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**Survey of Marine Scientists and  
Other Experts for Anecdotal  
Observations of Crown of  
Thorns Predation**

**Great Barrier Reef Marine Park  
Authority**

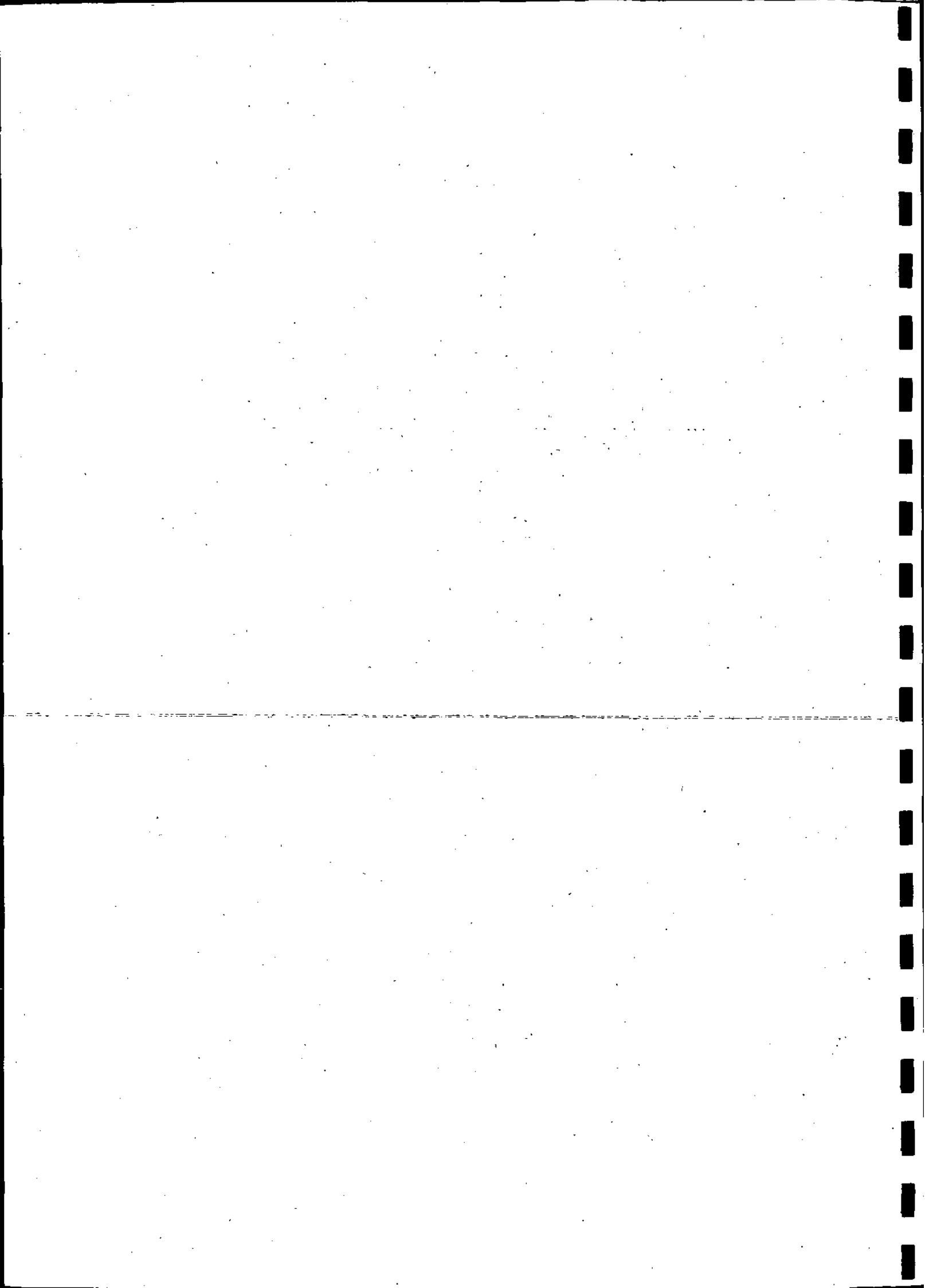
**January 1991**

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# 1. Executive Summary

218 marine scientists and other reef experts were surveyed by questionnaire to determine what observations had been made of predation on crown of thorns starfish.

90 recipients (41%) responded.

13 respondents had not dived or snorkelled and were therefore excluded from further analysis.

9 divers were too engrossed in other activities to have noticed predation and were therefore excluded from further analysis.

The 68 respondents that had dived and would have witnessed predation had an accumulated total of ~24 173 hours of diving on reefs with low density crown of thorns populations and a further 5 125 hours diving on reefs with high density populations.<sup>1</sup>

26 of the 68 valid respondents who (38%) had witnessed predation upon crown of thorns starfish.

A total of 69 unique predation events were observed first hand, and 1 respondent reported a further 31 predation events which were assumed from gut contents inspection.

8 of the predation events reported were under unnatural conditions and excluded from further analysis, leaving 92 valid predation events.

The triton, *Charonia tritonis* was the most commonly observed predator, accounting for 39 predation events (42% of all cases). Maori wrasse were responsible for 17 events (18% of all cases) Lethrinids for 13 events (14% of all cases) and toadfish for 11 events (12% of all cases). Four other predators each accounted for 1 event and in 8 cases the predator was not identified.

74% of recorded predation events were from high density crown of thorns populations suggesting that a predation event is witnessed approximately every 75 hours of diving on an 'outbreak' reef, whilst approximately 1013 hours of diving is required to witness a predation event on a 'non-outbreak' reef.

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<sup>1</sup> Range midpoints were assumed for cases where respondents gave a range of hours. 150 hours was assumed for cases where respondents said ">100 hours".

## 2. Introduction

Predation of crown of thorns starfish may or may not be a rare event, but is rarely observed on the reef. Very few reef users spend long hours underwater in a situation where they could witness predation if it took place. Preliminary discussions with several reef scientist known to the proponents of this work had indicated that several have personally witnessed as many as 7 instances of predation on *A. planci*. Given that there may be almost 100 scientists in Australia that have spent a substantial amount of time on the reef, there may be several hundred observations of predation that have, thus far, gone unreported.

Whilst anecdotal evidence is usually inadmissible in scientific works, the unpublished observations of experienced scientists represents an important intellectual resource. More importantly, it is also a volatile resource, and disappears both with ageing and as various workers disappear from the scene. Hence it is important to try to permanently record any anecdotal evidence in order to preserve this valuable resource.

One crown of thorns research area identified for further work is the field of predator pressure and its potential effects upon juvenile and adult crown of thorns population dynamics. A summary of anecdotal observations is also a useful point for further research that may be undertaken on crown of thorns predation, for it provides an indication of the known range of predators, a rank order of the likelihood of witnessing each type of predator in a predation event and an approximation of the effort (hours underwater) that may be required to witness further events.

A survey of marine scientists and other experts for anecdotal observations of crown of thorns (COT) predation was proposed, designed and implemented in the hope of establishing a permanent record of previously unrecorded observations, and of providing initial information to researchers wishing to undertake further research on predators of crown of thorns starfish.

### 3. Methods

The survey involved questionnaires (a copy of which can be found in **Appendix A**), being sent out to 218 people (a list of which can be found in **Appendix B**). Respondents were encouraged to reply regardless of whether they had witnessed predation, and were asked to give a description of any predation events they had personally witnessed. In addition, they were asked to estimate the number of hours spent underwater on reefs where crown of thorns starfish were present (to enable an estimation of the frequency with which predation occurs). Results were collated by the Great Barrier Reef Marine Park Authority and Marine Bio Logic and responses up to 5pm on the 2 January 1990 were analysed by Marine Bio Logic.<sup>2</sup>

Replies in which the witnessed event appeared to have resulted as a consequence of someones actions, including specifically "setup" events, were marked as "artificial" and excluded from further analysis.

Multiple range tick-boxed were provided to encourage respondents to estimate the number of hours spent underwater. In cases where respondents used these boxes (rather than specifying more precisely), the range mid-point was used to estimate observation time ("> 100 hours" was assumed to be 150 hours).

FoxBase (dBase-compatible) data base files were used to store and manipulate respondent information. **Appendix F** describes the structure and contents of each database and the programs used to generate database output. Files have also been provided to GBRMPA on floppy disk. These should facilitate regular updating or extension of this project.

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<sup>2</sup> In reviewing this report all responses up to January 1991 were included in the analysis

## 4. Results

The response rate to this survey was disappointingly low, with only 90 people (41%) replying. Of the 90 respondents, 13 were not in fact divers and a further 9 claimed to be too engrossed in their activities to have noticed predation. The number of valid responses was therefore 68, 26 of whom had witnessed predation (38%). A total of 100 predation events were recorded. Eight of these events were under unnatural conditions i.e. involving some form of human intervention. These events are excluded from further analysis. **Appendix C** summarises the data for each respondent while **Appendix D** summarises data specific to each predation event.

The relative frequencies of predators witnessed is contained in **Table 1**. The most frequently witnessed predator of crown of thorns is the triton, *Charonia tritonis*, (42% of observed cases). Further to these incidents (but not included in this survey) both Dr L Zann and Mr B Kettle each report that they knew of a further 4 or 5 second hand observations involving tritons. In addition, Mr L Squires reported seeing tritons eating crown of thorns on 20-30 occasions while working at the Cairns Oceanarium however these were not included due to the artificial circumstances involved. It is interesting to note that Mr Squires also observed that crown of thorns were the least preferred starfish prey of the tritons, being eaten only when the tritons were starved (a copy of Mr Squires submission is included in **Appendix E**).

The maori wrasse was the second most frequent predator, accounting for 18% of the recorded predation events. This fish was determined to be a predator of crown of thorns through studies of the gut contents of speared and line-caught fish. The respondent (Mr L Squires) is confident of the accuracy of these observations, having had substantial experience in this field.

Lethrinids were responsible for 13 of the witnessed predation events (14% of all cases) while toadfish accounted for 11 events (12% of all cases). Four other predators each accounted for 1 event. Eight of the reported cases were under circumstances where the predator was unknown but evidence indicated that predation had recently occurred.

Starfish density was reported in only 54 of the 92 recorded predation events. The total number of hours spent underwater on reefs with low density crown of thorns populations was -24173 hours, while for high density populations it was -5125 hours. On this basis a predation event is witnessed approximately every 75 hours of diving on an "outbreak" reef, whilst approximately 1013 hours is required to witness a predation event on a "non-outbreak" reef.



**TABLE 1** - LIST OF PREDATORS OBSERVED, NUMBER OF EVENTS WITNESSED AND RELATIVE FREQUENCY OF PREDATION BY EACH OF THESE.

Predator	# of Observations	Relative Frequency (%)
<i>Charonia tritonis</i>	39	42
Maori Wrasse	17	18
Lethrinids *	13	12
Toadfish **	11	14
<i>Balistoides viridescens</i>	1	1
<i>Euxhipops sextinatus</i>	1	1
<i>Pomacentrus sp.</i>	1	1
Turbellaria	1	1
Unknown	8	9
<b>Total</b>	<b>92</b>	<b>***</b>

\* Lethrinids (13 observations) includes 10 *Lethrinus chrysostomas* and 3 *Lethrinus nebulosus*.

