



# SEA TURTLE CONSERVATION TRAINING FOR COMMUNITY IN TIMOR-LESTE

---

2022

This report is prepared by Dwi Suprpti for the Arafura and Timor Seas Ecosystem Action Phase II (ATSEA-2) Project.  
December 2022

# SEA TURTLE CONSERVATION TRAINING FOR COMMUNITY IN TIMOR-LESTE

Copyright © 2022 Arafura and Timor Seas Ecosystem Action Phase II (ATSEA-2) Project

Authors:

Dwi Suprpti

Suggested Citation:

Suprpti, Dwi (2022). Sea Turtle Conservation Training for Community in Timor-Leste. Report to the Arafura and Timor Seas Ecosystem Action Phase 2 (ATSEA-2) Project, Bali, Indonesia. 24p.

Disclaimer:

ATSEA-2 Project has published the information contained in this publication to assist public knowledge and discussion, and to help improve the sustainable management of the Arafura and Timor Seas (ATS) region. The contents of this publication do not necessarily reflect the views or policies of ATSEA-2 implementing partners and its other participating organisations. The designation employed and the presentation do not imply expression of opinion whatsoever on the part of ATSEA-2 concerning the legal status of any country or territory, its authority or the delimitation of its boundaries.

Published by:

ATSEA-2 Regional Project Management Unit

Jl. Mertasari No. 140 Sidakarya,

Denpasar 80224, Bali, Indonesia

Telephone: +62 361 448 4147

Email: [infoatsea2@pemsea.org](mailto:infoatsea2@pemsea.org)

Website: <https://atsea-program.com/>

Cover Image: Sea turtle conservation group in Com Village, Lautem

# TABLE OF CONTENTS

<b>I. INTRODUCTION .....</b>	<b>1</b>
Background .....	1
Objectives.....	1
Expected Outputs .....	2
Date and Place .....	2
Resource Person .....	2
Participants .....	2
Training Agenda.....	2
<b>II. RESULTS .....</b>	<b>4</b>
Rapid Assessment of Sea Turtle Conservation Activities in Com Nesting Beach .....	4
Training Materials .....	5
Training Results.....	20
<b>III. CONCLUSION .....</b>	<b>22</b>
<b>IV. RECOMMENDATIONS.....</b>	<b>23</b>



# I. INTRODUCTION

## BACKGROUND

The Arafura and Timor Seas (ATS) is part of the North Australian Shelf large marine ecosystem, which is a tropical sea lying between the Pacific and Indian Oceans and extending from the Timor Sea to the Torres Strait and including the Arafura Sea and the Gulf of Carpentaria. The region is adjacent to the Coral Triangle, which hosts the world's highest marine biodiversity and contains some of the most pristine and highly threatened coastal and marine ecosystems. At the regional scale, the ecosystems of the ATS play an important economic and ecological role in the littoral nations bordering the Arafura and Timor Sea: Australia, Indonesia, Papua New Guinea, and Timor-Leste.

ATSEA-2 is the 2<sup>nd</sup> phase of the GEF-financed, UNDP, and PEMSEA-supported Arafura and Timor Seas Ecosystem Action (ATSEA) program. This 5-year project will support the implementation of the following governance and environmental objectives of the ATS regional Strategic Action Program: (i) Strengthening of ATS regional governance; (ii) Recovering and sustaining fisheries; (iii) Restoring degraded habitats for sustainable provision of ecosystem services; (iv) Reducing land-based and marine sources of pollution; (v) Protecting key marine species; and (vi) Adaptation to the impacts of climate change.

In connection with protecting key marine species, specifically in Timor-Leste, the ATSEA-2 Project established a pilot project to improve community-based sea turtle conservation and ecotourism in Lautem Municipality (specifically Com, Muapitine and Mehara villages), by working with the existing community groups, especially women. As part of the pilot project, it is important to ensure the community groups who run the community-based sea turtle conservation and ecotourism understand and employ the best practices so that the practices can be sustainable in the long term. To do so, the ATSEA-2 National Coordination Unit (NCU) of Timor-Leste commissions a local NGO, Prospek, to run a sea turtle conservation project in Lautem Municipality and assist the community, while the ATSEA-2 Regional Project Management Unit (RPMU) will support the conduct of a capacity building program for the community.

A capacity-building program in the form of training is needed to provide the correct information and improve sea turtle conservation and ecotourism management skills in Lautem Municipality. It is also expected that this training can provide a first-hand description of technical data collection, monitoring of sea turtle nesting, and relocation of nests (if needed) so that hatchlings are produced with a minimum hatchability of 70%. Proper sea turtle conservation and management will contribute to maintaining sea turtle populations in nature so that they can continue to provide ecological, religious, and economic benefits for the coastal communities.

## OBJECTIVES

The training was conducted to build the community group's capacity to deliver community-based sea turtle conservation and ecotourism. The training covers the biology and ecology of sea turtles, community-based monitoring/patrol, sea turtle bycatch mitigation, and sea turtle-based ecotourism best practices.

## EXPECTED OUTPUTS

1. Information from a rapid assessment regarding the conservation status of sea turtles on the nesting beach in Lautem Municipality, Timor-Leste;
2. Training participants to know and understand the status of sea turtles and their problems, both nationally and internationally;
3. Training participants know the correct procedures for turtle conservation (Code of Conduct/CoC);
4. Training participants know the procedures for having sea turtle-based ecotourism (CoC of Turtle Ecotourism);
5. Training participants to understand sea turtle data collection and relevant monitoring techniques;
6. Training participants to know the procedures for handling stranded and/or bycaught sea turtles.

## DATE AND PLACE

The training was held from 28 to 30 November 2022, including one day for preliminary observation and discussion in Los Palos, Lautem Municipality, Timor-Leste. The training was conducted in person.

## RESOURCE PERSON

The main resource person for the training is Drh. Dwi Suprapti, S.KH, M.Si. She has over 15 years of experience in the field of sea turtle conservation, especially in Indonesia.

## PARTICIPANTS

The number of participants in the training is 37 people, including the community group and local government representatives. Three persons from Prospek NGO also attended the training.

