IOSR Journal of Environmental Science, Toxicology and Food Technology (IOSR-JESTFT)
e-ISSN: 2319-2402,p- ISSN: 2319-2399.Volume 13, Issue 8 Ser. I (August. 2019), PP 14-16
www.iosrjournals.org

The Effect of Fisherman Floating Anchor Utilization to Bawean Island Coral Reefs

Ompang Reski Hasibuan[1], Moh. Shoheh[1], Diken Yus Damara[1], Muchamad Hafid[1], Imroatul Fadlilah[1], Sukari[1], Kevin S. Gunawan[2], Annisaa A. Septianthy[2], Totok R. Biyanto[2]

[1]*PT. PJB UP Gresik, Gresik, East Java, Indonesia*
[2]*Institut Teknologi Sepuluh Nopember, Surabaya, East Java, Indonesia*
Corresponding Author: Ompang Reski Hasibuan

Abstract: *This research was carried out by PT PJB UP Gresik Power Plant, Gresik, Indonesia to support Indonesian sustainable development goals (SDGs), The goal of this program is to provide sustainability of coral reef by changing the conventional anchor to floating anchor.The benefit of utilization of floating anchors for fishermen as a form of coral reef conservation on the coast of the Bawean island can be seen that the utilization of floating anchors on Bawean island has the huge potential benefit to protect coral reefs. Up to June 2018, coral reefs have been protected increase up to 0.69 Ha. The utilization of floating anchors through the biodiversity program by PT PJB Gresik contributes to Indonesia's SDGs program on coral reef conservation activities about 0.0000018% of the total national target.*

Date of Submission: 03-08-2019 Date of acceptance: 19-08-2019

I. Introduction

Indonesia is an archipelagic country consisting of 13,466 islands with a land area of 1,922,570 km^2 and water area of 3,257,483 km^2. Based on the one map policy in Law No. 4 of 2011, extensive coral reefs in Indonesia based on analysis of satellite imagery were around 2.5 million hectares [1]. Coral reefs are one of the most productive and richest ecosystems on earth of biodiversity, however now a day the coral reefs condition is threatened [2].

Conservation and management of coral reefs is very important, because of the highly productive coral reef ecosystems can support the lives of local fishermen [3]. Optimum coral reef habitat will affect the population of fish and will provide social and economic benefits for the fishermen community. Coral reefs have functionsas a place for living of fish and other biota, to protect the coast from waves, to support educations and research activities, as well as tourist attractions.

Coral reefs conditions status in Indonesia is divided into 4 parts, namely bad, sufficient, good, and very good. From eight coral observation stations, there are 6 stations in sufficient status and 2 others were in good status. Based on measurements carried out by Metta in collaboration with PT PJB Gresik, the coral reef ecosystem in Desa Daun, Bawean located about 500 meters from the shoreline of Bawean Island and around Noko Selayar Island, the condition of coral reefs on the coast of Bawean Island is better than the coral reefs on Noko Selayar Island[4]. It based on data that 58% of dead coral cover on Noko Selayar Island while in the South of Bawean Island 45% of the dead corals were found. Refer to benefit of coral reef and its real condition nowadays, coral reef conservation is needed as an effort to support Indonesia's sustainable development goals (SDGs) program [5]. This paper will describe the implementation of fisherman floating anchor in Bawean Island coral reefs .

II. Material And Methods

This research was carried out by PT PJB Gresik Power Plant, Gresik, Indonesia to support Indonesian sustainable development goals (SDGs), The goal or this program is to provide sustainability of coral reef by changing the conventional anchor that have potential to destroy coral reef to floating anchor as shown in Table 1 and Figure 1. The location of the research is Bawean Island.

