MARINE RESERVE IMPLEMENTATION:
SOUTH WEST

# KNOWLEDGE, OPINIONS AND ACTIONS: LOCAL PHONE SURVEY FOR THE PROPOSED GEOGRAPHE BAY/LEEUWIN-NATURALISTE/HARDY INLET MARINE CONSERVATION RESERVE

**REPORT: MRI/LNE/GBC-65/2005**

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February 2005

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# EXECUTIVE SUMMARY

The Western Australian Government is committed to the establishment of a statewide system of marine conservation reserves. In 1994, the Marine Parks and Reserves Selection Working Group published a report entitled *A Representative Marine Reserve System for Western Australia* that identified about 70 areas around the West Australian coast as being worthy of further consideration for reserve status under the *Conservation and Land Management Act 1984*. Of these identified areas, the Geographe Bay-Capes-Hardy Inlet area was announced by the Minister for Environment and Heritage as a priority candidate area for reservation.

An issue analysis that involved discussions between the Department of Conservation and Land Management (CALM) and representatives from the wide range of interest and user groups within the community was undertaken in late 2001 before the formal planning process was commenced. The information obtained from those discussions was used to: assess community attitudes; estimate levels of knowledge and understanding of marine conservation concepts and the planning process and identify any issues and concerns.

The planning process formally commenced in July 2003 with the establishment of a community based advisory committee and sector reference groups. In late 2003, CALM set out to assess the knowledge of the local people about the proposal to gauge the success of the community education and information program conducted up to that point in the planning process. The results of the interviews can be summarised as follows:

- 50% of respondents were aware of the proposal to establish a marine park in the south west. The minimum awareness occurred at Bunbury where 43% of respondents were aware, compared to the maximum at Augusta where 62% of respondents were aware of the proposal.

- From the number of respondents that knew of the proposed south west marine reserve most of them had heard via the newspaper (51%) or by word of mouth (26%). Approximately half of the respondents that were aware of the marine park proposal knew the approximate area of which the proposal encompassed (particularly Geographe Bay and the Cape Naturaliste to Cape Leeuwin area). Most did not know that the Hardy Inlet and parts of Flinders Bay were included in the proposal.

- Approximately half of respondents thought that all types of fishing would be restricted in the entire marine reserve, 14% thought that all types of fishing would be allowed in an entire marine reserve. Only 12% of respondents mentioned the possibility of using zoning to control fishing activities. The notion that all forms of fishing will be restricted in the entire marine park rather than the use of a multiple use scheme is one issue that may be inhibitive to the support of a marine reserve in the south west. The concept of zoning will have to be a major component of the marine education program.

- The majority of respondents (70%) were supportive or strongly supportive of the marine reserve proposal. Popular reasons for support included: to protect and conserve the marine habitats and their species for future generations (20%); to benefit the tourism industry (10%); and to reverse the effects of overfishing and better manage fisheries (8%). 22% of respondents were undecided about their feelings towards the proposal. All of the respondents that were undecided cited the reason that they would need more information about the process to make an educated decision. 8% of respondents were against the marine reserve proposal and no respondents were strongly against the proposal. Reasons for lack of support varied widely and no one reason dominated.

- Just over 60% of respondents felt that there was currently a need for better management of the marine environment. The most common reason for better management was due to concerns about the perceived conflict between professional crayfishers and the general community. Approximately 20% of respondents felt that management was currently OK. When asked to consider the future need for management of the marine environment, over 70% of respondents thought that there would be a need for better management of the marine environment in the future.

- Only 5% of respondents never used the beach or the ocean in the south west. The majority of respondents surveyed used the beach or the ocean at least once per week (just under 50%). The most common activities that respondents enjoyed in the Capes region included beach activities and swimming and/or snorkelling.

- Of the 62% respondents who fish in the region, approximately 30% enjoyed all types of shore based fishing, 25% specifically beach based, 20% boat based fishing, 15% enjoyed all types of fishing, whilst the rest enjoyed other types such as spearfishing, crabbing, inlet fishing, etc. Of the fishers in the survey, approximately 74% were supportive of the concept to reserve the marine area in the south west.

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# 1. INTRODUCTION

The Western Australian Government is committed to the establishment of a statewide system of marine conservation reserves. In 1994, the Marine Parks and Reserves Selection Working Group published a report entitled *A Representative Marine Reserve System for Western Australia* that identified about 70 areas around the West Australian coast as being worthy of further consideration for reserve status under the *Conservation and Land Management Act 1984*. Of these identified areas, the Geographe Bay-Capes-Hardy Inlet area was announced by the Minister for Environment and Heritage as a priority candidate area for reservation (Fig. 1). The proposed marine park in the south west region extends from the Busselton-Capel Shire in the north to Flinders Bay and Hardy Inlet in the south

An issue analysis that involved discussions between the Department of Conservation and Land Management (CALM) and representatives from the wide range of interest and user groups within the community was undertaken in late 2001 before the formal planning process was commenced. The information obtained from those discussions was used to: assess community attitudes; estimate levels of knowledge and understanding of marine conservation concepts and the planning process and identify the issues and concerns.

The planning process formally commenced in July 2003 with the establishment of a community based advisory committee and sector reference groups. In late 2003, CALM set out to assess the knowledge of the local people about the proposal to gauge the success of the community education and information program conducted up to that point in the planning process. Respondents' knowledge about the marine reserve proposal and some marine reserve concepts were discussed, as were their opinions about the proposal and their uses of the marine environment in the south west.

A phone survey to assess these knowledge, opinions and actions relating the marine environment was conducted for the towns of Augusta, Margaret River, Dunsborough, Busselton and the city of Bunbury, which are the closest population centres to the proposed marine reserve. The survey was completed by the Marine Conservation Branch of the Department of CALM in November, 2003.

# 2. METHODS

A sample of random computer generated telephone numbers was gained from a Marketing company to complete the phone survey. A total of 1218 numbers from five regions were supplied. The five regions – Augusta, Margaret River, Dunsborough, Busselton and Bunbury were divided up into subsets of each region with 240, 238, 250, 240, 250 phone numbers in each set respectively. The phone numbers were split up into two sets, since there were two surveyors completing the phone survey.

An answered call that declined to do the survey was crossed out from the list and not called back during the rest of the survey. Any disconnected or fax only numbers were also crossed out.

Any unanswered calls were returned to after one whole round of the set of numbers being completed. After three times of receiving no answer these numbers were not returned to.

A database was created so that all information from the survey could be included for result assessment. Most questions used a number system for ranking. The descriptive questions used shortened words or phrases to represent answers which were then elaborated on in a separate index within the database.

The work details of surveyor 1 and surveyor 2 are set out in table 1 below.

