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RESPONSIBLE MARINE TOURISM
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Practical Guide Series

Best Environmental Equitable Practices

MOORING BUOY INSTALLATION

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Practical Guide Series
Best Environmental Equitable Practices

MOORING BUOY INSTALLATION

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PREFACE

Praise the Lord so the guideline of preparation, installation, and handling of mooring buoy can be inalized. This document was prepared through several stages, namely documentation study from mooring buoy project in Komodo National Park, data collection, internal and external review process involving mooring buoy practitioners.

In particular, this practical guide aims to help improving comprehension of practitioners who interact in the ocean. This is mainly because irresponsible activities potentially increase the rate of destruction of coral reefs and surrounding ecosystem. The purpose of this book is also to give practitioners a standard guide in mooring buoy installation, especially in National Park area.

This guide is expected to inspire protected area managers, practitioners, and other users to implement the best practice in the planning, installation, and donation of mooring buoy in the surrounding area. Considering that most of the knowledge is gained through the mooring buoy installation in Komodo National Park, words of gratitude are addressed to the Head of Komodo National Park and his team who helped the implementation of mooring buoy program. Thank you also to the DOCK Komodo, the dive operator association of Labuan Bajo and others who contributed during the planning, survey, and installation of mooring buoy.

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GLOSSARY

Mooring Buoy

By definition, it is a buoy/facility to tie ship during anchoring in order to avoid shift due to waves, currents, and wind as well as a tool to turn ship. Its main components are mooring buoy, sinker or anchor, and chain or rope between anchor and buoy.

Mooring

The place where the anchor of the ship is located.

Buoy

A tool which floats and becomes a sign to show different regions or a sign to drop anchor as well as a pointer for berth locations of ships.

MBM

Multiple Buoy Mooring is a type of mooring tool with single mooring and more than one buoy.

SPM

Single Point Mooring is a type of mooring tool with single mooring and single buoy.

Sinker

Heavy weight which is placed on the seabed to keep mooring buoy afloat.

I. INTRODUCTION

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Coral reef area in Indonesia reaches 75.000 km2, which is about 12-15% of coral reef area in the world. In the last 50 years, coral reefs in Indonesia has been degrading sharply with only 30% of the coral reefs in good condition, 30% of the coral reefs in moderate condition, and the remaining 33% of them are severely damaged. Such damage is generally caused by natural factors and human activities, which in turn have direct impact on the loss of coral reefs as well as breaking the chain of ecosystem gradually. This ultimately gives impacts to humans.

In areas with high intensity of activities, possibility of damage to coral reefs is much larger than area with small intensity of activities. A number of case studies show that damage to coral reefs directly impacts on the declining resources in surrounding area and the loss of aesthetic values of underwater world which should have provided

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added-value to economy through tourism. Coral reefs rehabilitation program does not restore the coral reefs since it takes dozens of years to return them to their original condition with the same level of diversity. Therefore, installation of mooring buoy becomes one of the solutions to maintain the surrounding ecosystem.

Mooring buoy, which seems practical, has become one of the tools to reduce coral reefs damage in Indonesian waters. Considering its its different types, designs, and purposes, mooring buoy is expected to be a priority program either for government, business men, or fishermen, in order to minimalized damage to coral reefs.

The concept of mooring buoy is not complicated. In fact, the installation of mooring buoy is conducted in area of ship berth and or in coral reef protected area, which is effective as a sign or a barrier to reduce conflicts among users in the area. In term of installation, mooring buoy can be installed, relocated, or removed as needed.

II. MOORING BUOY

2.1 What is Mooring Buoy?

Mooring buoy is a floating structure which is used to moor vessels either cruise ships, fishing boats, cargo ships, or private ships while in deep water or shallow water. The buoy is moored to seabed by using chains or ropes, known as mooring. There are three types of mooring according to materials used, namely mooring chains, mooring ropes, and mooring which uses combination of the two materials, chains and ropes (American Petrolium Institute, 1987).

Buoy is a floating tool and sign to indicate differences in the utilization of territories, or a sign to drop anchor as well as a pointer for ship berth. Buoy is generally brightly colored so it can be easily recognized from a distance. Mooring buoy is equipped with heavier load to be placed on the seabed, commonly called sinker. The sinker's shape can be anchor or cast cement embedded into the seafloor. Sinker is connected with buoy by using chain or rope with extra 2 m added to total length in order to keep buoy at specified radius on the surface of water in case of tide.

2.2 Purpose of Mooring Buoy Installation

The purposes of mooring buoy installation are first, to avoid ships releasing anchors to seafloor so the marine ecosystem is maintained, and second, to assist ships to dock at safe distance in order to reduce the possibility of ships hitting the seafloor.