## TRAINING AGENDA

Date	Time (GMT+9)	Agenda
28 Nov 2022	05:00-11:00	Travel from Dili to Los Palos
	11:00-15:00	Assessment of sea turtle nesting beach and discussion with a community group
	18:00-19:00	Dinner
	19:00-21:00	Material update based on the assessment
29 Nov 2022	09:00-11:00	Opening remarks
	11:00-11:15	Pre-test
	11:15-11:30	Coffee break
	11:30-01:00	Introduction to sea turtle population status in the ATS region
	13:00-14:00	Lunch break

	14:00-14:15	Video on turtle life
	14:15-14:30	Discussion
	14:30-16:30	Sea turtle biology and ecology
	16:30-17:30	Discussion
30 Nov 2022	09:00-11:00	Sea turtle identification technique and morphometry
	11:00-11:15	Coffee break
	11:15-13:00	Code of conduct of sea turtle-based ecotourism
	13:00-14:00	Lunch break
	14:00-15:30	Sea turtle relocation and hatchling handling techniques
	15:30-16:00	Sea turtle bycatch and handling techniques
	16:00-16:15	Post-test and training feedback
	16.15-17.00	Closing training

## II. RESULTS

### RAPID ASSESSMENT OF SEA TURTLE CONSERVATION ACTIVITIES IN COM NESTING BEACH

Timor-Leste coastal area is an important habitat for sea turtles. There are at least four species of sea turtles that lay their eggs on the coast of Timor-Leste, namely the olive ridley turtle (*Lepidochelys olivacea*), green turtle (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricata*) and the leatherback turtle (*Dermochelys coriacea*). Based on Wikipedia (2022) Timor-Leste has a total beach length of 706 km. Of the total length of the beach, several locations are favourite areas for turtles to lay their eggs, including Com beach.

Com Beach is a beach located in the village of Com which is in the northern part of Lospalos and is part of the Nino Konis Santana National Park. This coastal area is not that long, it is estimated that it only reaches approximately 1 km. Even so, this beach is an option for turtles to lay their eggs. Based on the results of the rapid assessment, it is known that there are at least 3 species of turtles that nest at this beach to lay their eggs, namely the Olive ridley turtle, the Green turtle, and the Hawksbill turtle. Of the three species, the Olive ridley turtle is the dominant type of turtle that lays its eggs on this beach.

Olive ridley turtle or Safa in local language is a sea turtle that has the characteristics of making turtle egg nests with a relatively shallow depth of 30-50 cm. This actually makes turtle egg nests easy for predators and humans to dig up. So, it is not uncommon for Olive ridley turtle egg nests in this area to be unsafe either due to damage by predators such as wild dogs or hunting activities (Poaching).

Based on the results of non-intensive monitoring from the turtle conservation community group Com Village, in one-year turtles nest on this beach around 25-30 nests. From these nests, almost 100% of the turtle eggs are hunted and consumed by local people if relocation and intensive monitoring are not carried out. Therefore, the sustainability of sea turtle population in this area is threatened due to over-exploitation.

Seeing these conditions, the sea turtle conservation community group in Com Village felt the need to relocate all turtle egg nests to be able to secure the eggs from predators and massive poaching. But unfortunately, this relocation activity was not accompanied by knowledge and research on both nest transfer techniques and locations that became relocation areas, as a result, the hatchability of eggs (hatching success) was very low, even less than 30%.

According to group members, the hatchlings that hatched are then reared in plastic containers for a certain period of time, sometimes even more than 1 month. As a result, many hatchlings are weak, sick, and even die before being released. This then prompted the desire of community groups, local government, and NGOs (Prospek) to make a more adequate rearing pond, namely a 3 x 3-meter ceramic pond so that it can accommodate and raise hatchlings before the release event.

So based on the assessment obtained, the Trainer obtains sufficient information on matters that need to be corrected and that need to be explained theoretically in the presentation material so that the training participants understand the rules of turtle conservation properly and correctly. This information also forms the basis for formulating recommendations.



