Developing Carrying Capacity for Marine Tourism: The Case of the Republic of Palau

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Abstract

Tourism is one of the major drivers of Palau’s economy. The recent development of tourism in the nation has brought attention to the negative impacts of tourism on the natural environment. Concurrently, this increase in tourism drew much interest in sustainable tourism and its application to the local area, the concept of carrying capacity (Saarinen, 2006). Thus, the purpose of this study is to develop the basis for tourism carrying capacity - the visitor’s perception of crowdedness in a specific destination of Japanese tourists, one of Palau’s major segments of tourists. The study method is a self-administered survey, distributed by major Japanese tour operators in Palau. The results showed that most of the popular snorkeling and diving sites in Palau were perceived to be crowded by tourists. One of major marine recreational sites besides snorkeling and diving sites, Long Beach (Omokan) were also perceived crowded. By conducting research on tourism carrying capacity, the governing agencies of tourism in Palau can coordinate policies among various tour agencies and will lead to sound management of tourist activities in the pristine natural destinations.
Introduction

Palau attracts tourists due to its pristine nature, great diversity in fish and coral species, and distinctive culture. Marine tourism (incl. snorkeling, diving) has been the main activities for the tourists. Recently, various land-based eco-tourism and adventure activities have been developed. The number of tourists has grown since the 1970’s. In the past 10 years, it has increased fourfold (see Figure 1).

Figure 1. Total Number of Tourists to Palau (2007 - 2017): Author created the figure from PVA (Tourism Statistics reports from PVA: Palau Visitors Authority)

This recent surge in visitor numbers has brought enormous concern for sustainable tourism and the notion of carrying capacity. Without setting the policies for carrying capacity, it may be very difficult to sustainably manage tourism activities. The increase in Chinese tourists greatly contributed to the overall increase (see Figure 2).
The concept of tourism carrying capacity arises from the perception that tourism cannot grow continuously in a particular region without causing irreversible damage to the local system (Coccossis & Mexa, 2004). Thus, it is an appropriate time for tourism planners and tourism governing agencies to develop policies regarding carrying capacity. The purpose of this research is to understand the current conditions of marine tourism focusing on tourism carrying capacity on Japanese tourists, one of the largest segments of tourists in Palau. According to World Tourism Organization (2012), the definition of carrying capacity is that “The maximum number of people that may visit a tourist destination at the same time without causing destruction of the physical, economic or socio-cultural environment and unacceptable decrease in the quality of the tourist satisfaction” (Coccossis et al., 2002, p. 38). This study consists of two parts. The first is to learn about the socioeconomic characteristics (age, income, education, etc) of the Japanese tourists segment. The second is to obtain Japanese tourists’ perception of crowding at major snorkeling, diving sites and other marine and water-based recreational sites (swimming, splashing, snorkeling to see Jelly fish).
Method

This research used survey of the tourists. The survey was conducted from April to July in 2016. Questions for the survey were discussed and refined by natural science and social science researchers of P-CoRIE, researchers at PICRC, and the representatives of Japanese tour companies (land operators) and a diving company (Sam’s Tours). A total of 1,500 surveys were distributed to Japanese tourists by three Japanese tour operators (IMPAC, Rock Island Tour Company, and Dolphins Pacific). Respondents over 20 years old were asked to fill out the survey. The surveys were distributed when tourists signed up for tours at the airport and tour companies' reception desk. Incentives, such as a souvenir from Palau worth $5.00, were given to those who completed the survey. The questionnaire consisted of 53 questions comprising four sections: (1) marine recreation in Palau, (2) snorkeling skills and experiences, (3) diving skills and experiences, and (4) demographic questions. The survey included 5-point Likert scale questions and open-ended questions (see Appendix I for the survey questionnaire). The total of 629 surveys were collected, and the response rate was 42%. It was analysed using Descriptive analysis.

Results

1. Demographic characteristics of the respondents

The age of the respondents ranged from the 20s to the 80s. The largest segment of the respondents were 30 to 39 years old (26%) and 20 to 29 years old (26%). It can be concluded that different age group come to Palau (See Figure 3).
Figure 3. Age range of respondents, (n=597)

Figure 4 shows the gender of the respondents. Of the respondents, 58% were women and 40% were men.

Figure 4. Respondents’ gender (n=618)

Figure 5 shows the education of the respondents. The highest number of respondents graduated 4 year university (45%) and followed by the respondents graduated high school (19%).
Figure 5. Education (n=581)

Figure 6 indicates income of the respondents. The highest number of respondents were the respondents who answered that they earned over $94,000 (24%) ($1 = ¥105), followed by the respondents who answered that they earned $42,000 to 63,000 (21%).

