

APPENDIX 6. A SUMMARY OF RESULTS FROM THE INTEREST GROUP SURVEY

Interest Group Characteristics

- 16 male and 4 female members of local interest groups completed a mail survey (50% response rate)
- Average age was \bar{X} 53 (range 36 to 80 years of age)
- 10 local respondents had obtained a secondary level of education, 5 possessed some university / technical qualifications and 5 had completed a university degree
- All respondents considered themselves to be local residents; the average number of years these locals had resided in the Whitsundays region was \bar{X} 18.7 (range 2 to 68 years).
- Respondents were representatives of local interest groups which included: fishing (n = 3), tourism (n = 3), diving (n = 1), landcare (n = 1), boating club (n = 1), kayacker club (n = 1) and volunteers from the Queensland National Parks and Wildlife Service (n = 5).

Use and Activities undertaken in the Whitehaven Bay Area

- 15 of the 20 locals surveyed had visited Whitehaven Bay within the past year.
- Of these respondents, 10 had visited Whitehaven Beach between 2 and 6 times, 2 people indicated that they had travelled between 15 and 20 times, and one person had visited Whitehaven approximately 80 times.
- Residents were asked whether their visitation to Whitehaven Beach had changed from previous years. Eight respondents said that their usage of the area had remained the same, 3 reported that their trips had increased because they were new to the area, and 4 respondents indicated that their number of visits had decreased. Reasons for a decrease in use included: limited time available for recreation, the beach has become too crowded, and weather conditions had made it difficult to get out to Whitehaven Beach.
- The most popular activities undertaken by these local visitors to Whitehaven Beach included swimming (n = 14), beach walks (n = 13), relaxation and sunbathing (n = 5), taking photos (n = 5), birdwatching (n = 5) and fishing (n = 4).

Importance, Images and Values of Whitehaven Beach

- Whitehaven Beach was rated as 'extremely important' by the majority of local respondents (n = 15) (see figure 1).
- The most popular words used by local respondents to describe Whitehaven Beach were: spectacular / amazing; natural; beautiful; pristine; unique; pure white sand; crystal clear water; and a visual icon.
- Quiet, peaceful, unspoiled, and clean were also images locals had of Whitehaven Beach.
- Respondents felt that Whitehaven Beach was mostly valuable for: conservation (\bar{X} 4.60); recreational opportunities (\bar{X} 4.50); natural / ecological processes (\bar{X} 4.45); and educational opportunities (\bar{X} 4.05).
- Of least importance to respondents were the spiritual values (\bar{X} 2.85); historical meaning (\bar{X} 3.00); scientific research (\bar{X} 3.10); and cultural heritage (\bar{X} 3.10) of the Whitehaven Bay area.

Perceived Changes in Conditions at Whitehaven Beach

- Respondents were questioned about things that may have enhanced or detracted their enjoyment of Whitehaven Beach from previous visits. Things that detracted from locals enjoyment of Whitehaven included too many other people (n = 2), too many boats (n = 2); planes and helicopters were noisy (n = 1), sandflies (n = 2), jet skiers (n = 2) and the poor state of the toilets (n = 1).
- Having access to Hill Inlet (n = 1), walking up to the new lookout over Hill Inlet (n = 1) and the pristine environment and scenery (n = 1) were things that enhanced local users' enjoyment of Whitehaven Beach.
- Significant changes mentioned with regard to the levels and types of use included an increase in visitor numbers and recreational use (n = 7), and perceived crowding at one end of the beach (n = 2). Others included an increase in bareboats visiting Whitehaven, an increase in use of toilet facilities, increase in watersports, and camping which is no longer allowed at Whitehaven Beach.
- Some respondents said that there were no significant changes in the environmental condition of Whitehaven Beach (n = 8). A decrease in turtle breeding, concerns about moorings on seagrass beds and an increase in rubbish were mentioned by respondents' as observed changes to the environment at Whitehaven. Environmental impacts also noted included: an oil spill which left blobs of oil on the beach, a cyclone which wiped out she-oak trees at Hill Inlet 25 years ago; and the entrance to hill inlet which has doubled in size over the past 20 years.
- Things mentioned that would enhance locals enjoyment of Whitehaven Beach in the future included: no development (leave beach in its present state), allow camping, provision of shade, retained access to Hill Inlet and closure of Hill Inlet.
- Things that respondents said would detract from their enjoyment of Whitehaven Beach in the future included an increase in aircraft noise, large boats, people, development and rubbish.

