



Volunteer tourism, endangered species conservation, and aboriginal culture shock

Tzu-Ming Liu¹ · Keng-Kun Leung²

Received: 7 July 2016 / Revised: 26 June 2018 / Accepted: 25 September 2018 / Published online: 1 October 2018
© Springer Nature B.V. 2018

Abstract

We investigated the impact of ecological conservation volunteer tourism on aboriginal culture and ecological conservation. We present herein a case of green sea turtle conservation volunteer tourism at Orchid Island, Taiwan. We used field observations and in-depth interviews with semi-structured and open-ended questionnaires to collect data. Data and method triangulation approaches were adopted to ensure the reliability of the results. We presented that cultural changes resulting from volunteer tourism threaten the survival of endangered species. In addition, the failure of the market incentive mechanism and dysfunctional internal communication within the conservation organization, two issues that have not been reported in previous studies, can guide future studies on volunteer tourism and ecological conservation. We also provided practical recommendations for Orchid Island green sea turtle conservation, i.e., the combination of traditional and modern ecological methods, and the consideration of local norms and taboos during organizational planning. The planning and implementing of conservation activity that respects local customs fosters the support of the local people. Finally, implementing the locals' initial ecological conservation mechanisms can prevent the conservation activity from causing an undesirable threat to the conserved species.

Keywords Failure of the market incentive · Triangulation approach · Green sea turtle conservation · Tao · Cultural taboos

Communicated by Indraneil Das.

This article belongs to the Topical Collection: Biodiversity appreciation and engagement.

✉ Tzu-Ming Liu
liutm.tw@gmail.com

¹ Graduate Institute of Marine Affairs, National Sun Yat-sen University, No. 70, Lienhai Rd., Kaohsiung 80424, Taiwan

² National TaiChung University, TaiChung, Taiwan

Introduction

Volunteer tourism is a form of travel which includes volunteering in order to serve communities in destinations. Participants in volunteer tourism, also known as volunteer tourists, contribute to the community development and conservation of the tourist destination's natural environment (Wearing 2001). In recent years, the ubiquity and convenience of international transport, social networks and mass media have significantly improved citizens' social consciousness and increased their recognition of volunteer tourism, making volunteer tourism increasingly popular (Raymond and Hall 2008; Wearing and McGehee 2013; Young 2008).

Ecological conservation volunteers witness the multi-faceted positive influence of volunteer tourism on the tourist destination's social environment. Volunteer tourists have engaged in germplasm conservation and assisted ecological conservation organizations to repopulate endangered species and protect biological diversity (Brightsmith et al. 2008; Palacios 2010; Wearing and Neil 2000). The volunteers interact closely with the locals by volunteering their services, and close ties between the volunteers and locals are often established (Barbieri et al. 2012), which promotes a positive image of ecological conservation to the indigenous people and supports the local residents' as well, ultimately improving ecological conservation outcomes (Clifton and Benson 2006). Volunteers who come into close contact with wildlife not only enhance their wildlife awareness and knowledge but also strengthen their conservation awareness (Rattan et al. 2012). In addition, businesses related to volunteer tourism also benefit from the volunteer activity, which increases their support for conservation (Brightsmith et al. 2008).

Turtle conservation is an important success story in ecological conservation volunteer tourism. Relying on sea turtle volunteer tourism, turtle conservation organizations have helped to repopulate turtles at various tourist destinations worldwide (Chan 2006; Gray and Campbell 2007; Senko et al. 2011). Turtle conservation volunteer tourists engage in conservation work such as ecological monitoring, species protection, artificial propagation, and habitat patrol and maintenance to improve the chances of sea turtle survival. The economic incentives created by volunteer tourism are one of the key factors of the success of sea turtle conservation. The turtle conservation volunteer tourism programs in Mon Repos, Australia, Tortuguero National Park, Costa Rica and Ubatuba, Brazil have created employment opportunities for the locals (Campbell 2007; Gallo et al. 2006; Kamrowski et al. 2014). In addition, the lodging needs of volunteers can bring direct income to local communities (Gray and Campbell 2007). The non-consumptive use of sea turtle resources created by volunteer tourism has resulted in a reduction in poaching and the habitat destruction of sea turtles by local residents (Troëng and Rankin 2005). Economic incentives have encouraged the locals to change how they utilize the turtles and participate in conservation efforts, thereby enhancing the effectiveness of local sea turtle conservation. The success of turtle conservation volunteer tourism offers a good reference point for studying green sea turtle (*Chelonia mydas*) conservation in Orchid Island, Taiwan.

The threat to the survival of Orchid Island green sea turtles aggregated dramatically from the rapid development of tourism, changes in coastal land use and increased wildlife interference by tourists. To protect the green sea turtle population and its spawning habitat at Orchid Island, a green sea turtle conservation organization (hereafter referred to as the conservation organization) recruited green sea turtle conservation volunteers (hereafter referred to as the conservation volunteers) to go to Orchid Island and engage in green sea turtle monitoring, research and other conservation activities (hereafter referred to as green sea turtle volunteer

conservation tourism). The conservation organization hoped that successful applications of international volunteer tourism to sea turtle conservation could improve the effectiveness of Orchid Island green sea turtle conservation. However, after the introduction of green sea turtle volunteer tourism, the threat to the survival of Orchid Island green sea turtles persisted; in addition, periodic local aboriginal (Tao tribe) boycotts or protests of the conservation activities indicate that in this case, green sea turtle volunteer tourism has not reaped the desired results and has even caused grave social conflict and threats to conservation (Liu 2017).