\*\* Toadfish (11 observations) includes 5 specifically attributed to *Arothron hispidus*.

\*\*\* Subject to rounding error.

## 5. Discussion

This reports suggests that the triton *Charonia tritonis* is the most commonly witnessed predator of the crown of thorns starfish. Maori wrasse were the second most commonly reported predator of the starfish although they were never directly observed in the act of predation (reports based on gut contents only). Lethrinids (specifically *Lethrinus chrysostomas* and *L. nebulosus*) ranked third with toadfish (including *Arothron hispidus*) a near fourth.

Predation by Maori wrasse was not witnessed, but observations were reliably determined by Mr L Squires who was present when the freshly speared or caught fish were gutted, and who could positively identify *Acanthaster* remnants. It would be instructive to know whether there may be other predators of *Acanthaster* that were neither witnessed not identified from gut contents studies.

Since this report is based only on anecdotal observations, it may not be viewed as scientifically robust. However it does provide a starting point for further work on likely predators. The 8 predators and 92 predation events identified in this study represent a total of approximately 29 298 hours of underwater observation. Anyone wishing to extend the list of predators, or to study predators in detail, is obviously going to face significant problems with experimental logistics.

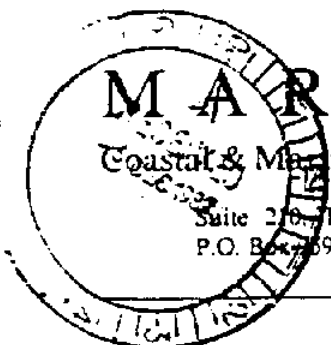
# Appendices

**MARINE BIO LOGIC**

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# Appendix A

## SURVEY QUESTIONNAIRES



# MARINE BIO LOGIC

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27th September, 1989.

Dear Reef User,

I am undertaking, as a consultant for the Great Barrier Reef Marine Park Authority, a review of the anecdotal observations of marine scientists and frequent reef users, on predation upon crown of thorns starfish, *A. planci*.

Preliminary discussions with a number of reef scientists revealed that some have personally witnessed as many as 7 instances of *A. planci* predation. Scientists and regular reef users in Australia have spent thousands of hours on the reef and there may be several hundred observations of predation that have, thus far, gone unreported.

Whilst anecdotal evidence is usually inadmissible in scientific works, the unpublished observations of experienced persons represents an important intellectual resource. Unless such observations are recorded it is feared they will be lost as people die or move on and memories fade.

I believe that most respondents could complete the following questionnaire within 20 minutes so please consider how valuable your contribution will be. We are particularly conscious of the importance of responses from those who have never witnessed a predation event as these will allow estimates of the frequency with which predation occurs.

Since we are concerned with not just the details of predation events but with the rate of occurrence of these events we have split our survey into 2 sections. The first seeks to establish the frequency of predation whilst the second is intended to examine the circumstances of each witnessed event. It should be stressed that this survey is interested in first hand observations only.

If you believe that you will require more space for describing predation events than that provided, then please photocopy the second form before you commence. If you have any further queries please don't hesitate to call. I shall be reporting the results of this survey to the Great Barrier Reef Marine Park Authority by November 15th, 1989 and would appreciate your response by October 20th, 1989. Please indicate whether you would like a copy of the report returned at the completion of this assessment.

Yours faithfully,

Brenda Kettle  
Marine Bio Logic

**Anecdotal survey of *A. planci* predators  
Form 1: Frequency of predation.**

Name: \_\_\_\_\_

Current address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contact phone number: \_\_\_\_\_

How many hours have you spent underwater (diving/ snorkelling etc.) on reefs where you have seen crown of thorns starfish, *A. planci*?

"normal (non-outbreak)" reefs	reefs with "outbreaks" or "above normal" numbers of crown of thorns
<input type="checkbox"/> 1-9 hours	<input type="checkbox"/> 1-9 hours
<input type="checkbox"/> 10-50 hours	<input type="checkbox"/> 10-50 hours
<input type="checkbox"/> 51-100 hours	<input type="checkbox"/> 51-100 hours
<input type="checkbox"/> >100 hours	<input type="checkbox"/> >100 hours
<input style="width: 50px;" type="text"/> please specify if you are able to estimate more precisely.	<input style="width: 50px;" type="text"/> please specify if you are able to estimate more precisely.

Are you able to validate the above estimates with dive logs/ field note books etc.?

- Yes  
 No

During this time how many predation events upon crown of thorns did you see?

If zero do you feel you would have noticed any predation events (or were you too engrossed in other activities)?

- Yes  
 No

**Anecdotal survey of *A. planici* predators  
Form 2: Predation details**

**\*Complete one form for each predation event witnessed\***

**Site**

On which reef did the event occur? \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Habitat description: \_\_\_\_\_

Purpose of dive: \_\_\_\_\_

In order to avoid unwittingly duplicating observations, was there any other person present who is likely to include this event in their own observations?  Yes - Name/s? \_\_\_\_\_  
 No

**Predator**

Identify predator as far as possible. \_\_\_\_\_ Size of predator? \_\_\_\_\_

Were there many of these predators in the area?  Yes  
 No

**Prey**

State of outbreak?  low crown of thorns numbers  
 high crown of thorns numbers

Size distribution of crown of thorns population

	none	some	many
<15cm			
15-30cm			
>30cm			

Size of crown of thorns being attacked?

<15cm  
 15-30cm  
 >30cm

How was the crown of thorns affected by the predation event?

slightly damaged  
 badly damaged  
 killed

Please describe (eg no arms lost; damage to the central disc etc)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Additional details**

\_\_\_\_\_

# Appendix B

## LIST OF QUESTIONNAIRE RECIPIENTS



Dive Officer  
Pro Diving Services  
79 Palmer St  
Sth Townsville

Dive Officer  
Magnetic Diving  
Shop 4 Arcadia Complex  
Magnetic Island 4819

Dive Officer  
The Dive Bell  
141 Ingham Rd.  
West End 4810

Dive Officer  
Scuba Doo Dive 'N' Sports  
22 Herbert St  
Bowen 4805

Dive Officer  
M.V. Quick Cat  
Cnr Pacific Pde & Seaview St  
Mission Beach 4854

Dive Officer  
Hayles Outer Reef Cruises  
Wharf St  
Cairns 4870

Dive Officer  
Sth Molle Is Resort  
P.O. Box 821  
Shute Harbour 4802

Dive Officer  
Great Keppel Is  
P.O. Box 108  
Rockhampton 4700

Dive Officer  
Hayman Island Resort  
Hayman Island via Airlie Beach  
QLD 4802

Dive Officer  
Hamilton Island Resort  
Private Mail Bag  
Mackay 4740

Dive Officer  
Herron Island Resort  
Gladstone 4680

Dive Officer  
Deep Sea Divers Den  
319 Draper St  
Parramatta Pk 4870

Dive Officer  
Down Under Dive Travel  
Cnr Aplin & Esp  
Cairns 4870

Dive Officer  
G.B.R. Diving Centre  
Hilton International  
Wharf St Cairns 4870

Dive Officer  
F.N.Q. Reef Cruises P/L  
Wharf St  
Port Douglas 4871

Dive Officer  
Marlin Coast Divers  
Paradise Village  
Williams Esp Palm Cove 4879

Dive Officer  
Pacific Rim Divers  
Shute Harbour Rd  
Shute Harbour 4802

Dive Officer  
Port Douglas Dive Centre  
Wharf St  
Port Douglas 4871

Dive Officer  
Pro Dive Cairns  
Marlin Pde  
Cairns 4870

Dive Officer  
Airlie Beach Dive Centre,  
Shute Harbour Rd  
Airlie Beach 4802

Dive Officer  
Barnes Reefdiving Services  
153 Victoria St  
Mackay 4740

Dive Officer  
Coral Coast Diving Academy  
38 Sapphire Crt  
Nth Mackay 4740

Dive Officer  
Down Under Dive  
The Esplanade  
Airlie Beach 4802

Dive Officer  
Mackay Diving  
1 Mangrove Rd  
Mackay 4740

Dive Officer  
Rockhampton Diving  
61 High St  
Nth Rockhampton 4701

Dive Officer  
Rockhampton Diving  
61 High St  
Nth Rockhampton 4701

Dive Officer  
Sportsworld Rockhampton  
29 Denham St  
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Dive Officer  
Sportsworld Rockhampton  
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# Appendix C

## RESPONDENT SUMMARIES

name	hours on low density reef	hours on high density reef	validate data possible?	events witnessed	would have seen predation?
Dr A. Ayling	>100	>100	yes	6	yes
Dr R. Babcock	>100	10-50	yes	2	yes
Mr I. Baxter	10-50	0	yes	0	yes
Mr R. Bell	>100	>100	no	1	yes
Dr P. Benzie	23	60	yes	0	yes
Dr C. Birkeland	-	90	yes	0	yes
Mr D. Briggs	0	0		0	yes
Prof J.H. Choat	>100	10-50	yes	0	no
Mr P. Christoffensen	0	0		0	
Dr J. Collins	>100	51-100	no	0	yes
Mr D. Cowie	0	0		0	
Dr W. Craik	51-100	1-9	yes	0	yes
Mr T. Craske	10-50	0	yes	0	yes
Mr B. Cropp		1-9		0	yes
Mr D. Crossman	0	0		0	
Ms R. Cumming	300	100	yes	2	yes
Mr P. Daniels	0	0		0	
Mr J. Davidson	>100	>100	yes	1	yes
Mr L. DeVantier	>100	>100	yes	3	yes
Mr M. Dodd	50-100	50-100	no	1	yes
Dr P. Doherty	>3000	200	no	0	yes
Dr T. Done	>100	10-50	yes	0	no
Miss L. Evans	>100		yes	0	yes
Dr P. Flood	51-100	1-9	yes	0	yes
Mr M. Fox	>100	>100	yes	0	yes
Ms J. Fromont	10-50		yes	0	yes
Dr M. Furnas	10-50	1-9	no	1	yes
Mr R. Garrick	10-50	1-9	yes	0	yes
Mr J. Graham	500-1000		yes	0	yes
Mr D. Hannan	1000	>100	no	2	yes
Ms V. Harriott	500	51-100	no	1	yes
Dr R. Hartwick	-	1-9	no	0	yes
Mr J. Hoey	0	0		0	no
Mr M. Holme	>100	0	yes	0	yes
Ass Prof D. Hopley	10-50	1-9	no	0	no
Mr R. Hore	>100	0	yes	0	yes
Mr P. Isdale	>100	10-50	yes	0	no
Dr C. Johnson	10-50	300	yes	0	no
Mr D. Johnson	540	200	yes	0	no
Mr J. Keesing	51-100	51-100	yes	7	yes
Mr S. Keilbaska	>100	51-100	yes	0	yes
Mr B. Kettle	300	200	no	9	yes
Dr D. Kinsey	>100		no	0	yes
Ms B. Kojis	>100		no	0	yes
Dr B. Lassig	>6000	1-9	no	0	yes
Ass Prof J. Lucas	51-100	51-100	yes	0	yes
Mr W. Mahon	>100	300	yes	0	yes
Dr B. Mapstone	3000	1-9	no	0	no
Mrs L. Marsh	51-100	51-100	yes	0	yes



