

Standard Criteria for Seagrass Beds Damage in Environmental Law Perspective

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Standard Criteria for Seagrass Beds Damage in Environmental Law Perspective

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A good and healthy environment is a basic right of every citizen guaranteed by the State Article 28 H paragraph (1) in The Law of 1945. This form of guarantee is in the form of an instrument to prevent pollution and damage to the environment, including the standard criteria for damage to Seagrass Beds. Seagrass Beds in development have been explored and implemented environmentally and society. The standard criteria for damage to Seagrass Beds are regulated in Article 21 paragraph (3) E in Law Number 32 of 2009 concerning Environmental Protection and Management and Ministerial Decree Number 200 of 2004 concerning Guidelines for Determining the Status of Seagrasses. In general, the percentage of seagrass cover calculated from 166 observation stations was 14.79%. Seagrass Padang is in a state of unhealthy condition. Seagrass Beds have a function as habitat breeding grounds, foraging, sheltering for marine biota, silencing sea waves, shoreline protection from erosion and sediment preventive. Damage to seagrasses threatens damage to seagrass ecosystems in coastal waters derived from community activities and management is did widely and pay more attention to economic value. In the end there is a lot of upheaval on the surface of the water, as a result of pollution and ecological aspects of the environment. Human and industrial activities have an impact on threat to the sustainability of Seagrass Beds. Damage to Seagrass Beds in Berau District, East Kalimantan, will be a threat to the environment, if not controlled by the East Kalimantan provincial

government. For this reason, the standard criteria for damaging Seagrass Beds are important for maintaining the preservation and sustainability of ecosystem in coastal area.

Keyword: Environmental Law, Damage, Seagrass Beds

Introduction

A. Background

Seagrass Beds are a complex aquatic ecosystem in tropical regions with high productivity and biodiversity. This ecosystem has the role of physics, chemistry, and biology. Biologically seagrass is a place for spawning ground, nursery ground, and feeding ground for aquatic biota, especially fish. Seagrass ecosystems have an important role in the ecology of coastal areas, because they become habitats for various marine biota; such as green turtles, dugongs, fish, echinoderms and gastropods that make seagrasses as feeding ground. Another role is to become a stronghold of defense (barrier) of the coral reef ecosystem from the threat of silting (sedimentation) originating from the mainland.

In general, the percentage of seagrass cover calculated from 166 observation stations was 14.79%. Seagrass Padang is in a state of unhealthy condition. Until now, world Seagrass Beds damage has reached 58%, and since 1980 every 30 minutes, the world has lost seagrasses as big as soccer fields¹. The distribution of global Seagrass Beds has been lost around 29% since the 19th century.

Seagrass Beds have a function as habitat breeding grounds, foraging and sheltering for marine biota, absorbing waves of sea water, protecting the coast from erosion and sediment preventive. Seagrass ecosystem has high ecological and economic functions, which is a place of growth for commercial fish, such as shrimp (*Penaeus* sp), several types of expensive shellfish such as Lola (*Trochus niloticus*) and Rock Fight

¹Dennison, W.C, 2009, *Global Trajectories of Seagrass, The Biological Sentinels of Coastal Ecosystem, In Global Loss of Coastal Habitat Rates, Causes and Consequencies (Duarte C.M.ed)*, hlm 91-107

Human Lawivities that cause seagrass damage include: Various human and industrial Lawivities on seagrass ecosystems both directly and indirectly, such as cleaning or harvesting seagrasses that are did for certain purposes, the entry of sediment or waste from the land, and oil pollution. Damage caused by boat propellers or ship anchors on the beach. Climate change, seagrasses disappear, especially in river mouths and in shallow waters. The main causes are rising temperatures in some shallow aquatic habitats, increased sedimentation and sediment resuspension due to high rainfall and frequency of flooding from rivers.

Damage to Seagrass Beds by environmental law has been regulated, by stipulated in the criteria for environmental damage which is a measure of the limits of changes in the physical, chemical and / or biological nature of the environment that can be tolerated by the environment to be able to continue to preserve its function. In Article 21 paragraph (3) E of Law number 32 of 2009 concerning Protection of Environmental Management, the standard criteria for damage to ecosystems include the standard criteria for damage to

Seagrass Beds and Ministerial Decree No. 200 of 2004 concerning Guidelines for Determining the Status of Seagrasses.

In perceptions of environmental law, standard criteria for damage, Seagrass Beds still have no deterrent effect on perpetrators of damage to Seagrass Beds, standard criteria for damage the existing environment is still inadequate. In fact, many seagrass meadows ecosystems in their development continue to experience a decline in environmental quality, due to pollution and environmental damage to Seagrass Beds. For this reason, a clear parameter in determining the standard criteria for Seagrass Beds damage must be upheld, in order to preserve the environment in the seagrass ecosystem. Environmental law instruments already exist, prevention and law enforcement efforts against perpetrators of damage to Seagrass Beds.