Like other tourism models, volunteer tourism has a social, environmental and management impact on the tourist destination. Previous studies have noted that the asymmetrical relationship between locals and volunteer tourists is potentially harmful to the local culture (Conran 2011; Raymond and Hall 2008). Palacios (2010) found that when volunteer tourists could not meet the needs of the residents of the tourism destination, the residents became disappointed, which affected their bilateral relations and cooperation, even causing conflict or suspicion. In another study, insignificant economic incentives made it impossible for the local residents to experience the benefits generated by volunteer tourism, making it difficult to attract local support for conservation efforts (Campbell 2007). In addition, the rise in prices resulting from tourism development might add an economic burden to the local population (Pegas and Stronza 2010), generating antagonism. Moreover, volunteer tourism might alter the identity and cultural values of the local residents, causing culture shock (Guttentag 2009, 2011).

The conflict between Orchid Island green sea turtle volunteer tourism and the Tao tribe may have stemmed from their asymmetrical relationship, insufficient interactions between the volunteers and locals, the limited capacity of the volunteers and a lack of economic incentives, although these factors have not all been verified as causes of the conflict. Potentially deeper, more complex conflict issues have not yet been reported in the literature and require further clarification. Theoretically, volunteer tourism benefits conservation; however, at Orchid Island, green sea turtle volunteer tourism threatened green sea turtle conservation. To effectively protect green sea turtles, it is necessary to have a full understanding of the issues and impact of green sea turtle volunteer tourism with respect to the local culture.

Green sea turtle volunteer tourism has not achieved its intended goal at Orchid Island. Instead, it has caused community conflict and an existential threat to green sea turtles. It is necessary to have an in-depth understanding of what caused the Tao tribe to resist green sea turtle volunteer tourism to ensure the survival of the Orchid Island green sea turtle population, effectively use conservation volunteer tourism to increase human and material resources, re-activate and boost the inherent ecological knowledge and conservation mechanism of the Tao tribe, eliminate conflict between the conservation measures and the Tao tribe's lifestyle and enhance cooperation between the conservation organization and local communities. In this study, we conducted interviews with members of the Tao tribe and collected data from conservation volunteers (Liu 2017) to examine their disputes regarding green sea turtle conservation. We present herein a case study and new results on the social and cultural challenges of volunteer tourism and make several recommendations for the practice of green sea turtle conservation tourism.

Research methods

Research site

The study was conducted at Orchid Island (22.0436°N, 121.5484°E), which is a traditional habitat of the Tao ethnic group located off the southeast coast of Taiwan. Because of differences in geography and language, the Tao people have developed a culture that is entirely different from that of the other aboriginals on the island of Taiwan. Currently, the Tao tribe of Orchid Island still resides in traditional underground houses, uses canoes and observes traditional rituals on specific occasions, e.g., flying fish offerings and crab offerings. The unique geographical conditions of Orchid Island have nurtured its distinct ecological resources, including a wealth of rare protected species such as the Lanyu Scops Owl, Magellan Birdwing, coconut crab and green sea turtle.

The unique cultural and natural features of Orchid Island attract various types of tourists. The annual number of tourists increased 2.82 times from 47262 in 2000 to 133292 in 2017 (Bureau 2018), but the number of each types of tourists and their origination countries could not be identified. However, western tourists can be seen sometimes. The popularity of ecotourism is increasing over the past years. Tourists can participate in birdwatching, hiking, and recreational scuba diving and snorkeling. These tours and excursions are run by local and non-local operators. Nevertheless, the boom of tourism has caused serious cultural and ecological impacts on the island (Liu and Lu 2014). The green sea turtle, listed as an endangered species by IUCN, is one of these impacted species.

The beaches of Orchid Island are important spawning habitats for green sea turtles. However, the tourism industry has resulted in the construction of a large number of tourist facilities such as lodging, houses and restaurants in the coastal areas, causing environmental problems such as beach erosion, light pollution, etc. These environmental changes have severely impinged upon the habitat of the green sea turtle, affecting female turtle spawning and threatening the survival of the green sea turtle population. To protect green sea turtles, the conservation organization began monitoring them at Orchid Island in 1997. Several conservation volunteers were recruited on a yearly basis to go to Orchid Island and engage in green sea turtle conservation activities, including patrolling, monitoring, protective egg transferring, manufacturing conservation tools, sponsoring lectures on green sea turtle ecology and assisting and promoting the ecotourism of green sea turtles.

Survey method

A participant observation method was adopted wherein the investigators were involved in the daily lives of the Tao tribe and the conservation organization's work. They collected the locals' and volunteers' opinions on current issues in conservation volunteer tourism development via semi-structured and open-ended interviews. Because of the sensitive issues such as cultural taboos and conservation conflicts and to enhance the reliability of our methods (Decrop 1999; Gavin et al. 2010; Jones et al. 2008; Nuno and St. John 2015), data triangulation (the integration of a variety of methods) was performed.

