Philippine Journal of Science
153 (1): 61-73, February 2024
ISSN 0031 - 7683
Date Received: 06 Sep 2022

Coastal Tourism and Fisheries Nexus: Comparing Sustainability of Small Islands with Varying Degrees of Tourism Development as Perceived by Fishers and Tourists

Cherry Pilapil-Añasco[1]*, Harold M. Monteclaro[2], Joy C. Lizada[3], Liah C. Catedrilla[1], Carlos C. Baylon[1], and Raul G. Bradecina[4]

[1]Institute of Aquaculture, College of Fisheries and Ocean Sciences, University of the Philippines Visayas, Miagao, Iloilo 5023 Philippines
[2]Institute of Marine Fisheries and Oceanology, College of Fisheries and Ocean Sciences, University of the Philippines Visayas, Miagao, Iloilo 2053 Philippines
[3]College of Management, University of the Philippines Visayas, Iloilo City 5000 Philippines
[4]Partido State University, Goa, Camarines Sur 4422 Philippines

Tourism in small islands is usually prioritized over fishing on the assumption that marginal fishers will eventually benefit from the multiplier effects of tourism activities. This leads to the difficult coastal tourism and fisheries nexus (CTF) conundrum, however, since the natural balance in small islands has been disturbed. Thus, to compare how locals and visitors perceived sustainability in small islands with the entry of tourism activities, Delphi surveys of 395 fishers and 113 tourists were conducted in Boracay, Gigantes, and Guimaras islands, Philippines. The indicators used were based on the UN sustainability framework and measured through a five-point Likert scale. Sustainability status was determined using the IUCN sustainability barometer, whereas sustainability ratings were compared ($\alpha = 0.05$) for respondents and study sites using standardized Mann-Whitney *U*-test and Kruskal-Wallis *H*-tests, respectively, with Games-Howell multiple comparison tests as *post hoc*. Results show that, overall, the three small islands are in potentially sustainable status (*i.e.* acceptable performance). In specific terms, both ecological and institutional dimensions are also in potentially sustainable status, whereas the socio-economic dimension has a sustainable status (*i.e.* desirable performance). Gigantes, however, has a significantly lower sustainability score ($p < 0.05$) compared to Boracay and Guimaras, which were not significantly different. Interestingly, tourists rated all small islands as sustainable with a perception rating significantly higher ($p < 0.05$) than fishers who perceived that their islands have only a potentially sustainable status. These findings suggest the difference in how fishers and tourists may look at programs and initiatives with long-term viability, and this needs to be addressed to attain a better and stable CTF so it can be used as a CRM strategy that can contribute to the sustainability goals in small islands.

Keywords: coastal resource management, coastal tourism and fisheries nexus, small islands, sustainable development, sustainable tourism

*Corresponding author: cpanasco@up.edu.ph

INTRODUCTION

The natural resources in small islands (Beller *et al.* 1990) have been important sources of provisioning ecosystem services in the form of fishing and cultural ecosystem services in the form of tourism as recreation (MEA 2005). In fact, small islands are becoming popular with tourists (Kurniawan *et al.* 2019) and members of local communities while, at the same time, fish production from the wild is declining (FAO 2020). Tourism products from small islands are based on the exceptional coastal resources in the interface between land and sea, and all the associated activities that take place in both landward and seaward parts of the coastal zone involving water, beaches, scenic beauty, rich terrestrial and marine biodiversity, and cultural heritage (EC 2014). In fact, in recent years, coastal and fishing tourism (Kurniawan *et al.* 2019; Hall 2021) – which is popularly known as sun, sand, and sea tourism – has become popular in these islands. Tourism does not only contribute to the global economy but also provides supplemental or alternative livelihood to local fishers (Lois Gonzales and Antelo 2020).

In archipelagic countries like the Philippines, small islands are becoming popular destinations for recreation by both domestic and foreign tourists alike. The Philippine government has been banking on developing the tourism sector based on its potential as an engine of economic growth. In fact, certain islands, coves, and peninsulas in the country were declared as tourist zones and marine reserves for almost half a century as of this writing (Proclamation 1801 1978). Tourism contributed to national development by stimulating additional investment, creating more income and employment opportunities, as well as enhancing national pride for all Filipinos in their natural and cultural heritage (Pilapil-Anasco and Lizada 2014). However, local fishing operations are affected by tourism activities (Sarr *et al.* 2008). Activities such as swimming, snorkeling, diving, island hopping, kayaking, surfing, and sports fishing often create space use-conflict with fishing (Lopes *et al.* 2017). With the promise of tourism as a growing economic driver worldwide, local authorities usually give priority to tourism activities at the expense of space for fishing with the assumption that fishers will benefit from the tourism multiplier effect (EC 2014).

In order to sustain the benefits derived from tourism, there is a need to properly manage the development of these island tourist destinations, regulate the aquatic recreational activities, and implement religiously the tourism initiatives, which are already well in place (Pilapil-Añasco and Lizada 2014). Moreover, all the factors that affect the sustainability of the coastal and marine resources should be considered. The members of the host community must also be empowered (Ferrer 2013) by increasing their awareness about tangible and intangible resources. It is hoped that sustained involvement of the local community in the development of the tourism industry will result to a sense of ownership (Ferrer 2013). Lastly, any infrastructure development must not damage the natural small island ecosystems (Hall 2021).

The Philippine government, through the Tourism Act of 2009, considers sustainable tourism development as the management of all resources that meet the needs of tourists and host regions while protecting opportunities for the future, in such a way that economic, social, and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biodiversity, and life support systems. Based on literature surveys, there is still no numerical sustainability index for tourism in the Philippines. Thus, this study aimed to measure and compare the sustainability of coastal tourism and fisheries nexus (CTF) as a social-ecological system (SES) based on the perception of the actors/stakeholders in the selected small islands of Boracay, Gigantes, and Guimaras. Specifically, this research [1] assessed ecological, socio-economic, institutional, and overall sustainability pillars of CTF as SES in the selected small islands from the viewpoint of the stakeholders; and [2] compared the perceived sustainability scores by island and respondent type. It is hoped that the methodology employed in this research, particularly the sustainability indices, and the results of this study will be useful to coastal local government units (LGUs), especially in making decisions to properly manage and attain sustainable tourism. The findings of this study are crucial in making informed decisions for the effective management of natural resources in small islands and for sustainable CTF development. Small island destinations like Boracay, Gigantes, and Guimaras will benefit both fishers and the fishery resources since tourism activities become sources of supplemental or alternative livelihoods of fishers that will hopefully lead to a reduction in fishing efforts in waters off small islands.