B. Research Problem

From the research problem above, the problem of existing Seagrass Beds damage, there are standards regulated in the Law of Protection and Law of Environmental Management, for this reason how prevention instrument in the standard criteria for damage to Seagrass Beds in the perspective of Environmental Law.

C. Research Objectives

The purpose of the study is to provide an environmental law instrument to reduce degradation of Seagrass Beds damage with the parameter of standard criteria for the quality of damage to Seagrass Beds in the perspective of environmental law.

D. Research Methods

The research that has been done was normative, with a legislative approach, conceptual approach, and case approach, with legislation primary legal materials, and field data as secondary data supporting legal arguments in this research.

E. Discussion

E.1 Construction of Standard Criteria of damage in Seagrass Beds.

Seagrass Beds are a typical shallow sea ecosystem in warm waters with sand bottom and dominated by seagrass plants, a group of plants belonging to Alismatales which adapt to saltwater². Seagrass Beds can only form in shallow sea waters (less than three meters) but the bottom is never open from the water (always inundated). It can be considered as part of the mangrove ecosystem, although Seagrass Beds can stand alone. Seagrass Beds can also be seen as an ecosystem between mangrove ecosystems and coral reefs.

According to expert, Seagrass is defined as the only flowering plant (Angiospermae) that is able to fully adapt in waters with a high salinity or live immersed in water and have true rhizomes, leaves and roots³. Some experts also define seagrass (seagrass) as water plants flowering, living in seawater, vein, leafy, coiled, rooted, and breed with seeds and shoots. Because the seagrass lifestyle is often in the form of a stretch, it is also known as Seagrass Beds, which is a stretch of seagrass vegetation that

covers a shallow coastal / marine area, formed from one type or more with dense or sparse density⁴.

Ecologically Seagrass Beds in coastal waters can Law as a protection area for important economical fish such as Baronang Fish and Turtle, provide nutrients to the surrounding waters, have a function as a primary producer, recycle nutrients, as biota habitat, fish spawning grounds, searching for eating a various marine biota, bottom

~~waters stabilizers, sediment traps, erosion barriers, and can produce 10 grams of dried~~
²Eleuterius, L.N. 1974. *A Study of Plant Establishment on Spoil Areas in Mississippi Sound and Adjacent Waters*. Report No. 74, US Army, hlm. 47.

³Fenchel, T 1977. Aspects of the decomposition of seagrasses. *Nat.Sci. Found.*, Leiden, 18p.

⁴Fonseca, M.S. 1987. The management of seagrass system. *Trop. Coast. Area. Manag.* 2(2): 5-10.

of fish which are inhabitants of seagrasses, found in Banten Bay 360 species, Bintan Island 33 species of fish from 22 families and 72 types of 39 fish families associated with seagrass in Teluk Awur Jepara.

Environmental parameters in the seagrass ecosystem can be seen from several parts, namely:

a. Temperature

Temperature, Salinity, Flow and Growth Wave of seagrass is strongly influenced by several environmental factors, including temperature, salinity, currents and waves of water.

b. Tides

The tides of the sea water cause changes in the depth of the waters and result in vortex currents known as tidal currents.

c. Nitrates and Phosphates

The ecosystem of Seagrass Beds are very vulnerable and sensitive to environmental changes such as dredging and **building** Law activities related to port development, real estate, tourism facilities, disposal of liquid organic waste, solid waste, pollution by industrial waste, especially heavy metals, agricultural waste pollution and oil pollution and use of unfriendly environmental fishing gear such as potassium cyanide and sickle / gareng. This condition can reduce the carrying capacity of the seagrass ecosystem in its function as a fish production site.

Seagrasses are also a very productive community so that invertebrate species of fish and fauna are abundant in these waters. Seagrass also produces large amounts of organic matter as a substrate for algae, epiphytes, microflora and fauna. If the water is receding very low or the full moon recedes, some Seagrass Beds will come out of the water, especially if the main component is *Enhalus acoroides*, so the birds come looking for food on this Seagrass. On the other hand, seagrass ecosystems are one of the most productive shallow marine ecosystems that support the life and development of living bodies in shallow seas.

There are several types and benefits of Seagrass meadows as follows:

- 1) *Thalassia hemprichii*, leaf sheaths are real and hard with a length of 3-6 cm. Hard, creeping rhizomes, segments of the rhizome have a sheath straight leaves are slightly curved, the edges of the leaves are not protruding, 5-20 cm long and 1 cm wide.