name	hours on low density reef	hours on high density reef	validate data possible?	events witnessed	would have seen predation?
Mr P. May		10-50	yes	0	yes
Dr H. McCallum	0	10-50	yes	0	yes
Mr R. McCauley	400	10-50	yes	1	yes
Mr K. McClymont	10-50	10-50	no	0	yes
Mr T. McKenna	51-100	10-50	yes	0	yes
Mr J. McPherson	0	0		0	
Mr B. Miller-Smith	>100	>100	yes	1	yes
Dr P. Moran	51-100	>100	yes	6	yes
Dr J. Morrissey	51-100	10-50	no	0	yes
Mr R. Oake	>100	51-100	yes	1	yes
Dr R. Ormond	>1000	51-100	no	3	yes
Dr L. Owens	51-100	10-50	yes	0	yes
Mr W. Oxley	10-50	1-9	no	1	yes
Mr N. Potter			yes	0	yes
Dr I. Price				0	no
Mr G. Redfern	>100	>100	no	0	yes
Dr R. Reichelt	>100	51-100	yes	3	yes
Mr D. Reitsma	>100	51-100	no	0	yes
Ms W. Richards	>100			0	yes
Mr J. Rudmall	10-50		yes	0	yes
Dr G. Russ	1500	>100	yes	0	yes
Dr K. Sainsbury	0	0		0	
Mr P. Sammarco	>100	>100	yes	0	yes
Ms M. Samoilyis	550	30	yes	1	yes
Dr D. Savage	>100	15	no	0	yes
Ms S. Sorokin	51-100	10-50	yes	0	yes
Mr L. Squire	500	500		1	yes
Mr R. Steene	>100	>100	no	1	yes
Dr J. Stoddart	51-100	10-50	yes	0	no
Ms H. Streiner	10-50	1-9	yes	0	yes
Dr D.C. Sutton	51-100	10-50	no	0	yes
Mr L. Trott	250	10-50	yes	0	yes
Mr R. Van Woelik	10-50	51-100	no	0	no
Dr T. Walker	>100	51-100	no	3	yes
Dr C. Wallace	>100	51-100	yes	0	yes
Dr D. McB. Williams	>3000	>100	yes	4	yes
Dr R. Willis	10-50	10-50	yes	0	yes
Dr D. Yellowlees	0	0		0	no
Dr Hiroyuki Yokochi	>100	>100	yes	2	yes
Ms I. Zagorskis	0	0		0	
Dr L. Zann	>100	>100	yes	6	yes

# Appendix D

## PREDATION EVENT SUMMARIES

Predator :**Arothron hispidus** Outcome :killed  
 Observed by :Mr B. Kettle  
 Dive purpose :fencing exercise  
 Reef :John Brewer Date :09/22/86 Time:1015  
 Habitat :open sand  
 Size of predator :45cm Number of predators :1  
 Size of COT :15-30cm Number of COTs :high density  
 Details :only fragments remained after puffer had finished

Predator :**Arothron hispidus** Outcome :killed  
 Observed by :Mr B. Kettle  
 Dive purpose :fencing exercise  
 Reef :John Brewer Date :09/24/86 Time:1000  
 Habitat :open sand  
 Size of predator : Number of predators :1  
 Size of COT : Number of COTs :high density  
 Details :only half starfish remained

Predator :**Arothron hispidus** Outcome :badly damaged  
 Observed by :Mr B. Kettle  
 Dive purpose :PhD studies  
 Reef :Helix Reef Date :09/24/86 Time:pm  
 Habitat :reef false front  
 Size of predator : Number of predators :few  
 Size of COT :>30cm Number of COTs :high density  
 Details :2 arms lost. Event not witnessed. Suspect engorged puffer

Predator :**Arothron hispidus** Outcome :badly damaged  
 Observed by :Dr P. Moran  
 Dive purpose :research  
 Reef :Little Broadhurst Reef Date :12/19/87 Time:1445  
 Habitat :Reef flat north-east  
 Size of predator :40-50cm Number of predators :many  
 Size of COT :15-30cm Number of COTs :high density  
 Details :Big hole in central disc

Predator :**Arothron hispidus** Outcome :killed  
 Observed by :Dr R. Ormond  
 Dive purpose :Field experiment on cot  
 Reef :Towariti Reef Date :// Time:  
 Habitat :  
 Size of predator :40cm Number of predators :some  
 Size of COT :15-30cm Number of COTs :few  
 Details :Base of arms demolished in sequence - tips detached

Predator :**Balistoides viridescens** Outcome :killed  
 Observed by :Dr R. Ormond  
 Dive purpose :Cot survey  
 Reef :Towariti Reef Date :// Time:  
 Habitat :  
 Size of predator :40cm Number of predators :many  
 Size of COT :15-30cm Number of COTs :few  
 Details :Central disc demolished

Predator :Charonia tritonis Outcome :  
Observed by :Dr A. Ayling  
Dive purpose :  
Reef : Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :high density  
Details :

Predator :Charonia tritonis Outcome :  
Observed by :Dr A. Ayling  
Dive purpose :  
Reef : Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :high density  
Details :

Predator :Charonia tritonis Outcome :  
Observed by :Dr A. Ayling  
Dive purpose :  
Reef : Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :high density  
Details :

Predator :Charonia tritonis Outcome :  
Observed by :Dr A. Ayling  
Dive purpose :  
Reef : Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :high density  
Details :

Predator :Charonia tritonis Outcome :  
Observed by :Dr A. Ayling  
Dive purpose :  
Reef : Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :high density  
Details :

Predator :Charonia tritonis Outcome :badly damaged  
Observed by :Dr A. Ayling  
Dive purpose :urvey COT's  
Reef :Bowden Reef Date :09/28/89 Time:1100  
Habitat :Front Reef Slope  
Size of predator :300mm Number of predators :many  
Size of COT :>30cm Number of COTs :high density  
Details :Fragmented

Predator :**Charonia tritonis** Outcome :killed  
 Observed by :Dr R. Babcock  
 Dive purpose :Look for spawning  
 Reef :John Brewer Reef Date :09/29/81 Time:1400  
 Habitat :Back bommie  
 Size of predator :30cm Number of predators :1  
 Size of COT :15-30cm Number of COTs :medium density  
 Details :The last arm was being injected

Predator :**Charonia tritonis** Outcome :killed  
 Observed by :Mr L. DeVantier  
 Dive purpose :Coral Surveys  
 Reef :Rib Reef Date : / / Time:pm  
 Habitat :North reef crest  
 Size of predator :>40cm Number of predators :few  
 Size of COT :15-30cm Number of COTs :low density  
 Details :

Predator :**Charonia tritonis** Outcome :killed  
 Observed by :Mr L. DeVantier  
 Dive purpose :Coral Surveys  
 Reef :John Brewer Reef Date : / / Time:am  
 Habitat :Lagoon  
 Size of predator :>40cm Number of predators :few  
 Size of COT :15-30cm Number of COTs :low density  
 Details :

Predator :**Charonia tritonis** Outcome :killed  
 Observed by :Mr L. DeVantier  
 Dive purpose :Corals Surveys  
 Reef :Lizard Island Date : / / Time:pm  
 Habitat :Back Reef Slope  
 Size of predator :>30cm Number of predators :few  
 Size of COT :15-30cm Number of COTs :low density  
 Details :Starfish was being consumed by Triton

Predator :**Charonia tritonis** Outcome :Badly damaged  
 Observed by :Mr D. Hannan  
 Dive purpose :Pleasure  
 Reef :Line Reef (Whitsunday) Date : / / Time:  
 Habitat :Hard Corals Leeward Lagoo  
 Size of predator :35-40cm Number of predators :rare  
 Size of COT :15-30cm Number of COTs :high density  
 Details :Badly damaged

Predator :**Charonia tritonis** Outcome :Badly damaged  
 Observed by :Mr D. Hannan  
 Dive purpose :Pleasure  
 Reef :New Caledonia Is of Pines Date : / / Time:  
 Habitat :Hard Corals Leeward Lagoo  
 Size of predator :35-40cm Number of predators :rare  
 Size of COT :15-30cm Number of COTs :high density  
 Details :Badly damaged

Predator	: <b>Charonia tritonis</b>	Outcome	:badly damaged
Observed by	:Ms V. Harriott		
Dive purpose	:A planci juvenile surveys		
Reef	:Green Is Reef	Date	: / /
Habitat	:Bommy field		Time:
Size of predator	:25cm	Number of predators	:rare
Size of COT	:<15cm	Number of COTs	:low density
Details	:Half eaten at time of observation		
Predator	: <b>Charonia tritonis</b>	Outcome	:killed
Observed by	:Mr J. Keesing		
Dive purpose	:Research		
Reef	:Davies Reef	Date	: / /
Habitat	:Back reef flat		Time:
Size of predator	:35cm	Number of predators	:rare
Size of COT	:15-30cm	Number of COTs	:low density
Details	:Collected with only a few arms emerging		
Predator	: <b>Charonia tritonis</b>	Outcome	:badly damaged
Observed by	:Mr B. Kettle		
Dive purpose	:PhD studies		
Reef	:John Brewer	Date	:09/24/86
Habitat	:back reef		Time:pm
Size of predator	:30cm	Number of predators	:rare
Size of COT	:15-30cm	Number of COTs	:low density
Details	:Central disc damaged. Obvious behavioural avoidance response		
Predator	: <b>Charonia tritonis</b>	Outcome	:killed
Observed by	:Mr B. Kettle		
Dive purpose	:PhD studies		
Reef	:Helix Reef	Date	:09/24/86
Habitat	:back reef		Time:
Size of predator	:40cm	Number of predators	:rare
Size of COT	:15-30cm	Number of COTs	:high density
Details	:Central disc damaged. Caeca siphoned out.		
Predator	: <b>Charonia tritonis</b>	Outcome	:killed
Observed by	:Mr R. McCauley		
Dive purpose	:Juvenile clam survey		
Reef	:MichaelmasCay	Date	: / /
Habitat	:Coral reef reef flat		Time:
Size of predator	:>30cm	Number of predators	:few
Size of COT	:15-30cm	Number of COTs	:low density
Details	:Over period of 2 days totally devoured, other than spines		
Predator	: <b>Charonia tritonis</b>	Outcome	:slightly damaged
Observed by	:Dr P. Moran		
Dive purpose	:research		
Reef	:John Brewer Reef	Date	:01/28/84
Habitat	:Reef slope north-east		Time:1000
Size of predator	:35cm	Number of predators	:many
Size of COT	:15-30cm	Number of COTs	:high density
Details	:Attacking one arm		