MATERIALS AND METHODS

Study Sites

This study was conducted in three small islands of Gigantes, Guimaras, and Boracay in the Western Visayas Region, Philippines (Figure 1), which are popular island destinations to both local and international tourists and with fishing as one of the sources of livelihood of local people. Based on the records of the Municipal Tourism Offices of Carles (the municipality with the jurisdiction of Gigantes Island) and Malay (the municipality of Boracay Island), the number of tourist arrivals on the island from 2013–2017 was 172,848 and 8,125,242, respectively. On one hand, the number of fishers in the records of the

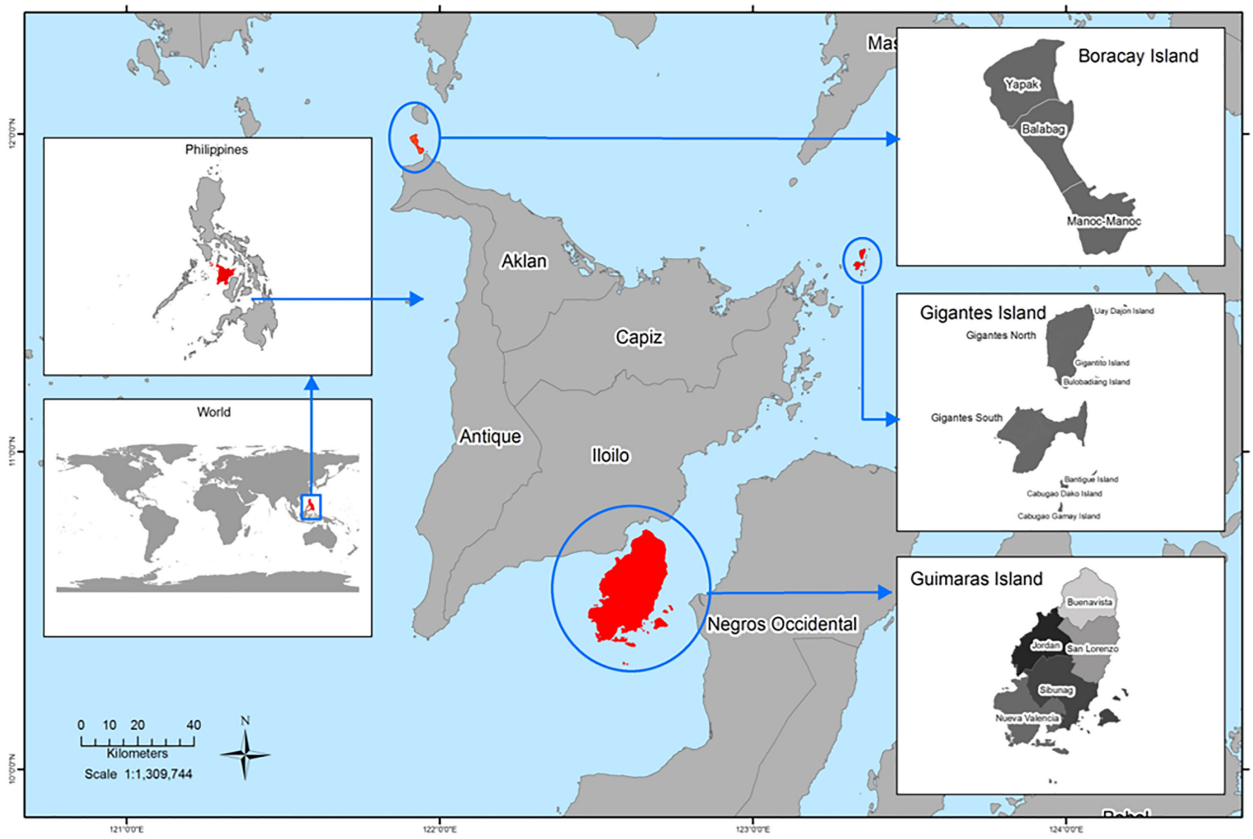

Figure 1. Map showing the locations of the study areas with inset maps of Boracay, Gigantes, and Guimaras islands.

Municipal Agriculture Offices of Carles and Malay in 2018 was 2,035 and 309, respectively. For Guimaras, the number of tourist arrivals from 2013–2017 was 2,461,408 based on the record of the Provincial Tourism Office, whereas the number of fishers was 10,111 as recorded by the Provincial Agriculture Office.

The tourist attractions in these islands are derived from rich and diverse natural and cultural heritage. While fishing is the major livelihood in Gigantes, the increase in tourism activities on the island is relatively new as compared to the other two study sites. It was among the areas severely damaged by super typhoon Haiyan (locally called *Yolanda*), in 2013 and it was only then that tourist arrivals on the island drastically increased when social media posts and word of mouth from relief operation volunteers about its scenic beauty spread. The tourism institutional initiatives on the island commenced only during such time. Despite the upsurge in tourist arrivals in recent years, Gigantes has maintained an off-beat attraction and remains moderately underdeveloped compared to the other study sites.

Meanwhile, fishing and tourism in Guimaras have been taking place for some time now with a community-based rural tourism strategy being applied to ensure socio-economic and environmental sustainability. Tourism on the island is already well-established, as the development of social infrastructure for tourism development has been established through the local government initiative to create an alternative source of income for fishers and other members of the community. Local governance systems enable local residents to participate in many forms of tourism activities. Boracay, on the one hand, has the longest tourism activity experience and has been dubbed as the most famous tourist attraction not only among the three study sites but worldwide. The tourism industry has been thriving over the years on the island, which impacts the national economy and the local people but also results in various environmental and social problems. In fact, it has been reported widely in both national and international news when it was temporarily closed to tourists due to the coliform contamination in swimming areas, alleged sex tourism, and environmental degradation due to land development (PP 475 of 2018).

Assessing Sustainability of the Coastal Tourism and Fisheries Nexus (CTF) Sites

The sustainability indicators used in this study were based on the United Nations Commission on Sustainable

Development (UN 2007) sustainability framework, which focused on ecological, socio-economic, and institutional dimensions or pillars. The indicators were measured using the perception of coastal tourism and fisheries representative stakeholders by answering the questions to cover the sustainability indicators as tailored to the small island context with inputs from LGU officials, fisheries and tourism experts and practitioners from the academe, and coastal resource managers or fisheries technicians through key informant interviews (KIIs). The representative stakeholders were the 395 local fishers and 113 tourists who were interviewed using surveys. The respondents were selected using snowball sampling methods (Johnson 2005), and the surveys were conducted from 2018–2019, with only the principal investigator (*i.e.* the primary author) having conducted both the survey and KIIs to eliminate the interviewer variability as a source of sampling error. The perceptions of the respondents were measured using a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"), wherein questions were stated either positively or negatively in a random manner to ensure unbiased responses.

