of reef-associated fish species. This was achieved through observations completed by a scuba diver within safe recreational diving depths (to 30m). On a cost and time basis this method is generally perceived to give the best results. Considerable scientific effort has gone into the analysis of the data derived from this