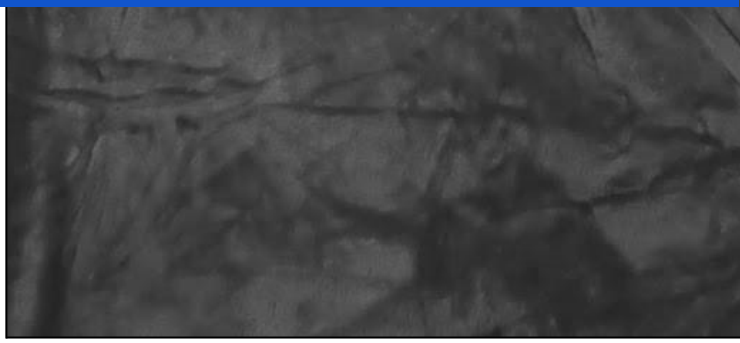
STRANDED TURTLE REPORT ON BALI ISLAND IN 2023

YAYASAN WESTERLAKEN ALLIANCE INDONESIA



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Yayasan Westerlaken Alliance Indonesia is the legal partner of the Westerlaken Foundation in Indonesia. One of Yayasan Westerlaken Alliance Indonesia's programs is the 'Marine Environment Program', which aims to preserve and protect the coastal and marine environment.

Our marine environment program focuses on the welfare of whales, dolphins and sea turtles. The foundation acts as a first responder for whale, dolphin and sea turtle strandings, actively confronts the captive industry, works towards sustainable dolphin watching practices and undertakes marine research.

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Foreword

The island of Bali, which is famous for its natural beauty and diverse ecosystem, has abundant marine resources. One of the important elements in this marine ecosystem is turtles, which are indicators of environmental health and the survival of various other species. Unfortunately, in recent times, this island has experienced an increase in the incidence of turtles stranded on its beaches.

Turtles are marine animals that have an important role in maintaining the balance of the marine ecosystem. They help control populations of invertebrates, such as crabs and shellfish, and maintain the balance of marine algae. Thus, the presence of turtles has a positive impact on the abundance and biodiversity of the surrounding waters.

Efforts to conserve and handle stranded turtles in Bali are a must to protect the sustainability of the turtle population and maintain the balance of the marine ecosystem. This includes:

- Research and Monitoring: To better understand turtle behavior and movements, and identify turtle stranding patterns.
- Breeding and Nest Protection: To increase the survival of turtle eggs and increase the chance of survival of baby turtles.
- Public Education: To increase public awareness of the importance of preserving the sustainability of sea turtles and avoiding actions that could harm them.
- Handling of Stranded Turtles: To provide medical care and rehabilitation to stranded turtles before they are released back into the marine environment.

In the context of this report, it needs to be emphasized that the protection and sustainability of turtle populations in Bali is not only the responsibility of the government or conservation institutions, but also the collective responsibility of the community. Thus, collaboration between governments, non-profit organizations, local communities, and the private sector is necessary to achieve larger conservation goals.

That is the background to this report, which is expected to provide a deeper understanding of the problem of stranded turtles in Bali and encourage collective efforts to protect the sustainability of the marine ecosystem in this region.

Denpasar, 31 Januari 2024
Co-author,

Pande Ketut Cahya Krisnanta Arioka, S.Si.
Coordinator of Marine Environment Program

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Introduction

Sea turtles, majestic and ancient creatures that have navigated the world's oceans for millions of years, face a growing threat in the form of stranding events along coastlines worldwide. The phenomenon of stranded sea turtles, where these gentle reptiles find themselves incapacitated and ashore, poses a significant concern for marine conservationists, scientists, and coastal communities alike. This report aims to shed light on the occurrence of turtle strandings, investigating the causes, impacts, and conservation measures associated with this alarming trend.

As we delve into the intricacies of turtle strandings, it becomes imperative to understand the multifaceted factors contributing to this phenomenon. Studt et al. (2019) show that stranded turtles can be caused by various factors. Some of them involve human activities, such as:

- Marine Pollution: Plastic waste and chemical waste can poison waters and pose a direct threat to turtles that consume them or become trapped in them.
- Climate Change: Global warming and climate change can affect ocean water temperatures and current patterns, which can influence sea turtle migration and feeding behavior.
- Growth of Development: Coastal development and human activities in coastal areas can disturb sea turtle nests and destroy their natural habitat.