We took part in the daily activities of the Tao tribe to learn about their living spaces and traditional cultural background, as well as their relationships with the green sea turtle and the conservation organization. By participating in the work of the conservation organization, we gained knowledge on the conservation organization's mode of operation

and interaction with the Tao tribe. The results obtained from the participants' observations were used to design questions for the in-depth interviews and seek out representative respondents.

The participant observations were conducted from October 2011 to May 2014, a total of 8 times, one of which lasted for 27 days and the rest of which lasted for 4–13 days. During the fieldwork time period, we participated in the daily lives of the Tao, i.e., in the reclamation of fields for taro cultivation, fishing, building houses and typhoon disaster rescue/recovery. We also visited the green sea turtle spawning habitat to observe the habitat environment and the interaction between the conservation volunteers and the Tao tribe and to understand the complex relationship between the Tao tribe and the green sea turtle conservation organization.

To understand the details of the phenomena found in the field observations and other social phenomena, which were difficult to observe but significantly affected the relationship between the conservation volunteers and the Tao tribe, we applied two in-depth interviewing methods, semi-structured interviews and open-ended interviews, for data collection.

Sampling method

The snowball sampling method was used for selecting the Tao tribe respondents because several people in the Tao tribe had no experience with the conservation organization; thus, it was difficult to find respondents who were familiar with the research topic using a general probabilistic sampling method. The snowball sampling was divided into four modes: resident introducing, volunteer introducing, expert introducing and self-seeking. The samples derived from the 'resident introducing' mode were primarily introduced by the respondent residents themselves and their referrals; suitable respondents were effectively found and a decreased interview-refusing rate was noted. The samples derived from the 'volunteer introducing' mode were chiefly introduced by conservation volunteers who identified Tao tribe individuals who came into direct contact with the conservation organization. The samples derived from the 'expert introducing' mode were predominantly introduced by knowledgeable experts in anthropology or volunteer activity planning on Orchid Island; the resulting Tao tribe samples were familiar with the traditional culture, field research methods and volunteer activities. Because the samples acquired using the aforementioned methods were inadequate based on participant observations and to improve the diversity and representativeness of our data source, the "self-seeking" sampling mode was applied to find Tao tribe members that were closely related to green sea turtle conservation work. The diverse sampling method used in the present study is similar to the method of data triangulation proposed by Decrop (1999), which ensures the reliability of interview data.

We interviewed 20 respondents; 11 of the interviews were semi-structured with Tao tribe locals, and nine of the interviews were open-ended. The sample size of the Tao tribe included 20 persons, aged 30–68 years, of which 16 were males and four were females.

Results

We used thematic analysis on the data, i.e., the data were classified according to keyword relevance, and the resulting themes were extracted. The analysis resulted in four problematic themes of green sea turtle volunteer tourism: "Conservation work violates traditional taboos", "Conflict between green sea turtle ecotourism and traditional cultural taboos",

“Differences in conservation concepts” and “Training and screening of conservation volunteers”. Each of these themes and their related interviews are presented in the following sections, wherein the following alphabetic coding convention is used: O indicates that the respondent was a volunteer; LR, LV and LS indicate that the respondent was introduced by a ‘resident’, ‘volunteer’ or ‘expert’, respectively, and LI indicates that the respondent was introduced from the interviewer’s ‘self-seeking’ behavior.

Conservation work violates traditional taboos

The conservation volunteers observed the spawning of green sea turtles on the beach of Orchid Island and measured the physiological characteristics of the green sea turtles and their eggs. Green sea turtles are perceived by the local Tao tribe as a source of evil spirits and diseases, and the sandy beach has traditionally been a taboo area. Because the conservation volunteers approached the taboo area and touched its evil spirits, the Tao tribe believed them to be the spreaders of evil spirits, diseases and curses. Thus, the Tao tribe rejected the conservation volunteers and their green sea turtle conservation measures.

The beach of Orchid Island was the main work site of green sea turtle tourist volunteer activity. On a nightly basis, the volunteers went to the beach to record data on the sea turtles’ crawling and nesting.

Our work mainly consists of going to the beach to look for green sea turtle crawling trails. (O1002)

Every day we perform shifts to patrol the beach. The majority of our work is done at the beach, including looking for turtles and noticing when they come ashore. (O2003)

In the evening, we go patrol the beach to see if the turtles have come ashore. (O2006)

When green sea turtles were observed crawling ashore, the conservation volunteers collected samples of the female turtles and turtle eggs.

We are to find the mother turtles that have laid eggs, and label them and take tissue samples. (O2006)

We obtain green sea turtle tissue for genetic analysis; in addition, we also measure the turtle’s shell and record other information such as the diameter and weight of the egg. (O2003)

The beach that the volunteers visited passed by a cemetery. The Tao tribe believed that the cemetery and its surrounding areas contained evil spirits. The sand from the cemetery and its proximate areas was regarded by the Tao tribe as the blood and flesh of their ancestors. Any of this sand was considered to be a curse to the tribe if it was brought back to them.