Figure 6. Income (n=547)
Figure 7 shows employment of the respondents. The highest number of respondents work for private companies (50%), followed by self-employed (11%) and housewife (9%) and self-employed (9%).

![Figure 7. Employment (n = 595)](image)

Figure 8 indicates the respondents' number of visits to Palau. The largest number of respondents came to Palau for the first time (74%), followed by 2 to 4 times (15%) and more than 10 times (6%).

![Figure 8. Number of Visits to Palau (n = 553)](image)
Figure 9 shows the number of days that tourists stayed in Palau. The largest group of respondents stayed in Palau for 4 to 7 days (82%), followed by 1 to 3 days (12%) and 8 to 14 days (5%).

![Figure 9. Number of Days that Tourists Stayed (n = 557)](image)

Figure 10 indicates respondents' knowledge of corals. The largest group of respondents thought corals were an animal (60%). Followed by the group of respondents thought corals were a plant (37%).

![Figure 10. Respondents’ knowledge of corals](image)
2. Snorkeling Sites

Figure 11 indicates the visitors’ perception of crowdedness for Palau’s major snorkeling sites. Questions 15 to 21 asked respondents their perceptions of crowdedness at the popular snorkeling sites.

To the question “How crowded was it with each of the snorkeling site you visited”, the respondents chose one answer from five choices. According to the previous studies of crowdedness in recreation settings (Shelby and Heberlain 1986, Jurado et al., 2013), when the questions are asked to rate the crowdedness, the choice of “too many people” and “many people” were considered crowded. Thus, in this study, the portions of “too many people” and “many people” at each site are mainly described as follows.

For Paradise (Cemetery Reef) as a snorkeling site, close to 22% of the respondents (22 out of 139 respondents) answered that the site had “too many visitors”. 33% (46 out of 139 respondents) of the respondents answered that Paradise had “many visitors”. Altogether, close to 49% of the respondents (68 out of 139 respondents) answered that there were many people at Paradise (Cemetery Reef). Thus, Paradise (Cemetery Reef) is considered crowded by close to half of the visitors in this study.

For Big Drop Off, 10% of the respondents (14 out of 131 respondents) answered that there were “too many visitors”. 22% of the respondents (30 out of 131 respondents) answered that Big Drop Off had “many visitors”. Altogether, the percentage of people who perceived “Too many people” and “many people” were 30%. Thus, the snorkeling site of Drop Off as a snorkeling site was perceived crowded by 30 % of respondents.

For German Channel, 3% of the respondents (3 out of 128 respondents) answered that that there were “too many people”. 16% of the respondents (16 out of 128 respondents) answered that there were “many people”. Altogether, the percentage of people who perceived both “Too many people” and “many people” were 19%. Thus, German Channel as a snorkeling site was considered crowded by 19% of respondents.

For Fantasy Island, though total number of respondents were much fewer than the above sites, 28% (17 out of 61 respondents) were considered crowded by the respondents.

For the question about the crowdedness of all the snorkeling sites the respondents visited, 3% of the respondents (6 out of 203 respondents) felt that there were “too many people” and 16% of the respondents (32 out of 203 respondents) felt that there were “many people”. Altogether, 19% of
respondents (38 out of 203 respondents) perceived that all the snorkeling sites that the respondents visited were crowded. Figure 11 provides further details on visitors’ perceptions of crowdedness at snorkeling sites.

3. Diving Sites

At German Channel, 17% of respondents (22 out of 129 total respondents) answered that there were “too many visitors” at the site. 36% of the respondents (46 out of 129 respondents) answered that there were “many visitors”. Altogether, 53% (68 out of 129 respondents) perceived that the site was crowded.

At Blue Corner, 15% of the respondents (26 out of 170 respondents) answered that there were “too many visitors”. 31% of the respondents (53 out of 170 respondents) perceived that there were “many people”. Altogether, 46% of the respondents (70 out of 170 respondents) perceived that the site was crowded.