**Table 1: Work details for the phone survey**

| | Number of days survey was completed over | Approximate total number of phone calls made | Number of surveys completed |
|---|---|---|---|
| SURVEYOR 1 | 9 | 900 | 150 |
| SURVEYOR 2 | 5 | 340 | 65 |
| **TOTAL** | **N/A** | **1240** | **215** |

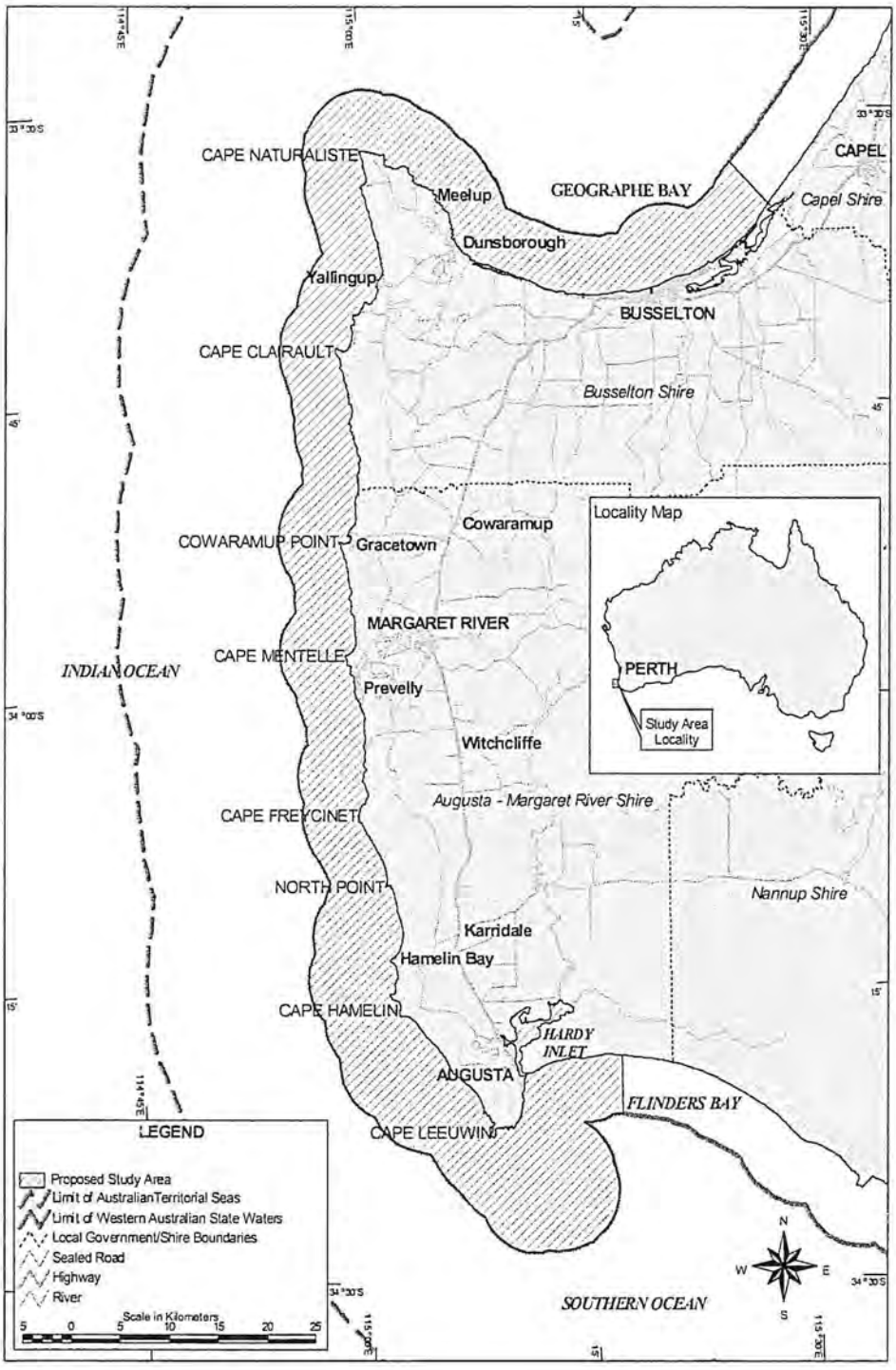


**Fig. 1: The proposed Geographe Bay-Capes-Hardy Inlet Marine Conservation Reserve: as identified in the Report from the Marine Parks and Reserve Working Group as worthy of consideration for reserve status.**

Since there were two different surveyors completing the surveys some slight differences in approach were unavoidable. Both surveyors attempted to not prompt or be suggestive unless they were asked direct questions. At the end of an interview, if the respondent sounded interested, one surveyor corrected or clarified a few facts about any answers that may have needed it; the other surveyor did not do this. This clarification was done since many people were contacted and the surveyor felt that the phone survey could provide a valuable educational role for interested respondents. Six respondents were very interested and they were sent further information about the Capes marine environment.

# 3. RESULTS

## 3.1 DEMOGRAPHICS

**- Combined statistics for all areas**

Tables 3.1 to 3.4 in Appendix 3 describe in detail the summary demographic statistics for all of the combined survey information.

The most commonly surveyed age range was between 61 to 70 years (17.7%), followed by 41 to 50 years old (16.7%) – Fig. 2. The least commonly surveyed age of respondents was 15 to 20 years closely followed by 26 to 30 year olds. Most respondents surveyed were residents of the area (>95%) with 15 years being the average length of residency. The residency length ranged from approximately 2.5 months to 79 years. Over 70% of respondents surveyed had children and less than 2% of respondents considered that their livelihoods involved the marine environment. 141 females were surveyed compared to 74 men. Therefore almost double the amount of females were surveyed compared to males. The most common 'occupation' was retired (36.1%) with the least common occupation involving vineyard farming (1.55%).

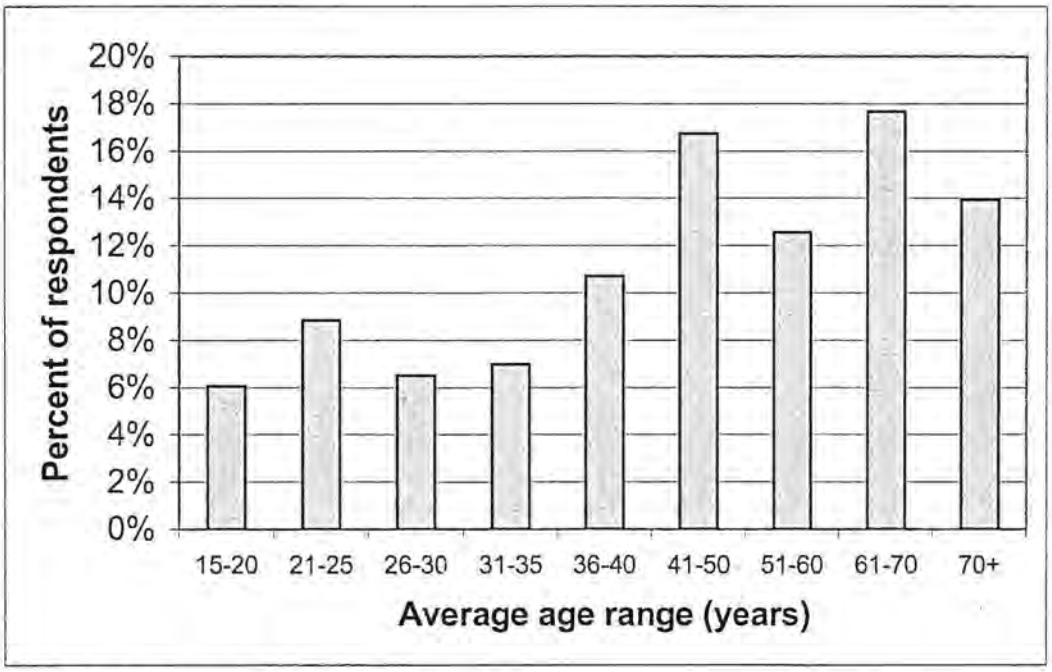


**Fig. 2: Age distribution of respondents.**

**- Statistics for each local area**

Tables 4.1 to 4.4 in Appendix 4 describe in detail the summary demographic statistics for each local area.