The ecological pillar questions given to the fishers covering air pollution, biodiversity and natural resources management, change at the coast, energy and climate change, land use, public health and safety, waste management, and water resources and pollution sustainability indicators were as follows:

1. The air quality on the island is not polluted.
2. Tourism on the island helps improve the condition of coastal and marine habitats and species that have been identified as priorities for conservation.
3. There is an area protected for nature conservation, landscape, or heritage—including a marine protected area—on the island.
4. Coastal rivers on the island allow passage of migratory fish to/from spawning grounds (asked to islands with rivers only).
5. I observed coastal erosion on the island.
6. My house/establishment is in the coastal area.
7. I observed that a portion of the coastline on the island has hard fences.
8. The island has a climate change adaptation strategy or planning
9. There are tourism accommodation and attraction infrastructure located in "vulnerable zones."
10. I observed overfishing on the island.
11. Fish catch is being monitored on the island.
12. Fish catch on the island has notably increased for the last 10 years.
13. Fish catch on the island has notably gotten larger for the last 10 years.
14. There is a strategy and/or plans on the island to reduce noise and light pollution, which benefits us.
15. A proportion of agricultural land on the island is farmed intensively (asked to islands with farmland only).
16. The coastal zone on the island is publicly owned.
17. People and assets are at risk in the island's coastal areas.
18. The forested land area on the island is vast.
19. Tourists and same-day visitors are using different modes of transport to arrive at the island (public/private and type).
20. Tourists are using local/soft mobility/public transport services to get around the island.
21. Sewage from the island is treated at least at a secondary level prior to discharge.
22. There is a garbage segregation program on the island, which I/my establishment follow/s religiously.
23. My household/establishment recycles solid waste.
24. The island tourism enterprises are separating different types of waste.
25. Enough litter bins or garbage containers are available on the island, especially on the beach and other tourist areas.
26. There is a wastewater treatment on the island.
27. The chemical status of transitional and coastal waters is being monitored on the island.
28. The ecological status of transitional and coastal waters is being monitored on the island.
29. The coastline of the island was affected by major/minor spills in the previous year.
30. The beaches on the island are safe for bathing.

The socio-economic pillar questions also asked to the local stakeholders covering equity, job opportunity, education and training, local and cultural identity, public health and safety, economic opportunity, land use, tourism investment, and transportation sustainability indicators were the following:

1. Overall, I am very satisfied with tourism on the island.
2. There are more employment opportunities during the development of tourism on the island.
3. Expenditures and investments in coastal management and tourism are notable.
4. The island is always accessible.
5. There are sufficient recreational boats on the island.
6. Tourism is contributing to the economy of the island.
7. I benefited from seasonal jobs brought by tourism on the island.
8. The economic status of my family improved with the development of tourism on the island.
9. Women have the same job opportunities as men in the tourism industry on the island.
10. Women have the same degree of participation in municipal decision-making positions.

11. Commercial accommodations on the island have rooms accessible to people with disabilities and/or participating in recognized accessibility schemes.
12. Public transportation on the island is sensitive to people with disabilities and people with specific access requirements.
13. Tourist attractions on the island are accessible to people with disabilities and/or participating in recognized accessibility schemes.
14. The island has an existing policy or plan that protects cultural heritage.
15. There are benefits for myself/my establishment from tourism and tourists visiting the island.
16. There are events on the island that are focused on traditional/local culture and assets.
17. I always attend organized festivals and public events to strengthen the island's local identity.
18. My family/establishment consumes/utilizes goods that are locally produced.
19. My house/establishment is within 10 kilometers or 30 minutes from a hospital.
20. Doctors are readily available on the island.
21. The crime rate on the island increased during the development of tourism.
22. There are lifeguards in designated bathing/swimming areas on the island.

The institutional pillar questions given also to the local stakeholders covering policies/strategies for sustainability, monitoring tools for sustainability, human resource capacity building, implementation of good management practices, stakeholder involvement/public participation, sustainable management in tourism enterprise, customer satisfaction, and information and communication indicators were as follows:

1. The island has development plans, policies, and strategies for the sustainability of its coastal areas and tourism industry.
2. The island has monitoring tools for the sustainability of its coastal areas and tourism industry.
3. The island has a human resources capacity-building program for the sustainability of its coastal areas and tourism industry.
4. The local government on the island is implementing its policies and strategies for the sustainability of its coastal areas and tourism industry.
5. Integrated programs with maximum involvement of stakeholders (community, PO, NGO, LGU, and other concerned agencies such as BFAR, DENR, DPWH, DOT) on the coast and other tourism areas are being carried out that improve their sustainability.
6. Partnerships have been established between local authorities and communities for coastal areas and tourism industry sustainability matters.

On one hand, the tourists who had visited the island two or more times were asked to rate the ecological and socio-economic sustainability based on their observed state of the environment, as well as the economic development and quality of life of the local people, respectively. English-language questionnaires were developed and the meaning of each value of the Likert scale of measurement was emphasized and explained thoroughly before asking the respondents for their responses. Pilot testing of the questionnaire was done in Pan de Azucar, another small island in the region, to check for comprehensibility and appropriateness. Cronbach's alpha values were computed to ensure the reliability or internal consistency of both survey questions (fishers questions Cronbach's alpha = 0.786 or acceptable; tourists questions Cronbach's alpha = 0.844 or good). Moreover, the primary author personally conducted the interviews in the local language to avoid interviewer variability as a source of sampling error. To standardize the responses of the two respondent types, all the ratings were transformed into percentages so that the sustainability scores are percent total scores in ecological, socio-economic, and institutional sustainability questions. That is, the pillar sustainability score given by the respondents was computed as the percentage of their total individual ratings for all pillar questions. Mathematically:

$$x_{P_i} = \frac{Total\ rating\ for\ all\ pillar\ questions}{Maximum\ possible\ total\ score} x\ 100$$

$$= \frac{\sum_{j=1}^{m} R_j}{\sum_{j=1}^{m} R_{Max}}\ x\ 100$$

$$= \frac{\sum_{j=1}^{m} R_j}{5m}\ x\ 100$$

where R_j is the respondent's rating for question j;

R = 1 as strongly disagree or … or 5 as strongly agree;

m = number of questions for pillar P;

P = 1, 2, 3 representing ecological, socio-economic, and institutional pillars respectively; and

R_{max} = as the highest possible R rating (*i.e.* 5).