At the Blue Hole, 7% of the respondents (7 of 71 respondents) answered that there were “too many visitors”. 32% of the respondents (25 out of 71 respondents) answered that there were “many people”. Altogether, 40% (32 out of 71 respondents) perceived that the site was crowded.
For the question about the crowdedness of all the diving sites the respondents visited, 2% of the respondents (4 out of 178 total respondents) felt that there were “too many people” and 21% of the respondents (38 out of 178 respondents) felt that there were “many people”. Altogether, 24% of respondents (42 out of 178 respondents) perceived that all the snorkeling sites were crowded. Figure 12 provides further details on visitors’ perceptions of crowdedness at diving sites in Palau.

![Figure 12](image_url)

**Figure 12.** Perception of Crowdedness: Diving Sites

3. **Marine Recreation Sites.**

The figure 13 shows the tourists’ perception of crowdedness for other marine and other water-based recreation sites.

At Long Beach (Omokan), 3% of the respondents answered that there were “too many visitors”. 26% of the respondents (62 out of 245 total respondents) perceives that there were “many visitors”. Altogether, 30 % of the respondents (74 out of 245 respondents) perceived that the site is crowded.

At Long Beach (Kayangel), 3% of the respondents (8 out of 385 total respondents) answered that there were “too many visitors”. 36% of the respondents (89 out of 385 total respondents) perceives that there
were “many visitors”. Altogether, 25% of the respondents (97 out of 385 respondents) perceived that this site is crowded.

At Milky Way, 1% of the respondents (2 out of 148 total respondents) answered that there were “too many people”. 18% of the respondents (27 out of 148 respondents) answered that there were “many people” at the site. Altogether, 20% of the respondents (29 out of 148 respondents) perceived that the site was crowded.

For the question about the crowdedness of other marine and water-based recreation sites, the respondents visited, 1% of the respondents (2 out of 146 total respondents) felt that there were “too many people” and 18% of the respondents (27 out of 146 respondents) felt that there were “many people”. Altogether, 20% of respondents (29 out of 146 respondents) perceived that all the snorkeling sites were crowded. Figure 13 provides further details on visitors’ perceptions of crowdedness at other marine and water-based recreation sites in Palau.

![Figure 13. Perception of Crowdedness: Sites for Marine and Water Based Recreation](image-url)
Conclusion

This study was conducted to develop tourism carrying capacity at Palau's tourist destinations. The results showed that popular snorkeling sites (Paradise, Big Drop off, Fantasy Island) were perceived crowded by 19% to 30% of the respondents. The results also showed that popular diving sites (German Channel, Blue Corner, Blue Hole) were perceived crowded by the 24% to 53% of the respondents. Other marine recreation and water-based sites such as Milky Way were perceived crowded by 20% to 30% of the respondents. Shelby and Heberlain (1986, p62) mentioned "If more than two-thirds of the visitors say that they are crowded, it appears likely that the capacity has been exceeded. If less than one-third senses the over-crowding, the area is probably below the load capacity. In this study, many of the snorkeling and diving sites can be considered overcrowded.

Open ended questions about the crowdedness of the snorkeling sites (Appendix 2) somewhat confirmed the above respondents' response about the crowdedness.

Knowing the tourism carrying capacity, visitors' perception of crowdedness can be a useful management tool for site operations. For example. By using the results from tourism carrying capacity study, tourism governing agencies can set the time schedule for visitation by different tour operators and give advice for the provision of quality tour experience. In addition, this kind of study can set limits on the number of visitors for each site.

In conclusion, periodical study of tourism carrying capacity is recommended, so that the tourism planning agency can set various rules and regulations regarding management of people in each snorkeling, diving, and recreational area in an up to date manner.

Since this research only focused on one of the segments of Palau's visitors, the Japanese tourists, studies focusing on other nationalities would greatly enhance the understanding of visitors’ satisfaction and a better management of sites can be put in place to improve visitors’ experience. It can be difficult to set carrying capacity at designated areas because there are many stakeholders in the tourism sector and
there were various ways to approach carrying capacity study (Saarinen, 2006). However, knowing the current condition of tourism carrying capacity (perception of crowdedness) can be one of the basis for establishing carrying capacity.

Acknowledgement
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References


Leujak and Ormond. (2007) Visitor Perceptions and Shifting Social Carrying Capacity of South Sinai’s Coral Reefs

Palau Visitors Authority (2007 – 2017) Report of Tourism Statistics were provided by PVA.


Appendix I

(Cover letter and Questionnaire used for the Survey)

Survey on Marine Tourism in Palau

University of the Ryukyus
SATREPS (Science and Technology Research Partnership for Sustainable Development)
Palau Coral Reef Center
Dear Visitors in Palau

April 12\textsuperscript{st}, 2017

Thank you for participating in this survey about marine tourism in Palau. Following is information to help answer general questions about this important survey.

