2 METHODOLOGY

This study was conducted in conjunction with a project examining the economic and socio-economic impacts of the crown-of-thorns starfish on tourism (Hundloe, Vanclay & Carter 1987). Linking these two projects resulted in considerable savings in field costs and respondent burden. However, it lead to a lengthy questionnaire. Furthermore, this study, being the more secondary project, was restricted in methodology to that required for the primary project.

The questionnaire was designed to satisfy the requirements of both studies. Linking the two studies had advantages beyond that of expediency. Questions relating to tourists' holiday experiences provided a background setting in which questions about the crown-of-thorns starfish could be asked in an appropriate context.

Preliminary unstructured interviewing was conducted at a number of locations in the Cairns region in May 1986, to provide a basis for the design of the questionnaire. Previous research, in particular the Unisearch report (Glaser & Wilkinson 1981), and the GBRMPA Project Officer, Ms Sally Driml, were other sources.

Personal interviews were conducted during two periods in 1986, August/September and November/December in order to represent the winter and summer tourist seasons. A total of 354 tourists were interviewed, with roughly an equivalent number from each season. A refusal rate of less than 10% was encountered.

Of all respondents, 92% were on holidays in the Reef region, while 8% were in the Reef region primarily for business and were undertaking visits to coral sections of reef in conjunction with the trip. People who were in north Queensland exclusively for business were excluded from the sample and were not interviewed.

The primary aim of the sampling strategy, as required for the major study, was to interview tourists who had seen coral. Interviews were conducted in many different locations ranging over the majority of the reef area, from Heron Island in the south to Agincourt Reef north of Port Douglas, with the primary interviewing locations being: Green Island, Dunk Island, Great Keppel Island, and the Whitsunday group; and boat trips visiting Low Isles, Agincourt Reef, John Brewer Reef, and Lady Musgrave Island. Interviews were also conducted at a range of other locations. Dunk Island does not have coral, but most resort guests visit Beaver Cay on an excursion from Dunk Island during the course of their stay at Dunk.

A number of strategies were employed to gain access to respondents. Captive audiences on return boat trips from coral sections of the reef accounted for 21% of respondents. 56% of respondents were interviewed in common areas at resorts, e.g. on the beach, at the dining area, near the swimming pool etc. 8% were interviewed in their resort motel rooms, and 7% were interviewed at the island camping areas. Other strategies on the mainland accounted for the remaining 8% of respondents interviewed.

Demographic data relating to the place of origin, age and sex of respondents was compared to published data on Great Barrier Reef tourism (ABS 1986, QTTC 1986). The length of stay for international tourists was also considered. Statistical techniques revealed that the sample was representative of the tourist population, with the exception that respondents from Queensland were undersampled. Such undersampling is unlikely to cause problems in the analysis. Furthermore, this undersampling may be a function of the different time periods between the population data and the sample data, or in the differences in the actual tourist population being considered by each study.

A more likely source of bias in this study is from the sampling strategy. The stated aim of the crown-of-thorns starfish study was to survey people who had seen coral. This could result in an oversampling of 'Reef' people, whereas with only minimal mainland interviewing, people who choose to have holidays in mainland north Queensland will be undersampled. To some extent it is possible to consider differences between 'Reef' people and 'Mainland' people by examining the responses to each dependent variable considered by location of interview and other locations in north Queensland that the respondent has visited. However, there still is likely to be an overstatement of the reef in comparison to other north Queensland tourist destinations. Much valuable information can still be extracted from this report, especially in relation to people who come to north Queensland to see the reef. This study is to be regarded as a study of the perceptions and opinions of Reef visitors, not of north Queensland tourists.

Sampling strategies could also have led to the undersampling of 'active' tourists, those engaged in fishing, scuba diving etc.

Although international tourists are not under-represented as a group, it is possible that certain sub-groups of international tourists are undersampled, particularly those from non-English speaking backgrounds. Funding for this study did not allow for foreign language interviewing, and difficulties in the interview schedule would not easily allow its translation and self-completion by non-english speakers. Data for this study was collected in 1986, before the rapid growth in Japanese tourism, and Americans constituted the bulk of international tourists to the Reef. In the analysis presented, international tourists are examined as a group, however it is quite likely that there are major differences between different categories of international tourist and care must be taken in generalizing these results.

The study area referred to in this report is the Great Barrier Reef region and is defined as the coastal region between Bundaberg and northern Cape York including all islands and reefs. To be included in the study, the respondent must have visited the reef region as so defined, independent of the location of interview. The economic constraints on interviewing meant that interviewing was concentrated to a number of specific locations within the reef region and on the mainland south of Agincourt Reef. As there is relatively little tourism north of Port Douglas, exclusion of the far northern reef region should have little effect on results.

Analytical Techniques

The analysis presented in this report is not conducted in the usual framework of scientific inquiry, in that the analysis presented is atheoretical. The report presents information useful to considerations relating to the management of tourism on the reef.