So the expected value of the sustainability pillar score is given by:

$$x_P = \sum_{i=1}^{n} X_{Pi}$$

where n is the number of respondents. All three pillars were considered prerequisites for the sustainability of CTF. This means that the ecosystem must be maintained at its best quality so it can be enjoyed for a long time. Economic gains must never sacrifice the quality of the

natural ecosystems. Hence, institutional structures are created to ensure this would never happen. Thus, the expected value of the total sustainability score, $\boldsymbol{x}$, was computed using the following formula, wherein the three pillars were treated as equally important (*i.e.* pillar weight is 0.33):

$$\boldsymbol{x} = 0.33 \sum_{p=1}^{3} X_p$$

Moreover, the barometer of sustainability concept of the International Union for Conservation of Nature or IUCN (Batalhão *et al.* 2017) was employed to identify the classification of sustainability in the selected study sites.

Data Management and Analysis

Databases were developed then exploratory data analysis was conducted to clean the dataset and check the correctness of encoded data points. Respondents with incomplete ratings were excluded from the analysis so that after data cleaning, the sample sizes for fishers and tourists became $n_{Fishers} = 373$ and $n_{Tourists} = 113$, respectively. Thus, the total sample size was $n = 486$. The variables were then formatted for descriptive and inferential statistical analyses using IBM SPSS Statistics 27.0.

To compare differences in sustainability scores by island and respondent type, *a priori* tests were conducted to check if fundamental assumptions (*i.e.* randomness, normality distribution, and homoscedasticity) were all satisfied to ensure the appropriateness of the statistical techniques using a level of significance, $\alpha = 0.05$. Randomness was readily satisfied as all possible elements in the population of tourists and fishers were given equal chances to be included in the sample. The normality assumption was checked using Shapiro-Wilk tests. For homoscedasticity or constancy of variance assumption, Levene's test was used.

Specifically, to evaluate the significant difference in sustainability rating between fishers and tourists as CTF SES actors, the Shapiro-Wilk normality *a priori* test was conducted for the use of either the *t*-test or the Mann-Whitney *U*-test. When $p < 0.05$, the *U*-test was utilized as an appropriate statistical technique to compare two non-normal distributed groups. For study site comparisons, the Kruskal-Wallis analysis of variance (ANOVA) by ranks for independent samples (also known as Kruskal-Wallis *H*-test), a nonparametric equivalent of ANOVA, was used because at least one of the fundamental assumptions in using parametric tests was not satisfied. Games-Howell multiple comparison tests were then applied when significant differences in sustainability ratings existed between the islands.

RESULTS

This study included both females (22%) and males (78%) fishers, wherein 93% and 81% of them were married, respectively. The mean ages of female and male respondents were 48 and 46 yr old, respectively. The mean incomes of female and male respondents are PHP 8,991 and 7,360, respectively. The majority of them (52% for females and 62% for males), at most, graduated from elementary school, whereas some of them earned either a technical diploma or a bachelor's degree (13% for females and 11% for males). The rest of the respondents graduated from high school. The average years residing on the island was 39 yr, and the mean household size was 5. For tourist respondents, on the one hand, the proportions of females and males were 70% and 30%, respectively. The mean ages of female and male tourist respondents were 32 and 31 yr old, respectively. The mean incomes of female and male respondents were PHP 31,647 and 50,372, respectively. The majority of them (85% for females and 82% for males) had educational attainment of at least a bachelor's degree. The mean length of stay was 4 d (4 d for females and 5 d for males). These tourists visited the islands at least twice, including the time of the interview.

The following subsection presents the results to answer the specific study objectives.

Ecological Sustainability

The ecological sustainability scores by type of respondent and by study site plus the corresponding status barometer are shown in Table 1. Boracay had the highest mean score (76.86%), followed by Guimaras (60.70%) and Gigantes (60.30%) accordingly – for both types of respondents. In general, tourists gave higher ratings as compared to fishers, who consistently rated ecological sustainability lower. With an overall ecological sustainability mean score of 66.03, the selected small islands are classified as potentially ecologically sustainable, with all three islands having ecological sustainability status as potentially sustainable. Interestingly, visitors rated Boracay as the most environmentally sustainable, having a status of being sustainable (mean rating of 91.08), although visitors rated all the islands as being sustainable in the ecological pillar. Meanwhile, the fishers of Gigantes and Guimaras rated ecological sustainability in the islands with intermediate status.

Socio-economic Sustainability

Table 1 further presents the socio-economic sustainability scores in the study sites by type of respondent. Guimaras had the highest mean score (88.65%), followed by Boracay (80.09%) and Gigantes (74.07%) – for both types of respondents. All the islands were rated by the tourists as

Table 1. Descriptive statistics of sustainability score (%) according to pillar, respondent type, and study site.

Sustainability pillar and respondent type	Study site							
	Boracay		Gigantes		Guimaras		All sites	
	n	$\bar{x} \pm s$	n	$\bar{x} \pm s$	n	$\bar{x} \pm s$	n	$\bar{x} \pm s$
Ecological								
Fishers	89	65.03 ± 4.96 *PS*	91	58.37 ± 4.80 *I*	202	57.88 ± 5.10 *I*	373	59.71 ± 5.81 *I*
Tourists	74	91.08 ± 15.22 *S*	17	70.59 ± 25.61 *PS*	22	85.45 ± 19.69 *S*	113	86.90 ± 19.23 *S*
All respondents	**163**	**76.86 ± 16.94** *PS*	**119**	**60.30 ± 11.72** *PS*	**224**	**60.70 ± 11.47** *PS*	**486**	**66.03 ± 15.61** *PS*
Socio-economic								
Fishers	89	75.42 ± 6.23 *PS*	91	71.53 ± 8.91 *PS*	202	88.80 ± 5.45 *S*	373	81.15 ± 10.22 *S*
Tourists	74	85.68 ± 13.04 *S*	17	87.65 ± 8.31 *S*	22	87.27 ± 13.52 *S*	113	86.28 ± 12.48 *S*
All respondents	**163**	**80.09 ± 11.13** *PS*	**119**	**74.07 ± 10.58** *PS*	**224**	**88.65 ± 6.69** *S*	**486**	**82.53 ± 10.97** *S*
Institutional								
Fishers	89	78.81 ± 10.72 *PS*	91	75.46 ± 14.76 *PS*	202	84.32 ± 14.39 *S*	373	80.84 ± 12.70 *S*
Overall								
Fishers	89	70.61 ± 4.33 *PS*	91	65.38 ± 5.88 *PS*	202	74.94 ± 4.64 *PS*	373	71.58 ± 6.28 *PS*
Tourists*	74	88.38 ± 12.00 *S*	17	79.12 ± 14.60 *PS*	22	86.36 ± 15.37 *S*	113	86.59 ± 13.38 *S*
All respondents	**163**	**78.68 ± 12.40** *PS*	**108**	**67.54 ± 9.39** *PS*	**224**	**76.11 ± 7.39** *PS*	**486**	**75.07 ± 10.58** *PS*

