4.0 RESULTS

4.1 A Description of Visitors to Whitehaven Beach

A total of 583 visitor surveys were analysed for the study. Of the sample 56% (n = 314) were female and 44% were male (n = 244).

The different age categories of respondents are displayed in figure 5. The majority of visitors surveyed were aged between 20 and 29 years (40%). For the entire sample the mean age was 37 (range 15 to 79 years of age). Most respondents had completed a secondary level of education (31%), 31% possessed some university or technical qualifications and 35% held a university or technical degree (see table 2).

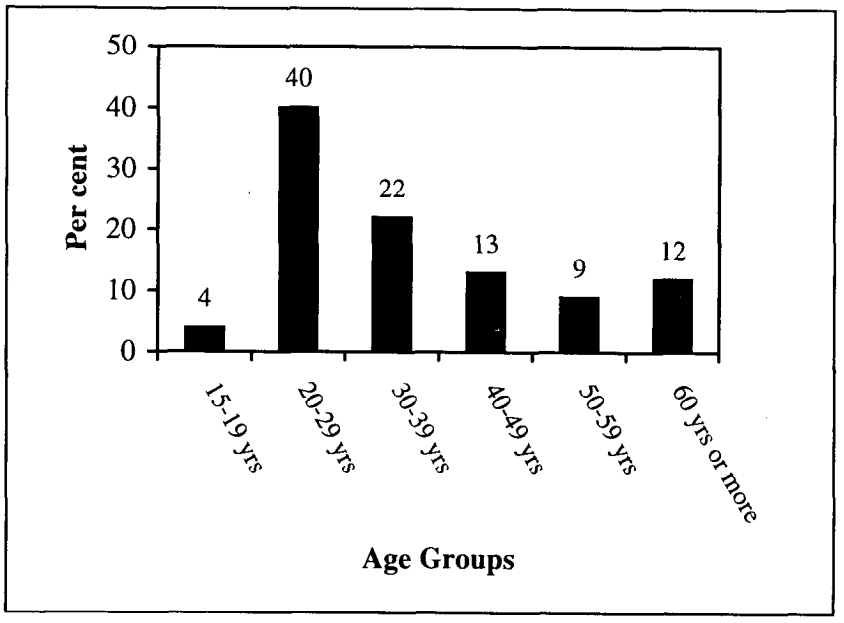

Figure 5. The age distribution of visitors to Whitehaven Beach

Table 2. Highest level of education achieved by respondents

Level of Education	Frequency	Per cent
Primary	8	1.5
Secondary	173	32.0
Some university or technical	168	31.1
University or technical	192	35.5
Total	**541**	**100.0**

As displayed in figure 6, four per cent of the sample were local residents visiting Whitehaven Beach, 46% indicated that they were Australian citizens, and 50% classified themselves as an international visitor. Of the Australian respondents 35% resided in Queensland, 32% were from New South Wales and 21% lived in Victoria (see table 3). Table 4 displays the country of citizenship of international visitors to Whitehaven Beach. A substantial number of international visitors were British (41%), 21% were European and a further 21% were visitors from North America or Canada.

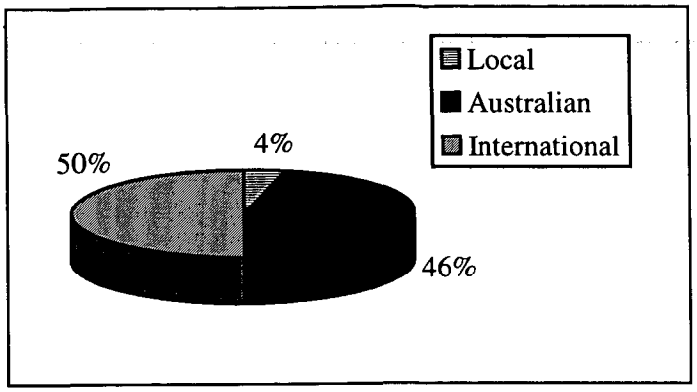

Figure 6. Visitors' place of origin

Table 3. The states in which visitors to Whitehaven Beach resided

States of Australia	Frequency	Per cent
Queensland	94	34.7
New South Wales	87	32.2
Victoria	58	21.4
South Australia	13	4.8
Tasmania	10	3.4
Western Australia	5	1.9
Northern Territory	3	1.2
Australian Capital Territory	1	0.4
Total	**271**	**100.0**