Moreover, the consequences of turtle strandings extend beyond the individual turtles themselves. The impact on local ecosystems, including disruptions in breeding patterns and potential threats to biodiversity, underscores the urgency of addressing this issue. Research on stranded turtles is crucial as it provides in-depth insights into the factors causing these incidents and their impacts on turtle populations and the marine ecosystem as a whole (Peltier *et al.*, 2021). By examining the repercussions of strandings, we hope to underscore the critical importance of proactive conservation efforts and the need for collaborative initiatives involving communities, governments, and environmental organizations.

As we know that the reasons behind turtle strandings are diverse and complex. This report will explore these factors, providing a comprehensive overview of the challenges faced by marine turtles in their struggle for survival. Throughout this report, we will also explore ongoing conservation strategies and rehabilitation efforts aimed at mitigating the effects of turtle strandings. From rescue and rehabilitation centers to community-based initiatives promoting responsible coastal practices, the collective response to stranded turtles reflects a shared commitment to preserving these remarkable species.

In conclusion, this report serves as a call to action, urging stakeholders at local, regional, and global levels to work together in safeguarding the future of marine turtles. By understanding the complexities surrounding turtle strandings and implementing effective conservation measures, we can contribute to the preservation of these ancient mariners and the delicate ecosystems they inhabit.

Report of Stranded Turtles on Bali Island in 2023

In this report, Yayasan Westerlaken Alliance Indonesia reports on the number of stranded turtles found or handled by the foundation along various beaches on Bali Island throughout the year 2023.

The turtle species that were frequently stranded on Bali Island in 2023 are:

1. *Lepidochelys olivacea* or Olive Ridley Sea Turtle (total of 6 individual stranded in 2023)

Conservation status	: **Vulnerable (Decreasing)**		
Family	: Cheloniidae	Phylum	: Chordata
Order	: Testudines	Kingdom	: Animalia

2. *Chelonia mydas* or Green Sea Turtle (total of 6 individuals stranded in 2023)

Conservation Status	: **Endangered (Decreasing)**		
Family	: Cheloniidae	Phylum	: Chordata
Order	: Testudines	Kingdom	: Animalia

3. *Eretmochelys imbricata* or Hawksbill Sea Turtle (total of 1 individual stranded in 2023)

Conservation Status	: **Critically Endangered (Decreasing)**		
Family	: Cheloniidae	Phylum	: Chordata
Order	: Testudines	Kingdom	: Animalia

In 2022, a total of 7 (seven) turtles were found stranded (Yayasan Westerlaken Alliance Indonesia, 2022). The number increased to 13 (thirteen) cases of stranded sea turtles in 2023. Based on the data above, there was a significant increase in strandings during November-December 2022 (6 cases) to January 2023 (5 cases), while between March-April there were only 2 cases and 6 cases from August-December 2023.

Determining the specific cause of an increase in sea turtle strandings in January 2023 would require a thorough investigation and analysis by marine biologists, conservationists, and relevant authorities. However, several factors commonly contribute to an upsurge in sea turtle strandings, and these factors can be influenced by both natural and anthropogenic elements. Here are some potential causes for the increasing strandings of sea turtles in January:

1. **Extreme Weather Events:** Unusual weather patterns, including storms, high winds, or sudden temperature changes, can impact sea turtles' navigation, feeding, and breeding behaviors, leading to an increased likelihood of strandings.
2. **Oceanographic Conditions:** Changes in ocean currents, temperature, and nutrient availability can affect the distribution and migration patterns of sea turtles. Anomalies in these conditions may lead turtles into unfamiliar or hazardous areas, increasing the risk of stranding.

3. **Human Activities:** Anthropogenic factors such as coastal development, pollution, and maritime traffic can pose significant threats to sea turtles. Accidental capture in fishing gear (bycatch), ingestion of marine debris (especially plastics), and habitat degradation are examples of human-induced stresses that can result in sea turtle strandings.
4. **Disease Outbreaks:** Like any wildlife population, sea turtles can be susceptible to diseases. Disease outbreaks within turtle populations may result in weakened individuals that are more prone to stranding events.
5. **Breeding Season Challenges:** January coincides with the nesting season for some sea turtle species. Females returning to lay eggs may face obstacles such as increased predation, loss of nesting habitats, or disturbances from human activities, affecting their reproductive success and potentially leading to strandings.
6. **Migration Disturbances:** Changes in the availability of food sources or disruptions in migration routes can affect sea turtles, causing them to deviate from their usual paths and increasing the likelihood of strandings.

It is essential to note that a combination of these factors, rather than a single cause, often contributes to an increase in sea turtle strandings. Timely and accurate data collection, along with necropsies and health assessments of stranded turtles, are crucial in identifying the root causes and implementing effective conservation measures to mitigate future strandings. Collaborative efforts involving government agencies, conservation organizations, and local communities are essential for addressing these challenges and ensuring the protection of sea turtles and their habitats.

