

CONSEPSUALSITEDESIGNLANDSCAPEMARINE
TOURISMDISASTER RESPONSE
(Study on theMarine National ParkZoneTakabonerate, Selayar Regency,
SouthSulawesi)

Muhamad and Fuadi Afif

Tourism Studies, Graduate School of Gadjah Mada University Yogyakarta

Email: memet_andra@yahoo.com

drmuhammad@ugm.ac.id

fuadi.natgeo@gmail.com

This study aims to produce a landscape design concept appropriate, functional and aesthetically pleasing, provide comfort, protection, beauty, and rational in terms of both physical and non fisik. Tapak landscape is intended to prevent a decline in the quality of the physical region that serves as a conservation area and marine waters. The method used is an inventory, analysis, planning, evaluation, and methods of landscape design using the method of Simmonds. The results of the study will accommodate the footprint of user activity that marine tourism activities can be carried by travelers include tourist activities on coastal landscapes and seascapes well above sea level (marine) as well as below the ocean surface (submarine).

Keywords: *Site landscape, marine tourism, disaster response.*

1.1. Background and Problem Formulation

Landscape planning is a conceptual design of adjustment between landscape and programs will be developed to preserve the ecosystem and landscape views in order to reach the best use (Marsh, 1983). Nurisjah and Pramukanto (1990) states that the planning approach should be effective to provide all forms of services and space for human users.

Beginning of the planning process begins by observing, interpreting, and responsive to the interests and needs of people and accommodate various forms of service, facilities, and various forms of services other available resources as well as human cultural values and Sumidi Mohammed (2014).

Site planning is an act against the tread in order to keep the environment necessary prior analysis and site planning of Muhammad and Sumidi (2014). Good planning process should be a dynamic process, interrelated, and mutually support (Gold, 1980). So that the elements of these plans can be accommodated in the planning process is continuous.

Marine landscape of the landscape in the form of a very wide area, more than two-thirds of the earth's surface. This study examines the strategic potential that could be developed as a strong foundation of nation building, especially in the field of nautical tourism. Marine tourism is a type of alternative tourism of various types of activities that exploit the potential traveled and marine waters.

Based on the identification of potential marine we have the following characteristics (a) ocean Indonesia is a region rich in potential for marine biodiversity (mega marine biodiversity) in the world, has 8500 species of fish, 555 species of sea grasses and 950 species of coral, (b) . centuries ago the seas of Indonesia and strait-selatnya a bustling international transport pathways for both traveled and important trade and cruise lines (yacht); (d) has the potential of marine tourism on the waterfront (waterfront) or at sea and waters such as estuaries, lagoons, coral clusters (barrier reef), seagrass and others.

Utilization of marine resources and marine environmental services in the nature conservation area and a conservation area refers to the principles in the utilization berazaskankelestaria ecological, social and economic. Utilization does

not take into account the preservation of the landscape tread, will lead to a decrease in the rate of degradation of landscape quality of the site itself. Potential environmental services marine park either directly or indirectly can be utilized measurable and not measurable by humans, among other things: nautical tourism, water resources utilization, oxygen supply, protection of hydrological systems and carbon offsets (Inventory Guidelines for Environmental Services, PHKA 2003.). In line with the development needs of nature tourism, the nature conservation area as a marine park has a unique phenomenon of nature, natural beauty, diversity of flora and fauna is very potential to be developed as an object and as a tourist attraction rides marine research, education and development of science. In order object and marine tourist attraction can be fully utilized primarily for landscape sustainability and tourism activities required comprehensive plan.