Predator	: <b>Charonia tritonis</b>	Outcome	:slightly damaged
Observed by	:Dr P. Moran		
Dive purpose	:research		
Reef	:John Brewer Reef	Date	:01/28/84
Habitat	:Reef slope north-east	Time:	1500
Size of predator	:35cm	Number of predators	:many
Size of COT	:15-30cm	Number of COTs	:high density
Details	:Damage to central disc		
Predator	: <b>Charonia tritonis</b>	Outcome	:slightly damaged
Observed by	:Dr P. Moran		
Dive purpose	:research		
Reef	:John Brewer Reef	Date	:01/27/84
Habitat	:Reef slope north-east	Time:	1400
Size of predator	:35cm	Number of predators	:many
Size of COT	:15-30cm	Number of COTs	:high density
Details	:Ingested whole		
Predator	: <b>Charonia tritonis</b>	Outcome	:slightly damaged
Observed by	:Dr P. Moran		
Dive purpose	:research		
Reef	:Wheeler Reef	Date	:01/07/87
Habitat	:Reef slope west	Time:	2240
Size of predator	:45cm	Number of predators	:rare
Size of COT	:>30cm	Number of COTs	:fewhigh density
Details	:One arm damaged		
Predator	: <b>Charonia tritonis</b>	Outcome	:slightly damaged
Observed by	:Dr P. Moran		
Dive purpose	:research		
Reef	:Feather Reef	Date	:03/27/83
Habitat	:Southern reef slope	Time:	1500
Size of predator	:40cm	Number of predators	:rare
Size of COT	:15-30cm	Number of COTs	:few
Details	:Attacked by one arm.		
Predator	: <b>Charonia tritonis</b>	Outcome	:killed
Observed by	:Dr R. Ormond		
Dive purpose	:		
Reef	:Towartit Teef	Date	: / /
Habitat	:	Time:	
Size of predator	:15cm	Number of predators	:some
Size of COT	:15-30cm	Number of COTs	:few
Details	:Tissue sucked out through large wound in side		
Predator	: <b>Charonia tritonis</b>	Outcome	:killed
Observed by	:Mr W. Oxley		
Dive purpose	:Survey DPI QLD		
Reef	:Michealimas Cay Reef	Date	: / /
Habitat	:Acropord Thicket	Time:	
Size of predator	:	Number of predators	:few
Size of COT	:15->30cm	Number of COTs	:low density
Details	:		

Predator :**Charonia tritonis** Outcome :  
 Observed by :Dr R. Reichelt  
 Dive purpose :  
 Reef : Date : / / Time:  
 Habitat :  
 Size of predator : Number of predators :  
 Size of COT : Number of COTs :  
 Details :

Predator :**Charonia tritonis** Outcome :  
 Observed by :Dr R. Reichelt  
 Dive purpose :  
 Reef : Date : / / Time:  
 Habitat :  
 Size of predator : Number of predators :  
 Size of COT : Number of COTs :  
 Details :

Predator :**Charonia tritonis** Outcome :badly damaged  
 Observed by :Dr R. Reichelt  
 Dive purpose :Measure size of A planci  
 Reef :John Brewer Reef Date : / / Time:  
 Habitat :Reef slope  
 Size of predator :2-30cm Number of predators :few  
 Size of COT :15-30cm Number of COTs :high density  
 Details :Damage to the central disc etc

Predator :**Charonia tritonis** Outcome :killed?  
 Observed by :Ms M. Samoilys  
 Dive purpose :AIMS Survey  
 Reef :Hyde Reef Date :06/29/84 Time:  
 Habitat :North east side of reef  
 Size of predator : Number of predators :  
 Size of COT : Number of COTs :  
 Details :It was half eaten

Predator :**Charonia tritonis** Outcome :killed  
 Observed by :Mr L. Squires  
 Dive purpose :  
 Reef :Upolo Rf Date : / / Time:  
 Habitat :  
 Size of predator :juvenile Number of predators :many  
 Size of COT : Number of COTs :  
 Details :

Predator :**Charonia tritonis** Outcome :badly damaged  
 Observed by :Mr R. Steene  
 Dive purpose :Recreation  
 Reef :Oyster Reef Cairns Date : / / Time:1400  
 Habitat :Staghorn Patch  
 Size of predator :300mm Number of predators :few  
 Size of COT :15-30cm Number of COTs :low density  
 Details :A planci in the process of being devoured



Predator	: <b>Charonia tritonis</b>	Outcome :	
Observed by	:Dr T. Walker		
Dive purpose	:		
Reef	:	Date : / /	Time:
Habitat	:		
Size of predator	:	Number of predators	:
Size of COT	:	Number of COTs	:
Details	:		
Predator	: <b>Charonia tritonis</b>	Outcome :	
Observed by	:Dr T. Walker		
Dive purpose	:		
Reef	:	Date : / /	Time:
Habitat	:		
Size of predator	:	Number of predators	:
Size of COT	:	Number of COTs	:
Details	:		
Predator	: <b>Charonia tritonis</b>	Outcome :killed	
Observed by	:Dr D. McB. Williams		
Dive purpose	:Fish census		
Reef	:? Central midshelf, 1983	Date	: / / Time:
Habitat	:outer reef slope		
Size of predator	:40cm	Number of predators	:
Size of COT	:>30cm	Number of COTs	:many / large
Details	:all in process of being consumed		
Predator	: <b>Charonia tritonis</b>	Outcome :killed	
Observed by	:Dr D. McB. Williams		
Dive purpose	:Fish census		
Reef	:? Central midshelf, 1983	Date	: / / Time:
Habitat	:outer reef slope		
Size of predator	:40cm	Number of predators	:
Size of COT	:>30cm	Number of COTs	:many / large
Details	:all in process of being consumed		
Predator	: <b>Charonia tritonis</b>	Outcome :killed	
Observed by	:Dr D. McB. Williams		
Dive purpose	:Fish census		
Reef	:? Central midshelf, 1983	Date	: / / Time:
Habitat	:outer reef slope		
Size of predator	:40cm	Number of predators	:
Size of COT	:>30cm	Number of COTs	:many / large
Details	:all in process of being consumed		
Predator	: <b>Charonia tritonis</b>	Outcome :killed	
Observed by	:Dr D. McB. Williams		
Dive purpose	:Fish census		
Reef	:? Whitsunday region, 1984	Date	: / / Time:
Habitat	:outer reef slope		
Size of predator	:40cm	Number of predators	:
Size of COT	:>30cm	Number of COTs	:many / large
Details	:all in process of being consumed		

Predator :**Charonia tritonis** Outcome :killed  
 Observed by :Dr Hiroyuki Yokochi  
 Dive purpose :Obser nocturnal animals  
 Reef :Amitori Bay Okinawa Date :12/29/82 Time:2100  
 Habitat :Reef slope ca 5m deep  
 Size of predator :35cm Number of predators :many  
 Size of COT :15-30cm Number of COTs :high density  
 Details :Almost entirely eaten - a few arm tips left

Predator :**Charonia tritonis** Outcome :badly damaged  
 Observed by :Dr L. Zann  
 Dive purpose :RAN Cots Eradication  
 Reef :Grub Reef Date :07/10/86 Time:am  
 Habitat :Coral Pinnacles sand/cora  
 Size of predator :30cm Number of predators :many  
 Size of COT :>30cm Number of COTs :high density  
 Details :Arms lost, central disc perforated

Predator :**Charonia tritonis** Outcome :killed/badly damaged  
 Observed by :Dr L. Zann  
 Dive purpose :Cots survey  
 Reef :Vanuatu Port Patrick Date :03/10/88 Time:pm  
 Habitat :Fringing reef  
 Size of predator :>30cm Number of predators :many  
 Size of COT :>30cm Number of COTs :high density  
 Details :Seriously damaged, certainly fatal condition

Predator :**Euxlhipops sextinatus** Outcome :badly damaged  
 Observed by :Dr R. Babcock  
 Dive purpose :COT manta tow experiment  
 Reef :Bowden Reef Date :06/17/88 Time:0900  
 Habitat :S/W inner edge of lagoon  
 Size of predator :>30cm Number of predators :many  
 Size of COT : Number of COTs :high density  
 Details :Eating starfish which was already dead

Predator :**L. chrysostomus** Outcome :killed  
 Observed by :Mr L. Squires  
 Dive purpose :spearing and fishing  
 Reef :off Cairns Date : / / Time:  
 Habitat :  
 Size of predator : Number of predators :  
 Size of COT : Number of COTs :  
 Details :1 of 10 such observations from gut contents

Predator :**L. chrysostomus** Outcome :killed  
 Observed by :Mr L. Squires  
 Dive purpose :spearing and fishing  
 Reef :off Cairns Date : / / Time:  
 Habitat :  
 Size of predator : Number of predators :  
 Size of COT : Number of COTs :  
 Details :1 of 10 such observations from gut contents

Predator :**L. chrysostomus** Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :off Cairns Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator :**L. chrysostomus** Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :off Cairns Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator :**L. chrysostomus** Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :off Cairns Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator :**L. chrysostomus** Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :off Cairns Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator :**L. chrysostomus** Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :off Cairns Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator :**L. chrysostomus** Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :off Cairns Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator	: <b>L. chrysostomus</b>	Outcome	:killed
Observed by	:Mr L. Squires		
Dive purpose	:spearing and fishing		
Reef	:off Cairns	Date	: / /
Habitat	:		Time:
Size of predator	:	Number of predators	:
Size of COT	:	Number of COTs	:
Details	:1 of 10 such observations from gut contents		
Predator	: <b>L. chrysostomus</b>	Outcome	:killed
Observed by	:Mr L. Squires		
Dive purpose	:spearing and fishing		
Reef	:off Cairns	Date	: / /
Habitat	:		Time:
Size of predator	:	Number of predators	:
Size of COT	:	Number of COTs	:
Details	:1 of 10 such observations from gut contents		
Predator	: <b>Lethrinus nebulosus</b>	Outcome	:killed
Observed by	:Mr B. Kettle		
Dive purpose	:fencing exercise		
Reef	:John Brewer	Date	:09/23/86
Habitat	:open sand		Time:0400
Size of predator	:	Number of predators	:few
Size of COT	:<15cm	Number of COTs	:high density
Details	:only fragments remained		
Predator	: <b>Lethrinus nebulosus</b>	Outcome	:killed
Observed by	:Mr B. Kettle		
Dive purpose	:fencing exercise		
Reef	:John Brewer	Date	:09/23/86
Habitat	:open sand		Time:1400
Size of predator	:	Number of predators	:few
Size of COT	:15-30cm	Number of COTs	:high density
Details	:		
Predator	: <b>Lethrinus nebulosus</b>	Outcome	:killed
Observed by	:Mr B. Kettle		
Dive purpose	:fencing exercise		
Reef	:John Brewer	Date	:09/24/86
Habitat	:open sand		Time:
Size of predator	:	Number of predators	:
Size of COT	:	Number of COTs	:high density
Details	:Found only three arms. Suspect nearby L. nebulosus.		
Predator	: <b>Maori Wrasse</b>	Outcome	:killed
Observed by	:Mr R. Oake		
Dive purpose	:spearfishing		
Reef	:Upolo Reef	Date	: / /
Habitat	:		Time:
Size of predator	:15-30cm	Number of predators	:few
Size of COT	:15-30cm	Number of COTs	:high density
Details	:large amount of animal found in stomach		