Attitudes towards Current Management and Plans of Management for Whitehaven Beach

- According to local respondents 16 said they had a 'good understanding' of the Whitsundays Plan of Management, whilst six indicated that they had 'some understanding' of management plans.
- Nine people said they agreed with the current Whitsundays Plan of Management (in relation to Whitehaven Bay) and twelve disagreed with the management plans.
- Twelve people said that Whitehaven Beach is currently 'well managed', and five indicated that they felt that Whitehaven Beach was 'not managed well'.
- Reasons for poor management included: a lack of amenities at the southern end; too crowded at high-use end and visiting boats should be allowed to spread out, people should be able to have access to Hill Inlet; not enough research is undertaken on-site or on the underwater environment at Whitehaven Beach; more patrols are needed.
- Good management was perceived by respondents because there has been little change in the natural environment over the years; frequent visits are made to Whitehaven Beach by rangers; adequate monitoring of Whitehaven Beach is being undertaken. There were also suggestions that management are doing the best they can given their limited resources.
- Suggested improvements in relation to the current management of Whitehaven Beach included moorings (n = 4); better toilet facilities (n = 3); more rangers on-site (n = 2); access to Hill Inlet (n = 2) and allow people to spread out along beach (n = 2).

APPENDIX 7. EXPECTED EXPERIENCES FROM WHITEHAVEN BEACH

Experiences	Frequency	Per cent
To swim and go snorkelling	134	20.5
See beach and silica sand	122	18.7
Relax and sunbathe	107	16.4
See and feel 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
See better coral and fish	18	2.8
See coral, fish, turtles	9	1.4
Tourist environment, commercialised	4	0.6
Shops and bars	3	0.5
Learn about reef and islands	3	0.5
No crowds	3	0.5
Bushwalking tracks	2	0.3
See new things	1	0.2
Action on beach	1	0.2
Scenic flight of Whitehaven Beach	1	0.2

APPENDIX 8. POST-VISITATION IMAGES OF WHITEHAVEN BEACH

Words used to describe Whitehaven Beach	Frequency	Per cent
Beautiful, pretty	103	12.1
Relaxing, calming	73	8.6
Quiet, tranquil	70	8.2
White sand	68	8.0
Clean	62	7.3
Fantastic, awesome, magnificent, incredible	58	6.8
Water quality	44	5.2
Unspoiled, untouched, undeveloped	44	5.2
Heavenly, magical, spectacular	39	4.6
Serene, panoramic	35	4.1
Natural, well preserved	31	3.6
Bad weather	27	3.2
Fun, enjoyable, delightful	23	2.7
Pure, virgin	22	2.6
Paradise	20	2.3
Secluded, remote	19	2.2
Warm, hot	16	1.9
Enchanting, dream, romantic	15	1.8
Refreshing	12	1.4
Blue	9	1.1
Wild, tropical, lush, green	8	0.9
Nice	7	0.8
Friendly	6	0.7
Unique	5	0.6
Safe beach	4	0.5
Exotic, exquisite	4	0.5
Uncrowded	3	0.4
Turtles, goannas, wildlife	3	0.4
Inviting, desirable	3	0.4
Spacious, vast	3	0.4
Unusual, interesting	3	0.4
Crystal	2	0.2
Spiritual	2	0.2
Breathtaking	2	0.2
Accessible	1	0.1
Sandflies	1	0.1
Healthy	1	0.1
Salty	1	0.1
Crowded	1	0.1
Rewarding	1	0.1
Family setting	1	0.1

APPENDIX 9. NUMBER OF OBSERVATIONS BY SETTING OVER 15 VISITS

Trip Number	Setting Visited	Seaplane Flyovers	Seaplane Events	Helicopter Flyovers	Helicopter Events
1	2	0	0	0	0
2	2	1	2	0	0
3	2	0	3	0	0
4	2	1	0	1	0
5	6	1	0	2	0
6	2	1	0	3	0
7	2	3	3	3	0
8	6	0	0	2	0
9	2	3	2	1	0
10	2	1	1	0	0
11	2	2	0	0	0
12	2	0	0	0	0
13	6	4	0	2	0
14	2	3	1	1	1
15	2	0	0	0	0

APPENDIX 10. A SUMMARY OF HAMILTON'S (1999) AIRCRAFT REVIEW

OVERVIEW

Background

Aircraft overflights and associated noise in national parks is an environmental management issue which has had the attention of researchers in the United States of America since the late 1980s but which is only beginning to be addressed in Australia, particularly as far as quantitative studies are concerned. The Great Barrier Reef Marine Park Authority (GBRMPA, the Authority) is at the first stage of developing policy for the management of aircraft operations in the Great Barrier Reef Marine Park (GBRMP, the Marine Park). This study and the social survey being undertaken concurrent with it by consultant Jayne Ormsby and Scott Shafer, are initial steps toward such policy development. To date, the only published discussion on the management of aircraft operations in the Marine Park is a paper by Adami and Jennings dated April 1995 and titled *Draft discussion paper: Management of aircraft operations in the Great Barrier Reef Marine Park*.