Table 4. The country of citizenship of visitors to Whitehaven Beach

Country	Frequency	Per cent
British/Irish	116	41.4
North American/Canadian	60	21.4
European	59	21.1
Japanese	22	7.8
South African	7	2.5
Eastern European	5	1.8
Asian	5	1.8
New Zealand	4	1.4
South American/Mexican	1	0.4
Middle East	1	0.4
Total	**280**	**100.0**

Approximately 36% of respondents travelled to Whitehaven Beach with their partner or spouse. Friends (19.5%) or family members (19.1%) accompanied almost 40% of passengers surveyed. Eighteen per cent of respondents were part of an organised group or club, whilst five per cent of the sample had travelled alone to Whitehaven Beach (table 5). The mean number of people in a group was $\bar{X}$ 9.38 (median = 2).

4.2 Previous Visitation to the Whitsunday Region and Whitehaven Beach

Respondents were asked whether they had previously visited the Whitsundays region. Results presented in table 6 reflect that 78% (n = 445) had never been to the Whitsundays region, whilst 23% (n = 127) reported that they had on prior occasions visited a Whitsunday reef or island area. Ten per cent of these respondents had travelled to the Whitsundays region once before, whilst almost nine per cent had visited between two and five times.

Table 9. Respondents' last visit to Whitehaven Beach (n = 55)

Last Visit to Whitehaven Beach	Per cent
In the last 12 months	34.5
Between 1 and 5 years ago	44.8
Between 6 and 10 years ago	10.3
More than 10 years ago	10.4
Total	**100.0**

4.3 A Comparison of Tour Operators and Differences in Visitor Characteristics

For comparative purposes, the five tourism boats used in this study have been divided into two categories, 'large' and 'small' operations, based on the length of the vessel and the number of passengers they were licensed to carry. Operator 1 was regarded as a large operation, whilst operators 2, 3, 4 and 5 were classified as small operations. Of the sample, 76% travelled on the large operation and 24% visited Whitehaven Beach on small vessels.

Differences were apparent between the large and smaller operations with regards to passenger characteristics (see table 10). Results indicated that those travelling with small operations tended to be younger (20–29 years), ($X^2 = 68.82$, $p < 0.001$), and were more likely to possess a university or technical degree ($X^2 = 13.09$, $p < 0.01$). The majority of visitors who were accompanied by a partner, spouse or members of their family travelled on the larger commercial operation, whereas people who were alone or with friends were more likely to have visited Whitehaven Beach on one of the smaller boats ($X^2 = 57.96$, $p < 0.001$). A higher percentage of international tourists chose to travel to Whitehaven Beach with smaller operations, whereas Australian visitors mostly used the larger operation as their means of transportation to the beach.

It has been suggested that a 'maturing process might be occurring in some visitors to the Great Barrier Reef leading them to choose smaller operations for their second/third trip (Shafer et al. 1998). This theory is based on visitors having an increased familiarity with an area or a possession of confidence in their ability to undertake ocean travel. To assess this concept, visitors were asked whether they had, on previous visits to Whitehaven Beach, travelled with a different operator and, if so, why? Fifty respondents indicated that they had travelled with a different operator previously. Reasons given for choosing a different operator on this occasion included convenience, safety and the size of the group they were travelling with. According to results shown in table 11, the majority of repeat visitors to Whitehaven Beach were more likely to have travelled on the larger operation. Initially, these results do not support suggestions of a maturing process occurring with repeat visitors to Whitehaven Beach. This finding however should be viewed with caution due to the small sample of previous visitors, and the bad weather conditions experienced during sampling which may have predisposed some people to choose a larger operation for reasons of comfort.

4.4 Expectations of Whitehaven Beach

Respondents were questioned about the types of experiences they expected to have during their visit at Whitehaven Beach. The most popular responses are displayed in table 12 and a list of all responses may be found in appendix 7. The three most sought-after experiences were to go swimming and/or snorkelling (20%), see the pure white silica sand/beach (19%) and to relax and lie in the sun (16%). A smaller percentage of respondents also expected to have fun, enjoy good weather, visit a quiet natural place that was uncommercialised, and view great scenery.