The average age of respondents surveyed throughout all areas was similar, between 36 and 50. Although not statistically significant, the percentages of men and women surveyed in each town ranged quite widely with the most amount of females occurring in Margaret River (80%) compared to 54% in Bunbury. All towns had less than 7% non-residents that completed the survey, ranging from 2.7% in Bunbury to 6.8% in Dunsborough. The average length of residency in the surveyed towns ranged from

12 years in Dunsborough to 19 years in Bunbury with quite a large spread. A similar percentage of respondents had children in each town (approximately 70%). There was little distinction between towns regarding whether respondents' livelihoods involved the marine environment.

The highest variable occurring from town to town was the occupation types (Fig. 3). For example, the number of retired respondents ranged from 22.5% of the sample in Margaret River compared to just over half in Augusta. The number of students also varied considerably with the highest amount being from Bunbury (18% of the survey participants from that area) and the lowest percentage being from Augusta (7%). These results agree with the fact that there is a large regional university in Bunbury which would encourage more students to the area and that there is likely to be less work close to Augusta relative to the other centres that were surveyed.

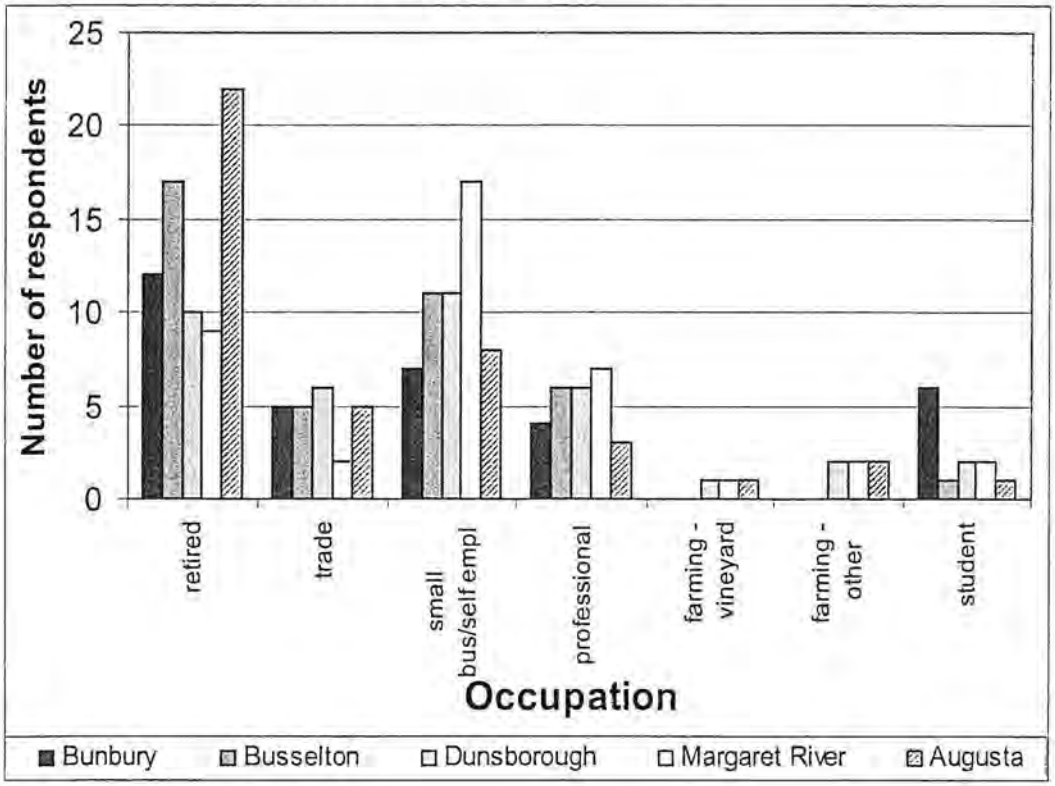


**Fig. 3: Occupations of respondents.**

3.2 QUESTIONS

Appendix 1 provides the full questionnaire that was used for each survey. Nine questions were asked to assess marine related knowledge, opinions and actions of a sample of the local residents of the south west.

Overall, approximately 50% of respondents were aware of the proposal to establish a marine park in the south west (Fig. 4). Although not statistically significant, there was some variation between the different towns and their knowledge of the marine park proposal. The minimum awareness occurred at Bunbury and Dunsborough with only 43% of respondents aware of the proposal, compared to the maximum at Augusta with 62% of respondents. There was very little difference of awareness between the sexes and different age groups. This may be due to Bunbury not being located adjacent to the proposal and therefore not being exposed to as much local news and word of mouth. Also, Dunsborough had the highest amount of non-residents that were surveyed which would also suggest that they too may not be exposed to as much local news which was the main media via which respondents had heard about the marine reserve proposal (see discussion below).

Of the respondents that knew of a proposed south west marine reserve most of them heard via the newspaper (51%) or by word of mouth (26%) – Fig. 5.

From the 107 respondents that were aware of the marine park proposal, about half of the respondents mentioned Geographe Bay and/or the Cape to Cape area, with fewer respondents mentioning the Capel/Busselton Shire boundary, the Hardy Inlet or Flinders Bay (Fig. 6). More than one of these regions could be selected during the survey by each respondent. An interesting comment made by several respondents was that they thought that a 'marine reserve' was a marina of some sort; a fun park in the marine environment; or that the surveyors were referring to the newly constructed Underwater Observatory in Busselton.