To maintain sustainable landscape management policies remain prudent in order not to have a negative impact on the environment and socio-cultural region surrounding communities. Businesses retain and use of environmental services for the benefit of marine nature tourism, should the principles of the conservation of marine tourism development, education, economy, recreation and the role / community participation, these factors have not been achieved. Many factors will undermine the sustainability of marine tourist attraction either by nature or by man. Damages include: **activities that are not environmentally friendly (bombs and stun), illegal fishing activities / over fishing which is not according to the rules along with other activities that damage the marine tourism area.**

1.2. PROBLEM FORMULATION

Takabonerate marine national park (TNTKBR) is a national park which is a nature conservation area (KPA) which has a native ecosystem, managed by the zoning system is utilized for the purpose of research, science, education, support aquaculture, tourism, and recreation. (Act No. 5 of 1990).Takabonerate National Park area is a habitat for hundreds of species of coral, seagrass, coral fish, macro-algae, molluscs, echinoderms and other marine life. Consisting of 18

small islands, 6 and 30 taka Bungin that form a ring / atolls, initial status: Decree No. 100 / Kpts-II / 1989 as a marine nature reserve. Designation: Decree No. 280 / KPTS- II / 1992, dated 26 February 1992 as a unit of the National Park with an area of 530 765 Taka Bonerate ha.

Marine park area has the third largest atoll in the world after Kwajifein in the Marshall Islands and Suvadiva in the Maldives. The total area of the atoll with 220,000 acres of coral reef distribution reaches 500 km². Since 2005 the National Park Taka Bonerate has been nominated to become a UNESCO world heritage site. Some of the most important activities in support of preservation is a series of islands Selayar anniversary at this location annually held festival titled Sail Taka Bonerate or previously called Takabonerate Island Expedition (TIE).

Until now, the area is still a pemafaatan direct utilization of available natural resources (fish, oyster, and other biota) by capturing directly in nature whereas cultivation efforts have not been going well. Exploiting the potential of extractive nature in the form of utilization of fish and other marine life, and still found a fisherman who catches fish in ways that, in principle, such as the use of environmentally damaging bomb (explosives), pushers, tindis traps and seines (gae).

Zone conservation at the landscape scale can not be separated from the pressure of human activities (Mohammed and Sumidi, 2014). In some cases, people even penetrated those areas of conservation for the benefit of their utilization of the area in the form of marine tourism services is still not optimal. Although, this highly prospective area to be developed, but much needed synergy between the various parties, both from the local government, tourism entrepreneurs, communities and other stakeholders so that the tourist marine tourism activities can done.

1.3. RESEARCH OBJECTIVES

The main objective of this study is:

How is the preparation of landscape design concept for the site and maintain marine tourism in anticipation of disaster caused by nature and man.

1.4. LITERATURE AND THEORY

Conception meeting space land-sea boundary (oceanic frontier space design) as a marine tourism landscape footprint is the most important part of the landscape footprint. Arrangement of land meeting the sea area that focuses on the harmony between them because of the mediation of land and sea is not seen as a separate entity and create a dichotomy in the arrangement. It is precisely through the introduction of ecologically depth, spatial, and technical advantages will be obtained and disadvantages of each element that will be answered in a model of coherent arrangement of tread landscape.

Gathering of the land-sea boundary, it is necessary to mention the quality of an area that will be useful as glasses in appreciating the landscape footprint. Structuring the landscape footprint is more directed to the physical character and the built environment of a region. Tread good landscape should be improving the physical-sensory experience and a feeling of mental (cognitive) in a region, so that the images are embedded in the frame of a strong regional character. It is composed by giving concern for preservation efforts, conservation and development at the same time, the spirit of togetherness in the placing of each tread landscape with scale and visual alignments *sekuenitas* without causing sharp contrast inequality.

Tread landscape areas should be closely intertwined with cultural relics and historical artifacts that could explain our past. In the end, good tread area landscape should help become more efficient, safe, healthy, comfortable, valuable, and have sustainability. Terms propriety above, then what must be considered in arranging the meeting of land and sea borders. There are some things that become ends in maritime landscape footprint that will bring business to the direction of a good arrangement, among others:

1. Uniting the area on land to the sea along the shores of the sea, with open spatial nodes in the form of land-sea open spaces, the main *jejalur*, making towing functions, utilizing existing elements typical.

2. 2 Make the waterfront accessible and foster a strong sense of identity and character of the waterfront area that is characteristic of marine to marine tourism of physical and non-physical aspects.
3. 3 Knowing the forms of marine and coastal management along coastal marine potentials widely: for the purposes of research, science, education, support aquaculture, tourism.
4. Identifying the strategic issues in the utilization of marine potential for marine tourism activities and provide policy direction in the development of marine tourism products that include attractions, amenities, and access to, the development of markets that include marketing and promotion, human resource development, institutional and institutional as well as management / mitigation and impacts.
5. Develop the concepts of development of nautical tourism on the basis of tourist activities, and the development of tourist destinations are complementary and synergistic both physical and non-physical.