Sustainability status barometer

Score (%)	Status	Description
1–20	Unsustainable (U)	Unacceptable performance
21–40	Potentially unsustainable (PU)	Unwelcome performance
41–60	Intermediate (I)	Transition performance
61–80	Potentially sustainable (PS)	Acceptable performance; goal almost achieved
81–100	Sustainable (S)	Desirable performance; goal achieved

[n] sample size; [$\bar{x}$] sample mean; [s] sample standard deviation
*Rated ecological and socio-economic pillars only

sustainable in this dimension. In Guimaras, fishers shared a similar perception, wherein this respondent type gave a slightly higher rating. Meanwhile, the two other islands were still in the potential status from the viewpoint of the fishers. With an overall socio-economic sustainability mean score of 82.53, the selected small islands are classified as sustainable in the socio-economic dimension. Overall, visitors and fishers rated all the islands as being sustainable in this pillar – with a mean rating of 86.28 and 81.15, respectively.

Institutional Sustainability

The institutional sustainability in the study sites was rated only by the local CTF SES actors, as represented by the fishers considering that the governance systems can be gleaned based on everyday experiences. Guimaras got the highest mean score (84.32%), followed by Boracay (78.81%) and Gigantes (75.46%). With an overall institutional sustainability mean score of 80.84, the selected small islands are approximately classified as potentially sustainable with respect to the institutional dimension.

Overall Sustainability

The overall sustainability scores in the study sites by type of respondent are presented also in Table 1. Boracay and Guimaras had an approximate mean score of 80%, whereas Gigantes got 67.54% for both types of respondents. In Boracay, visitors had a higher mean score (88.38%) than the fishers (70.61%). In Gigantes and Guimaras, a similar pattern of mean scores was observed wherein visitors had the higher mean score (79.12 and 86.36%, respectively) than the fishers (65.38 and 74.91%, respectively). With an overall sustainability mean score of 75.07, the selected small islands are classified as potentially sustainable, with all study sites having potentially sustainable status. Interestingly, visitors considered all the selected small islands as sustainable (mean percent score of 86.59), but fishers rated all the islands as only potentially sustainable with a mean rating of 71.57%.

Comparison of Sustainability Scores

Comparisons of sustainability scores of the statistically significant factors are shown in Figure 2. By respondent type for all study sites, the ecological and socio-economic

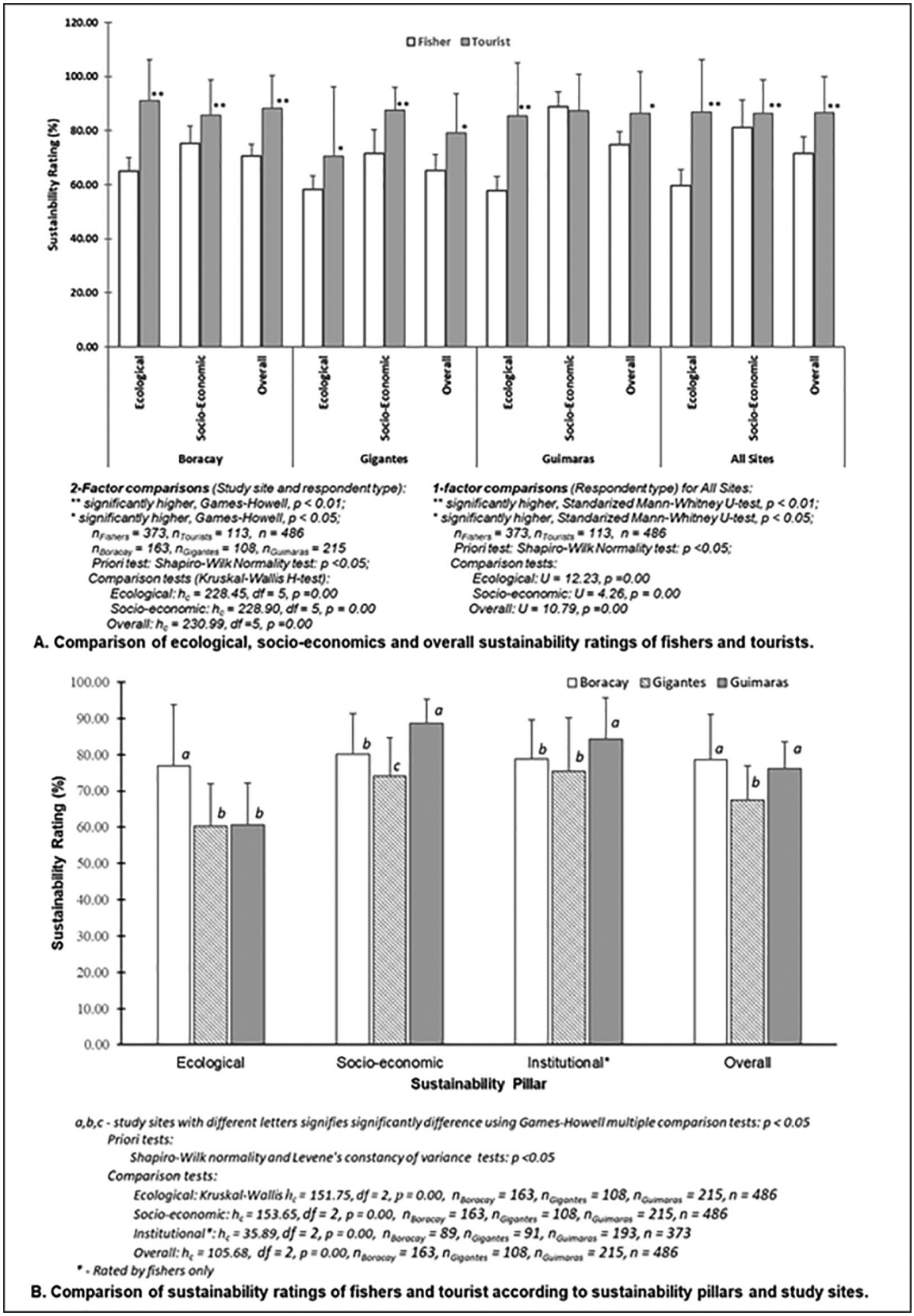

Figure 2. Comparisons of perceived sustainability scores by study site and respondent type.

sustainability ratings of tourists are significantly higher than the ratings of fishers (*U*-tests, $p < 0.05$). A similarly significant difference pattern is noted for the overall sustainability ratings. Considering the sustainability ratings of the respondents for three study sites, the Kruskal-Wallis *H*-test showed that the sustainability scores of tourists for the two dimensions rated are all significantly higher than the ratings of fishers ($p < 0.01$; Games-Howell, $p < 0.05$) except in the socio-economic pillar of Guimaras. Both respondent types agreed that Guimaras is already sustainable in this dimension (Figure 2A).