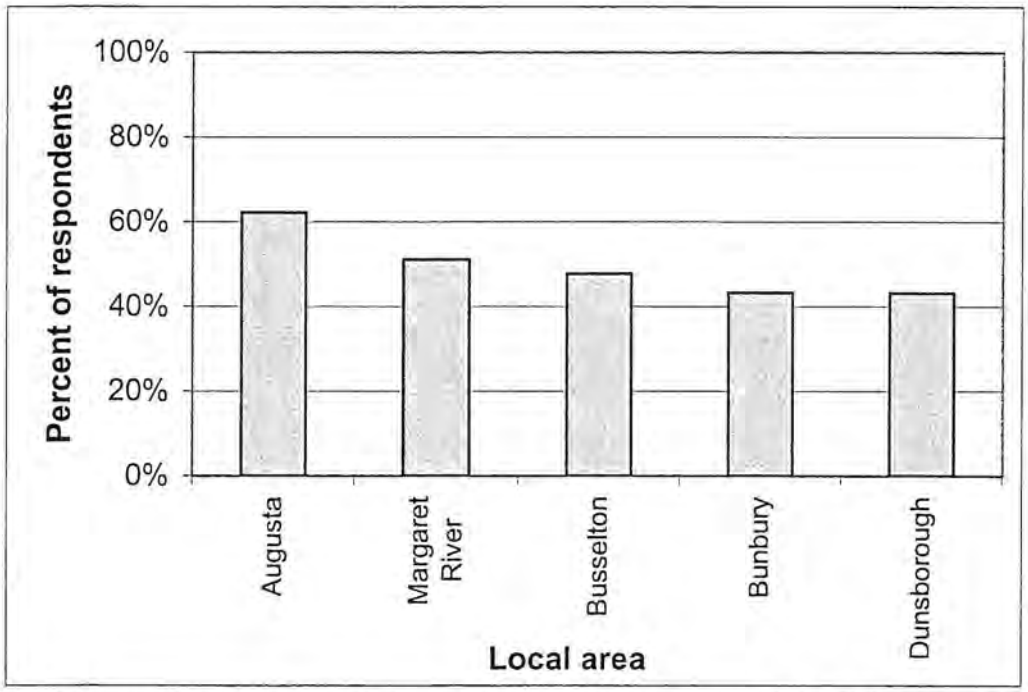


**Fig. 4: Percentage of respondents from each area that were aware of the marine reserve proposal in the south west.**

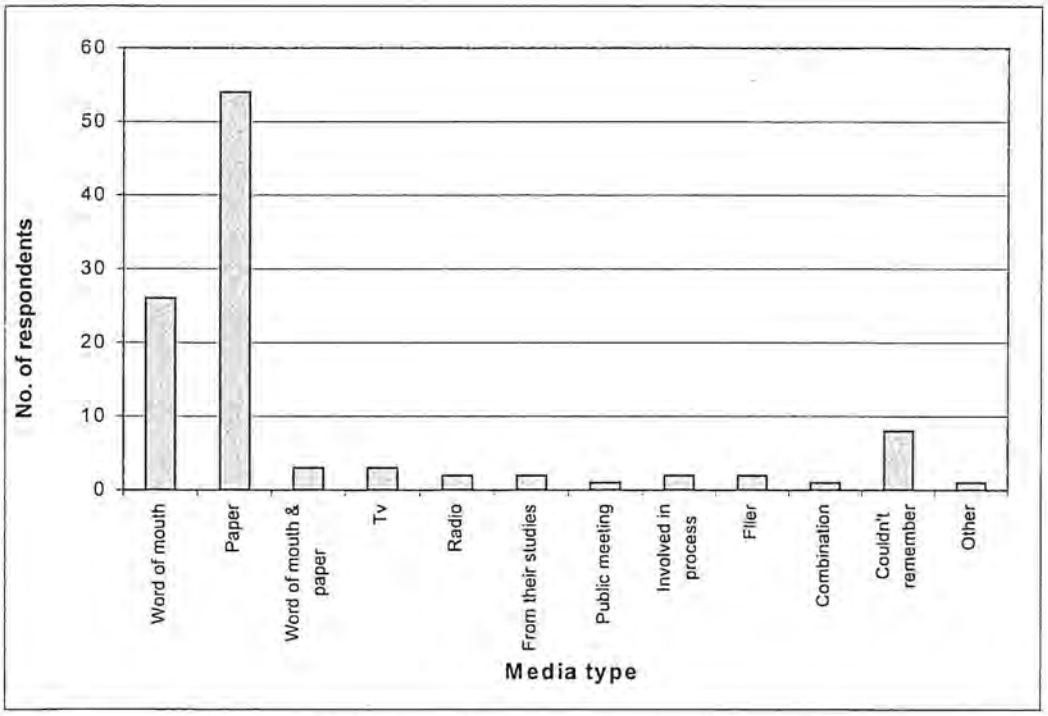


**Fig. 5: Type of media from which respondents became aware of the marine reserve proposal in the south west.**

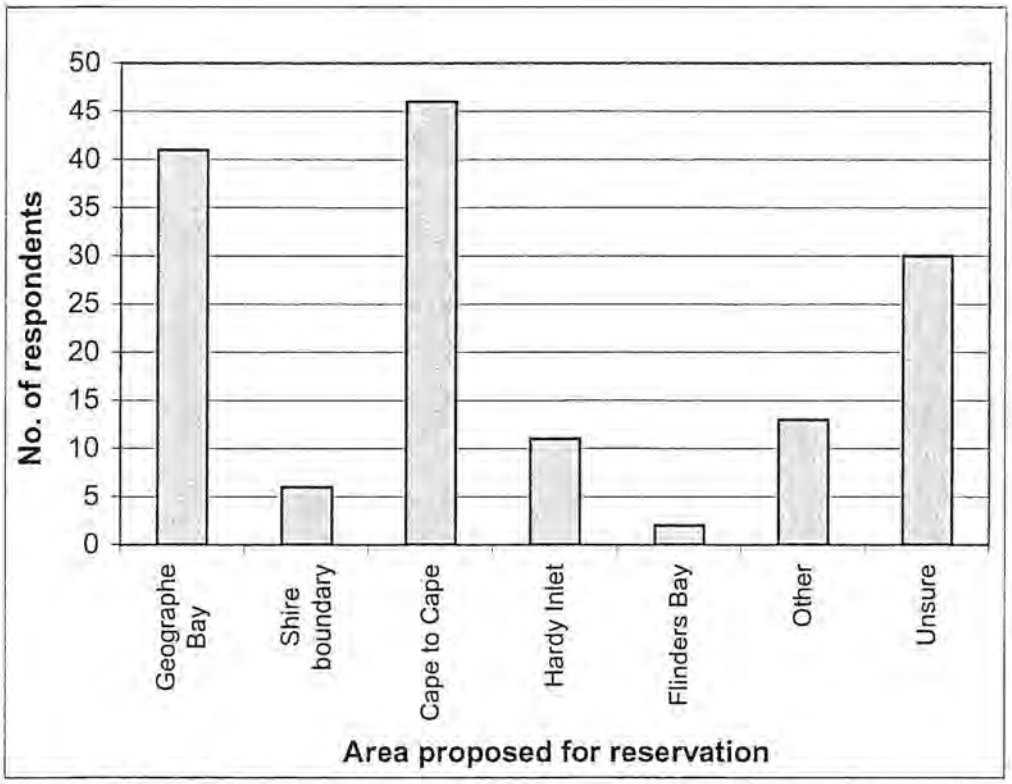


**Fig. 6: Number of respondents that mentioned certain areas that they thought were included in the marine reserve proposal in the south west.**

When asked if respondents thought that fishing would be allowed in a marine reserve once it was established, just over 53% of respondents thought that all types of fishing would be restricted throughout the entire marine reserve, about 14% thought that all forms of fishing would be allowed and just over 20% thought that only professional fishing would be restricted or were unsure. 12% of respondents mentioned the use of different zones to control fishing activities. The majority of respondents that were unaware or misguided about the restrictions that may exist within a marine park. This issue will need to be a focal point of education so that everyone understands the concept of zoning and that there will be areas to participate in fishing and other extractive activities and also areas for conservation of biodiversity. The notion that all forms of fishing will be restricted in the entire marine park rather than the use of a multiple use scheme is one particular comment that may be inhibitive to the support of a marine reserve in the south west.

There was no statistically significant difference in thoughts about fishing restrictions between towns, ages or genders.