Landscape, often given by geographers to understanding the landscape or the appearance on the surface of the earth, including the components of the result of human activities and influences. This understanding gives an indication that the scope of the landscape consists of physical elements, biotic elements and elements of human cultured. This landscape can be determined based on the desired boundaries. This means that the landscape can be defined in a macro-scale dimensions, meso and micro dimensions could also be in the. It is therefore very breadth of understanding of the landscape, the authors, including Peck, S. (1998), Turner, et al. (2001) sense given the landscape, including the following matters:

1. Landscape is always composed of the result of natural and man-made processes within a certain time period, currently and in the past.
2. Landscape always changing from time to time. But the changes are not in the same level. There is a gradual change, but there is a sudden change because of a natural disaster. In the event of a sudden change will inevitably happen recovery process that occurs slowly until it

reaches a new equilibrium. This balance can be characterized from the physical parameters, chemical and biological. Although this landscape dynamics occurred sometimes unexpected, but in a certain time can be predicted as a process of succession or degradation processes.

3. Landscape is an open system. The system is highly influenced by external factors, the landscape can be understood by taking into account the material cycle, energy flow and organisms.
4. Landscape is very diverse (heterogeneous) in the horizontal and vertical arrangement. Vertical aspect can be found in the layers that exist in the atmosphere, forest stands and soil layers. While the horizontal arrangement can be found from the land boundaries (landform), land units (land units) and land use (land use).

On a macro scale, the landscape can be set ranging from mountain top to the horizon where the ocean waters as a boundary, or land with a shoreline boundary. Such landscapes are landscapes in geomorphology perspective. But the landscape may also be stipulated in the meso-scale of a city or the countryside. While the micro-scale, the landscape can be defined within the region. Where noted, the landscape is essentially a macro scale is the earth's surface. Physically, the surface of the earth is made up of land, air and sea. These three components are called physiographic. So physiographic surface of the earth is made up of land, air and sea (Lobeck, 1939). The third component of the earth's surface, studied in different sciences. Land component studied in geomorphology, learned in the science of meteorology air and sea components studied in Oceanology.

Landscape ecology perspective, according to Forman and Godron (1986) is a heterogeneous land area composed of clusters of interacting ecosystems that are repeated in a similar form (Burel&Baudry 2004: 43), and as a mosaic of pieces - potongan habitats in which organisms move, live, reproduce, and eventually die (Groom et al. 2006: 440). In the perspective of human land use, landscape is defined as a result of the dynamics of the environment and the people who thrive