2.3 Types of Mooring Buoy

The most commonly used types of mooring buoy are Single Point Mooring (SPM), a mooring with single buoy, and Multiple Buoy Mooring (MBM), a mooring with multiple buoys, minimal three buoys. Selection to use Single Point Mooring or Multiple Buoy Mooring heavily depends on local condition and weight of ship expected to use the mooring buoy.

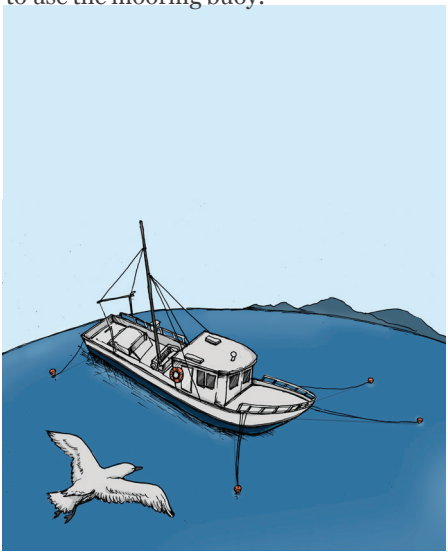


Illustration of *Multiple Buoy Mooring* (MBM)

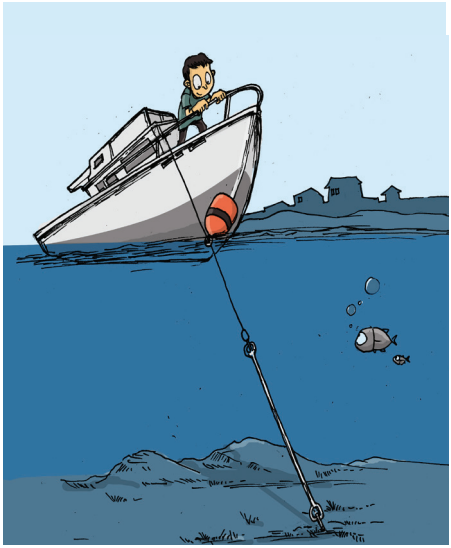
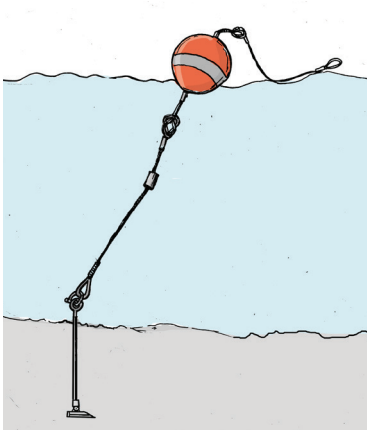


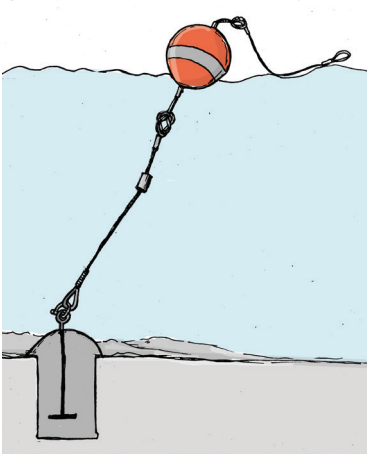
Illustration of *Single Point Mooring* (SPM)

According to Breda & Gjerde (2005), mooring buoy system consists of Halas and Manta system. Both of the systems must be tailored by the users based on three element, namely basal substrate, surface current, and combination of those two.



Halas system

The system is most suitable to be used in flat area with rock substrate. Equipment used for Halas system are buoy and sinker (concrete block). The distinctive feature of the system is the use of three concrete blocks strung with chain on the bottom of water then connected to rope and buoy to surface.



Manta system

The system is recommended for sand substrate, rubble substrate, combination of sand and rubble substrate, or smooth type of substrate. Installation of manta system has relatively small environmental damage to seafloor.

2.4 Design and Coloring of Mooring Buoy

Moring buoy has a very simple design. A mooring buoy consists of an anchor or sinker, rope and or chain, and buoy to mark the anchoring location. All designs strive not to damage water habitat and other organisms. The designs use rope with high strength, nylon rope which connects buoy to anchor and prevents scour. Mooring buoy which uses rope chain reduces disruption level to sea vegetation due to friction of chains. As

for the coloring of specific mooring buoy in national park area which serves as zone marker as well as mooring place, it is set in Attachment of Regulation of Minister of Forestry Number P.56/Menhut.II/2006 about Zoning of National Park and Regulation of Directorate General of Forest Protection and Natural resources Conservation Number P.3/IV/SET/2011 about area design guideline for management of natural tourism in wildlife reserves, national parks, forest reserves, and natural park, as well as Regulation

Illustration about disturbance on marine vegetation due to friction against mooring buoy chain, which is not made of rope

of Minister of Culture and Tourism Number KM.67/UM.001/MKP/2004 about general guidelines for development of tourism in small islands, ships which are expected to use the mooring buoy.