Respondents were asked their feelings towards the establishment of a marine park (Fig. 7) in the south west. The responses were recorded as strongly supportive, supportive, undecided, unsupportive or strongly unsupportive. The majority of respondents (72%) were supportive or strongly supportive of the marine reserve proposal. 20% of respondents were undecided about their feelings towards the proposal, 8% were against the proposal and no respondents were strongly against the marine reserve proposal. There was no statistically significant difference of feelings between different gender, ages or towns.

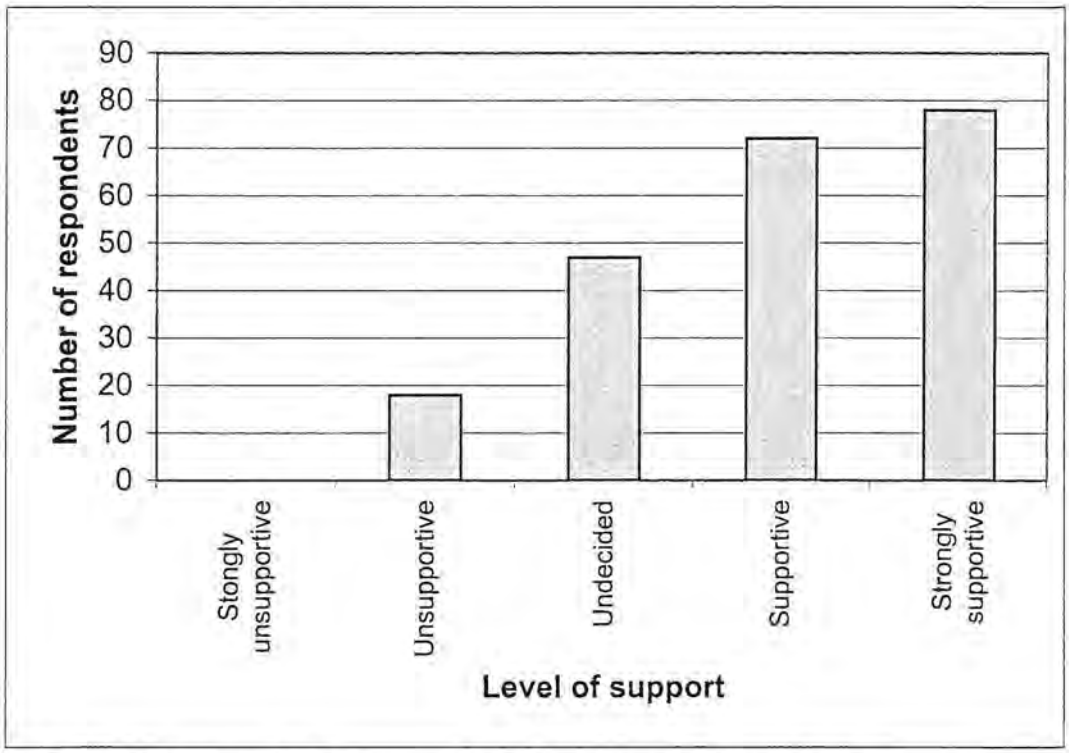


**Fig. 7: Level of support for the concept of a marine reserve in the south west.**

Interviewees were also questioned about the reasons as to why they supported or did not support a proposed marine reserve in the south west. 100% of respondents that answered that they were 'undecided' about the proposal cited the reason that they would need more information about the process to make an educated decision.

Popular reasons as to why some respondents supported the proposal included: to protect and conserve the marine habitats and their species for future generations (20%); due to the potential benefits to the tourism industry in the area (10%); and due to concerns regarding overfishing and to help increase fish stocks (8%). Other, less common reasons for supporting a proposed marine park included: the opportunities for education about the marine environment; support of any conservation in general; due to having witnessed first hand degradation of the marine environment; and others gave the example of management successes in other marine reserves.

Reasons for not supporting the marine reserve proposal varied widely and no one reason dominated. Examples of some explanations included: that there are too many residents and visitors in the area currently and a marine reserve, which would be actively publicised would lead to an increase in visitors, which would place more pressure on the marine environment; a marine reserve would be a waste of money and government money could be better spent; may adversely affect tourism if tourists can not fish; and some respondents negative attitudes stemmed from a general anti-government sentiment.

A strong opposition to marine reserves was not evident throughout the surveys. It is likely that once people that are undecided about a marine reserve receive sufficient information to make a decision that their views will transform into positive ones. Effective communication and education could increase the sample of supportive respondents to over 90%.

Just over 60% of respondents felt that there was currently a need for better management of the marine environment. Approximately 20% felt that management was currently 'OK' and a similar amount had no opinion on the question.

Almost all respondents that thought that current marine management was 'OK' cited the reason that they did not know of any specific problems in the region.

Most respondents that had no opinion on the question cited the reason that they do not know enough about the marine environment or its management to comment.

The most common reason respondents cited as to why they thought that there was a need for better current management of the marine environment stemmed from a concern about the perceived conflict between professional crayfishers and the general community. This concern included social impacts such as boat proximities to shore and ecological reasons such as reduced crayfish stocks. Other common reasons for the need for better management referred to overfishing from both commercial and recreational fishers; a need for better policing of fisheries regulations; concerns about commercial fishers in general; and litter and pollution threats.

No statistically significant difference of opinions occurred between genders, ages or towns but interestingly, a significant difference (P-value = <0.001) did occur between respondents that participated in extractive recreational pursuits versus those who did not. Out of all of the respondents surveyed, just over 60% of respondents participated in fishing. Of those 60%, only 10% had no opinion compared to 35% of non-fishers having no opinion on the topic of the need for better management. This may be due to recreational fishers being members of clubs that have educational material available and thus they are more aware of the pressures on marine environment or simply that they tend to spend more time around the ocean than others. Fishers in this sample did spend more time around the ocean than non-fishers. Fishers spent on average at least one day a week to one day a month using the ocean or coastline compared to non-fishers whose average frequency tended be less than once a month.

When asked to consider the future need for management of the marine environment, over 70% of respondents thought that there would be a need for better management of the marine environment in the future. Less than 3% thought that the current management practices, unchanged, would suffice in the future. The rest of the respondents had no opinion about this question. The issue that this question dealt with may be an effective in-road into educating the community about marine reserves. 80% of respondents who thought that there was a need for better future management of the marine environment also supported the marine reserve proposal. In comparison, of the few respondents who thought that current management would suffice for the future, none were supportive of the marine reserve. These percentages suggest that some people are already making the linkage that a marine reserve will improve marine management. Since most people are concerned about the future of the local marine environment, the positive linkages between the creation of a marine reserve and the corresponding increased effort, resources and funding that go into managing an area need to be explained to the local community.

Most respondents that had no opinion about future management either did not cite a reason or they needed more information about marine management to comment. Of the 158 respondents that commented that there will be a need for better management in the future, over 50 respondents cited the reason that there will be an increased population of both residents and visitors which will increase pressures on the marine environment. Other common reasons as to why respondents considered that there would be a need for better marine management in the future included: that future conservation of marine species and habitats will depend on better management; that increasing development will continually affect the coast and the inshore environment and; concern due to the impact of commercial fishing in the region. Other, less commonly cited reasons included: that management can always be improved; concern about professional crayfishing and its impacts in the future; the effects of overfishing (both recreational and commercial); the increasing need for education; and concerns about marine pollution.