- 2) *Halophila ovalis*, leaves are oval and have petiole (petiole), width of more than 0.5 cm and a length of 1-4 cm, accompanied by clear lines of leaf bones as much as 10-25 pairs.
- 3) *Chymodocea rotundata*, the plant looks slim, leaves are curved and do not shrink towards the end of the leaf curved inward.
- 4) *Cymodocea serrulata*, the appearance of seagrass is similar to *cymodocea rotundata*, but the tip of the leaf is jagged and does not curl in, the rhizome is hard.
- 5) *Halodule uninervis*, in general, plants resemble *halodule pinifolia*, but are wider (up to 4 mm). The tip of the leaf has three teeth, two on the edge, one in the middle.
- 6) *Syngodium isoetifolium*, short plant, leaves silidris and rather long, reaching 25 cm, creeping rhizomes.

Seagrass Function According to Azkab (2000) the function of seagrass communities in shallow aquatic ecosystems is as follows:

- a) Water Base Stabilizers. As a result of dense leaf growth and dense root systems, seagrass vegetation can slow the movement of water caused by currents and waves and cause the surrounding waters to be calm. Rhizomes and seagrass roots can capture and combine sediments so as to improve the stability of the surface below them.
- b) Containers of Nutrients. Seagrasses hold a major function in the cycle of various nutrients and rare elements in the marine environment. For example, *Zostera* root can take phosphate from the decaying leaves found in the sedimentary cracks.

These nutrients can potentially be used by epiphytes when they are in a phosphate-poor medium.

- c) Food Sources. Seagrasses can be eaten by several organisms. From invertebrates only sea urchins feed on seagrasses, whereas from vertebrates, some fish (Scaridae, Acanthuridae), turtles and dugongs, while ducks and geese eat seagrasses if the seagrass appears at the lowest ebb.
- d) Places of Care and Residence. Seagrass Beds are a care area for several organisms.

E.2 Determination of Standard Criteria for Seagrass Padang Damage

- a) Parameter criteria for Seagrass Beds damage are did with stages to determine the damage and assessment of quality standards for Seagrass Beds by conducting several methods such as measurement methods and analysis methods. This is based on the Minister of Environment Decree Number 200 of 2004 concerning Standard Damage Criteria and Guidelines for Determining the Status of Seagrasses. The transect method and sample plot are sampling the population sample of a community with an example approach that is on the line drawn through the ecosystem area, the measurement mechanism⁵:
- b) The location determined for observing Seagrass Beds must represent the area, and also must be able to indicate or represent any Seagrass Beds in the study area;
- c) At each location, conceptual observation stations were determined based on the representation of the study location;

- d) At each observation, line transects are determined from land to sea (perpendicular to the coastline along the seagrass zonation that occurs) in the intertidal area;
- e) On each line transect, place plots, square in size 1m x 1m with 15 m intervals for homogenous Seagrass Beds and 5 m intervals for compound areas; and
- f) In each plot of the sample that has been determined, the determination of each

⁵ Decree of the Minister of Environment Number 200 of 2004 Concerning Standard Damage Criteria and Guidelines for Determining the Status of Seagrass Beds.

adows ecosystems were tested the level of damage, to determine the area of closure of certain seagrass species compared to the total area of closure for all types of seagrasses, Saito and Adobe methods were used. In general, the condition of Seagrass Beds in Indonesia, specifically in East Kalimantan Regency, damaged seagrass ecosystems due to continuous dredging and overwriting Lawivities and water pollution.

E.3 Prevention Instruments in The Standard Criteria for damage to Seagrass Beds in the Perspective of Environmental Law.

Protection of Seagrass Beds has been mandated in the legislation, both Article 33 paragraph (3), Article 28 H paragraph (i) of the 1945 Constitution of the Republic of Indonesia, Article 21 paragraph (3) E of Law No. 32 of 2009 concerning Management Protection Environment, Article 35 of Law 6 of 2007 Spatial Planning, and Law 27 of 2007 concerning Management of Coastal Zone and Small Islands, Government Regulation No.19 of 1999 concerning Control of

Sea Pollution and / or Damage, and Ministerial Decree No.200 of 2004 concerning Standard Criteria for Seagrass Damage. Legal protection of a Seagrass Beds ecosystem, of course there is a standard criterion for seagrass damage which is important, considering the standard criteria for damaging Seagrass Beds is one of the instruments for preventing environmental damage in Indonesia. By setting the standard criteria for damage to Seagrass Beds, there are efforts by the central and regional governments to provide legal protection against the standard of environmental damage, which is mandated. Basically by protecting the environment in the seagrass ecosystem from damage and pollution, this means fulfilling human rights to a good and healthy environment.