The Marine Park area has been divided into a range of recreation opportunity spectrum (ROS) setting designed to provide for a variety of user tastes and environmental needs. Various anthropogenic variables act upon these settings subsequently influencing their attributes. Aircraft overflight frequencies and their associated noise levels are two such variables and are investigated in this research relative to the four setting along Whitehaven Beach, Whitsunday Island. The settings along Whitehaven Beach are High Use (Setting 2) at the southern most end of the beach, Moderate Use (3), Natural (4) and Protected (5) at the northern most end of the beach. Due to the small size and limited methodology of this study, it is best considered as a pilot study. However, one of its intended outcomes is to help determine whether or not a more complete baseline study, with the potential to lead into a monitoring program, of aircraft activity at Whitehaven Beach and the Whitsunday Islands generally, is warranted.

Specifically, this research seeks to assess aircraft sound impact and activity in the four ROS settings along Whitehaven Beach and to compare the results between settings, in order to determine whether or not the settings are receiving a gradient of impact in line with the definitions of the settings.

Methods

The study site is Whitehaven Beach, Whitsunday Island. The main data for the study was collected during two four-day long field trips in October 1998, a relatively low use season for aircraft tour operators. Data was collected at four set sites along the beach, each site situated approximately in the middle of the setting it represented. Sound level data was primarily collected with Techcessories analogue sound level meters, which do not meet Australian Standards for sound level meters. Data was collected on the frequency of aircraft overflights and their associated sound levels as well as on background sound levels. As a comparison with aircraft impacts, data was also recorded on watercraft and human activity levels and on watercraft sound levels.

Main Results

In terms of the frequency of overflights and their sound level durations above background sound levels, sites (settings) 3 and 4 were found to experience the greatest impact from aircraft followed by sites (settings) 5 and then 2. Thus the High Use setting which would be expected to experience the highest impact actually experienced the lowest impact. In terms of the absolute and average maximum aircraft induced sound levels experienced, no significant difference was found between settings although the raw results suggested that sites 3 and 4 experienced the greatest impact from these variables followed by sites 2 and 5. Most aircraft events (88%) registered above background sound levels and most (71%) affected three or all study sites.

Overall, the busiest time of day was from 11:30 to 13:30. The most common types of aircraft observed were seaplanes, followed by helicopters, other light aircraft and high altitude jets. Seaplane takeoffs and helicopter landings and takeoffs had the greatest sound impact. Setting 2 was found to receive the greatest impact from watercraft and people. Settings 3, 4 and 5 received similar levels of impact from both of these variables.

Conclusions

Although a significant difference was found between the frequencies and duration above background sound levels of aircraft events between settings, the trend exhibited did not follow that expected by the definitions of the ROS settings. While in terms of aircraft induced sound impact, no significant difference was found between settings. Thus, showing no gradient of impact at all for this variable. Subsequently, it is concluded that in terms of aircraft activity and sound impacts, the recreation opportunity spectrum along Whitehaven Beach is not functioning, as it should.

Rudimentary data collection on watercraft activity and sound levels and on the numbers of people present in the settings along the beach suggests that in terms of these variables, the recreation opportunity spectrum along Whitehaven Beach is much closer to functioning as it should. Setting 2 experienced the highest impact in both cases. Even so, very little difference was observed and recorded between Settings 3, 4 and 5. Thus the expected gradient in use between these settings was not observed.

APPENDIX 11. THINGS THAT ADDED TO VISITORS ENJOYMENT WHILST AT WHITEHAVEN BEACH

Things that added to enjoyment	Frequency	Percent
White silica sand and beach	120	19.9
Quality of the water (clean, clear)	77	12.8
Natural, unspoiled, uncommercialised	73	12.1
Cleanliness of Whitehaven Beach	70	11.6
Wildlife and marine-life (turtles, goannas)	39	6.5
Crew friendliness and information	34	5.6
Beach activities (swimming, snorkelling)	33	5.5
Quiet and peacefulness	29	4.8
Uncrowded	26	4.3
Shade tents on beach	19	3.2
Views and scenery	15	2.5
Weather	14	2.3
The Hill Inlet lookout and track	11	1.8
Journey to Whitehaven Beach	10	1.7
Seclusion	8	1.4
Water supplied on beach by operator	7	1.2
Other friendly people	4	0.7
Space	3	0.5
Great food	3	0.5
Closeness of the boat to the beach	2	0.3
Airconditioning on boat	2	0.3
Beach talks	1	0.2
Picnic tables	1	0.2
Safe environment	1	0.2
Unique transport by seaplane	1	0.2