There was a distinct difference between opinions concerning the above topic question between different ages. The age distribution of opinion was interesting, with less concern about the future by younger participants (under 35 years) compared to a maximum concern about future marine management by respondents aged between 41 to 50 and 61 to 70 (Fig. 8).

Respondents that participated in extractive recreational pursuits were less likely to have no opinion about future marine management (17%) compared to non-extractive users (36%).

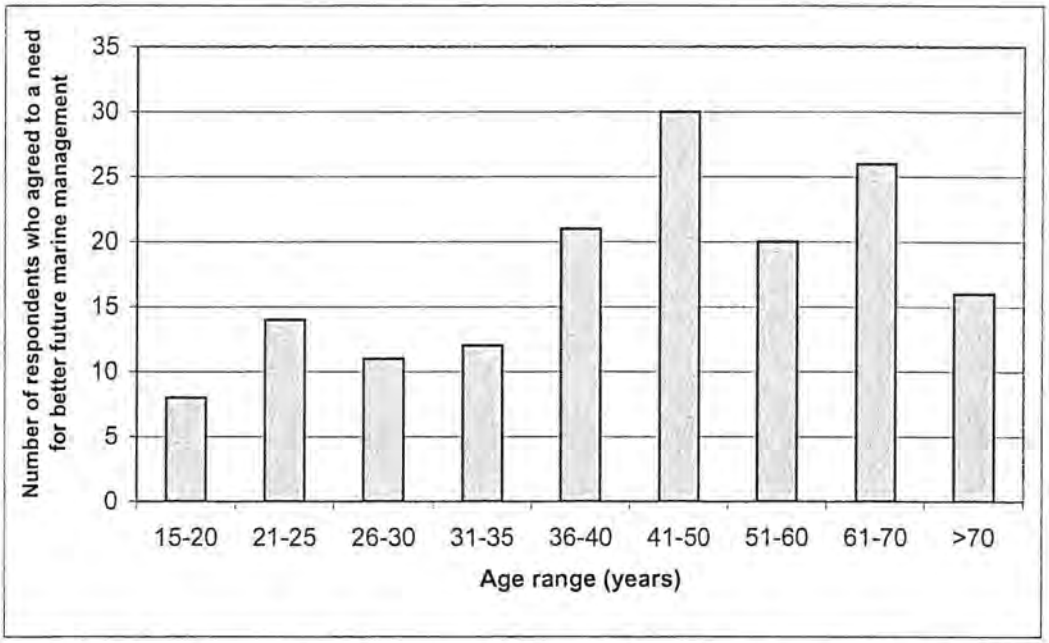


**Fig. 8: Number of repsondents, by age range, that considered that there would be a need for better management of the marine environment in the future.**

Another question regarding respondents' use of the marine environment assessed the regularity of this use. Figure 9 illustrates the number of respondents against the different use periods. Only 5% of respondents never used the beach or the ocean in the south west. The majority of respondents surveyed used the beach or the ocean at least once per week (just under 50%). There was no statistically significant difference of use frequency between different towns, ages, or genders. Respondents that used the beach daily to weekly included 66% of the sample from the surveys. This shows that the south west coastal towns have a highly coastal and marine focussed lifestyle. This lifestyle has resulted in a large number of interested stakeholders being involved in the planning process of the marine reserve and even in future management of the area.

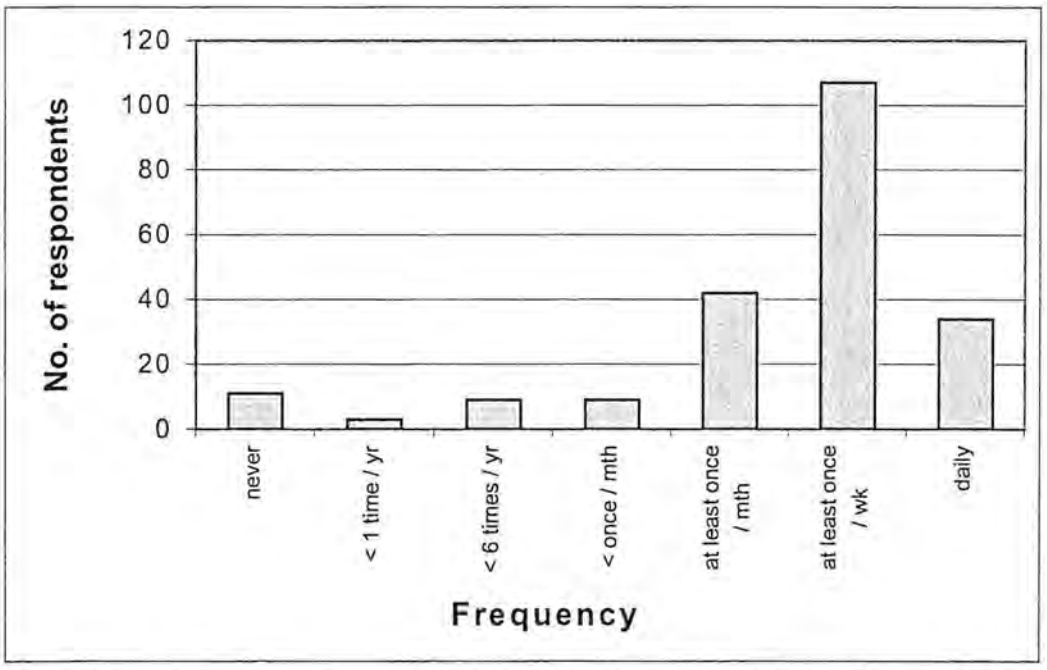


**Fig. 9: The number of respondents using the beach or the ocean at different frequencies in the south west.**

Of the 95% of respondents that used the beach and the ocean, many different activities were enjoyed. The most common activities that respondents participated in, in the Capes region included beach based activities, swimming and/or snorkelling (Fig. 10). The least common marine based activities were jetskiing, waterskiing and skurfing[1]. Survey participants could choose all or none of these activities during the survey. There was no statistically significant difference (P-value = >0.999) between the different towns and their activity preferences.