The sand from the grave is not allowed in the house because it had mingled with the blood and flesh of the dead. If you inadvertently bring sand to the house, you bring evil spirits to the house. If you want to curse someone, you spread sand from the grave in his/her house. (LS018)

The locals are very sensitive to bringing sand from the beach to their houses. There is a graveyard next to the beach, so they very much oppose the conservation activities. (O5011)

In addition, the Tao tribe also believes that contact with green sea turtles causes disease; the traditional word for green sea turtle is “irang,” which means cursing others. Thus, green sea turtles are believed by the tribe to be a source of evil spirits and diseases. The conservation volunteers went to the beach, a taboo area, and made contact with green sea turtles, the source of evil spirits and diseases. Therefore, the locals believed that the volunteers had violated taboos and might “bring bad luck to the tribe”.

They believe that green sea turtles can be evil spirits. (O1001)

Conflict between green sea turtle ecotourism and traditional cultural taboos

Many international conservation organizations garner the support of the local community for conservation groups and their participation in conservation through the economic benefits generated by ecotourism [15]. However, in our case, the Orchid Island green sea turtle ecotourism promoted by the conservation organization actually threatened the survival of green sea turtles because it did not contribute to the local economy and violated the traditional taboos of the Tao tribe.

The traditional Tao belief that green sea turtles are evil spirits is a key reason for the ineffective development of Orchid Island green sea turtle ecotourism .

That side (of the beach) is the grave area, and the locals will not go to that place (the beach). (LI005)

Because here (this beach) happens to be the cemetery, most people are not willing to approach here (this beach). (LV012)

The local residents rarely go down here (this beach) because they believe that green sea turtles are ominous evil spirits. (O1002)

To them, green sea turtles are bad omens. (O1004)

Because of the cemetery and evil spirit taboos of the Tao tribe, the locals bound by these taboos rejected passing through the cemetery and having contact with green sea turtles. They were repulsed by anything related to green sea turtles, including green sea turtle ecotourism in taboo areas. In addition, the Tao tribe people believed that the green sea turtle ecotourism promoted by the conservation organization would only cause more interference with the green sea turtles:

They (the conservation organization) are promoting green sea turtle ecotourism, and this is causing more people to want to see green sea turtles. When the tourists go to see the turtles, who is going to be responsible for the maintenance of the turtles? Who is going to be responsible for maintaining the order of the visitors? (LI010)

To the Tao tribe, the green sea turtle ecology signs marking the green sea turtle habitat made it possible for volunteer tourists to independently locate green sea turtles without seeking assistance from the Tao tribe or the conservation organization, making it difficult to control the tourists’ disruption of their land.

Do not erect the green sea turtle habitat signs. Once erected, the visitors will discern the spawning locations of the green sea turtles. (LI005)

In the traditional culture of the Tao, green sea turtles and turtle eggs are not traditional foods, and the locals did not approach or disturb green sea turtles. Green sea turtle

ecotourism created a new way for the locals to utilize green sea turtles and violated their beliefs in separating themselves from the green sea turtles and allowing for the natural reproduction of the turtles. Only the Tao locals who were not bound by traditional taboos engaged in green sea turtle ecotourism activity. The green sea turtle ecotourism organization's lack of recognition of traditional taboos resulted in serious interference issues:

They are exposing the green sea turtle habitat to interference, and keep exposing it to interference. Some Tao locals were making money by taking tourists to see the green sea turtles. These are bad guys because they violate the taboos. (LI005)

Once, after a local guide took visitors down (to the beach), the guide urged me to see if the green sea turtles were laying eggs. I told the guide that the green sea turtles were not yet laying eggs, but the guide still snuck visitors into the green sea turtle spawning area. (O1007)

The tourist guide took out a camera and directly shot the spawning turtles with flash. (O2006)

The conservation volunteers also worried that the green sea turtle ecotourism activity might disturb the green sea turtles:

From another standpoint, because the green sea turtles are famous, many tourists are very keen on seeing them. But the tourists know little about the species and are not civic-minded enough to avoid causing harm when they are watching the green sea turtles. For example, they are in non-compliance with the rules of the beach when they interfere with green sea turtles coming ashore to lay eggs. (O1009)

Differences in conservation concepts

Marked differences emerged between the conservation concepts and measures of the conservation organization and the Tao locals. To reduce the impact of tourist activity on the green sea turtles, the conservation organization's measures involved human interventions to achieve conservation, such as relocating turtle eggs:

We will be moving the eggs. (O1001)

However, the traditional conservation concept of the Tao tribe was that the most effective conservation approach was to let the turtles multiply freely and prevent the outside world from exerting excessive influence on the natural environment:

We believe that green sea turtles have been living here freely and laying their eggs. We Orchid Island people (Tao tribe) never interfered with their activities. (LI010)

We don't care about the green sea turtles and the green sea turtles don't care about us; they are living their own lives. (LS018)

We Tao people believe that the green sea turtles thrive here and leave them alone. Don't change their habits. (O1002)

Even if the green sea turtles experienced habitat loss, the Tao people believed that the mother turtles should choose where to lay their eggs. If green sea turtles disappeared from the beach of Orchid Island, they believed it would be the result of natural evolution:

Ecological conservationists should let the turtles thrive naturally. Research is welcome, but you cannot interfere with the turtles' daily lives. The green sea turtles thrive here, indicating that this place suits them. (LV012)

Even if the eggs are washed away by waves, it is still the mother turtle's choice. The mother turtles choose to lay their eggs here, you should not move the eggs elsewhere and change the hatching place of the turtles. (LS028)

Tao people respect nature. If nature wants green sea turtles to lay their eggs somewhere, it should stay that way, and we should not interfere with that process. (O1016)

The difference in conservation concepts between the conservation organization and the Tao tribe led to obvious differences in conservation measures for the green sea turtles, and several residents questioned the conservation organization's methods, particularly their engagement in egg relocation:

The restoration of green sea turtles should involve protecting their original environment and making the beach a place where they can lay eggs at any time without any threat to their survival, as opposed to manually moving the eggs to other places. (LI010)

Some respondents even viewed the conservation organization as the culprit that was causing ecological disturbance of green sea turtles:

We have been harmonious with green sea turtles for a very long time. The conservation organization caused the imbalance. (LR014)

It is the outside researchers and volunteers who have caused the increased interference with green sea turtles. (LS027)

The conservation volunteers also stated that the Tao people were dissatisfied with the conservation organization's methods, particularly concerning egg relocation:

They feel very surprised at our moving the egg nest. (O1001)

Several aboriginals claimed that these green sea turtles have been here for hundreds of years and got along with their ancestors very well. They are still alive, why do you interfere with them (green sea turtles)? Why do you move the nests? (O1009)

The older generation of the Tao tribe believes it's better to leave the turtles alone. (O2003)

He felt that the way we disturb the turtles is not conservation at all, but hindrance. (O1004)

It is worth noting that all the conservation volunteers perceived the dissatisfaction of the Tao people with the conservation organization and clearly explained the reason for it. The issue has still not been addressed, which indicates that the work experience of the conservation volunteers has not motivated the conservation organization to adjust or revise their conservation measures and volunteer activities.

Lack of cultural and social training and interaction in conservation volunteers

In addition to the conflict between the conservation organization's work and that of the traditional Tao culture, we also found that the training and community work of the conservation volunteers had an impact on the Tao tribe's perception of them.

Several Tao people mentioned the positive interactions they had with conservation volunteers in the past:

Previously, the conservation volunteers worked hard to pick up the garbage on the beach, and we had more interaction with them. (LI005)

This year's conservation volunteers like to play more, they are not like the old ones who took initiative. They don't have significant interaction with the residents. (LR014)

When the tourist volunteers actively engaged in community services and took the initiative to interact with the locals, the Tao locals had a more favorable impression of the conservation volunteers.

In addition to the conservation volunteers' active participation in community services and interaction with the locals, the training of the conservation volunteers was also very important to the volunteers' reputation. If the conservation volunteers were properly trained to have a solid understanding of Tao culture, taboos, local cultural characteristics and potential problems, the conflicts due to lack of mutual understanding could have been avoided. However, the training courses of the conservation organization only focused on how to properly use equipment and take measurements.

All the volunteers were together briefed on the ecology of the green sea turtle as well as on our future work. (O1002)

Before we go, we are introduced on the equipment that we might use, and then we operate the equipment to learn how to use it. (O1001)

They introduced to us what we would do on the beach and taught us how to measure the crawling trails and shells and use the tools. (O1004)

The training of the conservation volunteers focused on the ecology of the green sea turtle and the use of equipment; the instruction on Tao culture was very limited:

The conservation organization has very weak (inadequate) training. The training, mostly on the research equipment, lasted less than a day. Regarding the culture, we were instructed to not touch the ship and take precautions when taking pictures of the underground house. The training on the traditional culture of Orchid Island was seriously insufficient. (O1016)

Interviewer: Do you know what green sea turtles signify in the Tao traditional culture?

O1007: I do not know.

Interviewer: So do you know the significance of green sea turtles in the local culture?

O1008: I do not have an understanding of it yet.

This lack of training content on Tao culture led to several conservation volunteers having misunderstandings of the Tao culture:

They believe that green sea turtles are evil spirits because they lay eggs under screw pines, which, to the Tao people, are places of evil spirits, so they think that the green sea turtle is also an evil spirit. (O1001)

The above interview exhibits serious culturally erroneous observations. Screw pines typically grow in coastal areas, however, screw pines did not grow on the beach in question;

thus, it was not possible for the green sea turtles to lay their eggs under screw pines. Before the burial of their deceased, the Tao pass a young screw pine leaf across their lips to pray for good health, which suggests that the screw pine tree is not a place of evil spirits, and regarding it as such is undoubtedly a cultural misunderstanding. The conservation volunteers' misunderstanding of Tao culture not only caused cultural conflict between the volunteers and the Tao tribe but also led to a self-styled attitude of supremacy in the volunteers, which was likely to provoke the criticism of neo-colonialism:

The seniors' conservation ideas may not be good. (O1001)

I think it's better to teach the correct concept of conservation to the locals of Orchid Island rather than to the tourists, which is more helpful for conservation. (O1009)

Because the conservation volunteers had a shallow understanding of the traditional culture and conservation views of the Tao people, they believed that the Tao had a "lack of concept of conservation", and the volunteers had a "correct concept of conservation". The volunteer respondents acted as "ecological experts" by exhibiting their cultural superiority and imposing their conservation ideas upon the Tao people, which exactly portrays the type of neo-colonialism alleged by Conran (2011), Gray and Campbell (2007) and Palacios (2010).