III. STAGES OF PLANING AND INSTALLATION OF MOORING BUOY

Below are key points in the planning and installation of mooring buoy.

- **Coordination and Adjustment of Regulations.**

  Prior to the installation, it is important to coordinate with relevant parties in the surrounding area. If installation of mooring buoy is conducted in conservation area, coordination with local area manager and or local government needs to be there. The coordination also allows installation team to get enough information about related regulations on the installation of mooring buoy.

- **Survey.**

  Implementation of survey is an activity to determine initial condition of an area, mooring users, and its environmental impact. Survey is also conducted to determine the condition of tidal water and exact location for installation of mooring buoy, type of tool, and proper method form of installation.

- **Determination of Material-Component.**

  The determination of mooring buoy material and the type of mooring to be used depends heavily on the result of survey.

- **Installation of Mooring Buoy.**

  Installation of mooring buoy is conducted in two stages. The first stage is pre-installation, activity in which mooring buoy material is assembled, installed, and marked. Next is the installation in which mooring buoy begins to be installed at determined points, and it is followed by taking the (latitude and longitude) coordinates of installed mooring buoy.

- **Information Usage of Mooring Buoy.**

  Ensuring that users of mooring buoy have adequate information about the benefits of mooring buoy, procedure for of use, maintenance, and reporting in case of missing mooring buoy.

- **Maintenance.**

  Ensuring the regular schedule of mooring buoy maintenance. Key to success for sustainability of mooring buoy system is regular maintenance. Each area requires different treatment depending on their natural conditions. Therefore, maintenance plan should be made flexible, based on the local condition as its reference.

- **Reporting of missing Mooring.**

  Report to local stakeholder in case of losing the mooring buoy in specific area. This step is necessary in order to immediately replace the missing mooring.

- **Mooring Buoy Funding Program.**

  The ultimate challenge of mooring buoy program is to ensure that there is specific budget for purchase of equipment, installation, and maintenance. Mooring buoy program is a program that aims to save marine and coastal ecosystem, particularly coral reefs. Hence, there need to be awareness from all parties, especially from those who benefit directly from coral reef maintenance. Those parties need to think about such matter and take part in donation and sponsorship of mooring buoy program. Donation and sponsorship can be acquired through cooperation among individuals, community tourism (boat operator, dive operator, etc.), or from related agencies such as Department of Maritime Affairs and Fisheries and Department of Tourism and Creative Economy as well as from other agencies.

IV. INSTALLATION AND MAINTENANCE PRACTICES OF MOORING BUOY

4.1 Coordination and Adjustment of Regulations

As for the attachment of Ministerial Decree in C. Boundary Zoning, letter C. Number 5 for National Park in marine waters, it is stated that the letters of initial/code for zone boundary markers are as follows:

a. Core zone

- Mooring buy is painted in red with circumference of 10 cm
- The letters are black-colored
- Initial/ code used is ZI, with sequential numbers
- Placement of code and number is adapted to the shape of mooring buoy

b. Marine Conservation Zone

- Mooring buoy is painted in dark blue with circumference of 10 cm
- The letters are black-colored
- Initial/code used is ZB, with sequential numbers
- Placement of code and number is adapted to the shape of mooring buoy

c. Utilization Zone

- Mooring buoy is painted in dark green with circumference of 10 cm
- The letters are black-colored
- The top of mooring buoy is given additional ring as boat mooring
- Initial/code used is ZP
- Mooring buoy also function as boat mooring for tourists
- Placement of code and number is adapted to the shape of mooring buoy.

d. Traditional Zone

- Mooring buoy is painted in dark brown with circumference of 10 cm
- The letters are black-colored
- The top of mooring buoy is given additional ring as boat mooring
- Initial/code used is ZTr
- Mooring buoy also function as boat mooring for community
- Placement of code and number is adapted to the shape of mooring buoy.

e. Special Zone

- Mooring buoy is painted in dark gray with circumference of 10 cm
- The letters are black-colored
- Initial/code used is ZKh
- Placement of code and number is adapted to the shape of mooring buoy.

f. Rehabilitation zone

- Mooring buoy is painted in light blue with circumference of 10 cm
- The letters are black-colored
- Initial/code used is Zre
- Placement of code and number is adapted to the shape of mooring buoy

g. Religious, Cultural, and Historical Zone

- Mooring buoy is painted in deep purple with circumference of 10 cm
- The letters are black-colored
- Initial/code used is ZBS
- Placement of code and number is adapted to the shape of mooring buoy.