Table 10. Type of tour operator and differences in visitor characteristics

Visitor Characteristics	Type of Operation		test statistic	p value
	Large (n = 428)	Small (n = 137)		
Age group				
15–19	2.5%	8.6%	$x^2 = 68.82$	p<0.001
20–29	29.9	64.1		
30–39	25.1	15.6		
40–49	15.0	6.3		
50–59	11.9	2.3		
60 years or more	15.5	3.1		
	100%	100%		
Level of education				
Primary	1.8%	0.8%	$x^2 = 13.09$	p<0.01
Secondary	35.9	21.6		
Some university or technical	30.7	30.4		
University or technical degree	31.7	47.2		
	100%	100%		
Group travelled with				
Self	3.7%	12.2%	$x^2 = 57.96$	p<0.001
Partner or spouse	38.3	24.4		
Family	24.1	5.3		
Friends	14.6	35.1		
Organised group or club	18.0	21.4		
Business associates	1.2	1.5		
	100%	100%		
Place of origin				
Australian	60.5%	18.3%	$x^2 = 70.89$	p<0.001
International	39.5	81.7		
	100%	100%		

Table 11. Type of operation chosen by repeat visitors to Whitehaven Beach

Type of operation	Previous visitation to Whitehaven Beach	
	No (n = 508)	Yes (n = 50)
Large operation	75.6	74.0
Small operation	24.4	26.0
Total	**100%**	**100%**

4.5 Participation in Activities at Whitehaven Beach

Tour operators offered a range of activities to visitors whilst at Whitehaven Beach. A list of these activities and rates of participation by respondents is presented in table 13. The most popular activities included swimming, relaxing and sunbathing, taking photos, and going for beachwalks. Most operators spent approximately two hours on Whitehaven Beach. Findings suggest that during this time visitors spent an average of 58 minutes swimming, 52 minutes relaxing and sunbathing, 15 minutes taking photos and 33 minutes walking along the beach. Beach games such as volleyball, cricket, ball games and throwing frizbees were popular activities with 18% of the sample. An activity undertaken by nine per cent of visitors was bushwalking. Further investigation reflected that the majority of these people had visited Tongue Point. At Tongue Point a bush-track has recently been built leading up to a lookout over Hill Inlet. Other activities people said they participated in whilst at Whitehaven Beach included playing golf, building sandcastles and spending time meeting and talking to new people (4.3%).

Table 12. Expected experiences from visitation to Whitehaven Beach

Experiences	Frequency	Per cent
To swim/go snorkelling	134	20.5
See beach and silica sand	122	18.7
Relax and sunbathe	107	16.4
See and enjoy the water	51	7.8
Experience nature and enjoy surroundings	46	7.0
Peacefulness and quiet	41	6.3
Enjoy good weather	36	5.5
Have fun	26	4.0
Views and scenery	26	4.0
Unspoiled, uncommercialised beach	20	3.1

Local interest group members were also asked about the activities they normally would participate in whilst visiting Whitehaven Beach. Swimming, beachwalks, relaxing and sunbathing, taking photos, birdwatching and fishing were the most popular activities (see appendix 6).

Table 13. Activities participated in by visitors whilst at Whitehaven Beach

Activities	% Participated (n = 583)	Average Time* (n = 344) (minutes)
Swimming	79.4	58
Relax/sunbathing	65.5	51
Taking photos	49.1	15
Beach walks	45.0	32
Snorkelling	31.0	31
Beach games	18.4	28
Bush/nature walks	8.7	45
Wildlife/bird watching	7.2	22
Other activities	4.3	36
Fishing	1.9	23

* Average time spent participating in activities was calculated as a % of time spent during a visit.

4.6 Images of Whitehaven Beach

Respondents were asked to describe, using three words or phrases, the Whitehaven Beach setting they visited. The purpose of this question was to understand the perceptions (images) people have of Whitehaven Beach after their visit. The 10 most popular words used by visitors to describe Whitehaven Beach are displayed in table 14. Words such as beautiful (12%), relaxing/calming (9%) and quiet/tranquil (8%) were used most often. Many respondents were impressed about the clean beach environment (8%) and mentioned the white silica sand (8%) and quality of the clear water (5%) they saw whilst visiting Whitehaven Beach. Unspoiled, untouched, undeveloped, scenic and panoramic were also images of Whitehaven Beach that were described by many visitors. Appendix 8 displays the entire list of words used by visitors to describe Whitehaven Beach.