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :Bridge Reef Date : / / Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT : Number of COTs :  
Details :remains found in gut contents

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :13-119 or 13-116 Date :11/15/77 Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT :medium Number of COTs :  
Details :1 of 5 such observations from gut contents

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :13-119 or 13-116 Date :11/15/77 Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT :medium Number of COTs :  
Details :1 of 5 such observations from gut contents

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :13-119 or 13-116 Date :11/15/77 Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT :medium Number of COTs :  
Details :1 of 5 such observations from gut contents

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :13-119 or 13-116 Date :11/15/77 Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT :medium Number of COTs :  
Details :1 of 5 such observations from gut contents

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :13-119 or 13-116 Date :11/15/77 Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT :medium Number of COTs :  
Details :1 of 5 such observations from gut contents

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :Lark Reef Date :06/15/77 Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT :medium Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :Lark Reef Date :06/15/77 Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT :medium Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :Lark Reef Date :06/15/77 Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT :medium Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :Lark Reef Date :06/15/77 Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT :medium Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :Lark Reef Date :06/15/77 Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT :medium Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator :Maori wrasse Outcome :killed  
Observed by :Mr L. Squires  
Dive purpose :spearing and fishing  
Reef :Lark Reef Date :06/15/77 Time:  
Habitat :  
Size of predator : Number of predators :  
Size of COT :medium Number of COTs :  
Details :1 of 10 such observations from gut contents

Predator	:Maori wrasse	Outcome	:killed	
Observed by	:Mr L. Squires			
Dive purpose	:spearing and fishing			
Reef	:Lark Reef	Date	:06/15/77	Time:
Habitat	:			
Size of predator	:	Number of predators	:	
Size of COT	:medium	Number of COTs	:	
Details	:1 of 10 such observations from gut contents			
Predator	:Maori wrasse	Outcome	:killed	
Observed by	:Mr L. Squires			
Dive purpose	:spearing and fishing			
Reef	:Lark Reef	Date	:06/15/77	Time:
Habitat	:			
Size of predator	:	Number of predators	:	
Size of COT	:medium	Number of COTs	:	
Details	:1 of 10 such observations from gut contents			
Predator	:Maori wrasse	Outcome	:killed	
Observed by	:Mr L. Squires			
Dive purpose	:spearing and fishing			
Reef	:Lark Reef	Date	:06/15/77	Time:
Habitat	:			
Size of predator	:	Number of predators	:	
Size of COT	:medium	Number of COTs	:	
Details	:1 of 10 such observations from gut contents			
Predator	:Maori wrasse	Outcome	:killed	
Observed by	:Mr L. Squires			
Dive purpose	:spearing and fishing			
Reef	:Lark Reef	Date	:06/15/77	Time:
Habitat	:			
Size of predator	:	Number of predators	:	
Size of COT	:medium	Number of COTs	:	
Details	:1 of 10 such observations from gut contents			
Predator	:Pomacentrus sp	Outcome	:not effected hardly at al	
Observed by	:Mr J. Keesing			
Dive purpose	:Look for Acanthaster			
Reef	:Helix Reef	Date	:05/22/86	Time:
Habitat	:North east side			
Size of predator	:75mm	Number of predators	:	:many
Size of COT	:15-30cm	Number of COTs	:	:high density
Details	:			
Predator	:Toadfish	Outcome	:slight damage	
Observed by	:Mr M. Dodd			
Dive purpose	:			
Reef	:Bait Reef	Date	: / /	Time:
Habitat	:Reef flat/sand rubble			
Size of predator	:40cm	Number of predators	:	
Size of COT	:15-30cm	Number of COTs	:	:low density
Details	:photographed. Data via Mr K. McClymont			

Predator	:Toadfish	Outcome	:killed	
Observed by	:Mr L. Squires			
Dive purpose	:spearing and fishing			
Reef	:	Date	: / /	Time:
Habitat	:			
Size of predator	:18-36 in	Number of predators	:many	
Size of COT	:	Number of COTs	:	
Details	:1 of 5 such observations from gut contents			
Predator	:Toadfish	Outcome	:killed	
Observed by	:Mr L. Squires			
Dive purpose	:spearing and fishing			
Reef	:	Date	: / /	Time:
Habitat	:			
Size of predator	:18-36 in	Number of predators	:many	
Size of COT	:	Number of COTs	:	
Details	:1 of 5 such observations from gut contents			
Predator	:Toadfish	Outcome	:killed	
Observed by	:Mr L. Squires			
Dive purpose	:spearing and fishing			
Reef	:	Date	: / /	Time:
Habitat	:			
Size of predator	:18-36 in	Number of predators	:many	
Size of COT	:	Number of COTs	:	
Details	:1 of 5 such observations from gut contents			
Predator	:Toadfish	Outcome	:killed	
Observed by	:Mr L. Squires			
Dive purpose	:spearing and fishing			
Reef	:	Date	: / /	Time:
Habitat	:			
Size of predator	:18-36 in	Number of predators	:many	
Size of COT	:	Number of COTs	:	
Details	:1 of 5 such observations from gut contents			
Predator	:Toadfish	Outcome	:killed	
Observed by	:Mr L. Squires			
Dive purpose	:spearing and fishing			
Reef	:	Date	: / /	Time:
Habitat	:			
Size of predator	:18-36 in	Number of predators	:many	
Size of COT	:	Number of COTs	:	
Details	:1 of 5 such observations from gut contents			
Predator	:Turbellaria	Outcome	:killed	
Observed by	:Dr Hiroyuki Yokochi			
Dive purpose	:Sampling of A planci			
Reef	:Iriomote Is Okinawa	Date	:07/27/85	Time:1100
Habitat	:Reef Flat ca 2m deep			
Size of predator	:2-3m	Number of predators	:many	
Size of COT	:15-30cm	Number of COTs	:high denisty	
Details	:Internal organs lost			



Predator :Unknown Outcome :killed  
 Observed by :Mr J. Keesing  
 Dive purpose :Look for Acanthaster  
 Reef :Okinawa, Japan Date : / / Time:1400  
 Habitat :Exposed reef slope & flat  
 Size of predator : Number of predators :many  
 Size of COT :15-30cm Number of COTs :high density  
 Details :Did not see starfish attack but found scattered arm tips.

Predator :Unknown Outcome :slightly damaged  
 Observed by :Mr J. Keesing  
 Dive purpose :Monitor feeding Acanthant  
 Reef :Holbourne Island Date :03/20/87 Time:1200  
 Habitat :Back reef slope  
 Size of predator : Number of predators :many  
 Size of COT :15-30cm Number of COTs :high density  
 Details :Found two severed arms nearby an injured starfish.

Predator :Unknown Outcome :killed  
 Observed by :Mr J. Keesing  
 Dive purpose :Research  
 Reef :Little Broadhurst Date : / / Time:  
 Habitat :Back reef slope  
 Size of predator :60cm Number of predators :rare  
 Size of COT :15-30cm Number of COTs :high density  
 Details :Arm tips (ca 30mm) remaining only

Predator :Unknown Outcome :killed  
 Observed by :Mr B. Kettle  
 Dive purpose :Control exercise  
 Reef :Grub Reef Date :09/24/86 Time:  
 Habitat :back reef bommie  
 Size of predator : Number of predators :  
 Size of COT :15-30cm Number of COTs :high density  
 Details :Hole eaten through centre of disc.

Predator :Unknown Outcome :killed  
 Observed by :Dr L. Zann  
 Dive purpose :Cots survey  
 Reef :Fiji Suva Reef Date : / / Time:  
 Habitat :Oceanic barrier reef  
 Size of predator : Number of predators :many  
 Size of COT :>30cm Number of COTs :high density  
 Details :One of two cases -only armtips and spines remain

Predator :Unknown Outcome :killed  
 Observed by :Dr L. Zann  
 Dive purpose :Cots survey  
 Reef :Fiji Suva Reef Date : / / Time:  
 Habitat :Oceanic barrier reef  
 Size of predator : Number of predators :many  
 Size of COT :>30cm Number of COTs :high density  
 Details :One of two cases -only armtips and spines remain

Predator :Unknown/?Charonia Outcome :killed  
Observed by :Dr L. Zann  
Dive purpose :RAN Cots Eradication  
Reef :Grub Reef Date :07/15/86 Time:  
Habitat :Coral Pinnacles  
Size of predator : Number of predators :many  
Size of COT : Number of COTs :  
Details :

Predator :Unknown/?Charonia Outcome :killed  
Observed by :Dr L. Zann  
Dive purpose :RAN Cots Eradication  
Reef :Grub Reef Date :07/15/86 Time:  
Habitat :Coral Pinnacles  
Size of predator : Number of predators :many  
Size of COT :>30cm Number of COTs :high density  
Details :Internal organs digested

# Appendix E

SUBMISSION BY MR L SQUIRES

**MARINE BIO LOGIC**

PRINTED ON RECYCLED PAPER

## Conversation with Mr Lyle Squires re Predators of Crown of Thorns Starfish

20 November 1989

Lyle had difficulty completing the questionnaire because of his varying experiences with cots and evidence of predation. He has observations from aquarium situations, in the field and from fish gut contents (through spearing and line fishing). Lyle calculated he has spent approx 3 years of "wet time" since 1968 while collecting specimens for the Cairns Oceanarium (1968-73) and spearing. He has also spent a number of years working the reef north of Cairns as a commercial line fisherman.

### Oceanarium Experiences (1968-1973)

Tritons were kept in approx 1000 gallon aquaria with cots. Tritons ate cots on 20-30 occasions, with a preference for smaller individuals. Cots were the least preferred starfish prey, eaten only when the tritons were starved. *Culcita* were by far the most favoured, followed by *Linckia*. *Culcita* elicited a feeding response from tritons as soon as they were placed in the aquarium.

During transport of cots to the Oceanarium in "ice boxes", two cots were attacked by yellow-faced triggerfish (10-12lb). The triggerfish chewed off the cots arm tips but were removed before further damage could be inflicted. If left together Lyle was sure the starfish would have been totally destroyed. Lyle believed this was a case of aggression by the fish, rather than feeding behaviour.

In 1969 on Upolo Reef a triton was observed feeding on a juvenile cots. This was at the time of peak cots outbreaks in the area. The starfish was killed.

### Fishing and Spearing: Fish Gut Contents

#### **Maori Wrasse**

Lyle has found cots spines and arm pieces in 15-20 maori wrasse stomachs. He is sure of his ability to differentiate between cots and sea urchin spines. [Every second maori wrasse caught has urchin spines in its gut] He is also confident of his memory for reefs fished and dates. Most of the wrasse caught that had cots remains in their guts were on reefs without major cots outbreaks.