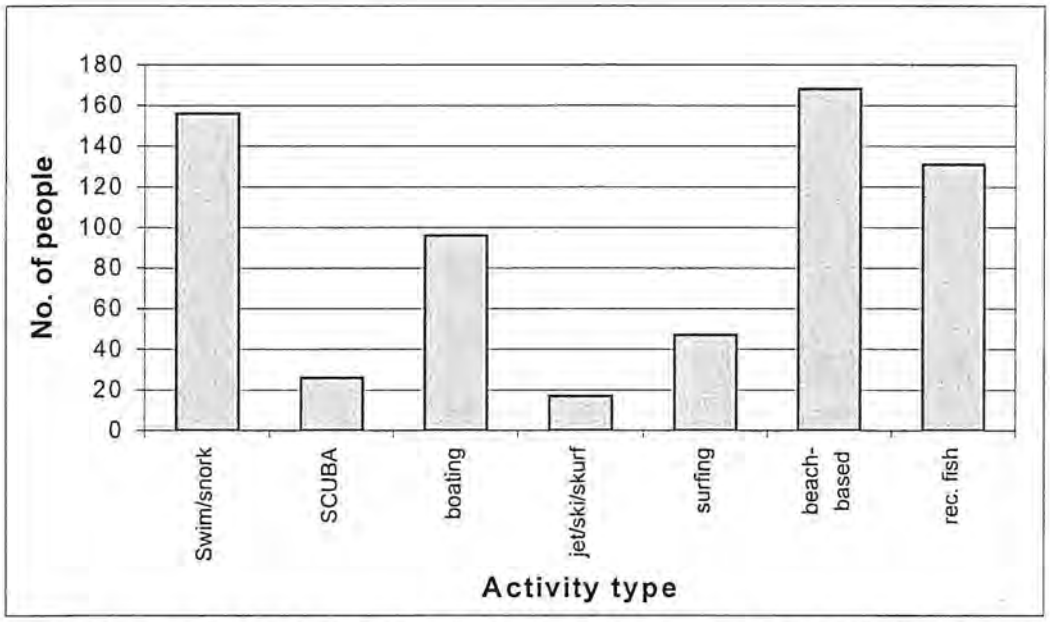


**Fig. 10: Number of repondents that participate in different marine based activities in the south west region.**

Approximately 62% of respondents fish in the south west region. The variety of fishing types was extensive and some respondents participated in more than one type of fishing (Fig. 11). Of the 133 respondents who fish in the region, almost 30% enjoyed all types of shore based fishing, 25% specifically beach based, 20% boat based fishing, 15% enjoyed all types of fishing and the rest enjoyed other forms such as rock or jetty based, inlet or river fishing, spearfishing, line fishing only or crabbing.

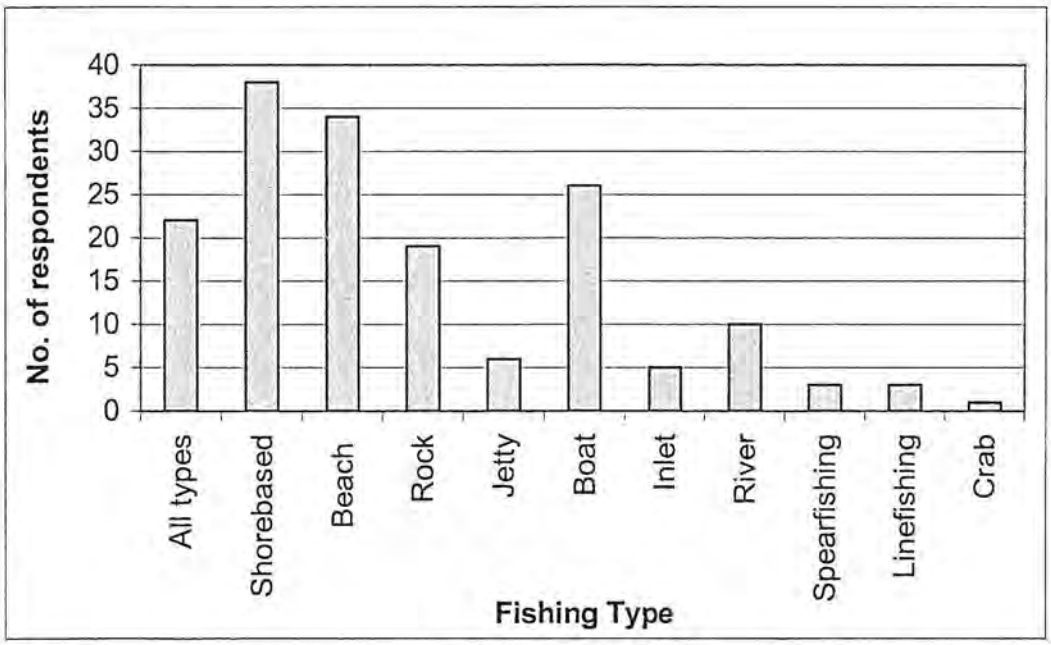


**Fig. 11: Number of respondents that participate in different types of fishing in the south west.**

[1] Surfing behind a boat.

Of the 62% of respondents who fished in the region, approximately 74% were either supportive or strongly supportive and only 7% were unsupportive of the concept of a marine reserve in the south west.

Respondents were also questioned about whether their livelihoods involved the marine environment. Only 4 respondents out of the 215 surveyed considered that their working lives involved the marine environment. The very small number of positive responses to this question resulted in there being no viable information for statistical analysis. Although it is likely that there are a large number of people whose livelihoods rely on the marine environment in the general population in the south west, this was not evident in the sample. This problem was probably due to the timing of the sampling effort. The majority of the surveys were conducted during the day on weekdays which would bias retired people, students, the unemployed and home carers. This would affect the likelihood of surveying a person who is at work full time or who works seasonally. Some surveys were conducted later in the evening to try to avoid some of this bias. The sample from these surveys does not adequately represent the population that work as commercial fishers, tourism employees, dive operators and others who rely on the marine environment for a living and these people will be a vital stakeholder in the planning and management of a marine reserve in the south west.

# APPENDICES

APPENDIX 1: Survey form

KOA Survey for Pubic Participation: note, questions with ** indicate need to prompt answers; where no **, allow respondent to answer and choose most appropriate box

**Survey for Capes: (PHONE No_____DISTRICT_____)**

(1) Are you aware that the Government proposes to establish a marine park in the South West ?

Yes ☐ No ☐ If yes, how did you hear ? _____

(2) What areas do you think are being considered as a marine park ?

☐ Geographe Bay → [☐ to Capel/Busselton Shire boundary]

☐ Cape to Cape

☐ Hardy Inlet

☐ Flinders Bay

☐ Other _____

☐ Don't know

(3) Do you think that fishing will be allowed in the marine park once it is established ?

Yes ☐ No ☐ It depends on the zone ☐

**(4) How do you feel about the idea of a marine park being established in the Geographe Bay/Leeuwin Naturaliste/ Hardy Inlet area ?

☐ Strongly support ☐ Against

☐ Support ☐ Strongly against

☐ Undecided

| Why ? |
|---|
| |

(5) Do you feel that at the moment there is a need for better management of the marine environment or is it ok the way it is?

Need better ☐ OK ☐ No opinion ☐

| Why ? |
|---|
| |

(6) Do you feel that in the future there will be a need for better management of the marine environment or will it be ok ?

Will need better ☐ OK ☐ No opinion ☐

Why ?

**(7) Do you participate in any of the following marine-based recreational activities?

☐ Shore-based swimming / snorkeling ☐ SCUBA diving

☐ Boating ☐ Jetskiing, waterskiing, scurfing

☐ Surfing ☐ Beach activities

☐ Recreational fishing (if yes, what kind _____)

(8) Does your livelihood involve the marine environment ?

Yes ☐ No ☐ If yes, what _____?