Similarly, the most popular words used by local interest group members to describe Whitehaven Beach were spectacular/amazing; natural; beautiful; pristine; unique; pure white sand; crystal clear water; and a visual icon. Quiet/peaceful, unspoilt, and clean were also perceptions locals had of Whitehaven Beach (see appendix 6).

Table 16. A comparison of spiritual values held for Whitehaven Beach by international and Australian visitors

Citizenship	Spiritual values				
	Little value	No opinion	Great value	test statistic	p value
Australian	32.5	39.4	28.1	$X^2 = 9.64$	< 0.01
International	24.7	30.1	45.2		

Table 17. A comparison of values held towards Whitehaven Beach as a place of scientific research by international and Australian visitors

Citizenship	Scientific research				
	Little value	No opinion	Great value	test statistic	p value
Australian	12.0	19.6	68.4	$X^2 = 9.34$	< 0.01
International	10.1	35.1	54.7		

4.8 A Review of Visitors Experiences at Whitehaven Beach

4.8.1 Visitation Experiences Provided by Whitehaven Beach

Respondents were asked to evaluate how much each of the 16 benefit items, presented in table 18, were provided from their visit to Whitehaven Beach. 'Seeing the beauty of Whitehaven Beach' ($\bar{X}$ 4.50), 'being in a natural place' ($\bar{X}$ 4.33) and 'viewing outstanding scenery' ($\bar{X}$ 4.23) were scored most highly as experiences received by Whitehaven Beach visitors. 'Escaping normal routine' ($\bar{X}$ 4.31) and 'rest and relaxation' ($\bar{X}$ 4.22) were also benefits seen as being well provided by the visit. In comparison 'meeting new people' ($\bar{X}$ 2.59), 'being physically active' ($\bar{X}$ 1.24) and 'learning about the Great Barrier Reef'($\bar{X}$ 1.34) were personal benefits that received the lowest ratings from respondents.

Table 18. Visitors' evaluation of experiences at Whitehaven Beach

Benefit item	Not at all	Slightly	Some	High	Very high	Mean	Std. dev.
See the beauty of Whitehaven	0	1.8	5.9	32.7	59.6	4.50	0.69
Be in a natural place	1.1	2.0	11.1	34.3	51.3	4.33	0.83
Escape from normal routine	2.5	2.7	9.8	30.7	54.2	4.31	0.94
View outstanding scenery	2.0	2.9	12.1	36.0	47.1	4.23	0.91
To rest and relax	2.5	2.5	12.1	36.7	46.3	4.22	0.93
Experience an undeveloped environment	3.1	4.9	16.7	30.9	44.4	4.09	1.04
Experience something new and different	5.6	10.7	23.1	34.6	25.9	3.64	1.14
Be with others who enjoy the things that I enjoy	9.8	9.3	26.6	32.8	21.5	3.47	1.21
Experience some solitude	10.9	13.9	26.6	26.8	21.7	3.34	1.26
Have fun, be entertained	12.2	14.6	25.6	27.6	19.9	3.28	1.28
Have some excitement	6.2	12.8	42.4	28.5	10.1	3.23	1.01
Go to a place my friends haven't been	24.6	9.7	16.0	23.1	26.6	3.17	1.53
Be close to friends and family	21.6	11.0	21.2	28.7	17.5	3.09	1.40
Learn from the GBR	19.1	19.3	27.2	18.4	16.1	2.93	1.34
Be physically active	16.1	20.1	30.2	21.6	12.1	2.93	1.24
Meet new people	23.9	23.3	30.2	14.8	7.8	2.59	1.22

To further examine the benefits received by Whitehaven Beach visitors a factor analysis was undertaken on the 16 experience items. This factor analysis yielded four experience domains

each of which received substantial loadings (0.4 or greater), (see table 19). Factor 1 was interpreted by six items, which reflect 'socially active' benefits. Having fun, being active, with other people best describes this domain. In relation to the other three benefit factors this was the lowest domain provided to visitors. The second factor was represented by four items, which allowed visitors to escape routine and relax in a scenic environment. This was the highest of the benefit domains received from visits to Whitehaven Beach and was named 'scenic escape'. Three items comprised the second ranking domain, 'experiencing nature'. This appeared to reflect that experiencing solitude in an undeveloped natural environment was provided to visitors. Factor IV, 'new excitement' was defined by three items associated with learning and experiencing something different and exciting.