By sustainability dimension and study site, Boracay was significantly highest ecologically ($h_c = 151.75$, $p = 0.00$; Games-Howell, $p < 0.05$ for both Gigantes and Guimaras), whereas ratings for Gigantes and Guimaras had no significant difference. In terms of the socio-economic pillar, all study sites were significantly different ($h_c = 153.65$, $p = 0.00$; Games-Howell, p-values < 0.05). Guimaras had the significantly highest score compared to the other two islands ($p < 0.05$ for both Boracay and Gigantes), and Gigantes had the significantly lowest score ($p = 0.00$ for Boracay). For institutional sustainability scores, the study sites were significantly different ($h_c = 35.89$, $p = 0.00$; Games-Howell, p-values ≤ 0.006), as perceived by the fishers. Guimaras was significantly different compared to the other two islands ($p = 0.01$ for Boracay, $p = 0.00$ for Gigantes), whereas Boracay and Gigantes were not significantly different at all. Overall, the study sites were significantly different in sustainability rating ($h_c = 105.68$, $p = 0.00$), wherein Gigantes was significantly the lowest (Games-Howell, $p < 0.05$), whereas Boracay and Guimaras were not significantly different (Figure 2B).

DISCUSSION

Sustainability of CTF in Small Islands

For the overall sustainability assessment, the CTF SES actors who availed the recreation ecosystem services (*i.e.* the tourists) viewed the small islands as having a sustainable status based on the sustainability barometer (Batalhão *et al.* 2017). Meanwhile, from the lens of the fishers as local actors, these small islands are still in potentially sustainable status. It seemed that the local stakeholders who stayed in the islands practically all the time had developed a sense of ownership (Ferrer 2013) of the islands and recognized the necessity of programs and initiatives for the long-term viability of CTF as SES so that sustainability goals will be truly achieved. This result is consistent with the findings of other studies [*e.g.* Kurniawan *et al.* (2019)], wherein local people have more awareness of their place as tourist destinations.

Considering each dimension of sustainability, the differing perceptions of local CTF SES actors and tourists as to the status of ecological sustainability can be explained by the fact that, as members of the local community who had been directly exploiting the natural resource units from the resource systems in the island, together with their local and traditional knowledge (St. Martin *et al.* 2007) about these resource systems, local actors recognized that more programs and initiatives are needed to make the state of these ecological systems truly sustainable. For instance, the work of Greenhawk and Espiritu-Afuang (2019) emphasized the need for conservation action, as there are species unique on the island (*e.g.* the *Platymantis insulatus*, commonly called Gigantes forest frog, Gigantes limestone frog, or Gigantes wrinkled ground frog), which is listed by the IUCN as Critically Endangered. In Guimaras, the oil spill occurrences – as many vessels regularly plying the waters surrounding the island – may be the reason for the intermediate sustainability status given by the fishers as such anthropogenic hazards disrupt their livelihood. Visitors, on the other hand, were just temporary SES actors, and their favorable experiences with their quick visit to the island somehow influenced their high ratings. The probability that visitors took notice of the need to maintain the integrity of the ecosystems while they are being utilized and exploited is definitely low as compared to the awareness of the local community. This observation was also underscored by Meneghello and Mingotto (2016).

For the socio-economic pillar, the average rating of fishers for all sites was that the small islands were in a sustainable socio-economic status. However, fishers in Boracay and Gigantes recognized that the tourism development in the islands had an acceptable performance in terms of economic development and improved the quality of life of the local people. This implies that the abilities and capabilities of local people to enjoy the socio-economic potentials of tourism must be enhanced, as underscored by other studies on small island tourism [*e.g.* Fabinyi (2010)]. Meanwhile, fishers of Guimaras and tourists in all islands were confident that this dimension of sustainability had already been achieved. There is just a need to sustain the existing socio-economic programs and initiatives so that they can be enjoyed continuously by both local and non-local SES actors. For Boracay, the fishers whose existence on the island was dependent on CTF SES resource systems and resource units recognized that programs and initiatives for economic development and improved quality of life of the local people still needed enhancement. For Gigantes, the local stakeholders recognized that their islands were still potentially sustainable with respect to socio-economic development, whereas the visitors already observed improvements in the quality of life of the local people and the increasing economic activity on the island since

it engaged in tourism development, as described by Butler (2011). For Guimaras, both fishers and tourists regarded this sustainability dimension as already achieved. This may be explained by the well-established socio-economic initiatives in this island province such as the community-based rural tourism strategy, which the key informants kept on repeating during interviews.

In terms of the institutional pillar, the sustainable status given by the fishers implies that the fishers were confident that the long-term viability of their CTF SES governance systems was already achieved. For instance, in Guimaras, the fishers must have benefitted from the community-based rural tourism strategy on the island. The initiative for national and local establishments of marine protected areas such as Taklong Island Marine Reserve may contribute also to such confidence in the governance system on the island. In Boracay, the fishers recognized that the island governance systems need improvement to achieve institutional sustainability goals, which is consistent with Trousdale's (1999) assertion that governance in Boracay is the critical issue in moving development toward sustainability. In Gigantes, fishers believed that the island was in a potentially sustainable institutional status. As tourism on the island is relatively new, this implies that the local government still needs capability building to achieve sustainability in this dimension (Brokaj 2014). Generally, the governance systems in small islands still need to be strengthened to attain its long-term viability. Capacity building to improve the governance systems and the ability of the local government was also necessary.

Comparison of Sustainability Scores

Statistically significant differences in the perceived overall sustainability scores of Gigantes according to the local respondents, compared to the two other islands, implies that Gigantes has different strategies that need improvement to be at par with Boracay and Guimaras as well-established island destinations. By respondent type, local stakeholders had a significantly lower sustainability rating than the visitors, which implied that the experience values for all of the islands were high, as such ratings are observed.

For the ecological dimension, the high ratings for Boracay may be attributed to the fact that the survey was conducted right after the re-opening of the island to tourists after the six-month closure due to rehabilitation (PP 475 of 2018). The government opted to close Boracay Island from tourists to address improper management of waste and other environmental problems, as pointed out by many studies [*e.g.* Maming *et al*. (2021), Trousdale (1999)]. Meanwhile, the lowest rating of Gigantes may be due to the fact that illegal fishing practices were still considered a way of life in the surrounding waters of Gigantes, as emphasized by both survey respondents and key informants. Solid waste management was still problematic, open defecation was still observed due to the lack of comfort rooms in some households, among other environmental issues. As for Guimaras, local stakeholders were cautious that the integrity of its natural systems is maintained.