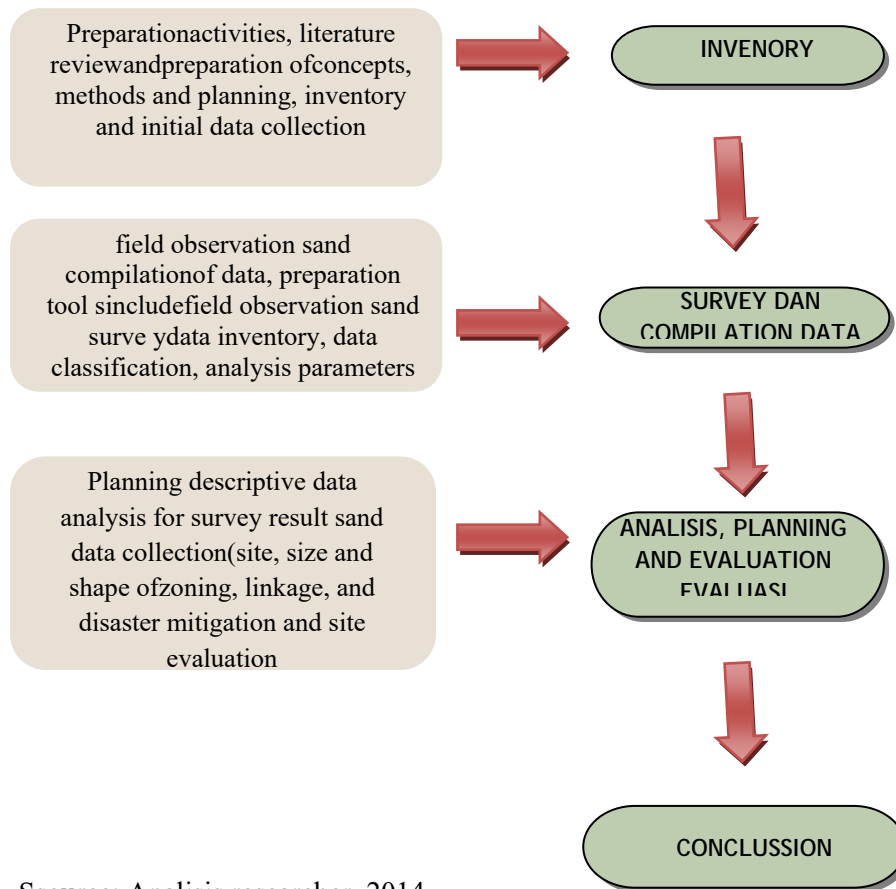
in it. Structure, organization, and dynamics of the landscape is constantly interact with ecological processes that occur in it (Burel&Baudry 2004: 44).

Landscape is built up of three elements, namely the matrix, patches (patch), and corridors. The matrix is the dominant element, patches and corridors are in it. Set of patches form a mosaic, while a collection of corridors forming network (network). The composition of the mosaic and the corridor forming the landscape pattern. In the patches and corridors, there are areas of the edges (edge) and interior areas. The edge of the area has a strong interaction with adjacent patches or matrix (Burel&Baudry 2004: 69).

Conservation area, the landscape scale, often in the area of human use, such as plantations, settlements, and mining. As a result, these regions into fragments for conservation areas. Conservation area is a small speck in the matrix plantations and settlements. Conservation areas is not unlike like "islands" isolated. Regions in waters that are designed through a landscape approach to be concerned about spatial patterns and ecological processes in the landscape. Some aspects of conservation priorities in looking at the landscape scale are: representation and community status (level keterancaman, endemicity), abiotic appearance, functional association community, abiotic gradients, large open areas, connections between natural areas, these migratory species, overall landscape pattern, process disturbances, and hydrologic processes (Peck 1998: 29).

1.5. METODE

The method of this study is the method used and the design of the landscape by using the method of **Simmonds namely**: inventory, survey data compilation, analysis, planning, evaluation, as follows:



Ssource: Analisis researcher, 2014

1.4.1. Qualitative Descriptive Analysis

Theoretically this method of trying to find the proper interpretation of the facts, study the problems of the area of the national park, as well as various perceptions that exist in the region, including the activities of the association of tourists, natural phenomena, and the process is carried out by menausiapenamanganan, anticipation and ongoing disaster mitigation and the effect of a variable on the observed phenomena.

Methods researchers examined certain phenomena that sample is a comprehensive study. The research team held a classification, as well as the study of phenomena by specifying a particular standard or a norm that is often referred to as normative survey (normative survey). In general, the purpose of the use of this method is to create a description, picture or painting in a systematic, factual

and accurate information on the facts, properties and relationships between phenomena that are being investigated.

1.5. ANALYSIS AND DISCUSSION

Landscape planning considerations in designing marine protected areas in the region through a landscape approach is the method mpenerapan Simmonds noted that the location (site), size, and shape and zoning systems, linkage (connectivity). including disaster mitigation and anticipation.