**APPENDIX 12. THINGS THAT DETRACTED FROM VISITORS' ENJOYMENT
WHILST AT WHITEHAVEN BEACH**

Things that detracted from enjoyment	Frequency	Per cent
The weather	44	34.6
Lack of shade	16	12.0
Sea sickness	11	8.7
Too many people, too crowded	10	7.9
Lack of change rooms and toilet facilities	7	5.5
Poor service related to operator	7	5.5
No fish or coral	5	3.9
No walking tracks	4	3.1
Poor condition of Tongue Point track	3	2.4
Sealice	3	2.4
Fences on beach	2	1.6
Pollution from boat (oil)	1	0.8
Sand	1	0.8
Water	1	0.8
Noise from planes	1	0.8
Shade tents on beach	1	0.8
No water sports at beach	1	0.8
Sandflies	1	0.8
Jellyfish and stingers	1	0.8
Not enough time on beach	1	0.8
Larger boats an eyesore	1	0.8
Boring	1	0.8
Rubbish on beach	1	0.8
Jet ski activities annoying	1	0.8

APPENDIX 13. CONDITIONS THAT HAD AN INFLUENCE UPON VISITORS' ENJOYMENT AT WHITEHAVEN BEACH

Positive Conditions			Negative Conditions		
	F	%		F	%
Enjoyed environment (no negative influences)	8	11.4	Too many people	16	22.8
Watching seaplanes	7	10.0	Aircraft noise	6	8.6
Watching other people/other people's enjoyment	6	8.6	Aircraft annoying	6	8.6
No noise, quietness	3	4.4	Noise large boats	5	7.1
Watching boats	2	2.9	Noise small boats	2	2.9
Enjoyed seaplane trip	2	2.9	Visual impact of large boats	2	2.9
Perfect number of people	1	1.4	Visual impact of Shade tents	1	1.4
			People's noise	1	1.4
			Too many boats	1	1.4
			Boats and planes detracted from natural environment	1	1.4

APPENDIX 14. SUGGESTED IMPROVEMENTS TO WHITEHAVEN BEACH

Improvements	Frequency	Per cent
No improvements (leave beach natural)	180	45.0
Provision of shade on beach	37	9.3
Service of tourist operator	35	8.8
Stay longer on beach	33	8.3
Better weather	27	6.8
Better toilet facilities	18	4.5
More information (island, coral, wildlife)	13	3.3
More bushwalking tracks	10	2.5
Beach in general	7	1.8
Too many boats and people in small area	7	1.8
Keep boat numbers and people monitored	5	1.3
Build a look-out	4	1.0
Improve the path to lookout at Tongue Point	3	0.8
No seasickness	3	0.8
Ability to stay overnight	3	0.8
No jet skis allowed	3	0.8
Bar on the beach	2	0.5
Less boats	1	0.3
Signs to help stop pollution	1	0.3
Less shade tents on beach	1	0.3
More seating in shaded areas of beach	1	0.3
No fences	1	0.3
Moorings for boats	1	0.3
Reduce rubbish in vegetated area	1	0.3
Place to buy souvenirs	1	0.3
Bins on beach	1	0.3
A barbecue	1	0.3

APPENDIX 15. FUTURE HOLIDAY DESTINATIONS IN THE WHITSUNDAYS REGION

Future holiday destination	Frequency	Per cent
Whitsunday Islands	57	34
Outer reef	37	22
Hamilton Island	28	17
Whitehaven Beach	14	8
Hayman Island	9	5.3
Daydream Island	5	3.0
Whitsunday Island	4	2.4
Heart Reef	3	1.8
Other destination, unrelated to Whitsundays region	3	1.8
Somewhere remote	2	1.2
Long Island	1	0.6
Hill Inlet	1	0.6
Hook Island	1	0.6
Brampton Island	1	0.6
Lindeman Island	1	0.6

APPENDIX 16. TYPE OF TRIP VISITORS WOULD LIKE TO TAKE ON A FUTURE HOLIDAY TO THE WHITSUNDAYS REGION

Type of trip	Frequency	Per cent
Yacht	46	35
Boat in general	25	19
Relaxing holiday	13	10
Helicopter or plane	10	8
Commercial tourist boat	9	7
Diving or snorkelling trip	8	6
Catamaran	5	3.8
Larger boat	3	2.3
Cruise	3	2.3
Day trip	3	2.3
Package deal (island accommodation and transfers)	2	1.5
Smaller boat operator	1	0.8
Charter boat	1	0.8
Runabout	1	0.8