The tourists' significant sustainable rating may signify that the experience values and tourists' satisfaction in the islands were high. The fishers' significantly lower rating indicated that as direct users of the resource systems, fishers were more aware of the environmental issues confronting the islands, which required sustained programs and initiatives for sustainable management that strikes a balance between conservation and utilization, as emphasized also by other studies [*e.g.* Ong *et al.* (2011), Lopes *et al.* (2017), Butler *et al.* (2020), Hall (2021)].

For the socio-economic pillar, both sets of respondents were consistent that Guimaras is already sustainable in this dimension. Again, this may be explained by the fact that Guimaras had been adopting a community-based rural tourism approach (Berkes 2006) to ensure that local stakeholders benefit from the CTF SES. Meanwhile, the lowest rating of Gigantes may be attributed to the fact that tourism development is still in its infancy, considering that it commenced only after Typhoon Haiyan rehabilitation operations. Although economic activities were observed on the island prior to the COVID-19 pandemic, the local stakeholders believed that the development of programs that maximize the involvement of the local people was still wanting. In fact, animosity among local island stakeholders and mainland LGUs and tourism product providers existed, as the latter encouraged only daytime visits to the island, which meant that local tourism products and service providers never earned profit in such an arrangement. The former considered the latter as uncollaborative and just took advantage of the island's resource systems, including the resource units' collection of visitor environmental fees. The local island stakeholders believed that they did not benefit from such collected environmental fees. The promise of multiplier effects from tourism seemed not realized yet to the fishers, which is similar to the observation of Fabinyi (2010) as to the experiences of the fishers in Calamianes Islands. Considering this scenario, it is essential to study the level of trust in the community, as it is the backbone of social capital, as pointed out by Saito and Ruhanen (2017). This research can be done using a survey of the local people's perceptions. In surveys, however, the strategic bias of Filipinos (*e.g.* warm glow effect, especially on the social system of SES, wherein those belonging to low economic status usually respond affirmatively to questions and avoid offending the interviewers) must be considered.

This is one challenge for researchers on how to ascertain the dignity of responses, as pointed out by Kennedy and Vargus (2001).

For institutional sustainability, all islands significantly differed, implying that each island has unique characteristics with respect to this dimension. This may be due to size variations and distance, as pointed out by Beller *et al.* (1990), and insularity or contact with the outside world. Development strategies and institutional capacities for achieving sustainable activities varied due to the different experiences of these three islands. The governance systems of Gigantes were still in the process of venturing into a new enterprise, as its stakeholders had just discovered the potential of its resource systems, which were already recognized by the tourism industry. The governance systems of Boracay, on the other hand, rested on the national inter-agency task force that took the responsibility of running the island. Moreover, Guimaras was governed by multiple levels of LGUs – from the *barangay* to the provincial levels – who were cautious in ensuring that local stakeholders have livelihood options other than tourism and fishing; not to mention that it is much bigger than the other two islands. This is in consonance with the findings of Saito and Ruhanen (2017) that stakeholder collaborations are vital for sustainable tourism development.

As many studies [*e.g.* Meneghello and Mingotto (2016), Saito and Ruhanen (2017), Ballad *et al*. (2021)] emphasized that sustainable tourism development wisely uses resources in order to maintain long-term viability, this study added the importance of considering as well the provisioning services for direct users of the common pool resources such as the fishers. Based on the definition of the World Commission on Environment and Development (WCED) and the works of other authors, sustainable tourism development is a development that meets the needs of the present tourists without compromising the ability of future generations to meet their own needs (WCED 1987). This definition focused only on the recreation ecosystem services. Thus, to incorporate provisioning ecosystem services (MEA 2005) from coastal and fisheries resources in small islands, sustainable tourism development in small islands can be achieved if it meets the needs of both the present tourists and members of the local community without compromising the ability of the future generations to meet their own needs, as emphasized by Meneghello and Mingotto (2016). As underscored by Butler (2011) and Ong *et al.* (2011), to closely achieve sustainable development, a holistic and integrated approach has to be adopted. The contribution of a full range of stakeholders in planning and decision-making in order to determine the long-term interest of the community is very important for inclusive development (Saito and Ruhanen 2017; Ballad *et al*. 2021). Hence, the local government can have a great influence on the local tourism industry and has a vital role in conserving the very asset on which its future depends (Brokaj 2014). Thus, this study presented that in a small island setting, both recreational and provisioning ecosystem services must be taken into utmost consideration for sustainable development.

CONCLUSION

From the lens of the CTF as SES actors, it is concluded that the overall sustainability status of CTF in small islands is potentially sustainable (*i.e.* acceptable performance in achieving the sustainable goals). For each sustainability dimension, the islands had a potentially sustainable status for the ecological and institutional pillars, as well as a sustainable status (*i.e.* the sustainability goals are already achieved) for the socio-economic pillar. Specifically, local stakeholders recognized that the small islands were still in a potentially sustainable status. On one hand, the repeat visitors perceived that these goals for ecological and socio-economic dimensions were already achieved, as this group rated the islands to be in a sustainable status, whereas fishers from Gigantes and Guimaras regarded its ecological dimension to be intermediate or still in transition performance.

Statistically significant differences were found between the overall, ecological, and socio-economic sustainability ratings of visitors compared to the local stakeholders. Looking at each dimension by study site, ratings of Gigantes were consistent to be significantly lowest, whereas Boracay was significantly the highest in the ecological dimension and Guimaras in the socio-economic and institutional dimensions. Overall sustainability ratings for Boracay and Guimaras were not significantly different, and Gigantes was consistent to be significantly the lowest.

It is, therefore, recommended that programs and initiatives to improve the sustainability status of Gigantes be given attention by its LGU. Capability building for all local stakeholders such as tourism goods and services providers (*e.g.* tour package, caterer, store owners), the accommodation owners, *Bantay Dagat* (sea warden), and the fishers are necessary for the sustained viability of CTF SES in small islands. Continuous information, education, and communication campaigns are in order to at least maintain the current status of Boracay and Guimaras. Monitoring systems as sustainability tools for marine ecosystems and tourism should be developed and maintained by the respective LGUs. Moreover, disaster risk reduction and climate change strategies such as the effective early warning system should be established to

benefit both locals and tourists. Finally, for research or academic institutions, it is recommended to conduct a study on social capital measurement in small islands. This can be done using a local community perception survey on the level of trust in their neighbors, *barangay* officials, and LGU officials. While this study tackled the sustainability of selected three small islands with varying degrees of tourism development, the results can guide future research on small islands with similar resource system characteristics, particularly in the context of sustainable CTF.