1. Tread 1 and the location (site): specifies the location in the landscape design program that has been designated as a conservation area that is the object of conservation is saved, conservation strategies will work executed. Some considerations in determining the location of the footprint area of landscape conservation sites, namely the representation of maximum biodiversity at these sites and ecological values they contain (Peck 1998: 93).
 - a. laying area (footprint) landscapes on location with maximum representation of biodiversity. For example, on the shores of forest landscapes that are water or swamp, there is a wetland biotic components of typical and important, the wetlands are included as a protected location in the landscape (Hansson & Angelstam 1991: 199).
 - b. laying area (footprint) landscapes on location with a high ecological value. For example, areas with high endemicity, or cruising areas overlap a number of species and vegetation (Peck 1998: 93). Another consideration in determining the location of the region there is a source habitat. Source habitat is the area that is higher reproductive rate than death rate. Possessed an important source of habitat conservation areas, as it can fix the sink habitat poorer through the spread of organisms (Groom et al. 2006: 424).



2. Determine the size of the footprint (site): Size is an important consideration in a footprint area of the landscape. A region with a large size are better than one small area. Advantages of a large area that is of area able to accommodate more species and accommodate ranges of species with extensive home-range. In addition, large areas will reduce the reduction and fragmentation of habitat (Peck 1998: 94), because the ratio between edge and core habitat habitat is large, so that the rate of extinction can be suppressed. Natural disturbance regimes that occur in large areas, no major effect on the survival of the organism, even the disorder can increase the population and the quality adaptation of one type of organism. Often there is no choice in determining the size of the region, due to the limitations of open land. Small footprint landscape will be vulnerable to edge effects. If there are wide ranges of species that region, it will overlap

with the landscape area. In addition, a small area that would trigger a local extinction, due to competition in memerebutkan resources. Small footprint landscape susceptible to inbreeding, particularly in the area of isolated islands, or on separate patches to other patches. This happens because there is no gene flow within the population. In the landscape of small footprint, especially in the form of islands in the atoll TNTBNR (Takabonerate), there should be an effort to build connections with other areas. This effort is important to create a path for the flow and control to form metapopulasi. In addition, the corridor also accommodates species, including marine vegetation has extensive cruising area.

3. Determine the shape of the footprint (site) landscapes, shapes also play a role in determining whether or not a landscape footprint. If the site is within a region or between matrix waters or close to residential areas, the round shape would be better than an elongated shape. Rounded area has a core area larger than the area that extends, so that will minimize edge effects (Indrawan et al. 2007: 327). The globular region is owned by TNTKBR (Takabonerate)
4. Connectivity between sites (footprint) region of the island though very small group isolated from each other waters must be based on the coordinates of the points that have been determined. PAs are fragmented from each other that are in the waters TNTKBR region should be connected in a network form the landscape. TNTKBR areas within the region that contained the arrangement between atolls (islands that empty middle and ring shaped) is an area adjacent waters, whether large or small, can be connecting with each other by corridors. Corridor is a path that connects the region with other areas that are close together (Simberloff et al. 1992: 399) and has historically been connected to each other (Saunders & Hobbs, 1991, in Peck 1998: 96). The aim is the establishment of the corridor as an alternative to the clarification of travelers jejalur, manage species, vegetation with extensive cruising area and a collection of corridors forming network (network) although the system water