Because the conservation organization inadequately trained the volunteers on Tao cultural and social interactions, the volunteers failed to understand Tao traditional culture. When they misinterpreted Tao culture, it caused damage to the relationship between the conservation organization and the Tao tribe.

Conclusion

Expecting to reproduce the international success of volunteer tourism with sea turtle conservation at Orchid Island, the conservation organization of the present study adopted volunteer tourism to engage in green sea turtle conservation at Orchid Island. However, the local Tao tribe did not support and, at times, blocked the green sea turtle conservation activity promoted by the conservation organization. Some residents even threatened the conservation organization with never allowing them to enter Orchid Island again for green sea turtle conservation. Through participant observation and in-depth interviews, we investigated the causes of the unexpected outcomes of Orchid Island green sea turtle volunteer tourism. To this end, we used an "information triangular" approach to ensure the reliability of the interview content and thematic analysis to analyze the data.

We discovered four problematic themes in Orchid Island green sea turtle volunteer tourism: "Conservation work violates traditional taboos", "Conflict between green sea turtle ecotourism and traditional cultural taboos", "Differences in conservation concepts" and "Training and screening of conservation volunteers". The violation of traditional taboos originated from the fact that the volunteers passed through a cemetery, a taboo area, at night and touched green sea turtles and turtle eggs, which the Tao believed to be the embodiments of evil spirits and diseases. Taken together, these violations caused the Tao to view the volunteers with repulsion, and they refused to cooperate with the conservation volunteers. The difference in the conservation views between the Tao and the conservation organization is illustrated by the Tao's belief that the turtle eggs should not be relocated and that improving the habitat environment of the turtles constituted sufficient conservation activity, whereas the conservation volunteers believed that due to the deterioration of their habitat environment, the turtle eggs

needed to be relocated to a more favorable environment to enhance their hatchability. The effectiveness of Orchid Island green sea turtle ecotourism was limited by the cultural taboos of the Tao people, who were unwilling to allow tourists to walk across the cemetery to observe the turtles. In addition, the green sea turtle ecotourism activity at Orchid Island failed to create economic benefits for the Tao tribe. The Tao people believed that the ecotourism activity that was actively promoted by the conservation organization attracted too many tourists to the spawning habitat of the green sea turtles, which increased their interference with the ecological environment of the green sea turtle. The Tao people who accepted green sea turtle ecotourism violated their cultural taboo of keeping their distance from green sea turtles, thereby increasing their interference with the turtles. The conservation organization lacked optimal screening and training methods for the conservation volunteers, resulting in conservation volunteers who were unable to appreciate the traditional culture of the Tao tribe. The volunteers' inadequate understanding of the Tao culture or attitudes of supremacy, in which they believed their ideas of conservation were superior to those of the Tao tribe, caused them to impose their conservation values upon the Tao, resulting in neo-colonialism.

We found that green sea turtle volunteer tourism had a negative impact on the culture of the tourist destination, which supports the conclusions of previous studies. The results of this study confirm the presence of negative interactions between the conservation volunteers and the local community, which underscores the potential damage to the local culture caused by volunteer tourism that was raised by Conran (2011) and Raymond and Hall (2008). The study results also verify that the volunteer tourist activity did not meet the needs of the residents of the tourism destination, that conflict between the residents and volunteer tourists arose and that the neo-colonialism concerns raised by Palacios (2010) are well-founded. Guttentag (2009, 2011) believed that volunteer tourism could weaken the self-identity and cultural values of the residents of the tourist destination. In this study, we not only observed such cultural changes but also found that these cultural changes also threatened the endangered species. The green sea turtle ecotourism promoted by the conservation volunteers caused some locals to alter their Tao taboos against approaching green sea turtle habitats and touching green sea turtles and their eggs. This cultural change directly elevated the threat to the survival of green sea turtles by introducing greater human interference with green sea turtles coming ashore to lay eggs.

In addition to this negative ecological impact, we also found rarely addressed market incentive mechanism failures and dysfunctional internal communications within the conservation organization. The market incentive mechanism contributes to the success of international sea turtle conservation. However, because this mechanism violated Orchid Island traditional taboos, very few members of the Tao tribe were motivated to get involved in green sea turtle-related activity by this mechanism. In addition, the Tao people who participated in the conservation efforts caused interference with the green sea turtles. This indicates that the market incentive mechanism cannot be universally applied; its planning and use must take the local culture into account. In addition, the fact that the conservation volunteers all elaborated upon the ecological and cultural issues they encountered at Orchid Island, but the problems persisted, suggests that there were internal communication obstacles in the conservation organization that rendered the decision-makers in the conservation organization unable to detect and respond to the problems. Previous scholars have emphasized the importance of volunteer training in conservation tourism organizations (Tomazos and Cooper 2012) and event planning (Sin 2010). In this study, the dysfunction of the organization's internal communication mechanism had a negative impact on the outcome of volunteer tourism.