Mooring buoy is also stated in Article 12 about design of public space area in Guidelines for Zoning of National Park and Regulations of Directorate General of Forest Protection and Nature Conservation No P.3/IV/SET/2011, as follows:

a. Design plan of public space area as referred to in Article 9 paragraph (2) about tourist facilities can be in the forms of visitor center building, information center area, pier/ jetty, parking space, mooring buoy, gate, shelter, paved/ concrete travel road and walkway equipped with bridge, observation tower, place for observation

and interpretation, signpost and direction, warning sign, information board, interpretation board, and hectometer pal throughout the trip, campsite, caravan, cottage, tourist resort and motel/ hotel, equipment rental place, place which provides food and drink, souvenir store, and stores which sell other essentials of visitors.

b. Design of public space area as referred to in paragraph (1) is placed on the entrance gate and or locations connected to general traffic lanes and or harbor for easy access to reach tourist sites.
c. Information Center area as referred to in paragraph (1) is placed at the farthest 500 meters from the entrance gate.

Development of mooring buoy infrastructure in guideline for planning of design area for management of nature tourism in wildlife reserves, national parks, forest parks, and nature parks as well as Regulation of Ministry of Culture and Tourism no KM.67/ UM.001/MKP/2004 on general guideline for tourism development in small islands, are as follows:

Construction of berth/boat mooring (jetty) and mooring buoy must meets the following requirements:

- Not built on top of live coral reefs
- Building foundation for boat mooring does not damage live coral reefs.

4.2 Survey

During survey process, it is necessary to note the following things:

- Condition of surrounding ecosystem and intensity of mooring users' activity, human activity and ships. (Example: What is the weight of ship which often crosses through the area and or berth location of ships either in the ship target region or in the region between)
- Tide condition at high tide and at low tide as well as seafloor substrate type (sand, rock, or coral).

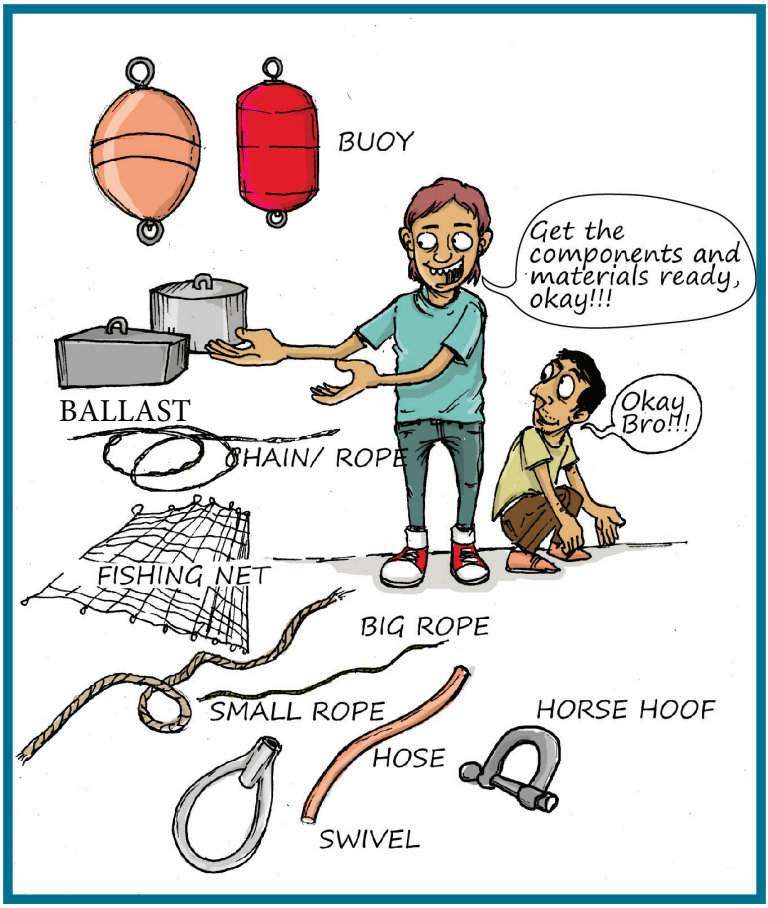
- Protected biotas in the region.
- Specific point where mooring installation will be conducted.
- Determine position using GPS.
- Information about ocean depth to anchor mooring.
- Safety standard and procedure of diving team and necessary equipment. Inspection of dive time, depth, and weather condition are priorities during observation and survey.