The questionnaire allowed for the possibility of a very large range of relationships to be examined. In consultation with the GBRMPA Project Officer, only issues of particular interest to GBRMPA have been explored, although the data set would allow for a much wider investigation into the nature of tourism on the reef. For example, the data set could be interrogated with more of a market research orientation for the purposes of promoting tourism on the reef, if this was desired. Issues that have been examined in this report relate to the importance of coral viewing and coral quality in tourists' holidays, tourists' attitudes to further development in the reef area, factors that may affect future growth of tourism in the reef region. In addition, many variables contributing to the understanding of these issues, were examined, such as reasons for visiting north Queensland, likes and dislikes, best and worst experiences, fears and concerns, opinions on the management of the reef and the importance of holidays.

Much of the analysis is exploratory giving a general overview of possible relationships, rather than a definitive statement of the exact relationship between variables. In many cases, further research is strongly recommended, especially where the findings of this report would have an impact on decision making.

Much of the analysis presented was not considered in great detail at the time of designing the questionnaire and survey methodology: it was requested only in the analysis stage of the research. It is therefore likely that research specifically dedicated to those issues would provide a more insightful analysis than is presented here. However, this study should be helpful in further research design and in illustrating where further research is required. A number of problems that have emerged in the analysis of this study are the direct result of decisions made for the primary study, and outside the control of this analysis. For the most part, these problems are small, but have added to the difficulty of analysis.

The independent variables that have been considered in this study relate to different categories of tourists, for example: the origin of the tourists; the residential status of tourists (i.e. resort guest, camper, day tripper); diver status; fisher status; whether a first timer to north Queensland or a return visitor; season; and the amount of previous coral experience, whether on the Great Barrier Reef, or other parts of the world. Different categories of tourists would be possible, however selection of the independent variables was from considerations relating to the management of the reef, and not from the point of view of tourism promotion or sociological perspectives. As such, analysis from these other perspectives was not undertaken.

In the interpretation of this report, care should be taken to consider the possibility of confounding. There is some confounding among the independent variables. This is potentially important since the differences that are observed between two variables may be due to their relationship with the third variable. For example, there is a very strong relationship between the origin of the tourist and whether it is the tourist's first trip to north Queensland. Only 11% of international tourists are return visitors, while 58% of Australians are return visitors. Locals have been excluded from analysis when considering relationships involving first trip to north Queensland. This means that results of relationships including the variable for first time/repeat visit will resemble the relationship including the origin of the tourist. Without further analysis, it would not be possible to determine if the difference is due to the respondent being a return visitor, or a first timer, or whether it is because the tourist is from overseas. With further analysis it is possible to isolate the effect of each variable. Because this report should be regarded as exploratory, such analysis has not been done routinely. However, the confounding of relationships has been examined where it is specifically important in the understanding of the analysis of important issues. If other issues are regarded as being important, further analysis examining the effect of confounding may be required.

Some other variables that could have a potential for confounding are:

- tourist origin and season. International tourists comprise 28% of winter tourists, and 42% of summer tourists in this survey.

- first time/repeat visit and season. First timers comprise 54% of winter tourism and 65% of summer tourism.

- diver status and season. Divers comprise 12% of winter tourists and 21% of summer tourists in this survey.

- fisher status and season. Fishers comprise 24% of winter tourists and 12% of summer tourists in this survey.

- origin of tourist and coral experience. 70% of locals had Great Barrier Reef coral experience, while 44% of Australians had Great Barrier Reef coral experience, and only 10% of international tourists had Great Barrier Reef experience.

- tourist origin and fisher status. 23% of Australians were fishers, while only 12% of international tourists were fishers, and only 10% of locals were fishers in this study.

- coral experience and first time/repeat visit. 52% of first timers had no previous coral experience, while only 18% of repeat visitors had no previous coral experience. No first timer could have previous coral experience on the Great Barrier Reef.

- fisher status and first time/repeat visit. Fishers comprised 24% of return visitors but only 15% of first timers.

- fisher status and diver status. Fishers comprised 16% of non-divers and 29% of divers.

All the relationships described above were statistically significant. This does not indicate that relationships involving these variables will be confounded, only that the potential for confounding exists. For some relationships, any confounding that is occurring could be quite severe, while for others the relationships are weak but significant, and the effect through confounding relatively small. Further analysis would be required to identify the true effect of any particular variable. For the most part, however, interpretation undertaken considering the possibility of confounding should be satisfactory for most applications of this analysis.

Many questions in the questionnaire were open ended and respondents were allowed to offer as many responses as they felt were necessary to portray how they felt in response to the question. These questions were analysed by multiple response procedures. While multiple responses were necessary for the validity of the results, one disadvantage is that statistical tests based on probability cannot be applied. Statistics have been used in the analysis of these data where appropriate, but the attempt has been to present a report that is available to a wide audience. Appendix 5 provides further details about the analysis of multiple responses.