Of 30 maori wrasse caught on Lark Reef in 1977; 10 had cots remains in their guts. There were sufficient remains to indicate whole starfish had been eaten and the prey were medium size adults. Between 1977-78 on Reef 13-119 or 13-116 (Far Northern Section), 5 maori wrasse were caught with cots remains in their guts. One large maori wrasse caught on Bridge Reef in 1975-76 had cots remains in its gut.

#### **Tricky Snapper (*L. chrysostomus*)**

Between 1975 and 1978 on reefs off Cairns (Beaver, Adelaide, Potter, Gibley and Hal-Thomson Reefs), around 10 tricky snapper of thousands caught had cots remains in their guts. Couldn't say if they were whole starfish eaten.


## Porcupine Fish/ Toadfish

At most 5 of these fish (between 18 and 36 inches in length) of hundreds caught had cots remains in their guts.

Lyle cautioned against asking professional and recreational fishermen for incidence of cots remains in fish guts because of the possible confusion with sea urchin spines. Sea urchins are frequently found in maori wrasse and tricky snapper guts. Because of his experience with cots at the Oceanarium, Lyle is sure of his identifications.

Lyle is an experience spearo and is willing to work with the Authority in future fish gut content studies.

Contact: Mr Lyle Squires  
Phone (070) 51 5588 (Q.DPI)  
(070) 56 2310 (Home)



# Appendix F

## DATABASE DETAILS

```
*resp_summ.prg
* lists summary of all respondents to a printable file
```

```
set talk off
set echo off
```

```
fname = putfile("Name of file to save?","AppC","txt")
set alte to &fname
set alte on
```

```
use people
do while .not. eof()
if replied='y' then
? trim(firstname)+" "+trim(lastname)+" "+
trim(normreefhr)+" "+trim(cotreefhrs)+" "+trim(validate)+" "+str(cots,1,0)+" "+trim(observ
ant)
endif
skip 1
enddo
set alte off
close alte
```

```
*list_events.prg
* lists all events in the events database to a printable file
* sorted by predator

set talk off
set echo off

fname = putfile("Name of file to save?","AppD",".txt")
set alte to &fname
set alte on

use events index predator
reindex
set filt to natural='yes'
loca
do while .not. eof()
? "Predator:" + trim(predator) + "Outcome:" + trim(outcome)
? "Observed by:" + trim(firstname) + " " + trim(lastname)
? "Dive purpose:" + trim(purpose)
? "Reef:" + trim(reef) + "Date:" + dtoc(ddate) + "Time:" + trim(dtime)
? "Habitat:" + trim(habitat)
? "Size of predator:" + trim(pred_size) + "Number of predators:" + trim(pred_numb)
? "Size of COT:" + trim(cot_size) + "Number of COTs:" + trim(cot_numb)
? "Details:" + trim(notes)
?
skip 1
enddo
set alte off
close alte
```



\*listpeople.prg

\* lists all people on the people database to a printable file

set talk off  
set echo off

fname = putfile("Name of file to save?","textout","txt")  
set alte to &fname  
set alte on

use people  
do while .not. eof()  
? trim(firstname)+" "+trim(lastname)  
? organisatn  
? address  
? suburb  
?  
skip 1  
enddo  
set alte off  
close alte

Structure for database:  
Number of data records:  
Date of last update:

Field

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13

RX1000:PROJECTS CURRENT:headofal COTs:people.dbf

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01/22/91

Field Name	Type	Width	Dec
firstname	Character	15	12
lastname	Character	41	
organize	Character	31	
address	Character	35	
suburb	Character	4	18
nombsesfar	Numeric	4	18
shr	Numeric	4	18
cohomefha	Character	4	
cohc	Numeric	4	
validate	Character	10	
cois	Numeric	2	
observant	Character	1	10
replied	Character	1	

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\*\* 70681 \*\*

first name	lastname	organization	address	suburb	nonrescfr	ahr	cost	rescfr	cost	validate	cost	observant	replied
Dive Officer		Pro Diving Services	79 Palmer St	Sth Townsville									
Dive Officer		Magnetic Diving	Shop 4 Arcadia Complex	Magnetic Island 4819									
Dive Officer		The Dive Bell	143 Legnam Rd.	West End 4810									
Dive Officer		Seaba Dive 'N' Sports	22 Herbert St	Bowen 4805									
Dive Officer		M.V. Quick Cat	Cnr Pacific Rd & Seaview St	Mission Beach 4854									
Dive Officer		Hayles Outer Reef Cruises	Wharf St	Cairns 4870									
Dive Officer		Sea Mollie Is Rescrt	P.O. Box 821	Shute Harbour 4802									
Dive Officer		Great Koppal Is	P.O. Box 108	Rockhampton 4700									
Dive Officer		Hayman Island Rescrt	Hayman Island via Airline Beach	Rockhampton 4700									
Dive Officer		Hamilton Island Rescrt	Private Mail Bag	GLD 4802									
Dive Officer		Heron Island Rescrt	Gladstone 4840	Mackay 4740									
Dive Officer		Deep Sea Divers Den	319 Draper St	Parramatta Pk 4870									
Dive Officer		Down Under Dive Travel	Cnr Applin & Exp	Cairns 4870									
Dive Officer		G.B.R. Diving Centre	Bilicon International	Wharf St Cairns 4870									
Dive Officer		F.N.O. Reef Cruises P/L	Wharf St	Port Douglas 4871									
Dive Officer		Marlin Coast Divers	Pargosie Village	Williams Esp Palm Cove 4878									
Dive Officer		Pacific Rim Divers	Shute Harbour Rd	Shute Harbour 4802									
Dive Officer		Port Douglas Dive Centre	Wharf St	Port Douglas 4871									
Dive Officer		Pro Dive Cairns	Marlin Pde	Cairns 4870									
Dive Officer		Airline Beach Dive Centre,	Shute Harbour Rd	Airline Beach 4802									
Dive Officer		Barnes Recreating Services	153 Victoria St	Mackay 4740									
Dive Officer		Coral Coast Diving Academy	38 Sephora Ct	Nth Mackay 4740									
Dive Officer		Down Under Dive	The Splanade	Airline Beach 4802									
Dive Officer		Mackay Diving	1 Mangrove Rd	Mackay 4740									
Dive Officer		Rockhampton Diving	61 High St	Nth Rockhampton 4701									
Dive Officer		Rockhampton Diving	61 High St	Nth Rockhampton 4701									
Dive Officer		Sportsworld Rockhampton	28 Derby St	Rockhampton 4700									
Dive Officer		Sportsworld Rockhampton	29 Dobson St	Rockhampton 4700									
Dive Officer		Duopong Diving Academy	54 Spurewood Rd	Cairns 4870									
Dive Officer (Returned)		Reef Explorer Cruises	185 Lake St	Cairns 4870									
Dive Officer (Returned)		The Diving Academy	24 Goodwood St	Gladstone 4680									
Mr G.	Andrews	P.O. Box 30	Townsville	GLD 4810									
Dr P.	Arnold	North Queensland Museum	Wonderland Complex	Townsville QLD 4810									
Dr A.	Ayling	Sea Research	P.O. Box 5645	Townsville QLD 4810	>100	150	>100	6	yes				y
Mrs A.	Ayling	Sea Research	P.O. Box 5645	Townsville QLD 4810									
Dr R.	Babcock	Marine Biology Department	James Cook University	Townsville QLD 4811	>100	150	10-50	2	yes				y
Dr R.	Bailey	Ecology Department	James Cook University	Townsville 4811									
Mr S.	Barrbridge	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810									
Mr M.	Bell	Mike Bell Water Sports	252 Walker St	Townsville 4810									
Mr S.	Balson	Diving Instructor	3 Lives St	Kirkwah 4817									
Mr D.	Barrow	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810									
Mr J.	Barnett	363 Stanley St	Townsville	4810									
Mr I.	Barnier	Great Barrier Reef Aquarium	Wonderland Complex	Townsville QLD 4810	10-50	30	0	0	yes				y
Mr R.	Bell	Marine Bio Logic	P.O. Box 5426	Townsville 4810	>100	150	>100	1	yes				y
Dr P.	Bentley	A.I.M.S.	PMB No. 3	Townsville M.C. QLD 4810									y
Mr K.	Bieneman	P.O. Box 847	Portland	Victoria 3205									y
Dr C.	Birkland	Marine Laboratory, Univ Quid	MUNGLIO	GUAM USA 96913									y
Mr A.	Birtles	Marine Biology Dept	James Cook University	Townsville QLD 4811									
Mr C.	Bone	P.O. Box 1159	Townsville	QLD 4810									
Mr K.	Boto	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810									
Mr R.	Boudry	Fitzroy Island Resort	Fitzroy Island	Via Cairns QLD 4870									
Mr C.	Boyd	28 French St	Pinalco	Townsville 4812									
Dr R.	Bradbury	A.I.M.S.	PMB No. 3	TOWNVILLE M.C. QLD 4810									y
Mr D.	Briggs	CNPS	University of Queensland	Rockhampton QLD 4700									
Dr A.M.	Cameron	Ecology Department	University of Queensland	ST LUCIA QLD 4067									
Mr J.	Carlston	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810									
Mr B.	Chalker	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810									
Dr J.	Charnin	A.I.M.S. (Returned)	PMB No. 3	Townsville M.C. QLD 4810									
Prof J.R.	Chick	Dept of Marine Biology	James Cook University	TOWNVILLE QLD 4811	>100	150	10-50	0	no				y
Mr P.	Christofferson	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810									y
Mr B.	Colman	C/- The Australian Museum	6-9 College St	Sydney N.S.W. 2000									
Dr J.	Coll	Chemistry Department	James Cook University	Townsville QLD 4811									
Mr J.	Collingwood	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810									
Dr J.	Collins	Marine Biology Department	James Cook University	Townsville QLD 4811	>100	150	51-100	0	yes				y
Mr D.	Coslin	Ocean Spirit Diving Services	41 Shield St	Cairns 4870	0	0	0	0	0				y