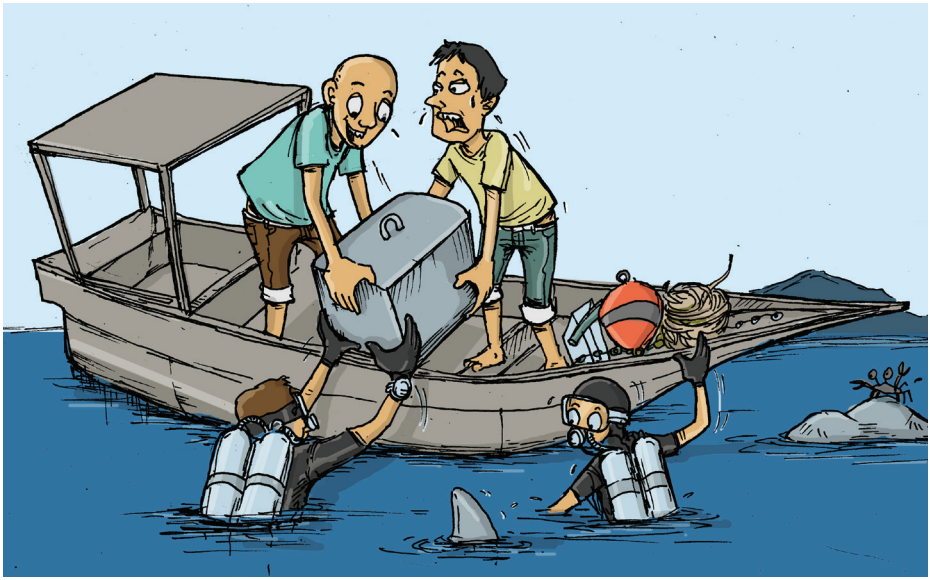
4.3 Selection of Material Components

- Note the weight of ballast or anchor. Ballast's weight is adjusted to the depth of target sea. In sandy sea, the type of ballast used is manta. On the other hand, rocky and deep sea uses anchor with Halas system. The weight is also adjusted to the boat's weight of mooring buoy users.
- The length of rope used must be adjustable.
- Tide.
- Buoy. The material can be made of plastic, rubber, or Styrofoam.
- Horse hoof. Horse hoof functions as a link between rope and chain which is connected to anchor. It is coated with hose in order to avoid friction between rope and chain.
- Nets or fish nets. Its function is to protect buoy made of Styrofoam.
- Large rope. It is used to connect between swivels or swivel to buoy.
- Small rope. It is used to attach buoy for boat mooring as well as to string up large rope by spinning.
- Swivel is a revolving coupling in which rope/chain is attached. If there is maneuver or movement of ship or vessel, the rope/chain does not move, thereby reducing the risk of rope/chain entangled.
- Hose functions as rope protector during frictions against metal so the rope does not wear out quickly.
- Chain is link between anchor or mooring with buoy. The material can be replaced with rope depending on the purpose.

4.4 Mooring buoy installation

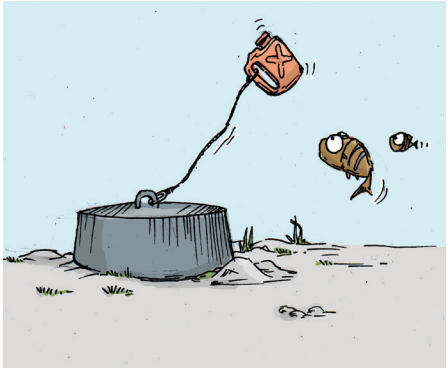
- Record materials which are ready to be installed and put them in one easily accessible location.
- Determine how many divers will perform the mooring buoy installation.
- Perform assembly of materials according to required prototype.
- Transport the materials to the ship then head to determined location