Here is the data in chart form. It is evident that the loggerhead turtle and green turtle dominate with a respective total of 6 (six) individuals stranded, while the hawksbill turtle only has 1 (one) individual stranded in the year 2023.

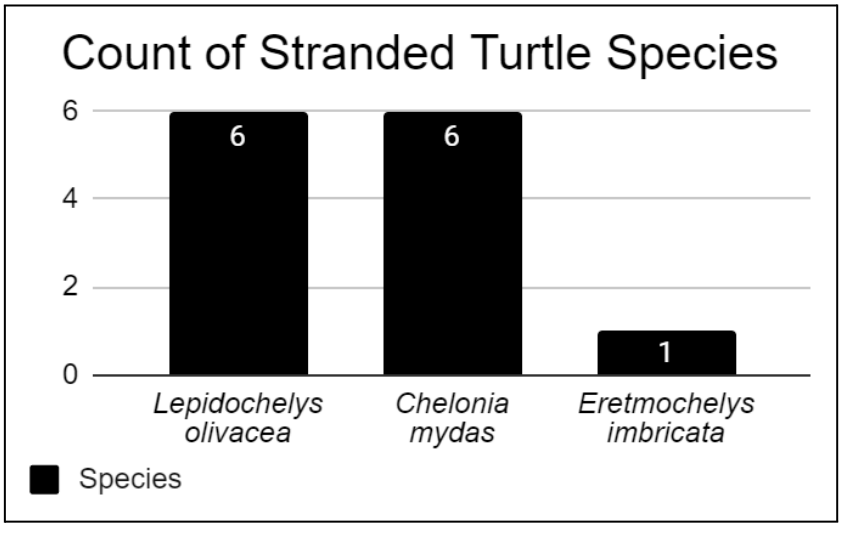

Image 1. Chart of Stranded Turtle in 2023

Below are further details on the turtle species stranded on Bali Island in 2023.

Table 1. Turtle Species Stranded on Bali Island in 2023

No	Date	Species	Location Found
1	January 11, 2023	*L. olivacea*	Jimbaran Beach
2	January 12, 2023	*C. mydas*	Kedonganan Beach
3	January 16, 2023	*L. olivacea*	Kuta Beach
4	January 17, 2023	*L. olivacea*	Kuta Beach
5	January 28, 2023	*L. olivacea*	Lovina Beach
6	March 2, 2023	*E. imbricata*	Kuta Beach
7	March 13, 2023	*C. mydas*	Perancak Beach
8	April 11, 2023	*C. mydas*	Jimbaran Beach
9	August 20, 2023	*C. mydas*	Perancak Beach
10	September 17, 2023	*L. olivacea*	Perancak Beach
11	November 9, 2023	*C. mydas*	Pengambengan Beach
12	December 5, 2023	*C. mydas*	Nyang Nyang Beach
13	December 14, 2023	*L. olivacea*	Batu Belig Beach

Map of Turtle Strandings on Bali Island in 2023

A total of 13 (thirteen) recorded cases of turtles from various species were stranded in 2023, as reported by Yayasan Westerlaken Alliance Indonesia. Based on the data, the most commonly stranded turtle species along the coastal areas of Bali were Green Turtles (6 cases) and Olive Ridley Turtles (6 cases). Necropsies were conducted on some of the stranded turtles which still have good carcasses condition.

Below is the map depicting the locations of stranded turtles on Bali Island in 2023.