**What is the purpose of this survey and how will results be used?**
This survey seeks your opinions about marine tourism (snorkeling and diving) and your satisfaction level about your experience in the Islands of Palau. Knowing visitors’ satisfaction level of tourism experiences in travel destinations has been deemed important for sound tourism development. This study is conducted by SATREPS (Science and Technology Research Partnership for Sustainable Development) through the collaboration of University of the Ryukyus and Palau International Coral Reef Center funded by JICA (Japan International Cooperation Agency) and JST (Japan Science and Technology Foundation).

**Will my answers be confidential?**
You indicate your voluntary agreement to participate by completing and returning this survey. However, if you choose not to complete all or some of the questions, you will not suffer any penalty. Results will be reported by groups, not by individuals. Also, your responses will be confidential (your name is not associated with the survey that you complete) and your privacy will be protected to the maximum extent allowable by law.

**What is the incentive?**
As a token of appreciation for completing the survey, we will give you a gift by the tour operator immediately after you return the survey.

**Who can I contact if I have questions about the survey?**
If you have any questions about this survey, please contact Kaoruko Miyakuni or Seiji Nakaya. If you have any questions or concerns, regarding your rights as a study participant, or are dissatisfied at any time with any aspects of this study.

| Kaoruko Miyakuni, Asst. Professor Principal Investigator Palau Coral Reef Project (P-CoRIE), CoRIE | Seiji Nakaya, PhD. Project Coordinator Coral Reef Project (P-CoRIE) |
| Faculty of Tourism Sciences & Industrial Management, University of the Ryukyus Center 1 Senbaru Nishihara Okinawa Japan 903-0213 nakayaseiji@gmail.com Phone: +81-988-985-8876 Email: kaorukom@eve.u-ryukyu.ac.jp | Republic of Palau Palau Coral Reef Phone: 680-488-6950 Email: |

Thank you for your time in completing this survey. When you have completed all the parts that apply to you, return the survey to the collector at the prearranged time.

Sincerely,
Survey on Marine Recreation in Palau

1. Questions about ocean of Palau

Q1. Which of the following activities did you experience in Palau? (Check all that applies)

1) □ Snorkeling  2) □ Diving  3) □ Enjoying at Milky Way
4) □ Others, Please specify________________________________________

Q2. How would you rate your knowledge about coral reef? (Check one)

1) □ None  2) □ Very little  3) □ Some
4) □ Quite a bit  5) □ A lot

Q3. Please check the answers to the following questions (Check one)
I think that corals are…

1) □ Animal  2) □ Plants  3) □ Not Alive
4) □ Others Specify________

Q4. What do you think about the ocean? (Check all that applies)

1) □ Plenty of corals  2) □ Too few corals  3) □ Too many damaged corals
4) □ Plenty of fish  5) □ Too few fish  5) □ Too few large fish
6) □ Water is pristine  7) □ Scenery is beautiful
8) □ Nothing is wrong  9) □ Others, Please specify____________________
1. Questions about ocean of Palau

Please indicate how crowded it was with each of the site you visited. (*Circle one response for each site you visited*).

<table>
<thead>
<tr>
<th>Q 5 Marine Lake where you can see jelly fish</th>
<th>Too Many Visitors</th>
<th>Many Visitors</th>
<th>Right Amount</th>
<th>Few Visitors</th>
<th>Too Few Visitors</th>
<th>I did not visit this place</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

| Q 6 Milky Way                                | 1                | 2             | 3             | 4            | 5                | 6                         |

| Q 7 Long Beach (Omokan)                      | 1                | 2             | 3             | 4            | 5                | 6                         |

| Q 8 Long Beach (Kayangel)                    | 1                | 2             | 3             | 4            | 5                | 6                         |

| Q 9 Ngardmau Waterfall                       | 1                | 2             | 3             | 4            | 5                | 6                         |

The following questions ask you about snorkeling sites and diving sites in Palau. If you did only snorkeling in Palau, please go to section 2, 4, and 5. If you did diving, please go to section 3, 4, and 5. If you did both snorkeling and diving, please answer all the sections, 1, 2, 3, and 4.

2. Questions about snorkeling

Q10. How often have you snorkeled in your lifetime?

1) □ 0
2) □ 1 – 5 times
3) □ 6 – 9 times
4) □ 10 - 19 times
5) □ More than 20 times
2. Questions about snorkeling

Q11. How would you rate your snorkeling ability?