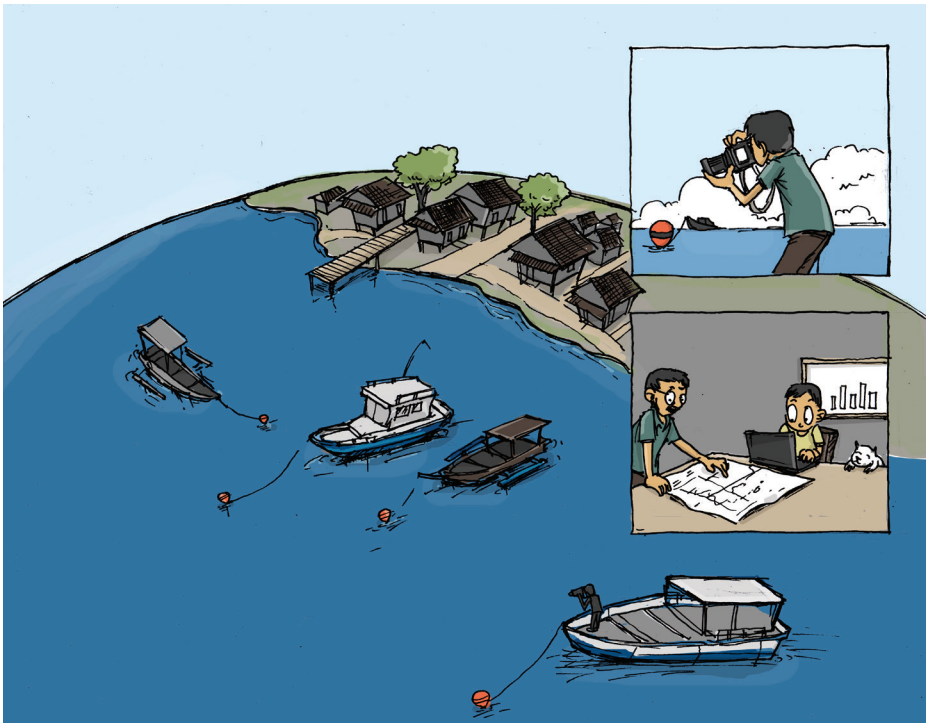
- Lower the materials into the water

- After the materials are placed on the seafloor, the divers come down to assemble some additional materials (for example, to install concrete block with chain and assembled with buoy rope)



- In some cases, to avoid missing trail of mooring buoy because of current or shift in the location of mooring in seafloor, some markers are placed (small buoy or jerry) and tied with rope attached to the concrete

- After every material on the seabed is ready, the divers attach the buoy which has been tied with rope on water surface



- Perform documentation and record coordinates location of the mooring buoy.

4.5 Information about Mooring Buoy's Utilization

- Communicate with mooring buoy users about the importance of mooring for ecosystems and safety.
- Inform boat users about the proper way to link ship with mooring buoy rope. For example: Use 20 meters of boat rope to reach the rope eye. Do not pull mooring rope to the boat.
- Spread information about point locations of mooring buoy and the coordinates to boat users, either through map, website, or brochures.
- Write down labels of maximum holding power on each mooring buoy.
- Positions and holding power of the moorings have to be informed to each anchored ships so that ship operators, especially large ships, do not moor their ships to small mooring. This is intended to avoid speedy damage of mooring buoys which are intended for small ships.

4.6 Maintenance

Tips for mooring buoy maintenance are as follows:

- Make an inventory of all existing moorings, record holding power of each mooring, and perform updates about the depth and GPS locations of each mooring.
- Conduct regular checks (at least every four months) to determine conditions of buoys, ropes, chains, and anchors.
- Adjust and if necessary, replace small-sized mooring with bigger mooring in places where many large ships moor.
- Invite mooring users to participate and perform maintenance in many ways such as engaging in inspections, providing information about mooring condition to stakeholders, being involved in cleaning the ropes from moss or coral, and being directly involved in activities of replacement and installation of mooring.

4.7 Reporting of Missing Mooring

- Report as soon as possible to stakeholders or in this case, it could be area manager or local authorities if there is missing mooring.
- Determine coordinates of the missing mooring.
- If you find a detached mooring, return immediately to competent authority or stakeholders in the area.

4.8 Funding Program of Mooring Buoy

- Conduct regular meeting with mooring buoy users and concerned parties to discuss the funding of mooring buoy, both for maintenance and new installations.
- Record ships which often enter specific areas where mooring buoys are placed and consult if they can be part of supervisors as well as funders of mooring buoy's maintenance.
- Share the funding to help the maintenance and installation cost of mooring buoy. Donations can be in the forms of money, equipment, personnel or logistics.
- If necessary, form a forum or group of mooring buoy users which involves local authorities and area manager. One of the tasks of the group is to find solution of funding for installation and maintenance of mooring buoy.

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Appendix 1

THE FOLLOWINGS PICTURES ARE PROBLEMS OF MOORING BUOY WHICH OFTEN OCCUR

All the chains should be replaced. This chains' condition is no longer capable of maintaining the position of mooring buoy

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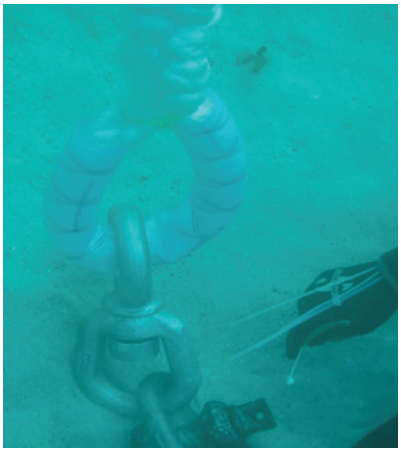
Before



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After

Old big chain must be replaced as well

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© WWF–Indonesia

Old big chain must be replaced as well

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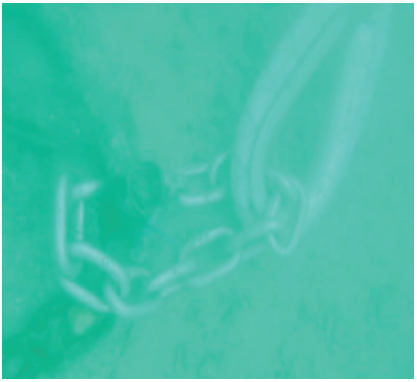