Although this study highlighted the conflict between conservation volunteer tourism activity and the Tao tribe, it is noteworthy that both the conservation volunteers and the Tao locals were in consensus on the green sea turtle conservation and that the green sea turtle cultural taboos of the Tao tribe can contribute to the turtle conservation. We recommend that the conservation organization consider the green sea turtle cultural taboos of the Tao tribe, which will enable the Tao tribe's acceptance of the conservation organization and reduce their rejection of and repulsion to green sea turtle conservation work. After the green sea turtle cultural taboos are emphasized and taken into serious consideration, increased human resources can be invested into supervising taboo violations to deter conservation activity misconduct. The conservation organization should halt its promotion of green sea turtle ecotourism and shift the focus of its ecotourism to alternative ecological resources on Orchid Island or to cultural tourism involving the Tao tribe. These measures would encourage tourism that benefits the local Tao tribe and create opportunities for cooperation.

Touching green sea turtles and turtle eggs, conducting physiological measurements and relocating eggs are indispensable components of green sea turtle conservation that cannot be discontinued because of the cultural taboos of the Tao people; however, the conservation organization can still adopt several measures to gain the acceptance of the local tribe. We recommend that conservation volunteers observe the traditional Chu Zhang ceremony after completing their shift and departing from the beach. The volunteers should pass young screw pine leaves across their lips to pray for peace and fully clean the sand from their bodies to eliminate "bringing bad luck to our tribe". Although the practice of relocating green sea turtle eggs remains controversial, the conservation organization can still earn the acceptance of the Tao tribe. We recommend that the conservation organization inform the Tao tribe about the attenuation of the green sea turtle habitat and the effect of light pollution on the turtles. We suggest that they describe the effects of environmental change to the Tao tribe, including the scientific basis of the need for egg relocation. They should be assured that before and after egg relocation, the traditional exorcising ceremony of the Tao tribe will be performed to avoid the dissemination of evil spirits, diseases and curses. Combining traditional cultural norms with modern ecological methods will enable the organization to plan feasible conservation measures.

Volunteers should be trained in cultural understanding and community service. The different concepts and measures applied by the traditional Tao and modern conservationists need to be fully addressed to improve the volunteers' understanding and respect for the Tao culture. Community service activities such as cleaning the beach, as mentioned by the Tao respondents, should be implemented. Conservation volunteers can make good use of their professional expertise to offer an ecology course to the Tao people to compensate for the shortage of basic education teachers at Orchid Island or improve the expertise of the locals on monitoring the environment, which would help win the acceptance and support of the locals.

In this study, we presented and analyzed the pitfalls of green sea turtle volunteer tourism. Cultural changes resulting from volunteer tourism threaten the survival of endangered species. In addition, the failure of the market incentive mechanism and dysfunctional internal communication within the conservation organization, two issues that have not been reported in previous studies, can guide future studies on volunteer tourism and ecological conservation. We also provided practical recommendations for Orchid Island green sea turtle conservation, i.e., the combination of traditional and modern ecological methods, and the consideration of local norms and taboos during organizational planning. The planning and implementing of conservation activity that respects local customs fosters the support

of the local people. Finally, implementing the locals' initial ecological conservation mechanisms can prevent the conservation activity from causing an undesirable threat to the conserved species.

Acknowledgements Tzu-Ming Liu gratefully acknowledges financial support from Ministry of Science and Technology, Taiwan, R.O.C. under Grant no. NSC 101-2621-M-002-032, NSC 102-2621-M-002-027, and MOST 103-2621-M-002-019.

