

Mangrove Rehabilitation Activities In Semarang Indonesia

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Abstract

Each resource utilization of coastal areas can cause changes in ecosystems with a certain scale. One of the damage caused is abrasion. Abrasion is a change in the shape of the beach or coastal erosion caused by an imbalance of dynamic beach interactions, both due to natural and non-natural factors. Abrasion can cause huge losses with damage to the coastal and coastal areas with all life in the region. The problem of coastal abrasion lately has tended to increase in various regions, including Mangunharjo Beach, Tugu District, Semarang City. The problems in this region are the higher abrasion rates which cause the loss of land around the shoreline so that the people's farms also disappear due to abrasion and damage to the mangrove exocytes from threats 3 W (Wideng, Wedhus, Wong) which can damage the existence of a mangrove ecosystem. The solution offered by the Polines Team is to assist partners in planting mangrove seedlings, which is one solution to prevent the spread of ponds lost due to abrasion and partners are trained to maintain and supervise mangrove ecosystems by the method of providing assistance, planting mangroves, monitoring and maintaining mangrove plants. The target of this activity is the planting of 1,200 stems of mangrove seedlings which are strengthened by as many as 1,200 stems in the pond area to prevent being exposed to abrasion and improve the economy of the community.

Key words: *Abrasion, Fish Pond, Mangrove*

1. Introduction

1.1 Situation Analysis

The problem of coastal abrasion lately tends to increase in various regions, including Semarang Beach. One of the areas that experienced severe abrasion was the West Semarang Beach which included Tugu District and West Semarang District. In these areas the problems that occur are quite severe, especially regarding the decline in land functions due to coastal abrasion and flooding of sea water in the pond area. The coastal damage occurred along approximately 2.25 km in Tugu Subdistrict including Mangunharjo Village, Mangkang Wetan Village, Randugarut Village, Karanganyar Village, Tugurejo Village and approximately 0.5 km in West Semarang District, Tambakharjo Village (Apriawan et al, 2012) .



Figure 1. Mangunharjo Coastal Area Map (Source: semarang.bps.go.id)

1.2 Partner Problems

The coastal area of Semarang has a sloping topography with a slope of 0-2% with most of its area almost as high as sea level even in some places below it (Aris I, et al, 2009). The city of Semarang has a problem of environmental damage caused by the inundation of tidal floods. This is because the city of Semarang has a relatively flat contour, making it difficult for drainage to drain water into urban areas, especially during high tides. In order for the impact of abrasion not to spread further, it must be immediately handled by referring to the spatial planning of the coastal area. In coastal areas, the pattern of coastal spatial planning is strongly influenced by the distribution of very tight protection zones. This is due to the highly dynamic coastal character but is vulnerable to changes. Adaptation of mangrove mangrove forest which is generally dominated by mangrove trees from four genera (Rhizophora, Avicennia, Sonneratia and Bruguiera), has a distinctive adaptive ability to live and develop on muddy substrates that are often acidic and anoxic. This adaptation ability includes: adaptation to low oxygen levels of mangrove trees having a root system that is typical of chicken claw type, and a strong buffer (Arief, 2003)



Figure 2. Location of Mangunharjo Pond

1. The higher level of abrasion causes the loss of land around the shoreline so that the farms of the residents also disappear due to abrasion
2. Damage to ex-mangrove ecosystems from threats of 3 W (Wideng, Wedhus, Wong) which can damage the existence of mangrove ecosystems.

2. Implementation Method

The method of implementing community service uses three stages, namely providing assistance, mangrove planting and maintenance and supervision of mangrove plants.

1. Providing assistance to the community through knowledge about natural disasters, basic concepts of coastal area disasters, disaster risk reduction in coastal areas
2. Mangrove planting through good seed selection, selection of mangrove planting sites, mangrove spacing planning, planting of mangroves
3. Supervision and maintenance of mangrove plants through the supervision of mangroves from the danger of damage, replacement of damaged / dead mangroves, empowering pond farmers in monitoring and maintenance activities.