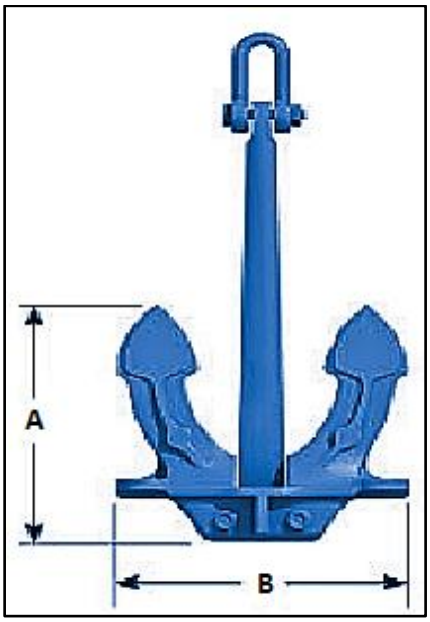

Figure no 1.Dimension of conventional anchor

Table no 1. Dimension of conventional anchor

No	Boat weight (kg)	A (mm)	Effective area (m^2)
1	500	810	0,71
2	750	927	0,93

Source : DuBye Ltd Marine and Oilfield Equipment

In chase the boat has weight of 500 kg, the boatweight anchor is 0.71 m^2. Therefore, each tourist / fishery'sboat with a frequency of 1 time per day throws, its anchor has potentially damaging coral reefs area of 0.71 m^2 / day. The remain discussion will provide the illustration of the successful floating anchor.

III. Results and Discussions

In order to protect the coral reef ecosystem, PT PJB UP Gresik began to facilitate reef tourism areas by placing floating anchors, change the anchor throwing system with just tie the rope to the floating anchor. This can reduce the damage to coral reefs caused by floating anchors by tourist / fishermen boats that deal with coral reefs.

Based on table no 2, it can be seen that there is an increase in the potential of coral reefs saved by using floating anchors on Bawean Island starting from 2017 until June 2018 which reaches 0.69 Ha. Moreover,based on the SDGs Indicator Metadata by the 2017 Ministry of National Development Planning / National Development Planning Agency (BAPPENAS) that the coral reef conservation program carried out by PT PJB Gresik is included in the SDGs No. 14.5.1 with the goal increase the waters conservation area as much as 20 million ha until 2019.

Table no 2: Calculation of Saved Coral Reef Potential on Bawean Island

Year	**Accumulation of floating anchors installed**	**Potential damage to coral reefs / one time throw (m^2)**	**The potential of protected reef areas (m^2/hari)**	**The total potential of saved coral reefs (ha / year)**
2017	11	0,71	7,81	0,29
2018	31	0,71	22,01	0,40
Total				0,69

The effect of using floating anchors for fishermen as a form of coral reef conservation on the coast of the Bawean island, it can be seen that the utilization of floating anchors on Bawean island has the huge potential benefit to protect coral reefs.Up to June 2018, coral reefs have been protected increase up to 0.69 Ha.The utilization of floating anchors through the biodiversity program by PT PJB Gresik contributes to Indonesia's SDGs program on coral reef conservation activities about 0.0000018% of the total national target.

IV. Conclusions

From the results and discussions about the benefit of using floating anchors for fishermen as a form of coral reef conservation on the coast of the Bawean island, it can be concluded that:

- The use of floating anchors on Bawean island has the potential to protect coral reefs until June 2018 reaches 0.69 Ha.
- The use of floating anchors through the biodiversity program by PT PJB Gresik contributes to Indonesia's SDGs program on coral reef conservation activities up to 0.0000018% of the national target.

Acknowledgements

The authors gratefully thank PT. PJB UP Gresik Indonesia for providing the facilities in conducting this research.

References

[1]. Giyanto, et al. 2017. Status Terumbu Karang Indonesia. Puslit Oseanografi-LIPI:Jakarta, ISBN : 978-602-6664-09-9
[2]. Lauretta, B, Reytar K. Spalding, M. Perry, A. 2012 Menengok kembali Terumbu Karang yang Terancam di Segitiga Terumbu Karang. World Resources Institute.
[3]. Guntur, Murachman & Soemarno. 2000. Konsep Pengelolaan Kawasan Konservasi Laut Selat Madura dan Sekitarnya. AGRITEK.
[4]. Metta. 2017. Pemetaan Flora dan Fauna di PT PJB UP Gresik Tahun 2018. PT. Meganesia Tirta Foresta, Cetakan Pertama, ISBN : 978-602-50266-6-9.
[5]. Kementerian PPN/Bappenas. 2017. Metadata indikator Tujuan Pembangunan Berkelanjutan / Sustainable Development Goals (SDGs) Indonesia Pilar pembangunan Lingkungan Hidup. Kementrian PPN/ Bappenas:Jakarta, ISBN : 978-602-1154-89-2

Ompang Reski Hasibuan" The Effect of Fisherman Floating Anchor Utilization to Bawean Island Coral Reefs" IOSR Journal of Environmental Science, Toxicology and Food Technology (IOSR-JESTFT) 13.8 (2019): 14-16.