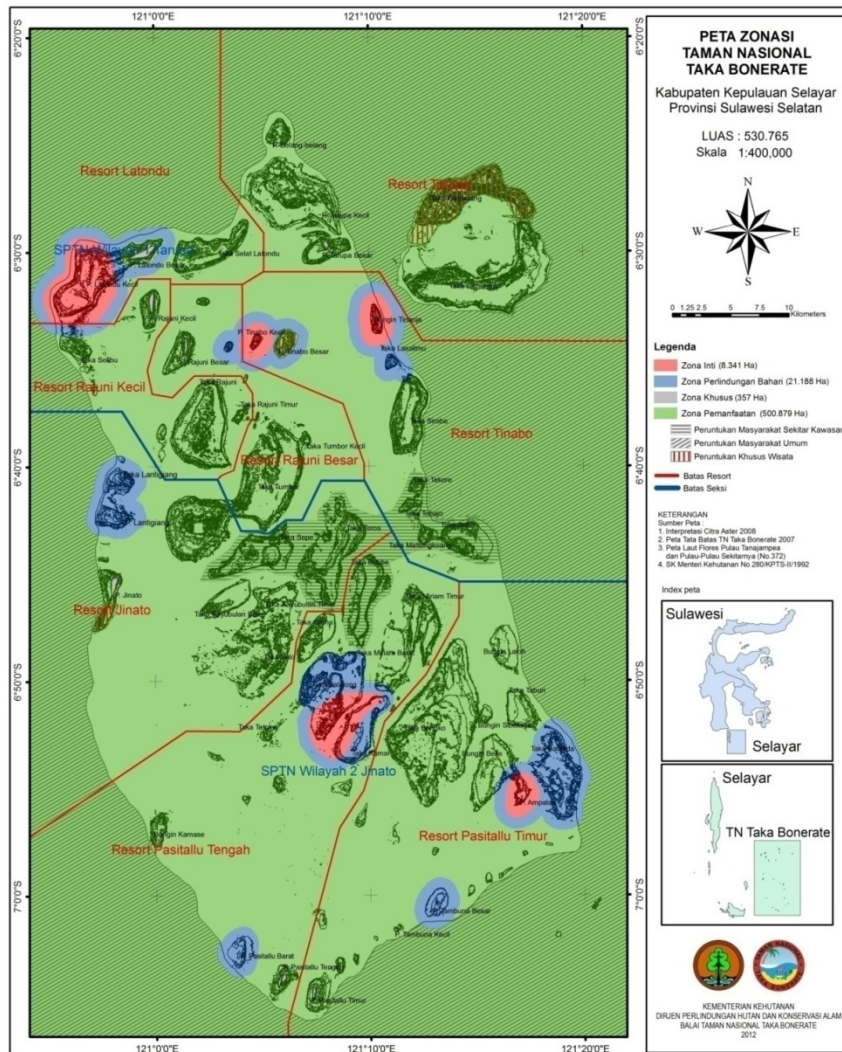


Figure 1 Connectivity Takabonerate region, 2012

Source: National Park Authority Takabonerate

5. Biosphere reserve in the waters of the landscape. One model that is developed is the establishment of a system in a conservation area zoning. Through the UNESCO Man and Biosphere program (MAB) develops a model of conservation-based zoning, which is called the biosphere reserves (biosphere reserve). The pattern and scale of the landscape, integrating the concept of ecosystem biosphere reserves and land-based activities primarily for the production of land (Guevara & Laborde 2008: 256). Biosphere reserves are developed with three zoning system, the core zone (core zone), a buffer zone (buffer zone), and the transition zone

(transition zone). Core zone is a zone that is filled by a majority of biodiversity (Guevara & Laborde 2008: 256), genetic richness and endemism (Peck 1998: 102), so it is fully protected. Human activities are accommodated in the buffer zone and the transition zone. In the buffer zone, local people can live and use the land to small-impact activities, such as searching for medicinal plants, honey, and firewood. Surveillance activities and community empowerment were also performed on biofer reserves, so that people no longer entirely dependent on forest products. Moreover, biosphere reserves can be exploited for the benefit of ecotourism, the buffer zone and the transition zone.

6. System model of zoning for marine tourism activities are part of a national park because the location, condition and natural potential of this space be used for nature tourism interests and conditions / other environmental services, as well as for the traditionally developed and utilized by the community to meet the needs of day-day, area. National Park is a Nature Conservation Area (KPA) which has a native ecosystem, managed by the zoning system is utilized for the purpose of research, science, education, support aquaculture, tourism, and recreation. The activities that may be performed in the utilization zone include: a) Protection and security by Central TN and other related parties, b) Inventory and monitoring of natural resources with the ecosystem; c) Exploiting the potential and condition of natural resources by the public in accordance with the agreement and applicable provisions of the Law No. 5/90, Law 31/2004, Law 45/2009, Regulation No. 7/1999, Candy Maritime Affairs and Fisheries No. PER.2 / MEN / 2011, c) Research (permission); d) Development of aquaculture education and support; e) The development potential and natural attractions; e) Development of habitat and populations; f) nature tourism exploitation and utilization conditions / environmental services; g) The construction of facilities and infrastructure management, research, education, nature and utilization conditions / environmental services; h) Restoration / recovery of resources; i) The flow

of traffic in the area of transportation. The activities should not be conducted in the utilization zone include: Taking rocks and marine life are protected, extraction of natural resources by using a compressor.