3. Results and Discussion

- 3.1. Providing assistance to the community through knowledge about natural disasters, basic concepts of coastal area disasters, disaster risk reduction in coastal areas, Mangrove rehabilitation in Mangunharjo has been realized in an area of 70 ha from 1999-2019 through community empowerment in collaboration with stakeholders. Disasters are events or series of events that threaten and disrupt the lives and livelihoods of people caused by natural factors and / or non-natural

factors and human factors, resulting in human casualties, environmental damage, property losses, and psychological impacts. In the Republic of Indonesia Government Regulation Number 21 of 2008, concerning the Implementation of Disaster Management states Rehabilitation is the repair and recovery of all aspects of public service or society up to adequate levels in the post-disaster area with the main goal for normalization or the proper running of all aspects of government and people's lives in the region post-disaster.

In Mangunharjo, the Team socializing abrasion disaster mitigation in Tambak Mangunharjo is a series of efforts to reduce disaster risk, both through physical development and awareness and capacity building in the face of disaster threats.

Disaster mitigation objectives : 1). Reducing the impact caused, especially for residents, 2). As a guideline for development planning, 3).Increasing people's knowledge in dealing with and reducing the impact / risk of disasters, so that people can live and work safely.



Figure 3. Residents in Mangunharjo Village

3.2. Mangrove planting through good seed selection, selection of mangrove planting sites, mangrove spacing planning, planting of mangroves, The application of the silvofishery pattern to ponds is an integrated and sustainable activity between efforts to manage mangrove areas coupled with fishponds or fish farming due to the function of mangroves as a nursery ground. As many as 1200 mangrove plants were added, which were reinforced by 1200 stems of fish in ponds that were potentially affected by abrasion



Figure 4. Mangrove Planting

3.3. Supervision and maintenance of mangrove plants through the supervision of mangroves from the danger of damage, replacement of damaged / dead mangroves, empowering pond farmers in monitoring and maintenance activities. Developing Mangrove Ecotourism, and Utilization of Environmental Services. Mangrove care/ supervision begins with painting mangrove trees with environmentally friendly paint. The mangrove forest area around Mangunharjo Pond has the opportunity to be developed by increasing supporting facilities or infrastructure. The development of mangrove ecotourism can be harmonized with the development concept of Semarang City



Figure 5. Supervision and maintenance of mangrove plants

4. Conclusion

1. Providing assistance to the community through knowledge about natural disasters, basic concepts of coastal area disasters, disaster risk reduction in coastal areas, Mangrove rehabilitation in Mangunharjo has been realized in an area of 70 ha from 1999-2019 through community empowerment in collaboration with stakeholders
2. The application of the silvofishery pattern to ponds is an integrated and sustainable activity between efforts to manage mangrove areas coupled with fishponds or fish farming due to the function of mangroves as a nursery ground.
3. Developing Mangrove Ecotourism, and Utilization of Environmental Services. Mangrove care / supervision begins with painting mangrove trees with environmentally friendly paint

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6. Reference

- Apriliawan S R, Anugroho DS, Petrus S, 2012, *Daerah Rawan Genangan Rob di Wilayah Semarang*, Journal Of Marine Research. Volume 1, Nomor 2, hal. 174-180.
- Arief, A. 2003. *Hutan Mangrove Fungsi dan Manfaat*. Kanisius; Yogyakarta
- Aris I, Anindya W, Muhammad Helmi, Agus H, Prayogi, 2009, *Model Sebaran Penurunan Tanah di Wilayah Pesisir Semarang*, Jurnal Ilmu Kelautan Volume 14, Nomor 4, hal.21-28.

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Asyiwati, Akliyah, 2008, *Identifikasi Dampak Perubahan Fungsi Ekosistem Pesisir Terhadap Lingkungan Di Wilayah Pesisir Kecamatan Muaragembong*, Jurnal Perencanaan Wilayah dan Kota, Vol.14 No.1,P 5-13.

Mukhlisi,2017, *Potential Development of Mangrove Ecotourism in Tanjung Batu Village, Derawan Island District, Berau Regency*, J. Manusia & Lingkungan, Januari 2017, 24(1):23-30.
DOI: 10.22146/jml.22939

Republic of Indonesia Government Regulation Number 21 of 2008, *Concerning The Implementation Of Disaster Management States*