1) □ 1 (Very low skills)  2) □ 2 (low skills)  3) □ 3 (Moderate skills)

4) □ 4 (high skills)  5) □ 5 (Very high skills)

Q12. While snorkeling in Palau, have you been briefed on corals, fish, and other natural environment of Palau before your snorkeling?

1) □ Yes, Please specify________________________________________

2) □ No

3) □ Others

Q13. While snorkeling in Palau, did your tour guide talk about human actions that will harm the coral reef and wildlife? If yes, how did he or she explain?

1) □ Yes, Please specify________________________________________

2) □ No

3) □ Others

Q14. While snorkeling in Palau, have you been explained on safety? If yes, how did he or she explain?

1) □ Yes, Please specify________________________________________

2) □ No

3) □ Others
2. Questions about snorkeling skills and experiences (continued.)

Please indicate how crowded it was with each of the following locations where you visited. 
(Circle one response for each site you visited).

<table>
<thead>
<tr>
<th>Q 15</th>
<th>Paradise (Cemetery Reef)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q 16</td>
<td>Fantasy Island</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q 17</td>
<td>Big Drop Off</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q 18</td>
<td>German Channel</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q 19</td>
<td>Clam City</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q 20</td>
<td>Turtle Wall</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Q 21</td>
<td>Overall impression about the snorkeling Sites where you visited in Palau</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Q22. What makes Palau’s snorkeling sites special?

Q23. What are the problems of snorkeling sites in Palau?

Q24. Please advise if there is anything to improve your snorkeling experience in Palau?

3. Questions about diving skills and experiences

Q 25. How often have you dived in your lifetime?

1) □ 0  
2) □ 1-10  
3) □ 11-20  
4) □ 21-49  
5) □ 50 -100  
6) □ 101 and over
Q 26. How would you rate your diving ability?

1) □ 1 (Very low skills) 2) □ 2 (Low skills) 3) □ 3 (Moderate)

4) □ 4 (High skills) 5) □ 5 (Very high skills)

Q27. While diving in Palau, have you been briefed on corals, fish, and other natural environment of Palau before your snorkeling?

1) □ Yes, Please specify________________________________________

2) □ No 3) □ Others

Q28. While diving in Palau, did you tour guide talk about human actions that will harm the coral reef and wildlife? If yes, how did he or she explain?

1) □ Yes, Please specify________________________________________

2) □ No 3) □ Others
3. Questions about diving skills and experiences

Q29. While diving in Palau, have you been explained on safety? If yes, how did he or she explain?

1) □ Yes, Please specify________________________________________
2) □ No
3) □ Others

Please indicate how crowded it was with each of the following diving locations where you visited. (Circle one response for each location).

<table>
<thead>
<tr>
<th>Question</th>
<th>Too Many Visitors</th>
<th>Many Visitors</th>
<th>Right Amount</th>
<th>Few Visitors</th>
<th>Too Few Visitors</th>
<th>I did not visit this place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q30 Blue Corner</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Q31 Blue Hole</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Q32 Big Dropoff</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Q33 New Dropoff</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Q34 German Channel</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Q35 Coral Garden</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Q36 Sias Corner</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Q37 Ulong Channel</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Q38 Turtle Wall</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Q39 Overall impression about the diving sites you visited</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
3. Questions about diving skills and experiences
Q 40. What makes Palau’s diving sites special?

Q 41. What are the problems of diving sites in Palau?

Q 42. Please advise if there is anything to improve your diving experience in Palau?

4. Questions about your stay in Palau
Q 43. How long is your stay in Palau this time?
   1) □ 1 to 3 days  2) □ 4 to 7 days  3) □ 8 to 14 days
   4) □ More than 15 days

Q 44. How many times did you visit Palau?
   1) □ First time  2) □ 2~4 times  3) □ 5~9 times
   4) □ More than 10 times

4. Questions about your stay in Palau
Q 45. Where are you staying? Please write the name of the hotel, motel, etc.
   __________________________________________________________

Q 46. How much is your budget for food?
   __________________________________________________________

Q 47. How much is your budget besides food?
   __________________________________________________________
5. Questions about you

This set of questions are just demographic information needed for survey purposes.