first name	last name	organization	address	suburb	nomineefnc	one concernfhrs	nochr	validate	costs	observernt	replied
Dr M.	Cretik	GBRPA	Wonderland Complex	Townsville QLD 4810	51-100	15 1-9	5 yes	0 yes	0	0	Y
Mr T.	Creake	Sun City Water Sports P/L	Tobruk Pool, The Strand	Townsville 4810	10-50	30 0	0	0	0	0	Y
Mr P.	Croham	Sun City Water-Sports P/L	Tobruk Pool, The Strand	Townsville 4810		0	0	0	0	0	Y
Mr I.	Croll	22 Clacherty St	Cairns	OLD 4870		0	0	0	0	0	Y
Mr B.	Cropp	Post Douglas	OLD 4871		0	0	0	0	0	0	Y
Mr D.	Crossman	Dept of Env & Conserv	Marine Park Sect Nth Reg Centre	Pallaresda QLD 4810	0	0	0	0	0	0	Y
Ms R.	Cuningy	Marine Biology Department	James Cook University	Townsville QLD 4811	300	300 100	100 yes	2 yes	0	0	Y
Mr P.	Daniels	A.I.M.S.	PMB No. 3	TOWNVILLE M.C. QLD 4810	0	0	0	0	0	0	Y
Mr J.	Davidson	A.I.M.S.	PMB No. 3	TOWNVILLE M.C. QLD 4810	>100	150 >100	150 yes	1 yes	0	0	Y
Mr B.	Dawson	Sun City Water Sports P/L	Tobruk Pool, The Strand	Townsville 4810	0	0	0	0	0	0	Y
Mr L.	DeVantaz	A.I.M.S.	PMB No. 3	Townsville 4810	>100	150 >100	150 yes	3 yes	0	0	Y
Mr B.	Dean	Royleen Cruises Pty. Ltd.	P.O. Box 169	Mackay 4740	0	0	0	0	0	0	Y
Mr M.	Devereux	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810	0	0	0	0	0	0	Y
Dr I.	Dinnlough	Dept of Env & Conserv	Northern Regional Centre	Pallaresda QLD 4810	0	0	0	0	0	0	Y
Mr P.	Dixon	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810	0	0	0	0	0	0	Y
Mr M.	Dodd	Charter skipper		Whitsundays	50-100	75 50-100	75 no	1 yes	0	0	Y
Dr P.	Doherty	A.I.M.S.	PMB No. 3	TOWNVILLE M.C. QLD 4810	>3000	3000 200	200 no	0 yes	0	0	Y
Dr T.	Done	A.I.M.S.	P.M.B. No. 3	TOWNVILLE M.C. QLD 4810	>100	150 10-50	30 yes	0	0	0	Y
Mr E.	Drew	A.I.M.S.	252 Walker St	Townsville, M.C. 4810	0	0	0	0	0	0	Y
Mr E.	Dryemistki	Mike Ball Water Sports	252 Walker St	Townsville 4810	0	0	0	0	0	0	Y
Mr W.	Dunlop	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810	0	0	0	0	0	0	Y
Ass Prof R.	Endean	Zoology Department	University of Queensland	ST LUZIA QLD 4567	150	150	0 yes	0	0	0	Y
Miss L.	Evans	P.O. 429	Tuesday Island	TOWNVILLE M.C. QLD 4810	>100	75 1-9	5 yes	0	0	0	Y
Mr D.	Flak	Reef Research & Information Services	P.O. Box 5348	TOWNVILLE M.C. QLD 4810	51-100	75 1-9	5 yes	0	0	0	Y
Dr P.	Flood	Dept of Geology and Geophysics	The University of New England	ARMIDALE NSW 2351	>100	150 >100	150 yes	0	0	0	Y
Mr M.	Fox	University of Technology, Sydney	P.O. Box 123	SYDNEY NSW 2007	0	0	0	0	0	0	Y
Dr B.	Frankel	Lacy Elliott Island Holidays Pty. Ltd.	LMB 6	Bundaberg 4670	0	0	0	0	0	0	Y
Mr J.	French	Sir George Fisher Centre	James Cook University	Townsville QLD 4811	10-50	30	0 yes	0	0	0	Y
Mr S.	Fromont	Mar. Pka Ctr, Toranomon Denkai Bldg	2-9-1 Toranomon, Minato-ku	Tokyo 105 JAPAN	0	0	0	0	0	0	Y
Mr S.	Fujiwara	A.I.M.S.	PMB No 3 HSO	TOWNVILLE QLD 4810	10-50	30 1-9	5 no	1 yes	0	0	Y
Dr M.	Furnas	A.I.M.S.	James Cook University	Townsville QLD 4811	10-50	30 1-9	5 yes	0	0	0	Y
Mr R.	Garrick	Sir George Fisher Centre	James Cook University	TOWNVILLE QLD 4811	0	0	0	0	0	0	Y
Dr J.	Glazebrook	Grad Sch of Trop Wet Sci	PMB 37	Cairns QLD 4870	0	0	0	0	0	0	Y
Mr B.	Goldman	Lizard Island Research Station	252 Walker St	Townsville 4810	500-1000	750	0 yes	0	0	0	Y
Mr J.	Graham	Mike Ball Water Sports	14 Parliament Place	East Melbourne VICTORIA 3002	1000	1000 >100	150 no	2 yes	0	0	Y
Dr L.	Hammond	Vic. Inst. Mar. Sci.	Clayton St	Townsville 4810	0	0	0	0	0	0	Y
Mr D.	Herman	Coral Sea Imagery	P.M.B. No. 3	Townsville, M.C. 4810	500	500 51-100	75 no	1 yes	0	0	Y
Mr J.	Herman	A.I.M.S.	Wonderland Complex	Townsville QLD 4810	0	0	0	0	0	0	Y
Ms P.	Hazlett	Great Barrier Reef Aquarium	James Cook University	Townsville 4810	0	0	0	0	0	0	Y
Dr V.	Harrison	Marine Biology Department	James Cook University	Townsville QLD 4811	0	0	0	0	0	0	Y
Dr R.	Hartwick	Marine Biology Dept	James Cook University	Mission Beach 4854	0	0	0	0	0	0	Y
Dr P.	Harvey	Friendship Cruises	Clump Pt Jetty	Townsville 4810	0	0	0	0	0	0	Y
Mr J.	Hoey	Great Barrier Reef Aquarium	Wonderland Complex	Townsville QLD 4810	0	0	0	0	0	0	Y
Mr M.	Hoyle	Sir George Fisher Centre	James Cook University	TOWNVILLE QLD 4811	>100	0	0	0	0	0	Y
Ass Prof O.	Ropley	Reef Bioscience	Marina Mirage	Port Douglas, 4811	10-50	30 1-9	5 no	0	0	0	Y
Mr R.	Hore	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810	>100	150 0	0 yes	0	0	0	Y
Mr P.	Idedale	Dept of Env & Conserv	Marine Park Sect Nth Reg Centre	P.O. Box 132, AIRLIE BEACH QLD 48	>100	150 10-50	30 yes	0	0	0	Y
Mr A.	Jacobson	Dept of Env & Conserv	Marine Park Sect Nth Reg Centre	Pallaresda QLD 4810	0	0	0	0	0	0	Y
Ms R.	James	A.I.M.S.	PMB No. 3	TOWNVILLE M.C. QLD 4810	10-50	30 300	300 yes	0	0	0	Y
Dr C.	Johnson	A.I.M.S.	PMB No. 3	TOWNVILLE M.C. QLD 4810	540	540 200	200 yes	0	0	0	Y
Mr D.	Johnson	A.I.M.S.	PMB No. 3	TOWNVILLE M.C. QLD 4810	51-100	75 51-100	75 yes	7 yes	0	0	Y
Mr J.	Keesing	A.I.M.S.	252 Walker St	Townsville 4810	>100	150 51-100	75 yes	0	0	0	Y
Mr S.	Kailoaka	Mike Ball Water Sports	252 Walker St	Townsville 4810	0	0	0	0	0	0	Y
Mr R.	Kelly	Dept. of Env & Conserv (Returned)	Northern Regional Centre	Pallaresda 4810	0	0	0	0	0	0	Y
Dr R.	Kenchington	GBRPA	Wonderland Complex	Townsville QLD 4810	0	0	0	0	0	0	Y
Mr M.	Keasey	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810	0	0	0	0	0	0	Y
Mr B.	Mattie	Marine Bio Logic Pty Ltd	P.O. Box 989	TOWNVILLE QLD 4810	300	300 200	200 no	3 yes	0	0	Y
Dr D.	Klasey	GBRPA	Wonderland Complex	Townsville QLD 4810	>100	150	0 no	0	0	0	Y
Mr R.	Kitchan	Mike Ball Water Sports	252 Walker St	Townsville 4810	0	0	0	0	0	0	Y
Mr D.	Klumpff	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810	>100	150	0 no	0	0	0	Y
Ms B.	Kojis	Lizard Is. Res. Station	PMB 37	Cairns QLD 4870	0	0	0	0	0	0	Y
Mr B.	Land	Dept of Env & Conserv	Marine Park Sect Nth Reg Centre	Pallaresda QLD 4810	0	0	0	0	0	0	Y
Dr B.	Lewisig	GBRPA	Wonderland Complex	Townsville QLD 4810	>6000	6000 1-9	5 no	0	0	0	Y
Mr M.	Leonard	C/- Allan Diamond	Sir George Fisher Centre	James Cook University QLD 4811	0	0	0	0	0	0	Y
Mr E.	Lougheed	Mike Ball Water Sports	252 Walker St	Townsville 4810	0	0	0	0	0	0	Y