7. Anticipation of Disaster Mitigation and Landscape by Saving in natural phenomena. Disaster mitigation and anticipation can be done to maintain the landscape by the ocean waves caused by a long period by an impulsive disturbance that occurs in the ocean medium, such as earthquakes, volcanic eruptions or avalanches. Hazard analysis is addressed. Mapping the relationship between the activity of earthquakes, volcanic eruptions, avalanches seabed with the wave based on historical occurrence. From the results of the analysis are then identified and mapped the site of impact Mitigation wave is all an attempt to minimize losses and risk due to natural disasters. We need to realize, that the earthquakes are very rarely kill, kill it is generally the rubble caused by the earthquake and the victims are not protecting themselves from the building. Mitigation can be done in three stages: before they happen, and when it takes place after the
8. Mitigation and anticipation disaster rescue in the landscape by human disturbance. Mitigation and anticipation is done is done by the control system of the National Park Taka Bonerate this time there are a few ways: Functional Operation marsh pre-emptive and preventive undertaken with a view to preventing the occurrence of illegal activities in the National Park area. Repressive efforts undertaken only in illegal activity that can not be tolerated anymore, which is a pre-emptive efforts and preventive. For functional operation involving police Forestry (Polhut) and Forest Security Force Lainnya (TPHL). Pre-emptive efforts (early prevention), preventive (control and prevention) and repression (by law enforcement) are implemented with a view to provide a deterrent effect by taking decisive action against the perpetrators of illegal activities at the same time to prevent the occurrence of illegal activities in the National Park area Taka Bonerate involving personnel from several agencies. Some of that is being addressed is the capture of protected marine life (turtles, Napoleon,

ornamental fish and Kima) 5 cases of bombings and fish anesthesia and storage of explosives as much as ± 8 cases, discovery / retrieval of rock as much as ± 8 cases. The use of compressors in catching marine products as much as ± 24 cases

1. Evaluation in the conduct of activities that should and should not be on landscape water in each zone

Activity	Core Zone	Zone Special Use Zone	Use-Zona		Zona Khusus
			Appropriation community	Appropriations pecialtourist	
Appropriation specialtourist DA retrieval using gear	X	X	√	X	X
Supporting Aquaculture	X	X	√	√	√
Meti-Meti (mengambil biota laut)	X	X	√	X	√
Penelitian	Ijin	Ijin	ijin	ijin	Ijin
Sailing across (not stop)	X	√	√	√	√
Sailing and anchored	X	X	√	√	√
tourism	X	Ijin	ijin	ijin	Ijin
Restorasi/ pemulihan sumber daya	X	√	√	√	√
Education	Ijin	Ijin	√	√	√
Traditional ceremonies, religious rituals, historical and cultural sites	X	X	X	X	√
Use of Compressor	X	X	X	X	X
Decision rock	X	X	X	X	X
Intake of marine protected	X	X	X	X	X

Source : Analisis Researcher, 2014

Environmental problems driven by the problems that occur as a result of damage to natural human intervention in natural systems and caused by human

activity that does not have good environmental management. Growing ecological landscape of pattern development relearn thinking of the last few decades in which there phytosociology and biogeography, landscape design, geography, regional modeling, ecology-oretical, island biogeography (Turner, et al, 2001). Development of mapping technology in a particular region is one of the development of technology that can give a new contribution in the development of landscape ecology.



Figure 2: Attempts maintain the landscape as a tourist area with cypress waters shrimp to anticipate the erosion of sand land

Source: Documentation, 2014

One of the development of this technology is the mapping of existing agroecological zones. This mapping is done with the concept adapted to the physical conditions of the area so that there is a difference, especially plants with one region to another. Structuring a nature conservation area, is the main thing to be implemented, because the region with a well-organized, the management model to be applied to be effective, such as:

1. Measurement of the outer limits of the area that generates the data width = 530 765 ha area

2. The division of zones in the region that produces three types of zones within the TN Taka Bonerate thecore zone, the zone use (traditional and intensive) and the reserve zone.
3. Measurement and mapping zones that produce the specific conditions of each area and zone
4. Maintenance of the zone is a collaborative program with other components, which are expected to predefined zones can be run according to function
5. Program supporting arrangement (installation of a reference point on land in the waters, beacon lights, interpretation boards, mooring buoys).