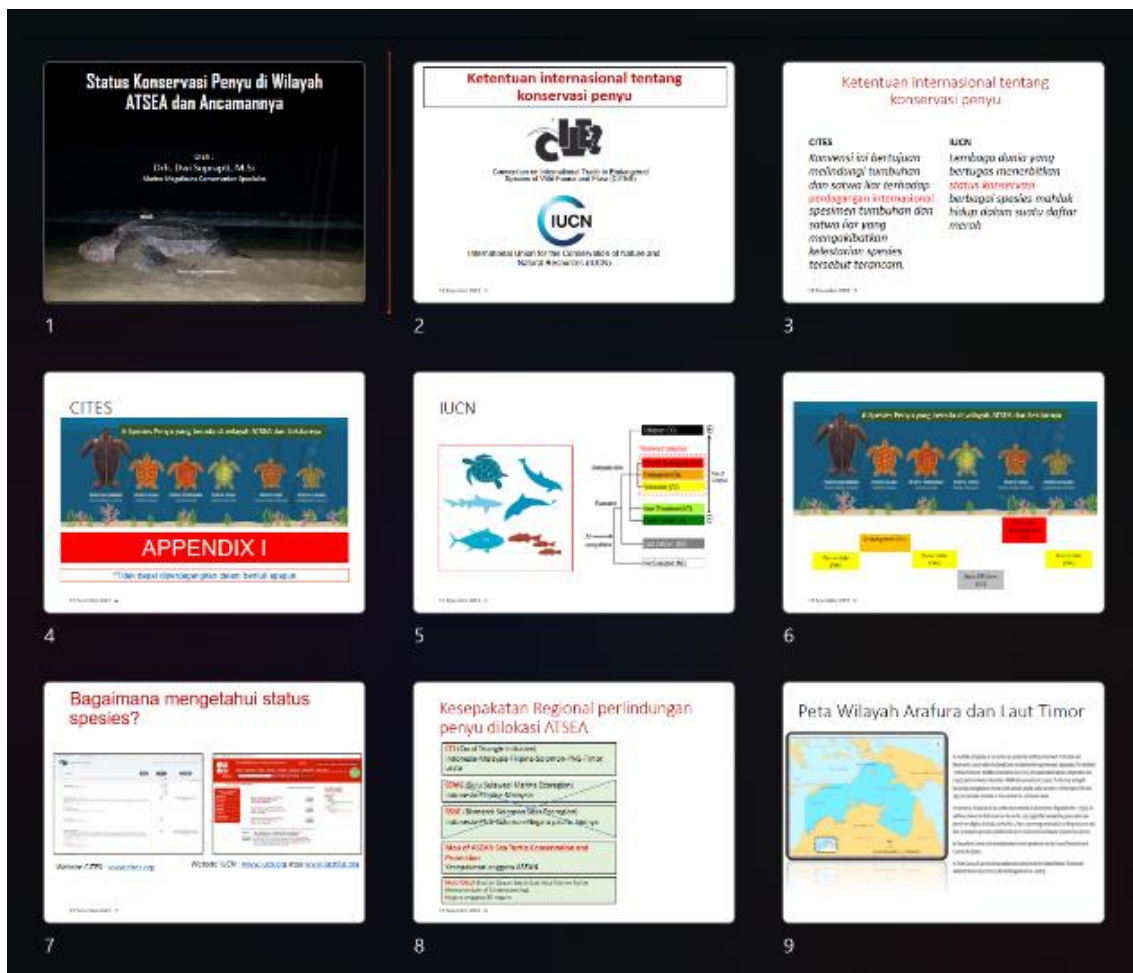
## TRAINING MATERIALS

The following is material presented in the basic sea turtle conservation training for the coastal community of Com village. The materials were packaged and delivered in Indonesian considering the trainer's limitations in Tetun language. The materials were presented in the form of Powerpoint, video, and dummy. The materials were packaged in a concise form which was then conveyed and explained by the Trainer to the participants in sentences that are easy to understand, interactive and provided both verbal and visual descriptions so that participants can receive the materials as well as possible.

The following are some of the materials presented in the training.

### 1. Status of Turtle Conservation in the ATS Region and the Problems

This material tells about the status of turtle protection both internationally (CITES and IUCN), regionally, and nationally. In general, turtles have received full protection in ATS countries which include Indonesia, Timor-Leste, Australia, and Papua New Guinea. This material also explains trends in population data on various nesting beaches, but unfortunately, Timor-Leste does not yet have a series of data on turtle nesting that can be published. For this reason, the emphasis in this presentation also includes the importance of population status data on each nesting beach, including Com beach, Timor-Leste. The material closes with an overview of the importance of turtle conservation and the various threats experienced by sea turtles causing their populations to decline.



### Status Perlindungan Penyau

AMBIENT DATA CENTER OF SEA TURTLE POPULATION TRENDS IN AUSTRALIA  
The Australian Sea Turtle Conservation Research Program (ASTCRP)  
Report No. 10, 2007

10

### Contoh Tren Data Populasi Penyau di Australia (contohnya penyu)

11

### Western Australia

12

### Kakadu National Park, Australia

13

### Kalimantan Barat, Indonesia

14

### Lampung, Indonesia

15

### Kalimantan Timur, Indonesia

16

### Sulawesi Selatan, Indonesia

17

### Bali, Indonesia

18

### Papua Barat, Indonesia

19

### Jawa Barat, Indonesia

20

### Manfaat Penyau

Selain manfaat socio-economic, reigi juga manfaat ekologi

#### MENGAPA AJU PENTING?

21

### Ancaman terhadap Populasi Penyau

#### ANCAMAN KEPUNAHAN

22

### Ancaman Plastik bagi Penyau

23

### PERMASALAHAN SAMPAH PLASTIK LAUTAN

24

DAMPAK DARI SAMPAH PLASTIK LAUTAN

### MARINE PLASTIC DEBRIS : CONSEQUENCES

**TOURISM** : MARINE PLASTIC DEBRIS, BEACH AND MARINE RESOURCES  
 HARMFUL AND DANGEROUS

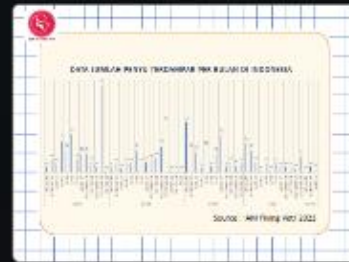
**ENVIRONMENT AND MARINE LIFE** : HULLS OF SHIPS AND LIFE-BOATS MADE OF PLASTIC DEBRIS

**HUMAN HEALTH** : PLASTIC TRASH, WHICH IS CAPTURED, CONSUMED BY FISH, WHICH IS CONSUMED BY HUMANS

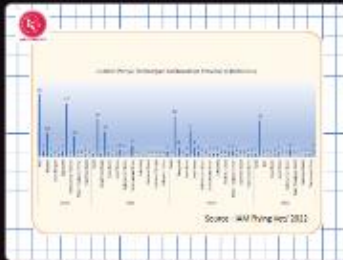
25

Kematian Penyus akibat Pencemaran Laut

26



27



28



29

DAMPAK DARI SAMPAH PLASTIK LAUTAN

1 IN 3 SPECIES of marine mammals have been found ENTANGLED IN MARINE LITTER

30

APA YANG BISA KITA LAKUKAN

- Mengubah perilaku (behavior change) dengan mengurangi penggunaan plastik sekali pakai (single-use plastic)
- Menggunakan produk 3 K (Kurangi, Buang, Recycle)
- Kebersihan dan bertanggung jawab dalam membuang sampah ke tempat sampah dan mengelola sampah. Hasil Lautan

31

9 TIPS FOR LIVING WITH LESS PLASTIC

1. Minum air putih
2. Minum air isi ulang
3. Minum air kemasan
4. Menggunakan botol minum
5. Menggunakan gelas
6. Menggunakan cangkir
7. Menggunakan wadah
8. Menggunakan wadah
9. Menggunakan wadah

APLIKASI: 1000 BUKALAH

APA YANG BISA KITA LAKUKAN

32

APA YANG BISA KITA LAKUKAN

Tak bisa pisahkan Sampah Organik dan Sampah Anorganik!

**SAMPAH ORGANIK**

**SAMPAH ANORGANIK**

33

JANGAN PERNAH MEREMEHKAN NILAI DARI SUATU PERUBAHAN SEKECIL APAPUN PERUBAHAN TERSEBUT

SINGLE USE PLASTIC FREE PLEDGE

**SAY NO TO PLASTIC'S BIG 4**

34



35

## 2. Sea turtle bioecology

This presentation explains the biology and ecology of sea turtle life starting from its species, food, life cycle, reproduction, nesting tracks, anatomy of adults and hatchlings to their migration patterns. Knowing turtle bioecology, it is hoped that participants will understand the life of sea turtles with long life cycle, slow breeding and their enormous life threats.

**BIOEKOLOGI PENYU**  
drh. Rini Darmawati, MSi  
Lecture Title: Ecology  
20 Nov 2022

**Pendahuluan**  
**PEKYU, "DINOSAURUS" YANG MASIH HIDUP**  
Penyu adalah salah satu makhluk yang telah ada sebelum zaman kristianitas. Dari 28 jenis penyu yang ada, hanya 7 jenis yang masih ada hingga saat ini.