References

- Annual statistics on tourism (2018) Tourism Bureau, M.O.T.C. Republic of China (Taiwan). <http://recreation.tbrc.gov.tw/asp1/statistics/year/INIT.ASP>
- Barbieri C, Santos CA, Katsube Y (2012) Volunteer tourism: On-the-ground observations from Rwanda. *Tour Manage* 33:509–516. <https://doi.org/10.1016/j.tourman.2011.05.009>
- Brightsmith DJ, Stronza A, Holle K (2008) Ecotourism, conservation biology, and volunteer tourism: a mutually beneficial triumvirate. *Biol Conserv* 141:2832–2842. <https://doi.org/10.1016/j.biocon.2008.08.020>
- Campbell LM (2007) Local conservation practice and global discourse: a political ecology of sea turtle conservation. *Ann Assoc Am Geogr* 97:313–334. <https://doi.org/10.1111/j.1467-8306.2007.00538.x>
- Chan E-H (2006) Marine turtles in Malaysia: on the verge of extinction? *Aquat Ecosyst Health Manage* 9:175–184. <https://doi.org/10.1080/14634980600701559>
- Clifton J, Benson A (2006) Planning for sustainable ecotourism: the case for research ecotourism in developing country destinations. *J Sustain Tour* 14:238–254. <https://doi.org/10.1080/09669580608669057>
- Conran M (2011) They really love me!: intimacy in volunteer tourism. *Ann Tour Res* 38:1454–1473. <https://doi.org/10.1016/j.annals.2011.03.014>
- Decrop A (1999) Triangulation in qualitative tourism research. *Tour Manage* 20:157–161. [https://doi.org/10.1016/S0261-5177\(98\)00102-2](https://doi.org/10.1016/S0261-5177(98)00102-2)
- Gallo BMG, Macedo S, Giffoni BdB, Becker JH, Barata PCR (2006) Sea turtle conservation in Ubatuba, Southeastern Brazil, a feeding area with incidental capture in coastal fisheries. *Chelonian Conserv Biol* 5:93–101. [https://doi.org/10.2744/1071-8443\(2006\)5%5b93:STCIUS%5d2.0.CO;2](https://doi.org/10.2744/1071-8443(2006)5%5b93:STCIUS%5d2.0.CO;2)
- Gavin MC, Solomon JN, Blank SG (2010) Measuring and monitoring illegal use of natural resources. *Conserv Biol* 24:89–100. <https://doi.org/10.1111/j.1523-1739.2009.01387.x>
- Gray NJ, Campbell LM (2007) A decommodified experience? Exploring aesthetic, economic and ethical values for volunteer ecotourism in Costa Rica. *J Sustain Tour* 15:463–482. <https://doi.org/10.2167/jost725.0>
- Guttentag DA (2009) The possible negative impacts of volunteer tourism. *Int J Tour Res* 11:537–551. <https://doi.org/10.1002/jtr.727>
- Guttentag DA (2011) Volunteer tourism: as good as it seems? *Tour Recreat Res* 36:69–74. <https://doi.org/10.1080/02508281.2011.11081661>
- Jones JPG, Andriamarivololona MM, Hockley N (2008) The importance of taboos and social norms to conservation in Madagascar. *Conserv Biol* 22:976–986. <https://doi.org/10.1111/j.1523-1739.2008.00970.x>
- Kamrowski R, Sutton S, Tobin R, Hamann M (2014) Potential applicability of persuasive communication to light-glow reduction efforts: a case study of marine turtle conservation. *Environ Manage* 54:583–595. <https://doi.org/10.1007/s00267-014-0308-9>
- Liu T-M (2017) Unexpected threat from conservation to endangered species: reflections from the front-line staff on sea turtle conservation. *J Environ Plan Manage* 60(12):2255–2271
- Liu T-M, Lu D-J (2014) The cultural and ecological impacts of aboriginal tourism: a case study on Taiwan's Tao tribe. *SpringerPlus* 3:347
- Nuno A, St. John FAV (2015) How to ask sensitive questions in conservation: a review of specialized questioning techniques. *Biol Conserv* 189:5–15. <https://doi.org/10.1016/j.biocon.2014.09.047>
- Palacios CM (2010) Volunteer tourism, development and education in a postcolonial world: conceiving global connections beyond aid. *J Sustain Tour* 18:861–878. <https://doi.org/10.1080/09669581003782739>
- Pegas F, Stronza A (2010) Ecotourism and sea turtle harvesting in a fishing village of Bahia, Brazil. *Conserv Soc* 8:15–25. <https://doi.org/10.4103/0972-4923.62676>
- Rattan JK, Eagles PFJ, Mair HL (2012) Volunteer tourism: its role in creating conservation awareness. *J Ecotour* 11:1–15. <https://doi.org/10.1080/14724049.2011.604129>

- Raymond EM, Hall CM (2008) The development of cross-cultural (Mis)understanding through volunteer tourism. *J Sustain Tour* 16:530–543. <https://doi.org/10.1080/09669580802159610>
- Senko J, Schneller AJ, Solis J, Ollervides F, Nichols WJ (2011) People helping turtles, turtles helping people: understanding resident attitudes towards sea turtle conservation and opportunities for enhanced community participation in Bahia Magdalena, Mexico. *Ocean Coast Manage* 54:148–157. <https://doi.org/10.1016/j.ocecoaman.2010.10.030>
- Sin HL (2010) Who are we responsible to? Locals' tales of volunteer tourism. *Geoforum* 41:983–992. <https://doi.org/10.1016/j.geoforum.2010.08.007>
- Tomazos K, Cooper W (2012) Volunteer tourism: at the crossroads of commercialisation and service? *Curr Issue Tour* 15:405–423. <https://doi.org/10.1080/13683500.2011.605112>
- Troëng S, Rankin E (2005) Long-term conservation efforts contribute to positive green turtle *Chelonia mydas* nesting trend at Tortuguero, Costa Rica. *Biol Conserv* 121:111–116. <https://doi.org/10.1016/j.biocon.2004.04.014>
- Wearing S (2001) *Volunteer tourism: experiences that make a difference*. Cabi Publishing, Wallingford
- Wearing S, McGehee NG (2013) Volunteer tourism: a review. *Tour Manage* 38:120–130. <https://doi.org/10.1016/j.tourman.2013.03.002>
- Wearing S, Neil J (2000) Refiguring self and identity through volunteer tourism. *Loisir et Société/Society and Leisure* 23:389–419. <https://doi.org/10.1080/07053436.2000.10707537>
- Young T (2008) Mediating volunteer tourism alternatives: Guidebook representations of travel experiences in Aboriginal Australia. In: Lyons KD, Wearing S (eds) *Journeys of discovery in volunteer tourism*. Cabi Publishing, Wallingford, pp 195–209