Surname	Lastname	organization	address	suburb	nomineefhr	nbr cotreefhrs	cochr validate	costs	observant	replied
Ass Prof J.	Lucas	Department of Zoology	James Cook University	TOONSVILLE QLD 4811	51-100	75 51-100	75 yes	0	yes	Y
Mr W.	Mahon	Marine Biology Department	James Cook University	Townsville QLD 4811	>100	150 300	300 yes	0	yes	Y
Mr B.	Mapstone	Western Australian Museum	Francis St	Townsville QLD 4811	3000 1-9	0	5 no	0	no	Y
Mr L.	Marsh	Olive Hunter Dolchont	Mission Beach	Berth WA 6001	51-100	75 51-100	75 yes	0	yes	Y
Mr P.	May	Zoology Department	University of Queensland	ST LUCIA QLD 4067	0	0 10-50	30 yes	0	yes	Y
Dr B.	McCallum	A.I.M.S.	P.O. Box 332	ALLEN BEACH QLD 4802	400	0 10-50	30 yes	0	yes	Y
Mr R.	McAnley	Dept of Env and Conserv	Woodsland Complex	Townsville QLD 4810	10-50	0	30 no	0	yes	Y
Mr K.	McClintock	GEORGE	PMB No. 3	Townsville M.C. QLD 4810	51-100	75 10-50	0	0	yes	Y
Mr P.	McGinnity	A.I.M.S.	Amuller St	Portsmouth, Cairns 4870	0	0	0	0	yes	Y
Mr T.	McKenna	D.P.I. Fisheries	Amuller St	Townsville, M.C. QLD 4810	0	0	0	0	yes	Y
Mr J.	McPherson	D.P.I. Fisheries	Amuller St	Portsmouth, Cairns 4870	0	0	0	0	yes	Y
Ms J.	McLora	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. QLD 4810	>100	150 >100	150 yes	0	yes	Y
Mr B.	Miller-Smith	A.I.M.S.	P.M.B. No. 3	TOONSVILLE QLD 4810	51-100	75 >100	150 yes	6	yes	Y
Dr P.	Moran	A.I.M.S.	PMB No 3 HQ	TOONSVILLE QLD 4810	51-100	75 10-50	30 no	0	yes	Y
Dr J.	Morrissey	Great Barrier Reef Aquarium	Woodsland Complex	TOONSVILLE M.C. QLD 4810	0	0	0	0	yes	Y
Mr C.	Muddy	A.I.M.S.	PMB No. 3	Townsville, M.C. QLD 4810	0	0	0	0	yes	Y
Mr P.	Narphy	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. QLD 4810	0	0	0	0	yes	Y
Mr T.	Nurrey	Mike Ball Water Sports	252 Walker St	Townsville 4810	0	0	0	0	yes	Y
Mr K.	Navin	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. QLD 4810	0	0	0	0	yes	Y
Mr R.	Neave	Bluewater Coral Supplies	Perkins St	Cairns QLD 4870	>100	150 51-100	75 yes	3	yes	Y
Mr Y.	Oske	Bluewater Coral Supplies	Perkins St	Cairns QLD 4870	0	0	0	0	yes	Y
Mr G.	Oke	Ball Bai II	P.O. Box 892	Cairns 4870	0	0	0	0	yes	Y
Dr J.	Olliver	A.I.M.S.	PMB No. 3	Townsville M.C. QLD 4810	0	0	0	0	yes	Y
Dr R.	Olsen	Mar Bich Inst. RRI Box 196A	Fort Pierce FLA 33450	U.S.A.	0	0	0	0	yes	Y
Dr R.	Ormond	Tropical Mar Res Unit, Univ York	YORK	ENGLAND VOL 57D	>1000	1000 51-100	75 no	3	yes	Y
Dr W.	Owens	Grass Sch of Trop Vet Sci	James Cook University	Townsville QLD 4811	51-100	75 10-50	30 yes	0	yes	Y
Dr L.	Oxley	Marine Biology Department	James Cook University	Townsville QLD 4811	10-50	30 1-9	5 no	1	yes	Y
Mr J.C.	Parkerson	Charonia Research	G.P.O. Box 2308	TOONSVILLE QLD 4810	0	0	0	0	yes	Y
Mr A.	Pearson	Director, D.P.I. Fisheries	C/O Box 46	BRIISBANE QLD 4810	0	0	0	0	yes	Y
Mr K.	Peckham	C/- 8 Dickman Ave	Falsterton	E.A. 5070	0	0	0	0	yes	Y
Dr M.	Pichon	A.I.M.S.	PMB No. 3	Townsville M.C. QLD 4810	0	0	0	0	yes	Y
Mr M.	Potter	Botany Department	James Cook University	Townsville 4811	0	0	0	0	yes	Y
Dr I.	Price	13 Bradford St	Innes Est	Townsville 4810	0	0	0	0	no	Y
Mr F.	Quinnemeyer	Sir George Fisher Centre	James Cook University	Townsville QLD 4811	0	0	0	0	yes	Y
Mr C.	Ramsay	Fisheries Br. R. Bur. Res.	Box 858 G.P.O. Canberra	A.C.T. 2601	>100	150 >100	150 no	0	yes	Y
Mr G.	Redfern	Mike Ball Water Sports	252 Walker St	Townsville 4810	>100	150 51-100	75 yes	3	yes	Y
Dr R.	Reichert	School for Field Studies	Deeragun	4872	0	0	0	0	yes	Y
Dr D.	Reid	Woodland Crt	P.O. Box 217	Port Douglas QLD 4871	>100	150 51-100	75 no	0	yes	Y
Ms J.	Reising	Waddy Richards & Leppoc	P.M.B. No. 3	Townsville, M.C. QLD 4810	0	0	0	0	yes	Y
Ms D.	Reitman	A.I.M.S. (Returned)	James Cook University	TOONSVILLE QLD 4811	0	0	0	0	yes	Y
Ms M.	Richards	Marine Biology Department	CS180 Dept of Fish Res	TOONSVILLE QLD 4811	10-50	30	0 yes	0	yes	Y
Mr H.	Riddle	Dept Zool	Ohiv New Hampshire, Durhan	NEW HAMPSHIRE U.S.A. 03824	1500	1500 >100	150 yes	0	yes	Y
Mr J.	Rodwell	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. QLD 4810	0	0	0	0	yes	Y
Dr G.	Ross	Marine Biology Department	James Cook University	TOONSVILLE QLD 4811	0	0	0	0	yes	Y
Dr K.	Sainsbury	Dept Zool	GPO Box 1538	ROSBART TASMANIA 7001	0	0	0	0	yes	Y
Prof P. F.	Sale	A.I.M.S.	Ohiv New Hampshire, Durhan	NEW HAMPSHIRE U.S.A. 03824	0	0	0	0	yes	Y
Mr P.	Sammaroo	D.P.I. Fisheries	P.M.B. No. 3	Townsville, M.C. QLD 4810	>100	150 >100	150 yes	0	yes	Y
Ms M.	Sammolya	Dept of Env and Conserv	Amuller St	Portsmouth, Cairns	550	550 30	30 yes	1	yes	Y
Dr D.	Savage	Tropica Pty Ltd	P.O. Box 332	ALLEN BEACH QLD 4802	>100	150 15	15 no	0	yes	Y
Mr C.	Shelley	Zoology Department	29 Pugh St	Alckenvale 4814	0	0	0	0	yes	Y
Dr A.	Smith	Tropica Pty Ltd	James Cook University	Townsville QLD 4811	0	0	0	0	yes	Y
Ms P.	Scrokin	A.I.M.S.	PMB No. 3	Townsville M.C. QLD 4810	51-100	75 10-50	30 yes	0	yes	Y
Ms P.	Southgate	A.I.M.S.	29 Pugh St	Alckenvale 4814	0	0	0	0	yes	Y
Mr P.	Spears	D.P.I. Fisheries	PMB No. 3	Townsville, M.C. QLD 4810	500	500 500	500	1	yes	Y
Ms L.	Squires	205 Martyn Hoda	Amuller St	Portsmouth, Cairns 4870	>100	150 >100	150 no	1	yes	Y
Ms M.	Stafford-Smith	Sir George Fisher Centre	Cairns	QLD 4870	0	0	0	0	yes	Y
Mr R.	Stanno	A.I.M.S.	James Cook University	TOONSVILLE QLD 4811	0	0	0	0	yes	Y
Mr A.	Stevan	Sir George Fisher Centre	PMB No. 3	Townsville M.C. QLD 4810	51-100	75 10-50	30 yes	0	no	Y
Dr J.	Stoddart	Sir George Fisher Centre	James Cook University	TOONSVILLE QLD 4811	30-50	30 1-9	5 yes	0	yes	Y
Ms R.	Strainer	Zoology Department	James Cook University	TOONSVILLE QLD 4811	0	0	0	0	yes	Y
Mr R.	Stump	Sir George Fisher Centre	James Cook University	TOONSVILLE QLD 4811	51-100	75 10-50	30 no	0	yes	Y
Dr D.C.	Sutton	Reef Link P/L (Returned)	187 Pinner St	TOONSVILLE 4810	0	0	0	0	yes	Y
Mr D.	Tarca				0	0	0	0	yes	Y
R. & V.	Taylor				0	0	0	0	yes	Y

firstname	lastname	organization	address	suburb	nomrescfr	nhr	entrefhrs	schr	valdate	costs	observent	replied
Mr R.	Reynolds	Sun City Water Sports P/L	Tobruk Pool, The Strand	Townsville 4810		0	0	0	0	0		
Mr J.	Thoroughgood	185 Main Rd	Wellington Pt	QLD 4160		0	0	0	0	0		
Mr P.	Tilba	Peter Tilba Scuba School	370 Sheridan St	Calross Rch 4870		0	0	0	0	0		
Mr P.	Todd	28 Clifton Rd	Clifton Beach	Cairns QLD 4870		0	0	0	0	0		
Mr E.	Trott	A.I.M.S.	PRB No. 3	Townsville N.C. QLD 4810	250	10-50	30	yes	0	0	yes	y
Mr R.	Van Woesik	Sir George Fisher Centre	James Cook University	Townsville 4811	10-50	30-51-100	75	no	0	0	no	
Dr J.	Veron	A.I.M.S.	PRB No. 3	Townsville M.C. QLD 4810	0	0	0	0	0	0	0	y
Dr T.	Walker	Dept of Env & Conserv	Northern Regional Centre	Pallarenda QLD 4810	>100	150-51-100	75	no	0	0	3	yes
Dr C.	Wallace	North Queensland Museum	Woodsland Complex	Townsville QLD 4810	>100	150-51-100	75	yes	0	0	0	yes
Ms A.	Watts	Zoology Department	James Cook University	Townsville 4811	0	0	0	0	0	0	0	y
Mr S.	Wenstone	Tropoqua Pty Ltd	29 Pugh St	Aikenvale 4814	0	0	0	0	0	0	0	
Mr C.	Wilkinson	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. QLD 4810	0	0	0	0	0	0	0	
Dr D. McR.	Williams	A.I.M.S.	PRB No. 3	TOWNVILLE, M.C. QLD 4810	>3000	>100	150	yes	0	0	4	yes
Mr D.	Williams	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810	0	0	0	0	0	0	0	
Mr W.	Williams	Mike Bell Water Sports	252 Walker St	Townsville 4810	0	0	0	0	0	0	0	
Dr B.	Wills	Marine Biology Department	James Cook University	Townsville QLD 4811	0	0	0	0	0	0	0	
Dr R.	Wills	Biochemistry Department	James Cook University	Townsville QLD 4811	10-50	30-10-50	30	yes	0	0	0	yes
Dr B.	Wilson	W. A. Dept of Conservation	50 Bayman Rd	Coos M.A. 8152	0	0	0	0	0	0	0	
Prof. H.	Yamaguchi	Dept of Mar Sci, Univ Ryukyus	Bohbaru 1 Nishihara	Okinawa, JAPAN	0	0	0	0	0	0	0	
Dr D.	Yellowless	Biochemistry Department	James Cook University	Townsville QLD 4811	0	0	0	0	0	0	0	no
Dr Hiroyuki	Yokochi	Tokai Uni, Iriomote Mar Res Stat	Sakiyama, Taketomi-cho	Okinawa 907-15, JAPAN	>100	150 >100	150	yes	0	0	2	yes
Ms M.	Yong	A.I.M.S.	PRB No. 3	Townsville M.C. QLD 4810	0	0	0	0	0	0	0	
Ms I.	Zagorkis	A.I.M.S.	P.M.B. No. 3	Townsville, M.C. 4810	0	0	0	0	0	0	0	y
Dr L.	Zann	GBRQA	Woodsland Complex	Townsville QLD 4810	>100	150 >100	150	yes	0	0	6	yes

Structure for database:  
 Number of data records:  
 Date of last update:

831000 PROJECTS CURRENT:haucodca) COTs revert a .dbf

Field	Field Name	Type	Width	Dec
1	firstname	Character	12	
2	lastname	Character	12	
3	natural	Character	3	
4	predator	Character	25	
5	rowf	Character	25	
6	ddate	Date	8	
7	dtlim	Character	4	
8	habitat	Character	25	
9	purpose	Character	25	
10	outcome	Character	25	
11	pred_size	Character	4	
12	pred_num	Character	4	
13	con_size	Character	13	
14	con_num	Character	15	
15	notes	Character	60	
** Total **				287