ACKNOWLEDGMENTS

This study was funded by the Science Education Institute of the Department of Science and Technology. The authors would like to thank the respondents, key informants, and the LGUs of Malay, Carles, and Guimaras for their participation in this research. This manuscript is a portion of a dissertation, which was language-edited by Prof. Alice Prieto-Carolino and Prof. Celia F. Parcon. The map of the study sites was generated by Mr. Alan Moscoso.

REFERENCES

BALLAD EL, YOSHINORI MOROOKA Y, SHINBO T. 2021. Impact of Ecotourism on Local Community's Participation in Coastal Resource Management: Case of Palaui Island Protected Landscape and Seascape (PIPLS) in Northern Luzon, Philippines. The Philippine Journal of Fisheries 28(2): 158–170.

BATALHÃO ACS, TEIXEIRA D, GODOI EL. 2017. The Barometer of Sustainability as a Monitoring Tool of the Sustainable Development Process in Ribeirão Preto, Brazil. Journal of Environmental Science and Engineering (A6): 120–126.

BELLER W, D'AYALA P, HEIN P. 1990. Sustainable Development and Environmental Management of Small Islands, In Man and the Biosphere Series (2nd ed.), Vol. 5. UNESCO and the Parthenon Publishing Group. 116p.

BERKES F. 2006. From community-based resource management to complex systems: The scale issue and marine commons. Ecology and Society 11(1): 45.

BROKAJ R. 2014. Local government`s role in the sustainable tourism development of a destination. European Scientific Journal 10 (31): 103–117.

BUTLER EC, CHILDS A-R, SAAYMAN A, POTTS WM. 2020. Can Fishing Tourism Contribute to Conservation and Sustainability *via* Ecotourism? A Case Study of the Fishery for Giant African Threadfin *Polydactylus quadrifilis* on the Kwanza Estuary, Angola. Sustainability 12–4221. DOI: 10.3390/su12104221

BUTLER RW. 2011. Tourism Area Life Cycle. Contemporary Tourism Reviews. Woodeaton, Oxford: Goodfellow Publishers Limited.

[EC] European Commission. 2014. Farnet Guide 9. Fisheries and Tourism: Creating Benefits for the Community. European Union, Belgium. 52p. DOI: 10.2771/7410

FABINYI M. 2010. The intensification of fishing and the rise of tourism: competing coastal livelihoods in the Calamianes Islands, Philippines. Human Ecolology 38: 415–427.

[FAO] Food and Agriculture Organization. 2020. State of World Fisheries and Aquaculture: Sustainability in Action. Rome. 26p.

FERRER EM. 2013. Organizing and Mobilizing in Community-based Coastal Resources Management (CBCRM): Lessons and Insights. In: Coastal Resource Management. Siason IML ed. UPV/DA-BAR. p. 45–104.

GREENHAWK N, ESPIRITU-AFUANG L. 2019. Conservation Action Plan for *Platymantis insulatus*. Project *Palaka*. 14p.

HALL CM. 2021. Tourism and fishing. Scandinavian Journal of Hospitality and Tourism 21(4): 361–373. https://doi.org/10.1080/15022250.2021.1955739

JOHNSON TP. 2005. Snowball Sampling. John Wiley & Sons, Ltd. DOI: 10.1002/0470011815.b2a16070

KENNEDY JM, VARGUS B. 2001. Challenges in Survey Research and Their Implications for Philanthropic Studies Research. Nonprofit and Voluntary Sector Quarterly 30(3): 483–494.

KURNIAWAN F, ADRIANTO L, BENGEN GB, PRASETYO LB. 2019. The social-ecological status of small islands: an evaluation of island tourism destination management in Indonesia. Tourism Management Perspectives 31: 136–144.

LOIS GONZALES RC, ANTELO M. 2020. Fishing Tourism as an Opportunity for Sustainable Rural Development – the Case of Galicia, Spain. Land 9: 437.

LOPES PFM, MENDES L, FONSECA V, VILLASANTE S. 2017. Tourism as a driver of conflicts and changes in fisheries value chains in Marine Protected Areas. Journal of Environmental Management 200: 123–134.

MAMING JB, DELANTAR AFF, GABUYA PG. 2021. Sustainable Tourism Development in Boracay Island,

Malay, Aklan. International Journal of Multidisciplinary: Applied Business and Education Research 2(8): 699–711.

MENEGHELLO S, MINGOTTO E. 2016. Promoting sustainable development through fisheries-related tourism experiences: benefits from the integration between fisheries and tourism in Venetian coastal areas. International Journal of Sustainable Development and Planning 11(3): 447–457.

[MEA] Millennium Ecosystem Assessment. 2005. Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC. 137 p.

ONG LTJ, STOREY D, MINNERY J. 2011. Beyond the Beach: Balancing Environmental and Socio-cultural Sustainability in Boracay, the Philippines. Tourism Geographies 13(4): 549–569.

PILAPIL-AÑASCO C, LIZADA JC. 2014. Philippine Tourism: Evolution towards Sustainability. SHS Web of Conferences 12: 01032.

[PP] Presidential Proclamation No. 475. 2018. Proc. No. 475. Declaring a State of Calamity in the *Barangays* of Balabag, Manoc-manoc, and Yapak (Island of Boracay) in the Municipality of Malay, Aklan, and Temporary Closure of the Island as a Tourist Destination. Republic of the Philippines. 4p.

PROCLAMATION 1801. 1978. Declaring Certain Islands, Coves, and Peninsulas in the Philippines as Tourist Zones and Marine Reserve under the Administration and Control of the Philippine Tourism Authority. Republic of the Philippines.3p.

SAITO H, RUHANEN L. 2017. Power in tourism stakeholder collaborations: power types and power holders. Journal of Hospitality and Tourism Management 31: 189–196. http://dx.doi.org/10.1016/j.jhtm.2017.01.001

SARR O, BONCOEUR J, TRAVERS M, CORMIER-SALEM MC. 2008. Can Ecotourism Be an Alternative to Traditional Fishing? Economics of Poverty, Environment, and Natural-resource Use. p. 87-100.

ST. MARTIN K, MCCAY BJ, MURRAY G, JOHNSON T, OLES B. 2007. Communities, knowledge, and fisheries of the future. International Journal of Global Environmental Issues 7(2/3): 221–239.

TROUSDALE WJ. 1999. Governance in context: Boracay Island, Philippines. Annals of Tourism Research 26(4): 840–867.

[UN] United Nations. 2007. Indicators of Sustainable Development: Guidelines and Methodologies (3rd ed.). New York.

[WCED] World Commission on Environment and Development. 1987. Our Common Future. Oxford: Oxford University Press. 300p.