**Jenis - Jenis Penyu di Dunia**

1. Penyu Belimbing (*Dermochelys coriacea*; leatherback turtle)
2. Penyu Hijau (*Chelonia mydas*; green turtle)
3. Penyu Tempayan (*Caretta caretta*; loggerhead turtle)
4. Penyu Sisk (*Eretmochelys imbricata*; hawksbill turtle)
5. Penyu Sisk Sema/Lekang (*Lepidochelys olivacea*; Olive ridley)
6. Penyu Kempis (*Lepidochelys kempi*; Kemp ridley)
7. Penyu Pipih (*Natator depressus*; flatback turtle)

**Jenis Pakan Penyu Laut**

- Penyu hijau (*Chelonia mydas*) : ubur-ubur, kepiting, jamur dan rumput laut.
- Penyu sisk (*Eretmochelys imbricata*) : spons, kerang lunak dan kerang-kerangan.
- Penyu lekang (*Lepidochelys olivacea*) : kerang-kerangan dan kepiting.
- Penyu belimbing (*Dermochelys coriacea*) : ubur-ubur dan invertebrata berbadan lunak.
- Penyu tempayan (*Caretta caretta*) : kerang-kerangan, kepiting, bulu babi dan ubur-ubur.
- Penyu pipih (*Natator depressus*) : teripang, kerang-kerangan lunak dan ubur-ubur.

**CIRI-CIRI BIOLOGIS PENYU**

- Penyu berkembang dengan telur bertelur laut.
- Penyu bernafas dengan paru-paru.
- Berdarah panas tidak memiliki kelenjar mamaria hingga menetas.
- Penyu dapat memencin lemak untuk bertahan hidup.
- Jika tidak ada lagi penyu akan mengakibatkan siklus rantai makanan untuk mempertahankan kadar lemak dalam tubuhnya, ini yang terlihat seperti anoreksia.

- Penyu belimbing biasanya merupakan kelompok terbesar 120 meter lebih untuk memakan ubur-ubur.
- Penyu hijau dapat memakan selam 5 jam.
- Penyu sisk hanya dapat memakan selama 15-45 menit.
- Penyu memakan sekerang kacang, penyu jika dapat berenang dengan kecepatan 1,5-1,9km/jam sedangkan penyu belimbing 1,5-8,3km/jam.

**Siklus Hidup Penyu**

Penyu menghabiskan 90% hidupnya di laut.

**REPRODUKSI PENYU**

**PEMLAKU PENYU BERTELUR**

Betina penyu betina yang datang ke pantai untuk bertelur. Setelah bertelur, penyu betina akan kembali ke laut. Penyu betina akan bertelur di pantai yang berpasir. Penyu betina akan bertelur di pantai yang berpasir. Penyu betina akan bertelur di pantai yang berpasir.

**Siklus Hidup**

1. Penyu betina datang ke pantai untuk bertelur.
2. Penyu betina menggali sarang.
3. Penyu betina bertelur.
4. Penyu betina kembali ke laut.
5. Telur penyu.
6. Penyu menetas.
7. Penyu muda.
8. Penyu dewasa.
9. Penyu dewasa.
10. Penyu dewasa.
11. Penyu dewasa.





### 3. Anatomy and morphology

This material explains the anatomical structure of turtles, taxonomy, classification, turtle identification techniques and turtle measurement techniques. It is expected that by delivering this material the trainees will be able to differentiate each species of sea turtle based on its anatomical characteristics.

## Anatomi dan Morfologi Penyu

Drh. Dwi Suprpti, M.Si

### ANATOMI PENYU

Penyu adalah berbagai jenis hewan berkaki empat yang mempunyai cangkang gepeng dan dapat melakukan identifikasi dengan baik. Secara umum, tubuh penyu terdiri dari bagian-bagian:

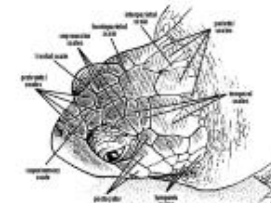
- 1) Karapas, yaitu bagian tubuh yang dilindungi oleh cangkang, terbagi di bagian punggung dan ventral sebagai pelindung.
- 2) Plastron, yaitu bagian tubuh bagian bawah sebagai pelindung pada bagian dada dan perut.
- 3) Insang, yaitu organ yang berfungsi untuk bernafas.
- 4) Ekor, yaitu organ yang berfungsi sebagai alat gerak.
- 5) Ekor, yaitu kaki bagian belakang (pada Ekor), berfungsi sebagai alat penggerak dan kemudi.
- 6) Sirip, yaitu organ yang berfungsi untuk berenang.
- 7) Sirip, yaitu organ yang berfungsi untuk berenang.
- 8) Sirip, yaitu organ yang berfungsi untuk berenang.



### Bagian-bagian tubuh Penyu



### Anatomi Bagian Kepala



### Taksonomi dan Klasifikasi

Menurut Carr (1977), penyu termasuk ke dalam Ordo Testudinata yang memiliki dua famili yang sudah berlainan hingga saat ini, yaitu:

- A. Famili : Cheloniidae, meliputi :
  - 1) Chelonia mydas (penyu hijau)
  - 2) Naretus depressus (penyu emping)
  - 3) Lepidochelys olivacea (penyu kelabu)
  - 4) Lepidochelys kempi (penyu kemping)
  - 5) Eretmochelys imbricata (penyu sisik)
  - 6) Caretta caretta (penyu tempayan atau penyu kasa)
- B. Famili : Dermochelyidae, meliputi :
  - 1) Dermochelys coriacea (penyu belahkang)



### Perbedaan Penyu dan Kura-kura





**Kepala** : Kepala Kura-kura bisa masuk ke dalam cangkang. Penyu tidak bisa.

**Kaki** : Kaki kura-kura bulat dan berkaki banyak, Kaki Penyu pipih dan berkaki 4 pada Ekor.

**Habitat** : Kura-kura di darat dan air tawar sedangkan Penyu di Laut.

### Kunci Identifikasi Penyu

- a. Bentuk tubuh (morfologi)
- b. Tanda-tanda lahirnya pada cangkang dan sirip kepala
- c. Jenis dan struktur sirip (sirip dorsal dan insang) serta kebiasaan berenang
- d. Pola makan dan kebiasaan (Vegetasi, Waktu makan dan tipe penyu, dll)