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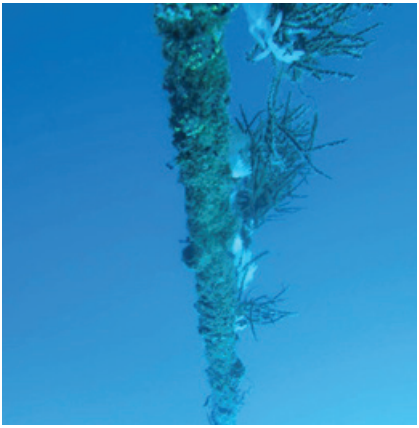

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Appendix 2

THE FOLLOWING ATTACHMENT IS REGULATION OF MINISTER OF FORESTRY NUMBER P.56/MENHUT.II/2006 ABOUT ZONING OF NATIONAL PARK.

f) Zona Religi, Budaya dan Sejarah
- Plat seng diberi cat dasar warna ungu tua dengan tulisan warna putih
- Inisial/kode yang digunakan ZBS

g) Zona Khusus
- Plat seng diberi cat dasar warna abu-abu tua dengan tulisan warna hitam
- Inisial/kode yang digunakan ZKh

5) Pemberian nomor dibuat secara berurutan sesuai dengan hasil pengukuran dan pada jarak tertentu.

6) Pemeliharaan batas zona dilakukan minimal dalam jangka waktu 5 (lima) tahun atau berdasarkan perubahan kondisi kawasan dan kebutuhan pengelolaan.

2. Untuk taman nasional di wilayah perairan laut :

1) Untuk kawasan taman nasional perairan laut, tata batas dapat berupa :
   a. Memasang papan pengumunan pada lokasi zonasi dengan mencantumkan batas wilayah zonasi pada papan pengumuman tersebut serta di Desa atau Kecamatan terdekat lokasi
   b. Mencantumkan tanda batas zonasi (letak geografis zonasi) pada peta laut dengan simbul sesuai dengan Standart Hidrografi Internasional dan selanjutnya dilaporkan pada Dinas Hidrooseanografi, TNI AL agar dicantumkan pada "Berita Pelaut Indonesia" yang disebarluaskan di pelabuhan-pelabuhan.
   c. Pemasangan tanda batas di lapangan berupa "Mooring Buoys" yang diberi warna dan nomor.
2) Pemasangan tanda batas zona berupa mooring bouys hanya dimungkinkan diletakkan pada perairan dengah kedalaman kurang dari 5 (lima) meter yang jumlahnya disesuaikan dengan kebutuhan.
3) Posisi peletakan mooring buoys harus menggunakan GPS *(Geografical Position System)* sehingga dapat tepat letak koordinatnya yang selanjutnya sebagai bahan informasi untuk dicantumkan pada peta laut.
4) Tanda batas berupa mooring buoys dapat perupa pelapung seperti pada contoh di bawah ini:

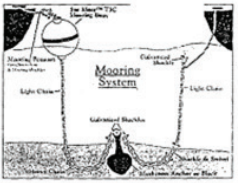
Bahan dari plastik,
Ukuran diameter 15 inci
Bentuk bundar
Sabuk biru keliling mooring buoys mengambarkan peruntukan masing masing zonasi
Mooring buoys diberi nomor berurutan

Bahan dari plastik
Ukuran diameter 12 inci
Bentuk ionjong
Sabuk biru keliling mooring buoys mengambarkan peruntukan masing masing zonasi
Mooring buoys diberi nomor berurutan

Bahan dari plastik,
Ukuran diameter atas 10 inci, diameter bawah 15 inci
Bentuk kerucut
Sabuk biru keliling mooring buoys mengambarkan peruntukan masing -masing zonasi
Mooring buoys diberi nomor berurutan

Salah satu bentuk jangkar yang diletakan di dasar perairan sebagai pengikat Mooring buoys agar selalu berada pada tempatnya (tidak hanyut)

Bentuk peletakan mooring buoys pada zona pemanfaatan dan zona pemukiman yang memiliki fungsi ganda selain sebagai penantaan batas zonasi juga berfungsi sebagai tempat tambat perahu agar tidak membuang jangkar perahu di dasar perairan. Kebutuhan mooring buoys sesuai dengan kebutuhan di zona tersebut.