Table 19. Four benefit domains received by visitors to Whitehaven Beach

Factor (Benefit items)	factor loading	mean* factor score	alpha
Factor I—Socially Active			
Be with others who enjoy what I enjoy	0.73		
Have fun, be entertained	0.72	3.08	0.75
Be close to friends and family	0.60		
Meet new people	0.60		
Be physically active	0.59		
Go to a place my friends haven't been	0.54		
Factor II—Scenic Escape			
View outstanding scenery	0.73		
See the beauty of Whitehaven Beach	0.63	4.31	0.61
To rest and relax	0.58		
Escape from normal routine	0.41		
Factor III—Experiencing Nature			
Experience some solitude	0.78		
Be in a natural place	0.67	3.92	0.66
Experience an undeveloped environment	0.64		
Factor IV—New Excitement			
Learn about the Great Barrier Reef	0.67		
Experience something new and different	0.65	3.26	0.58
Have some excitement	0.55		

* Mean is based on a five-point scale where 1 = not at all, 2 = slightly, 3 = some, 4 = high, 5 = very high.

4.8.2 Classifying Visitor Types Based on Experiences Provided by Whitehaven Beach

While it was important to understand the types of benefits Whitehaven Beach provided to visitors, it is also useful to group people into similar segments or types based on the levels of benefits received. Table 20 identifies four types (clusters) of visitors to Whitehaven Beach. The first group representing 17% (n = 81) of visitors, scored trip benefits relatively low compared to the other three groups. Although this segment received some rest and scenic opportunities, overall they didn't appear to gain too much from their trip. As such this group was named the 'passivists'. The second type of visitor was very different from members of the passivist group. In comparison these visitors received a great deal from each benefit domain. These 'socially active naturalists', as they were classified, comprised the largest group of 149 (32%) visitors. Type three represents a group of visitors who were escaping routine to relax and enjoy the natural beauty and scenery. This group of 136 (29%) visitors were thought of as the 'relaxed

sightseers'. The fourth type of visitor showed little in terms of experiences gained from new and exciting things or being socially active. These 106 (22%) visitors received benefits related to experiencing nature and escaping routine. This group was classified as the 'nature escapists'.

Table 20. Types (clusters) of Whitehaven Beach visitors based on how much each of the four benefit domains were provided

	Visitor Clusters*			
Benefit Domains	**1 Passivists n = 81**	**2 Socially Active Naturalists n = 149**	**3 Relaxed Sightseers n = 136**	**4 Nature Escapists n = 106**
Socially active	2.14	3.81	3.34	2.36
Scenic escape	3.69	4.70	4.19	4.43
Experiencing nature	2.83	4.45	3.53	4.44
New excitement	2.55	4.09	2.98	2.96

* Values represent group means based on a five-point scale of benefits provided by the trip where 1 = not at all, 2 = slightly, 3 = some, 4 = high, 5 = very high.

4.8.3 A Comparison of Visitor Types and Values Ascribed to Whitehaven Beach

It is helpful to analyse visitor types in terms of other factors that may be of relevance to management. An evaluation of visitor types in relation to the amounts of benefits received and ascribed values can be useful indicators for monitoring changes in use and perceptions over time. To extend our understanding of the types of visitors Whitehaven Beach attracts, analyses were undertaken to compare the four visitor groups (clusters) on their demographic characteristics, participation in various activities, the boat operator they chose to travel with and previous visitation to Whitehaven Beach. No significant differences were found between visitor types on these variables. There were however significant differences in the values they attributed to the Whitehaven Bay area.