► Cara mengidentifikasi Penyu dilakukan berdasarkan ciri-ciri bentuk tubuh (morfologi) yaitu:

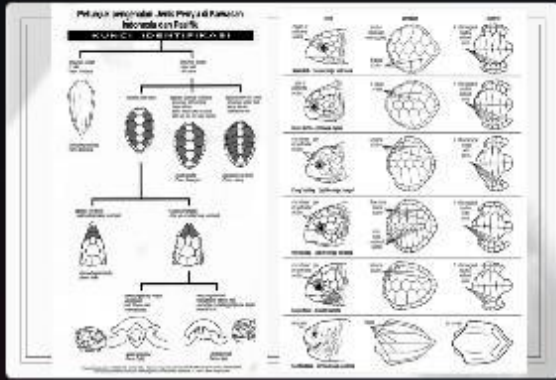
1. Sirip dan cangkang (sirip dorsal dan insang) serta ada atau tidaknya kemampuan sirip di kepala (sirip) dan di bagian belakang.
2. Adanya dan ukuran kemampuan (sirip) pada cangkang, insang dan bagian sirip lainnya (sirip) dan kemampuan cangkang bagian bawah (sirip).
3. Adanya kemampuan dan kebiasaan pada sirip.

### Identifikasi penyu berdasarkan karakteristik

Beda Spesies/ Jenis Penyu	Jenis cangkang / Sirip	Karakteristik Identifikasi			
		Jenis sirip dorsal / Sirip	Jenis sirip ventral / Sirip	Jenis sirip insang / Sirip	Jenis sirip ekor / Sirip
Penyu belahkang (Dermochelys coriacea)	Keras	1 sirip	1 sirip	1 sirip	1 sirip
Penyu hijau (Chelonia mydas)	Keras	1 sirip	1 sirip	1 sirip	1 sirip
Penyu emping (Naretus depressus)	Keras	1 sirip	1 sirip	1 sirip	1 sirip
Penyu kemping (Lepidochelys kempi)	Keras	1 sirip	1 sirip	1 sirip	1 sirip
Penyu sisik (Eretmochelys imbricata)	Keras	1 sirip	1 sirip	1 sirip	1 sirip
Penyu tempayan (Caretta caretta)	Keras	1 sirip	1 sirip	1 sirip	1 sirip
Penyu belahkang (Dermochelys coriacea)	Keras	1 sirip	1 sirip	1 sirip	1 sirip

**Catatan**

1. Penyu hijau (Chelonia mydas) cenderung di perairan. Menurut data yang dikumpulkan di Indonesia.
2. Ciri-ciri penyu sisik (Eretmochelys imbricata) cenderung tinggal di perairan.
3. Pada saat berenang penyu belahkang (Dermochelys coriacea) cenderung lebih sering berenang.



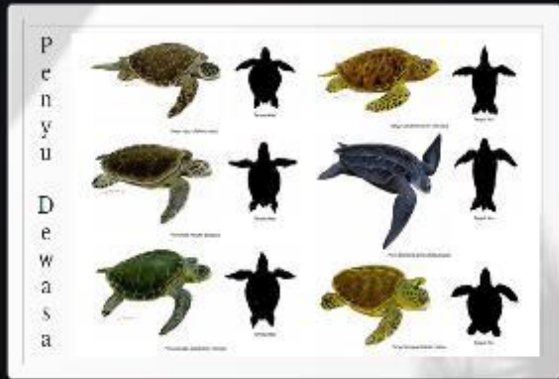
9



10



11



12



13



14




15




16






17

### Sebutkan Jenis Penyu dibawah ini!



18

### Pengukuran Karapas Penyu




Metode Pengukuran Penyu bisa menggunakan Caliper (Panjang Lunas Karapas) dan menggunakan Pita measure (Pangap Lengkung Karapas)

19

### Thanks!

[cwipenyu@gmail.com](mailto:cwipenyu@gmail.com)  
 +62 812 36 55 006  
 IG: @cwipenyu  
 Dwi Suprapt DVM



20

#### 4. Turtle-based ecotourism

This presentation material explains turtle-based ecotourism both the advantages and problems. In addition, this material also provides an overview of the success of sea turtle-based ecotourism activities in various countries.

#### EKOWISATA BERBASIS PENYU



1

#### Ekowisata

- Ada 2 konsep utama yaitu yang satu & lainnya konsekuensi.
- **Praktis**
  - Tidak pernah ada masalah jika ada masalah di suatu wilayah karena bisa diatasi.
- **Ekologi**
  - Akan menimbulkan masalah bila ada masalah alam dengan lingkungan masyarakat di sekitar yang bisa diatasi, yaitu yang berwujud pada tumbuhan yang tumbuh.



2

#### Ekowisata

- Ada pergeseran dari tradisi lokal menuju **praktis** pada realita di lapangan yang digunakan untuk kegiatan dengan cara:
  - Mengikuti tradisi lokal ekonomi dari suatu kebudayaan masyarakat di suatu lokasi wisata konservasi.
- Ini lah yang kemudian disebut dengan istilah **Ekowisata**, yaitu yang berkaitan dengan tradisi lokal ekowisata.



3

#### Ekowisata

- Masi mampu berfungsi sebagai alat pemenuhan bagi masyarakat setempat, agar sesuai dengan kondisi hidup manusia. Kepentingan di maksud adalah:
  - Kepentingan perlindungan ekologi
  - Kepentingan pembangunan ekonomi
  - Kepentingan untuk melestarikan suatu objek sosial-budaya tertentu



4

#### Ekowisata

Ekowisata adalah alat atau alat pemenuhan berkelanjutan dalam suatu wilayah (ekowisata) alamiah tersebut dengan melakukan **aktivitas** konservasi terhadap **alam** tersebut.



5

#### Masyarakat & Alam

- Suatu masyarakat dikatakan berkelanjutan secara ekologi jika selalu:
  - Melestarikan sistem penyangga kehidupan & keberagaman hayati;
  - Menggunakan SDA tepat pilih dengan tidak melebihi kapasitas reproduksinya & mengurangi depleksi SDA tak bisa pulih;
  - Selalu berada dalam koridor daya dukung penyangga ekosistem

6

## Problema Penyu

- Status dilindungi (karena terancam punah) vs eksistensi pemanfaatan (telur, daging, cangkang, plastron, & minyak) oleh banyak kelompok masyarakat (karena memiliki ekonomis tinggi)
- Upaya penegakan hukum tak pernah efektif menimbulkan efek jera
- Apakah ekowisata berbasis penyus adalah suatu solusi?