The problem of seagrass damage is a problem with all parties, including the government, stakeholders, businessmen, and the public to realize that the seagrass ecosystem area is vulnerable to environmental damage and pollution. Prevention and / pollution of the environment must be did in coordination, systematic, and law enforcement for the perpetrators.

Environmental management lies in fulfilling environmental principles and the reason for the importance of the existence of these principles for the right to a good and healthy environment for the maintenance of seagrass ecosystems for surrounding communities, so that the value of benefits, economic, healthy and prosperous is fulfilled.

The form of collateral for damage to Seagrass Beds that exceeds the standard criteria for damage is the responsibility of the state did by the central government, regional (province / district / city). The Government guarantees the

utilization of natural resources, including seagrass ecosystems to provide maximum benefit for the welfare and quality of life of the people, both present and future generations, guaranteeing the right of citizens to a good and healthy environment, and the state prevents it Lawivities to utilize natural resources that cause pollution and / or environmental damage to Seagrass Beds.

E.4 Instrument to Prevent Standard Criteria for Seagrass Damage in the Environmental Law.

A good and healthy environment is a basic right of every citizen guaranteed by the State Article 28 H paragraph (1) of the Law of the Unitary State of the Republic of Indonesia in 1945. To guarantee this right, instruments for preventing pollution and environmental damage are did, including the criteria standard damage to Seagrass Beds, which has not been maximized to date.

The standard criteria for damage to Seagrass Beds are regulated in Article 21 paragraph (3) E of Law Number 32 of 2009 concerning Environmental Protection and Management. Standard criteria for damage to Seagrass Beds, this is a measure of the limits of physical and biological changes in the field of shade that can be tolerated. Seagrasses in the construction of environmental law, that the standard criteria for environmental damage, view Seagrass Beds as natural resources that have a function as habitat for breeding grounds, foraging and sheltering marine life, silencing sea waves, protecting beaches, from erosion and sediment lifting, to must remain maintained her descent.

In its development, Seagrass Beds experienced increased threats; legal protection efforts were mandated in Article 35 of Law No.27 of 2007 concerning Management of Coastal and Small Islands, essentially requiring the rescue and management of Seagrass Beds as part of the integrated management of coastal ecosystems and small islands. The community-based seagrass management program in Indonesia is the Trismades program (Trikora Seagrass Management Demonstration Site) at Bintan Beach, Riau Islands. Then there is the blue carbon program 2009 by 3 (three) UN agencies namely, UNEP, FAO, and ENESCO.

For East Kalimantan, there are no rules related to Seagrass Beds. East Kalimantan Province Regional Regulation Number 1 of 2016 concerning the Regional Spatial Plan for East Kalimantan Province in 2016-2036, regulates the karst area related to the standard criteria for environmental damage for the Environmental Management Protection Law. In Article 29 C of Regional Regulation 1 of 2016, pacify the plan for the pattern of space for cultivation areas is 10,451,331 ha, which includes: Fishery designation area with an area of 187,304 ha.

Instrument for Prevention of Standard Criteria for Seagrass Damage in the Environmental Law, in this case regulates the size of the limits of physical and biological changes in Seagrass Beds that can be tolerated. The construction of the law must have a size limit or standard criteria for damaging Seagrass Beds to qualify them in good condition and damaged. Seagrass Beds must be adapted to the carrying capacity and carrying capacity of the environment, related to the management of resource areas in Seagrass Beds.

If there is damage to Seagrass Beds, it is clear that the size of the changing physical, chemical and biological boundaries of the environment changes, so that they cannot preserve the function of the seagrass. The environmental destruction of Seagrass Beds, specifically the Berau Regency of East Kalimantan, the existence of human activities or actions of people that cause direct and indirect changes in the physical, chemical and biological properties of Seagrass Beds, as mentioned earlier.

Protection of Environmental Management, to ensure the survival of living things and environmental sustainability including Seagrass Beds and guarantee the fulfillment and protection of the right to a good and healthy environment, as part of human rights. The instrument to prevent seagrass damage must be coordinated, systematic, and internal between strategic environmental studies, spatial planning, environmental quality standards and standard criteria for environmental damage, including Seagrass Beds.

F. Conclusion

Standard criteria for damage to Seagrass Beds are regulated in Article 21 paragraph (3) E of the Environmental Management Protection Law and Ministerial Decree No.200 of 2004 concerning Standard Criteria for Seagrass Damage. The effort to prevent damage to Seagrass Beds in the perspective of environmental law, comprehensive, systematic, inter-related efforts in systematics, and integral between strategic environmental studies, spatial planning, environmental quality standards and standard criteria for environmental damage, including Seagrass Beds.

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