UNIVERSITY OF THE PHILIPPINES

Master of Science in Environmental Science

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Towards the sustainable management of SCUBA diving tourism: Understanding diver-dependent threats to coral communities in Balicasag Island, Bohol, Philippines

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Abstract

SCUBA diving tourism has grown rapidly in recent years. It has been gaining industry and academic interest and attention because of its potential impacts to the marine environment. SCUBA diving and its related activities, such as anchoring and sediment stirring, generally have not garnered much concern on their effects in the long-term survival of coral reefs, as opposed to issues such as overfishing, natural disasters, coral bleaching, and crown of thorns infestations. However, it has been widely documented that SCUBA diving can significantly contribute to coral breakage and abrasion that increases susceptibility of corals to disease, hampers coral growth, and reduces abundance and distribution of the benthic communities. While considered highly localized, the impacts of SCUBA diving may have substantial effect on the overall health conditions of coral reefs and communities. Balicasag Island in Panglao, Bohol is one of the top diving destinations in the Philippines with more than 40,000 divers visiting annually. With a diving industry spanning more than 30 years that is heavily dependent on its coastal and marine resources, this research delves into the management and sustainability of Balicasag Island as a diving destination by understanding the relationships of divers, SCUBA diving tourism industry, host community, and the marine environment.

The first part of the study looks into the trends, management interventions, regulations, tourism demand, and tourist experiences through the diver survey (n=354) and key informant interviews (n=7). Estimates from the dive shop survey (n=175) reveals that two dive sites, namely Black Forest and Diver's Haven, exceed the carrying capacity of 60 dives per site per day at a daily average of 119 and 100 dives respectively. The second part of the study discusses factors that influence diver contact rates based

on in-water diver observations (n=49). Dive guides are more likely to make contact than guests (p=0.011) as a result of in-water intervention practices. Branching corals are most susceptible to accidental contacts, while massive corals to intentional contacts (p=0.001).

The third part of this study focuses on diver damage and its relationship to morphological assemblage of the dive sites and dive usage. Results show that there is a significant relationship between diver damage and the percent cover of branching (p=0.05) and massive (p=0.05) corals. There is also sufficient evidence to suggest that dive usage influences diver damage (p=0.014). From these results, the ideal carrying capacity per site should be set at 48 dives per day to be within the 4% acceptable damage level set by the local government unit (LGU). However, improving management interventions may allow the LGU to retain its current carrying capacity level by improving monitoring dive usage per site and investing on educating divers and dive guides on marine conservation. The recommendations proposed from the results of this study are thus geared towards creating a culture of environmental awareness and concern to ensure the sustainability of Balicasag Island as a prime diving destination.

Keywords: SCUBA diving tourism, impacts of diving, coral damage, sustainability