7

## Ekowisata berbasis penyus

Pelajaran dari tempat lain

8



Dibangun tahun 2004 oleh Pemda Bali & WWF dengan dukungan KSDA Bali & Universitas Udayana

9

## Tujuan utama

Mengurangi tingkat perdagangan & konsumsi penyus yang melanggar peraturan



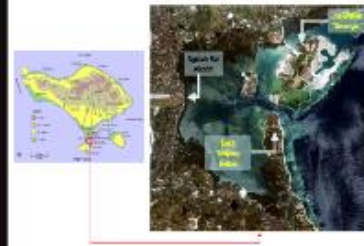
10

## Tujuan ...

- Sumber kegiatan ekonomi bagi (sebagian) masyarakat
- Menjaga & revitalisasi pemanfaatan penyus untuk kepentingan ritual-keagamaan

11

## Contoh - Lokasi Turtle Conservation and Education Center di Bali



12



1. Lantai bawah: 1 ha Struktur
1. Perawatan telur penyus
2. Kamar tidur & kamar penyus, kamar staf
3. Dapur & training center
4. Ruang display, bengkel & produksi material
5. Area parkir

13

## Turtle Conservation and Education Centre - Serangan: Beberapa Program Kerja



14

## Training life-Skill Bagi Masyarakat



15

## Atraksi 'laris': pelepasan Tukik



16

## Perkembangan (Hasil)

- Tingkat perdagangan ilegal penyus di Bali pada tahun 2010 menurun 90% dibandingkan tahun 2000.
- Pendapatan (gross) TCEC per BULAN (23 - 31 jt)
  - Donasi kunjungan ~ Rp. 9 - 10 jt
  - Adopsi tukik ~ Rp. 5 - 7 jt
  - Produksi cendera-mata & makanan ~ Rp 1 - 2 jt
  - Fee dari travel agent ~ Rp. 8 - 12 jt
- Retribusi ke Pemerintah (Desa): 25 - 35 jt
- 70% kebutuhan penyus (non-lindungi alam) untuk ritual keagamaan bisa dipenuhi.

17

## Cayman Turtle Center



18

## Cayman Turtle Center



19

## Cayman Turtle Center



20

## Sabah Park (Selingan, Bakkungan Kecil, Gulsan)



21



### Lokasi Membangun Penetasan Buatan

- Penetasan mesti dibangun sedikit mungkin dengan perka pada lokasi
  - Minimize gangguan tikuk tidak boleh ada
  - Minimize akses tikuk ke area saat dilakukan dan dibangun di penetasan non aktif
  - Memeriksa kesempatan bagi embrio & tukik untuk berpindah di lokasi penetasan
  - Fasilitas pelepasan tukik yang baik



7

### Lokasi penetasan

1. Mesti sesuai dengan dengan lokasi penetasan alami
2. Bebas gangguan manusia, binatang, gangguan alam (banjir, gempa, angin, gelombang, ombak, gelombang, banjir)
3. Sebaiknya kawasan penetasan lebih tinggi dari permukaan laut
4. Tidak ada gangguan dari sumber air
5. Sebaiknya lokasi penetasan lebih tinggi dari permukaan laut
6. Sebaiknya lokasi penetasan lebih tinggi dari permukaan laut



8

### Desain Penetasan

1. Tidak spesifik, namun bebas & bertanggung jawab
2. Jika banyak predator maka penetasan mesti dibangun (beton, kayu, plastik, dll)
3. Penetasan mesti dibuat sedemikian rupa untuk habitat bertukik
4. Bentuk penetasan disesuaikan kondisi lokal
5. Dilokasi yang baik bervegetasi, maka diperlukan pelindung panas



9

### Perlindungan (Shading)

1. Diperlukan jika temperatur sangat panas (diatas 30°C) atau di bawah 20°C
2. Tidak diperlukan shading jika suhu antara 20-30°C
3. Jika suhu sangat panas, maka diperlukan shading
4. Jika suhu sangat dingin, maka diperlukan pemanasan
5. Jika suhu sangat dingin, maka diperlukan pemanasan



10

### Kaidah Umum

- Penetasan hendaknya dibangun beberapa unit untuk menjaga di waktu kasu sandak lompat telur ditetaskan & juga diantisipasi tempat pelepasan tukik
- Penetasan hendaknya dibangun di area yang setidaknya 1 m lebih tinggi dari permukaan laut
- Pastikan penetasan terapan dengan baik. Sebaiknya tanah yang nyelim (tidak 1-2 m diameter 1 cm) sedalam setidaknya 0.5 m di bawah dasar pagar
- Sebaiknya jangan gunakan penetasan buatan lebih dari 20 musim berturut-turut sudah tentu harus di

11

### Yang Kiri Lebih Baik dari yang Kanan



12

### Relokasi Telur Penyus

1. Telur penyusu tak dibedakan untuk dipindah
  - Memeriksa lokasi yang sudah ada untuk penetasan
  - Pastikan lokasi yang sudah ada untuk penetasan
2. Sebaiknya relokasi dalam 2 jam dan esok dilakukan
  - Jika lokasi yang sudah ada untuk penetasan sudah ada, maka relokasi telur dengan cepat
3. Pengumpulan masih dalam container. Lebih baik ember plastik/bundar dibanding tas
4. Telur jangan dicuci dan dibersihkan dengan keadaannya yang sama dengan situasi alamiah
5. Hindari menggunakan probing device untuk memindahkan telur. Telur yang pecah bisa mengorbakan yang lain

13

### Relokasi Telur

- Ingat, sebaik dilakukan dalam kurun 2 jam dan saat telur Mokka
  - Lebih dari 2 jam tak di rekomendasikan
- Telur bisa diambilkan kapan langsung saat keluar kloaka
  - Hal-hal yang tidak dilakukan saat relokasi telur



14

### Penanaman Telur

- Lubang mesti dibuat menyerupai lekukan & bentuk sarang asli
- Jarak penanaman telur satu dengan lainnya tak kurang dari 1 m
- Telur mesti ditutupi dengan pasir/embak



15

### Protokol Umum


1. Bersihkan pantai
2. Monitor/amanakan penyus bertelur (catat data dasar)
3. Relokasi telur
4. Catat data yang relevan dengan sarang (tanggal ditelurkan, perkiraan menetas, persentase menetas)
5. Catat jumlah tukik yang dilepas ke laut