Q48. Gender:
1) □ Male 2) □ Female

Q49. How old are you? (Please use number)_________________

Q50. Where are you from?
1) □ Japan 2) □ China 3) □ Taiwan
4) □ Korea 5) □ America 6) □ Australia
7) □ Europe, specify_______ 8) □ Others, specify

5. Questions about you

Q51. What is the highest level of education you have attained?
1) □ Junior high school 2) □ High school 3) □ Technical school degree
4) □ Completed two years of college 5) □ 4 – year college degree
6) □ Graduate school and beyond

Q52. What was your households’ annual income in 2016 including taxes?
1) □ No income 2) □ Less than $18,000 3) □ $18,001 - $36,000
4) □ $36,001 - $54,000 5) □ $54,001 - $72,000
6) □ $72,001 - $90,000 6) □ $90,001 and over

Q53. If you are employed, which best describes your occupation?
1) □ Government employee 2) □ Private sector employee 3) □ Self-employed
4) □ Teacher 5) □ Student 6) □ Retired
7) □ Housewife
8) □ other (please specify_______________________________)

25
Thank you for your time in completing the survey. When you have completed, please give it to the collector.
Appendix I

Table 1. Open ended questions about the problems of snorkeling sites in Palau

<table>
<thead>
<tr>
<th>Perceptions of crowding</th>
</tr>
</thead>
<tbody>
<tr>
<td>I cannot concentrate in snorkeling when there were other snorkeling group.</td>
</tr>
<tr>
<td>Our boat was about to be hit by other boat.</td>
</tr>
<tr>
<td>Because there were too many people, one cannot move freely.</td>
</tr>
<tr>
<td>There were too many people.</td>
</tr>
<tr>
<td>I could not enjoy it because of too many people.</td>
</tr>
<tr>
<td>Good spots have too many people and I could not watch them and I could not swim freely.</td>
</tr>
<tr>
<td>I want to snorkel in a larger area.</td>
</tr>
<tr>
<td>There were too many people at the popular spots.</td>
</tr>
<tr>
<td>There were many other groups and it was chaotic.</td>
</tr>
<tr>
<td>Too many people were concentrated in one place and it was crowded.</td>
</tr>
<tr>
<td>There were too many people that it was difficult to distinguish my group form other group.</td>
</tr>
<tr>
<td>There were too many people.</td>
</tr>
<tr>
<td>Too many people. In a small place, there were too many.</td>
</tr>
<tr>
<td>There were too many people. There were many Asians who made noise around BBQ areas.</td>
</tr>
<tr>
<td>The manners for Chinese and Koreans were not good.</td>
</tr>
<tr>
<td>There were many Chinese tourists and I bumped into them.</td>
</tr>
<tr>
<td>There were too many boats.</td>
</tr>
<tr>
<td>The manner of the Chinese in other tour groups was bad. They bumped into me.</td>
</tr>
<tr>
<td>The snorkeling spot is too small that people bump into other people.</td>
</tr>
<tr>
<td>Chinese tourists were noisy. They were splashing around, so I was bothered.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tour Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>I needed more relaxed time</td>
</tr>
<tr>
<td>I needed more time at each point.</td>
</tr>
<tr>
<td>It takes too long to go to the snorkeling sites.</td>
</tr>
<tr>
<td>The tour feels constrained, not free.</td>
</tr>
<tr>
<td>I wanted to swim more.</td>
</tr>
<tr>
<td>There is no snorkeling spots to enter from beach.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diversity of fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>I could not see the marine species such as turtles and dolphins.</td>
</tr>
<tr>
<td>I did not see big fish.</td>
</tr>
<tr>
<td>I wanted to see turtles.</td>
</tr>
<tr>
<td>Some places have just a few fish.</td>
</tr>
<tr>
<td>Unless we drive a boat for 20 to 30 minutes, we cannot find fish.</td>
</tr>
<tr>
<td>Overall, there were a few fish and it was easy to swim.</td>
</tr>
<tr>
<td>Most of the fish were small and I was not scared.</td>
</tr>
<tr>
<td>There were too few fish.</td>
</tr>
</tbody>
</table>
Weather

Weather, Water temperature
There were no sunny day.
The wave was too high, today.
It was too bad that there were not many sunny days.

Others

It was too bad that there were trash on the beach.
Chinese tourists broke corals.
Corals has died.
I wonder about feeding.
A foreign (Spanish) tourists feed fish and took pictures.
Tourists don’t have knowledge so that I wanted the tour agency to explain how to swim as well as about fish and bleaching of the coral.
The place where the boat was docked were cold. After swimming, it was cold.
There were no bathroom, so it was trouble. (From the tour period of 9 to 4, there were only once, at lunch time.
I wanted to dive deeply, but security is the most important thing.