5) Penulisan inisial/kode pada tanda batas zona sebagai berikut :
   a) Zona Inti
      - Mooring Buoys diberi cat warna merah keliling selebar 10 cm.
      - Tulisan berwarna hitam
      - Inisial/kode yang digunakan ZI, dengan nomor berurutan
      - Peletakan kode dan nomor disesuaikan dengan bentuk mooring buoys.
   b) Zona Perlindungan Bahari
      - Mooring Buoys diberi cat warna biru tua keliling selebar 10 cm.
      - Tulisan warna hitam

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- Inisial/kode yang digunakan ZB, dengan nomor berurutan
- Peletakan kode dan nomor disesuaikan dengan bentuk mooring buoys.

c) Zona Pemanfaatan
- Mooring Buoys diberi cat warna hijau tua keliling selebar 10 cm.
- Tulisan warna hitam
- Pada bagian atas mooring buoys di beri tambahan ring sebagai tambat perahu
- Inisial/kode yang digunakan ZP
- Mooring buoys berfungsi pula sebagai tempat tambat perahu wisatawan
- Peletakan kode dan nomor disesuaikan dengan bentuk mooring buoys.

d) Zona Tradisional
- Mooring Buoys diberi cat warna coklat tua keliling selebar 10 cm.
- Tulisan berwarna hitam
- Pada bagian atas mooring buoys di beri tambahan ring sebagai tambat perahu
- Inisial/kode yang digunakan ZTr
- Mooring buoys berfungsi pula sebagai tempat tambat perahu masyarakat
- Peletakan kode dan nomor disesuaikan dengan bentuk mooring buoys.

e) Zona khusus
- Mooring Buoys diberi cat warna abu-abu tua keliling selebar 10 cm.
- Tulisan berwarna hitam
- Inisial/kode yang digunakan ZKh
- Peletakan kode dan nomor disesuaikan dengan bentuk mooring buoys.

f) Zona Rehabilitasi
- Mooring Buoys diberi cat dasar warna biru muda keliling selebar 10 cm.
- Tulisan berwarna hitam
- Inisial/kode yang digunakan Zre
- Peletakan kode dan nomor disesuaikan dengan bentuk mooring buoys.

g) Zona Religi, Budaya dan Sejarah
- Plat seng diberi cat warna ungu tua keliling selebar 10 cm.
- Tulisan warna hitam
- Inisial/kode yang digunakan ZBS
- Peletakan kode dan nomor disesuaikan dengan bentuk mooring buoys.

Salinan sesuai dengan aslinya
Kepala Biro Hukum dan Organisasi,

SUPARNO, SH.
NIP. 080068472.

MENTERI KEHUTANAN,

Ttd.
H.M.S. KABAN, SE., M.Si.

THE FOLLOWING ATTACHMENT IS REGULATION OF DIRECTORATE GENERAL OF FOREST PROTECTION AND NATURE CONSERVATION NUMBER P.3/IV/ SET/2011 ABOUT AREA DESIGN GUIDELINE FOR MANAGEMENT OF NATURAL TOURISM IN WILDLIFE RESERVES, NATIONAL PARKS, FOREST RESERVES, AND NATURAL PARKS

8. Pembangunan pendaratan/tambat kapal *(jetty)* dan *mooring buoy* harus memenuhi ketentuan sebagai berikut:
   a. Tidak dibangun di atas terumbu karang hidup.
   b. Fondasi bangunan tambat kapal tidak merusak gugusan terumbu karang hidup.

THE FOLLOWING ATTACHMENT IS REGULATION OF MINISTER OF CULTURE AND TOURISM NUMBER KM.67/UM.001/MKP/2004 ABOUT GENERAL GUIDELINES FOR DEVELOPMENT OF TOURISM IN SMALL ISLANDS.

Paragraf 1
Desain Tapak Ruang Publik

Pasal 12

(1) Rancangan desain tapak ruang publik sebagaimana dimaksud dalam Pasal 9 ayat (2) untuk fasilitas wisata dapat berupa bangunan pusat pengunjung, ruang pusat informasi, dermaga/*jetty*, tempat parkir, tambat kapal/*mooring buoy*, pintu gerbang, pondok teduh/*shelter*, jalan wisata beraspal/berpengeras dan jalan setapak lengkap dengan jembatan, menara pandang, tempat pengamatan dan interpretasi, papan penunjuk jalan dan arah, papan peringatan, papan informasi, papan interpretasi, dan pal hektometer sepanjang perjalanan, perkemahan, caravan, pondok wisata, resort wisata dan motel/hotel, tempat penyewaan peralatan, tempat penyediaan makan dan minum, tempat penyediaan cindera mata, dan tempat penjualan kebutuhan pengunjung lainnya.

(2) Desain tapak ruang publik sebagaimana dimaksudkan pada ayat (1) diletakkan pada pintu masuk dan atau lokasi-lokasi yang terhubungkan dengan jalur lalu lintas umum dan atau dermaga pelabuhan untuk kemudahan mencapai lokasi wisata.

(3) Ruang pusat informasi sebagaimana dimaksud pada ayat (1) diletakkan paling jauh 500 meter dari pintu gerbang.

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WWF Mission
To stop environment from degrading and build future where human and nature live in harmony

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