16

### Pelepasan Tukik

- Lepas berkelompok pada posisi & waktu 'random' di pantai penetasan
  - Hindari saat feeding station
- Idealnya sesial setelah muncul ke permukaan
- mpmring alami bisa dilakukan dengan memberikan tukik bergeser bebas di pantai menuju air laut
- Jika pelepasan mesti ditunda, letakkan tukik pada container yang lembut dan lembab dalam suasana sejuk, gelap & sury/terang. Jangan disimpan di container yang tertiar

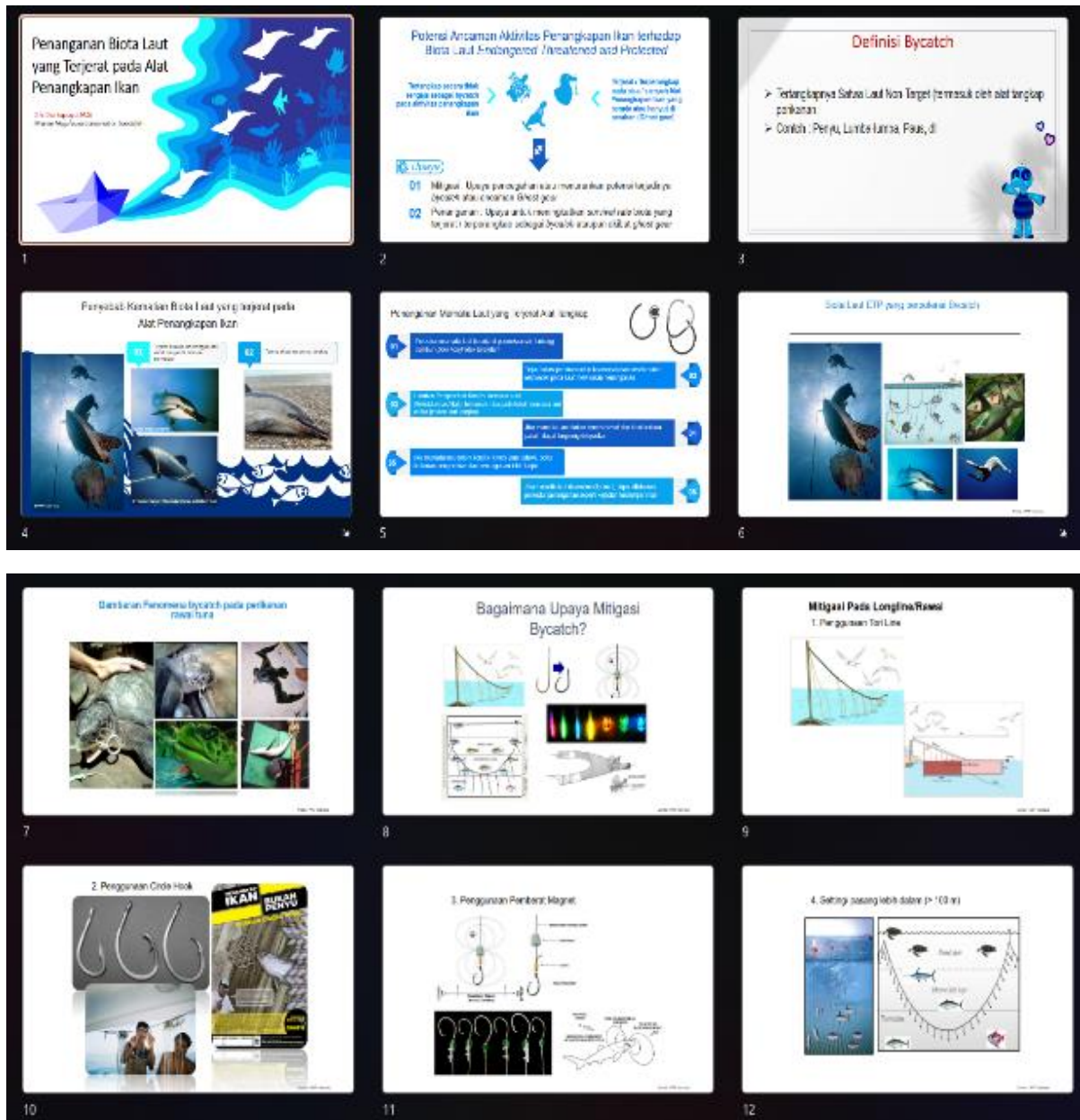
17



18

## 6. Bycatch mitigation

This material describes techniques for handling sea turtles and other marine biotas that are entangled in fishing gear (bycatch). The material begins by explaining the potential threat of bycatch from injury to death. This material also explains the phenomenon of bycatch in the world of fisheries, mitigation techniques, and handling if bycatch occurs to increase the chances of survival for sea turtles that experience bycatch.





13



14



15



16



17



18



19



20



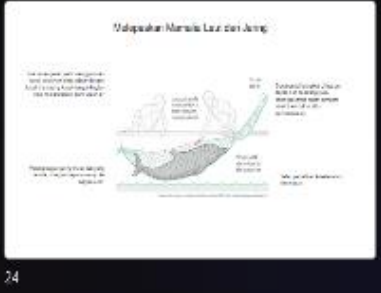
21



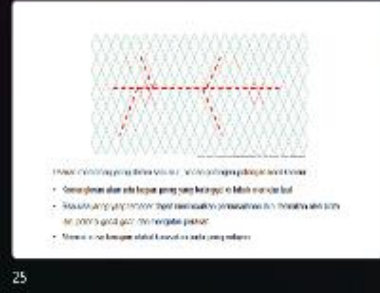
22



23



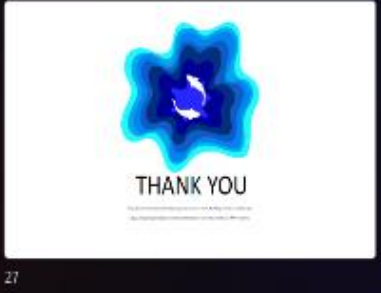
24



25



26



27



## TRAINING RESULTS

To measure the success of the training, pre and post-tests were carried out for all training participants. The questions given prioritise basic knowledge in differentiating turtles and tortoises and their identification, as well as knowledge about relocating nests and releasing hatched hatchlings. This type of question was chosen based on the results of the assessment when the training participants still could not differentiate all species of turtles and still believed that relocating and caring for hatchlings were the best strategy of sea turtle conservation that needs to be carried out in the long term, especially to attract tourists. The following are pre and post-test questions that were tested on training participants:

**Choose the correct answer from the following questions!**

1. Which one is a sea turtle (*lenuk*)?

a.



c.



b.



d.