Differences among the four types of visitors and the values they ascribed to the Whitehaven Beach area are presented in table 21. The passivist group were more likely to have either no opinion about the values of Whitehaven, or rated potential uses as having less value in comparison to other visitor types. Specifically passivists had no real opinion about the values of cultural heritage (51%), scientific research (44%), spiritual values (47%) or historical meaning (48%) in relation to Whitehaven Beach. Although the majority of passivists attributed great value towards the natural ecological processes (72%) and educational opportunities (60%) offered by the Whitehaven Bay area, this group still represented a lower proportion of visitors that placed value on these items. Comparatively, the socially active naturalists represented the group of visitors who were most likely to feel that Whitehaven Beach was very valuable in terms of its natural/ecological processes (95%), educational opportunities (85%), cultural heritage (80%), scientific research (78%) and historical meaning (77%). To some extent this finding reflects the experience traits of this particular type of visitor; who was enthusiastic about the importance of natural, environmental and social benefits of Whitehaven Beach. Nature escapists represented the largest proportion of visitors that placed great value towards the natural/ecological processes (96%) of the Whitehaven Beach area. This assists with validating the benefit package of the nature escapists, who received most from experiencing the natural environment whilst at Whitehaven Beach. Only a proportion of relaxed sightseers felt that Whitehaven Beach was valuable for scientific research (50%), cultural heritage (50%) and historical meaning (46%). Overall these findings do suggest that visitors are different in their approach to experiencing and valuing the Whitehaven Beach environment.

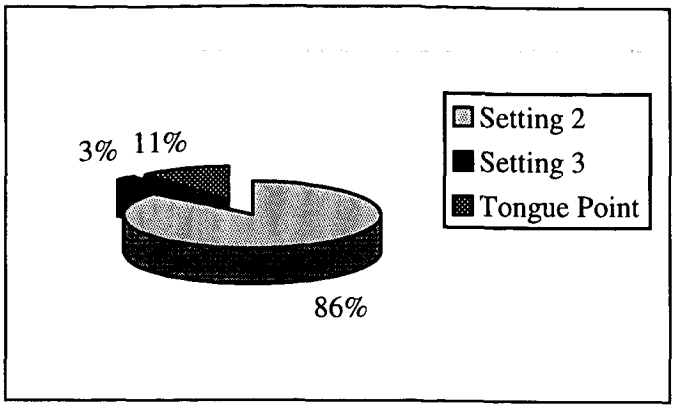

Figure 7. Settings visited by respondents

Weather Conditions

The types of weather conditions experienced by respondents during their visit to Whitehaven Beach are displayed in figures 8, 9 and 10. Figure 8 illustrates that 12% of the sample (n = 66) experienced clear (fine) conditions whilst visiting Whitehaven Bay. For sixty-five per cent of the sample the weather was cloudy or overcast, and 23% had rainy conditions during the time they spent on the beach. Figure 9 reflects that sea conditions in Whitehaven Bay were moderate to smooth during most people's visit (97% of respondents). Conditions in exposed water was very different. Eighty-two per cent of visitors surveyed experienced moderate to rough sea conditions on their journey to and from Whitehaven Beach (figure 10). The average wind strength recorded over the different trips was 22 knots. Overall weather conditions were not favourable during data collection. On most trips the seas were moderate to rough, making the journey uncomfortable for many passengers.

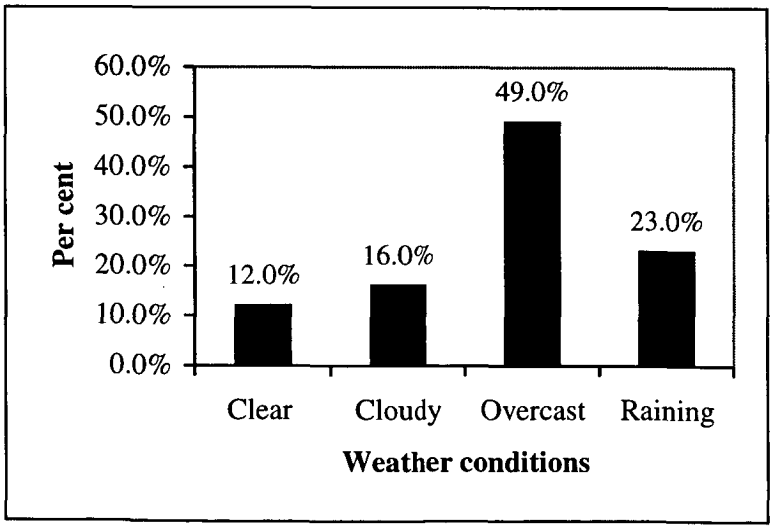

Figure 8. Weather conditions experienced at Whitehaven Bay by visitors

Numbers of People, Aircraft and Vessels Recorded by Setting

Table 22 displays the average (mean) number of people and vessels observed in each of the Whitehaven Bay settings over the surveying period. In Setting 2 and Setting 3 an average of 137 people ($\bar{X}$ 136.97) and five people ($\bar{X}$ 4.86) were counted respectively. In Setting 2 the mean number of boats recorded included one large vessel (Operator 1), three medium vessels ($\bar{X}$ 2.91) and two small boats ($\bar{X}$ 1.79). Approximately four yachts ($\bar{X}$ 4.43) were also noted on any one visit to Setting 2. Very little activity by vessels or people occurred at any of the other Whitehaven Beach settings. Due to the distance between settings it was not possible to count the

number of people and smaller vessels at Tongue Point when Setting 2 was visited. Therefore the numbers recorded at Tongue Point (table 22) were taken only on those trips to the northern end.

