

Economic valuation of whale shark tourism in Cenderawasih Bay National Park, Papua, Indonesia

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Abstract. Anna Z, Saputra DS. 2017. *Economic valuation of whale shark tourism in Cenderawasih Bay National Park, Papua, Indonesia. Biodiversitas 18: 1026-1034.* The whale sharks aggregation in the waters of Cenderawasih Bay has an impact on improving the marine tourism industry in the region. On the other hands, Whale Shark is one of the species listed in the Red List of Threatened Species by the International Union for Conservation of Nature (IUCN), the vulnerable status, means that a whale shark populations have been reduced by 20% to 50% within 10 years or three generations. The decline numbers of whale sharks caused by human activities that damage the fish and the habitat, such as fishing and tourism activities. This is due to the lack of public awareness about the function and value of these resources and its habitat. The whale shark has inherent value as marine resources, and has an environmental services value, in relation to tourism activities. This paper measures the economic value and environmental services of the whale shark and its habitat. The method of Travel Cost is used to calculate the value of expenditures incurred by both foreign and local tourists. The study also measured the value obtained by tourist operators, the value of fishing activities, and the value of the habitat, through the people's Willingness to Pay (WTP), using Contingent Valuation Method (CVM). From the result of the overall economic valuation can be determined the estimated value of whale shark tourism, as well as Cenderawasih Bay National Park area, amounted to IDR 35.5 trillion. The policy implication of this research is the need for appreciation of the whale sharks value, as well as its habitat, by managing and developing conservation areas, and community capacity building on the understanding of the importance of whale sharks and its conservation.

Keywords: Whale shark tourism, economic valuation, Travel Cost Methods, Contingent Valuation Methods, Willingness To Pay

INTRODUCTION

Indonesian economic condition that has not much been improving in recent decades, coupled with the depletion of natural resources and environmental degradation which is also worsened, prompting the need for more innovative thought, to develop more environmentally sound and sustainable economic activities, and reduce the pressure of exploitation of natural resources and the environment. One of the activities that are considered to provide a significant economic contribution to the future, when the exploitative of nonrenewable natural resources, such as oil, gas, and minerals were already short, is tourism (WTTC 2015)

A wealth of natural resources and the environment with an incredible potential, which can be relied upon for the tourism development in Indonesia, is a coastal and marine resource. Those resources are storing wealth and natural beauty, which can be benefited to be developed sustainably, as a tourism industry. One of the areas, now of concern and have a high demand to be developed as a marine tourism destination in Indonesia, is Cenderawasih Bay. This area has an extraordinary wealth of biodiversity and natural beauty that is difficult to surpass by other coastal areas in Indonesia. One particular biodiversity in this area, which is hard to find in other coastal areas in Indonesia, is the species aggregation of Whale sharks that can be seen throughout the year, as the region is a habitat for the species (Stacey et al. 2008; Mangubhai et al. 2012).

The whale shark (*Rhincodon typus*), is one of the rare species with the largest size among other fish in the sea (Last and Stevens 1994; Chen et al. 1997; Compagno 2001; Andrzejacze et al. 2017). This species has the high migratory capability and has their habitat in tropical and warm seas (Colman 1997; Colman 1997b). These species included in the red list of the International for the Conservation of Nature (IUCN 2017), as a species whose status is particularly vulnerable because its population reduced by between 20-50%, for 10 years or three generations of the whale shark. This fish is also included in the list of Appendix II of the Convention on International Trade in Endanger Species (CITES 2017), which requires regulations to be more cautious in the trade of products of this species, to prevent population decline. The population decline can also be indicated by the decrease in the total catch, reported by several studies including Watts (2001), Theberge and Dearden (2006), and Myers et al. (2007).

The decline of the whale shark population is due to their habitat in coastal waters, which is vulnerable to anthropogenic activities, including illegal, unreported and unregulated (IUU) fishing. The whale shark caught a lot in some areas because it is believed to have various benefits for health, so the demand for this species is quite high, especially in China and Taiwan. The scarcity of whale shark is also due to the whale shark habitat in the coastal waters which is susceptible to many human disturbances, including tourist's activity and water transportation. Whale