2. Which is not the way to differentiate sea turtles and turtles?

- a. Shape of feet
- b. Habitat
- c. Head
- d. Colour

3. These are sea turtles that can be found in Timor-Leste, except...

- a. Green turtle
- b. Hawksbill turtle
- c. Olive ridley
- d. Kemp ridley

4. How old should sea turtle hatchlings be released to the sea after hatching?

- a. More than 1 month
- b. More than 1 year
- c. Less than 1 week
- d. The sooner, the better



5. These are some benefits of sea turtles, except..
  - a. Ensure there is fish in the oceans
  - b. Source of carbohydrate
  - c. Control coral reef ecosystem productivity
  - d. Control jellyfish population
  
6. This is a prerequisite for nest relocation.....
  - a. Beach abrasion
  - b. Waterlogged
  - c. Many predators
  - d. Pollution
  - e. All is correct
  
7. What is the challenge to do nest relocation?
  - a. Lower hatching rate
  - b. Physical trauma on the eggs
  - c. Need specialised skills
  - d. Need extra resources and time
  - e. All is correct
  
8. These are some challenges when tending sea turtles in a rehabilitation pond, except...
  - a. Spread of disease
  - b. High operational costs
  - c. Need good water circulation.
  - d. Limited food
  - e. No need for special skills

---

The pre and post-tests showed an increase in the participants' knowledge from 18 out of 29 participants (62%) who took and completed pre and post-tests. While 3 participants did not experience changes and 8 participants experienced a decrease in value. This decrease is thought to be related to difficulties in interpreting the language of the questions and the presence of elderly participants who experienced difficulties in reading. Lastly, 2 participants experienced a significant increase in knowledge by 50%.

### III. CONCLUSION

Based on the results of the assessment, discussions during the training and post-training as well as video analysis of handling sea turtles by community groups, some information was obtained and it was concluded as follows:

1. Com Beach is a nesting beach for at least 3 species of turtles, namely the Olive ridley turtle (*Lepidochelys olivacea*), Green turtle (*Chelonia mydas*), and Hawksbill turtle (*Eretmochelys imbricate*), where the Olive Ridley turtle is the dominant type of turtle found laying eggs on this beach.
2. Com Beach is not a big nesting beach. The population is relatively small with only around 25-30 nests per year. It is suspected that the poaching factor has caused the turtle egg population to continue to decline in this area, given the massive hunting for turtle eggs in this area since ancient times (reaching 100% nests). In addition, the data collection factor that is not intensive and the recording that is not good can be another factor for some loss of data. In addition, the coastline before and after Com Beach stretches a quite long beach, but this area is not a target monitoring area so there is a possibility that the area around Com Beach is a nesting area where no information is recorded.
3. The lack of knowledge of both the community, government and accompanying NGOs regarding the principles of sea turtle conservation, so that views on turtle conservation and turtle ecotourism are still in the context of keeping, rearing and directly holding turtles are the main things to attract tourists. Sea turtle ecotourism is not only those, other simple things can also be done.
4. The hatchability of relocated turtles (hatching success) is reported to be very low (less than 30%). This is of course still far from the recommended value of 70% of the total eggs, so it needs to be increased.
5. The unavailability of a series of comprehensive sea turtle monitoring data and the unavailability of reports and publications related to Com's nesting beaches.
6. There are no supporting facilities for sea turtle monitoring and data collection.
7. Group and group members are still not solid. There are still many gaps between group members, so it is necessary to strengthen the organisation so that the group can run with the same goals.

## IV. RECOMMENDATIONS

Based on the conclusions above, there are several recommendations for both high and low-priority scales.

### High Priority

1. Formation of conservation groups and strengthening of group legality.  
There is a need for clarification on the legality status of the group, group members, group name, purpose of the group's establishment, to the management structure accompanied by an advisor for the policy, conservation, and organisational aspects.
2. Series of training and practicum in an effort to increase community capacity  
Considering that the group is still relatively new and does not have the same vision and mission as well as unequal insights, a series of training and practices are needed to strengthen the group so that the goals of conservation and improvement of the economic sector can be achieved, including:
  - Organisational management training
  - Training on sea turtle data collection and monitoring techniques
  - Field training on relocation techniques, calculating hatching success and handling baby turtles/ hatchlings after they hatch
  - Training on ecotourism package management
  - Tour guide training
  - Citizen journalism training in an effort to publish ecotourism data and information.
  - Sustainable livelihoods training that can support sea turtle conservation efforts
  - Training on handling stranded and/or bycatch turtles and their rehabilitation efforts
  - Etc.
3. Provision of information boards and appeals related to sea turtle protection  
Especially in beach areas, markets and crowded areas so that more and more people know about turtle protection.
4. Develop a long-term Master Plan for Sea Turtle Conservation on Com beach. So that funding support, facilities, and others are more directed and well conceptualised.
5. Compilation of a picket list for monitoring sea turtles and ongoing monitoring and data collection by sea turtle monitoring team.
6. Hiring consultants for analysing available data and compiling various articles and other publications to introduce Com Beach to the public, both nationally and internationally.
7. Provision of Monitoring Facilities (monitoring post, camera, GPS, laptop, printer, handy talky, internet quota, stationery, etc)

## Less Priority

1. Provision of non-permanent (semi-natural) nest relocation facilities (i.e. relocation is in the beach area which is given a portable fence and made of non-permanent materials).
2. Provision of turtle-based educational facilities  
As a location for socialization, research, and education for the local community, government, school children, students and others, in the forms of dioramas, laptops, projectors, active speakers, posters, projector screens, and educational rooms.
3. Conservation cadre from young people and/or community figures who can become champions of sea turtle conservation and can campaign for sea turtle conservation efforts in Timor-Leste, especially Com Beach.



**ATSEA-2 Regional Project Management Unit**

Jl. Mertasari No.140 Sidakarya,  
Denpasar 80224, Bali, Indonesia

P: +62 361 448 4147

E: [infoatsea2@pemsea.org](mailto:infoatsea2@pemsea.org)

W: <https://atsea-program.com/>