The main problem in this program is still a lack of facilities and infrastructure at each zone boundary markers such as markers, mooring buoy, beacon lights and other means. Similarly, the control system of the designation of each zone is still weak, and monitoring the condition of natural resources in each zone that has not been taking place on an ongoing basis.



Figure3 Disaster marine habitats by humans with thewind charger compressor tireonly.Air flow is not clear due to thecomposition of other amazing marine habitats.

Source: National ParkTakabonerate, 2012

1.6. CONCLUSSION

In the conceptual design of marine tourism landscape is a landscape and seascape beach well above sea level (marine) as well as below the ocean surface (submarine) that in planning can (1) determine the location, zoning systems, to determine the measures to be important considerations in a landscape footprint. A

region with a large size are better than one small area as well as play a role in determining the form of either or not a footprint landscape (2) Connectivity marine areas isolated from each other and fragmented to be connected to each other and must be connected in a network form. Context modeling developed at this time is the establishment of a system of protected areas through zoning in the Man and Biosphere program (MAB) develops a model of conservation-based zoning,

REFERENCES

- Burel, F. & J. Baudry. 2004. *Landscape ecology. Concept, methods, and applications*. Science Publishers, Inc., New Hampshire: xvi+362.
- Guevara, S. & J. Laborde. 2008. The landscape approach: designing new reserves for protection of biological and cultural diversity in Latin America. *Environmental Ethics* **30**: 215-262.
- Groom, M.J., G.K. Meffe & C.R. Carroll. 2006. *Principles of conservation biology*. Sinauer Associates, Inc., Massachusetts: xxx+780 hlm.
- Hidayat, Mawan S. 2006. Landscape Ecological Pattern Of Tropical Agroforestry Efforts At Educational Forest Landscape Of Mount Walat, Sukabumi. *Eccotrophic* 5(1): 13-20.
- Hansson, L. & P. Angelstam. 1991. Landscape ecology as a theoretical basis for nature conservation. *Landscape Ecology* **5** (4): 191-201.
- Indrawan, M., R.B. Primack & J. Supriatna. 2007. *Biologi konservasi*. Yayasan Obor Indonesia, Jakarta: xviii+625 hlm.
- Mukaryanti, dkk. 2006. Keberlanjutan Fungsi Ekologis Sebagai Basis Penataan Ruang Kota Berkelanjutan. *Jurnal Teknologi Lingkungan* 7(1): 7-15.
- Muhamad dan Sumidi (2014), Pengelolaan lanskap untuk Kepariwisata Alam di kawasan Konservasi, Sekolah Pascasarjana, Universitas Gadjah Mada Yogyakarta.
- Muhamad dan Fandeli, (2007) Prinsip-prinsip Dasar Mengkonservasi Lanskap, Gadjah Mada University Press, Yogyakarta

- Peck, S. 1998. *Planning for biodiversity. Issues and examples*. Island Press, California: xiv+222.
- Simberloff, D.S., J.A. Farr, J. Cox & D.W. Mehlman. 1992. Movement corridors: conservation bargains or poor investments? *Conservation Biology* 6: 493-505.
- Status SK No. 100/Kpts-II/1989 sebagai cagaralam laut Penunjukan : SK Nomor: 280/KPTS-II/1992, tanggal 26 Pebruari 1992 sebagai Unit Taman Nasional Taka Bonerate dengan luas 530.765 ha Penetapan : SK Nomor: 92/KPTS-II/2001 tanggal 15 Maret 2001 sebagai Taman Nasional Taka Bonerate dengan luas kawasan 530.765 ha
- Simond. J.O. 1961. *Landscape Architecture*. Mc Graw-Hill Book Company. Inc. New York. Toronto. London.
- Siregar E. dan Djamilah. 2000. *Aset Wisata Bahari yang Tercemar*. Tamasya. Jakarta.
- Turner, dkk. 2001. *Landscape Ecology In Theory And Practice*. Springer Verlag. New York.