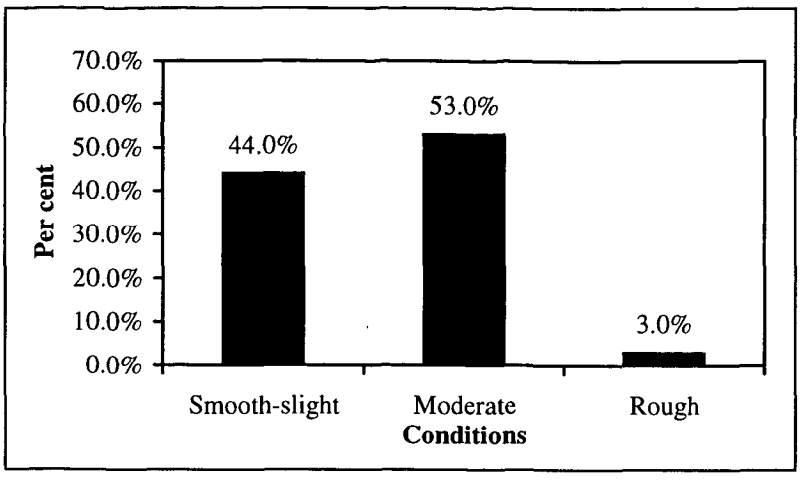

Figure 9. Sea conditions experienced in Whitehaven Bay by visitors

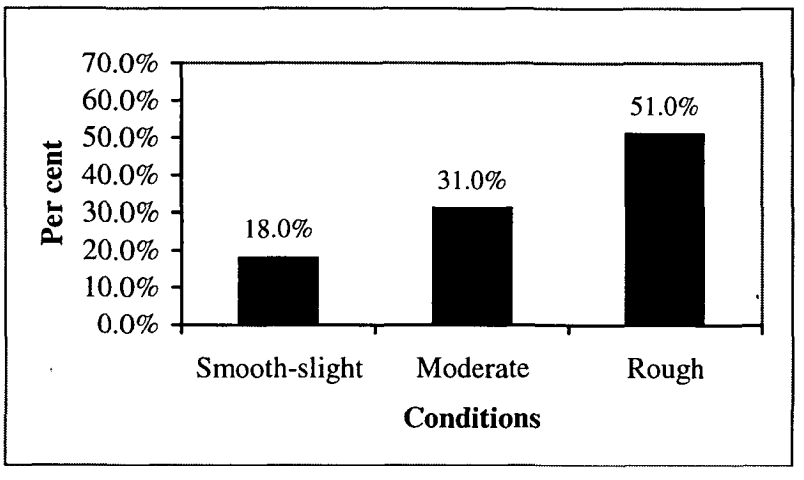

Figure 10. Sea conditions experienced in exposed water by visitors to Whitehaven Bay

Table 22. Average numbers observed in each setting of Whitehaven Bay

Visitation by:	**Setting 2** $\bar{X}$	**Setting 3** $\bar{X}$	**Setting 4** $\bar{X}$	**Setting 5** $\bar{X}$	**Setting 3 Tongue Pt.** $\bar{X}$
People on beach	136.97	4.86	0		17.85
Large motorised vessels (15 – < 35 metres)	1.47	0			0
Medium motorised vessels (6 – < 15 metres)	2.91	0.12	0.33		1.00
Small motorised vessels (< 6 metres)	1.79	0.28	0		0.24
Yachts & other sailing craft	4.43	0.88	0.34		0.84

A Record of Aircraft Overflights and Events

Aircraft activity by seaplanes and helicopters is displayed in table 23. During visits to Whitehaven, the mean number of observed seaplane overflights was $\bar{X}$ 1.3 (range 0 to 4) and