**(9) How regularly are you in the sea or on the beach?

☐ Daily ☐ Less than 6 x per year

☐ at least once a week ☐ Less than 1 x per year

☐ at least once a month ☐ Never

☐ Less than 1/month

Demographics

**(10) In which of the following age categories do you fall?

☐ 15-20 yrs ☐ 31-35 yrs ☐ 51-60 yrs

☐ 21-25 yrs ☐ 36-40 yrs ☐ 61-70 yrs

☐ 26-30 yrs ☐ 41-50 yrs ☐ >70 yrs

(11) Do you have children ? Yes ☐ No ☐

(12) Are you a full time resident of the area? Yes ☐ No ☐

If yes, how many years have you lived here? _____

**(13) Which of the following would best describe your occupation / activities?

☐ Retired

☐ Trade

☐ Small business/self employed

☐ Professional

☐ Farming: vineyards ☐ other ☐

☐ Student

Gender Female ☐ Male ☐

That's it for the questions. I'd like to thank you again for your time. If you have any questions, please feel free to contact Neil Taylor, the Capes marine park planner at the Busselton CALM office (9752 5517).

Interviewer: _____ Date: _____

APPENDIX 2: Phone call details

**Work details (Surveyor 1 data set)**
Survey and data entry occurred over approximately 9 full days
Approximately 900 phone calls
150 surveys completed

**Augusta**

| | |
|---|---|
| Total number of calls | 189 |
| Total number of surveys | 30 |
| "No" responses | 34 |
| Disconnected | 5 |
| No answer | 50 |

**Margaret River**

| | |
|---|---|
| Total number of calls | 171 |
| Total number of surveys | 30 |
| "No" responses | 22 |
| Disconnected | 9 |
| No answer | 47 |

**Dunsborough**

| | |
|---|---|
| Total number of calls | 180 |
| Total number of surveys | 30 |
| "No" responses | 26 |
| Disconnected | 8 |
| No answer | 47 |

**Busselton**

| | |
|---|---|
| Total number of calls | 202 |
| Total number of surveys | 30 |
| "No" responses | 41 |
| Disconnected | 7 |
| No answer | 47 |

**Bunbury**

| | |
|---|---|
| Total number of calls | 171 |
| Total number of surveys | 30 |
| "No" responses | 37 |
| Disconnected | 9 |
| No answer | 41 |

**Work details (Surveyor 2 data set)**
Survey occurred on 5 different days
Approximately 340 total calls
65 surveys completed

**Augusta**

| | |
|---|---|
| Total number of calls | 42 |
| Total number of surveys | 15 |
| "No" responses | 13 |
| Disconnected | 3 |
| No answer | 11 |

**Margaret River**

| | |
|---|---|
| Total number of calls | 46 |
| Total number of surveys | 15 |

| | |
|---|---|
| "No" responses | 6 |
| Disconnected | 5 |
| No answer | 20 |

**Dunsborough**

| | |
|---|---|
| Total number of calls | 56 |
| Total number of surveys | 15 |
| "No" responses | 9 |
| Disconnected | 3 |
| No answer | 27 |

**Busselton**

| | |
|---|---|
| Total number of calls | 115 |
| Total number of surveys | 15 |
| "No" responses | 22 |
| Disconnected | 6 |
| No answer | 15 |

**Bunbury**

| | |
|---|---|
| Total number of calls | 77 |
| Total number of surveys | 6 |
| "No" responses | 27 |
| Disconnected | 3 |
| No answer | 22 |

APPENDIX 3: Summary statistics of demographics in the region for all local areas combined

Table 3.1: summary statistics of age and length of residency of respondents

| Variable (yrs) | mean | SD | min | max | median |
|---|---|---|---|---|---|
| AGE | 36 to 50 (5.8value) | 21 to 25 (2.44value) | 15 | 92 | 41 to 50 (6value) |
| LENGTH OF RESIDENCY IN LOCAL AREA | 15.37 | 14.09 | 0.2 | 79 | 10.5 |

Table 3.2: number of respondents that were residents of the region, had children and their livelihoods depended on the marine environment for the combined surveys

| Variable | yes | no |
|---|---|---|
| RESIDENT | 205 | 10 |
| CHILDREN | 152 | 63 |
| LIVELIHOOD-dependant on marine environment | 4 | 211 |

Table 3.3: percentage and number of female and male respondents

| SEX | % | N°. |
|---|---|---|
| female | 65.58 | 141 |
| male | 34.42 | 74 |

Table 3.4: percentage and number of different occupations of respondents

| Variable | % | N°. |
|---|---|---|
| OCCUPATION | | |
| retired | 36.08 | 70 |
| trade | 11.86 | 23 |
| small business/self employed | 27.8 | 54 |
| professional | 13.4 | 26 |
| farming - vineyard | 1.55 | 3 |
| farming - other | 3.09 | 6 |
| student | 6.19 | 12 |

APPENDIX 4: Summary statistics of demographics in the each local area

Table 4.1: summary statistics of age and length of residency of respondents

| | Bunbury | Busselton | Dunsborough | Margaret River | Augusta |
|---|---|---|---|---|---|
| **AGE** | | | | | |
| mean value | 5.54 | 6.18 | 5.05 | 5.22 | 6.96 |
| mean age (yrs) | 36 to 40 | 41 to 50 | 36 to 40 | 36 to 40 | 41 to 50 |
| SD | 2.68 | 2.41 | 2.69 | 1.98 | 2.00 |
| median | 6 | 7 | 5.5 | 5 | 7 |
| **LENGTH OF RESIDENCY** | | | | | |
| Mean (years) | 19.28 | 18.81 | 11.73 | 12.17 | 15.41 |
| SD | 17.29 | 17.05 | 10.33 | 9.27 | 13.93 |
| min | 1 | 1 | 0.5 | 1 | 0.2 |
| max | 79 | 76 | 41 | 42 | 69 |
| median | 17.5 | 14 | 8 | 10 | 11 |

Table 4.2: number of respondents that were residents of the region, had children and their livelihoods depended on the marine environment in each local area

| | Bunbury | Busselton | Dunsborough | Margaret River | Augusta |
|---|---|---|---|---|---|
| **RESIDENT** | | | | | |
| yes | 36 | 43 | 41 | 43 | 42 |
| no | 1 | 1 | 3 | 2 | 3 |
| **CHILDREN** | | | | | |
| yes | 23 | 33 | 29 | 32 | 35 |
| no | 14 | 11 | 15 | 13 | 10 |
| **LIVELIHOOD - dependant on marine env.** | | | | | |
| yes | 2 | 0 | 1 | 0 | 1 |
| no | 35 | 44 | 43 | 45 | 44 |

Table 4.3: percentage of female and male respondents

| SEX (%) | Bunbury | Busselton | Dunsborough | Margaret River | Augusta |
|---|---|---|---|---|---|
| male | 45.9 | 38.6 | 36.4 | 20 | 33.3 |
| female | 54.1 | 61.4 | 63.6 | 80 | 66.7 |

Table 4.4: Number of respondents with different occupations in each local area

| OCCUPATION | Bunbury | Busselton | Dunsborough | Margaret River | Augusta |
|---|---|---|---|---|---|
| retired | 12 | 17 | 10 | 9 | 22 |
| trade | 5 | 5 | 6 | 2 | 5 |
| small bus/self employed | 7 | 11 | 11 | 17 | 8 |
| professional | 4 | 6 | 6 | 7 | 3 |
| farming - vineyard | 0 | 0 | 1 | 1 | 1 |
| farming - other | 0 | 0 | 2 | 2 | 2 |
| student | 6 | 1 | 2 | 2 | 1 |