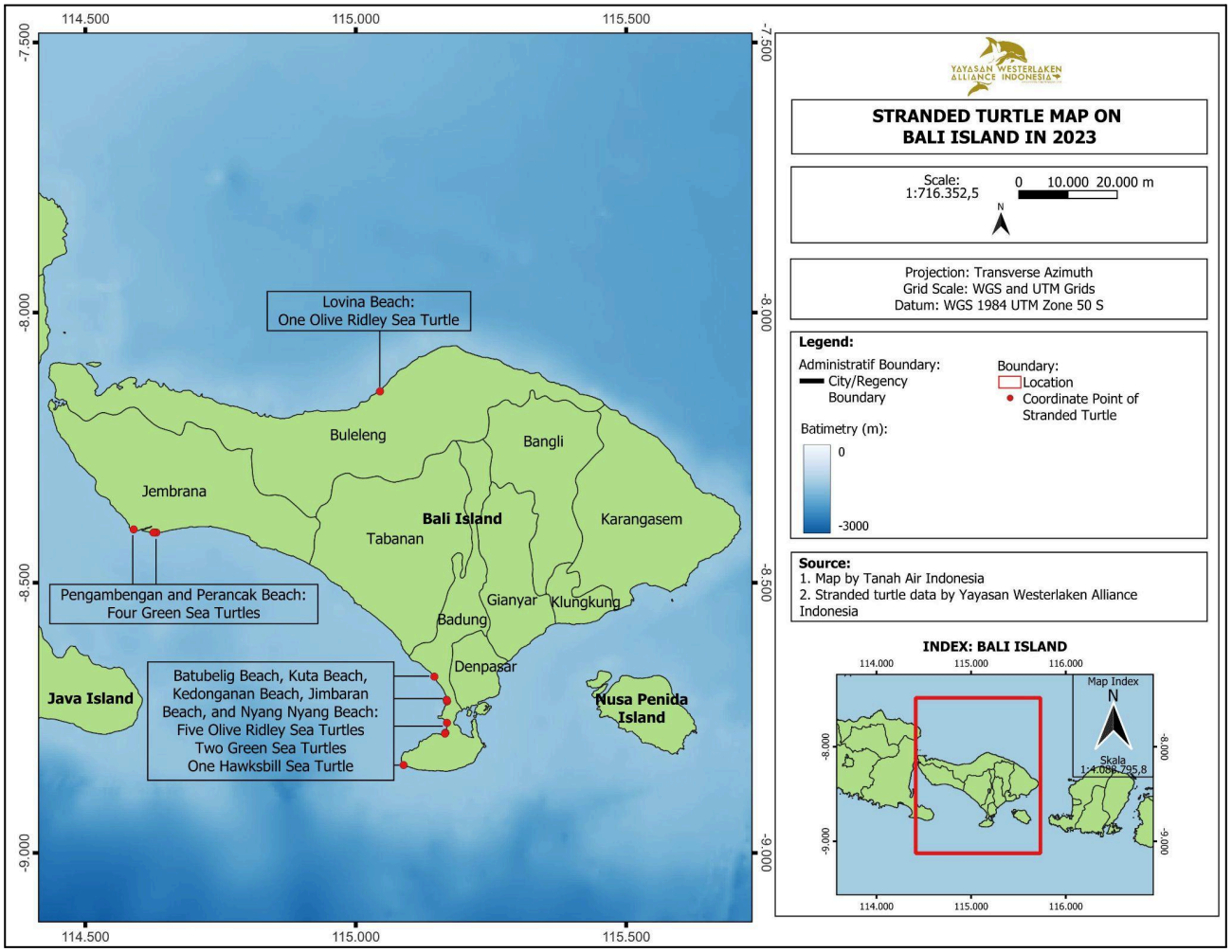

Image 2. Map of Stranded Turtles on Bali Island in 2023

The data collection efforts were carried out through coordination with:

- Socialization conducted by Yayasan Westerlaken Alliance Indonesia with officers of DLHK (*Dinas Lingkungan Hidup dan Kebersihan*) Kabupaten Badung and Badan Pengelola Kawasan Pariwisata Pesisir Kedonganan (BPKP2K).
- Collaboration with BKSDA (*Balai Konservasi Sumber Daya Alam*) Bali and BPSPL (*Balai Pengelolaan Sumberdaya Pesisir dan Laut*) Denpasar through a network of sea turtles observers, share information regarding stranded events.
- Reports from residents, tourists, and beach visitors, submitted either directly or through social media posts.
- Collaboration with environmental observer communities in Bali, which frequently conduct beach cleaning activities and share information if stranded turtle carcasses are found on the beach.

Handling/Actions

Out of the 13 (thirteen) turtle reports, we did necropsy to 2 of turtles carcasses. The actions taken in each of the stranded turtle events above varied depending on the condition of the turtle carcasses when found. The main actions carried out included identifying the species, including its gender and body size, documenting the incident, and then burying the carcass near a location far from the coastline.

Here are the information details :

1. On 5th December 2023, Yayasan Westerlaken Alliance Indonesia conducted intervention for a green turtle (*C. mydas*) that was stranded, and we found it among the coral rocks during three location checks. Yayasan Westerlaken Alliance Indonesia has performed measurements, documentation, DNA sampling, necropsy, and burial. The turtle measured 40 x 55 cm and was identified as female. The age of the turtle is presumed to be below reproductive age as it is not yet sexually mature. The turtle likely stranded less than 24 hours (code 3), and the necropsy results was:
   - The heart appears darker, possibly due to the carcass being relatively old, causing blood to clot inside.
   - The liver is normal, incision in one lobe shows good consistency.
   - The stomach is of normal size, neither too large nor too small, and still contains seaweed.
   - The small and large intestines were incised to check for plastic or foreign objects such as hooks, but none were found during the necropsy.
   - The lungs were left attached to the carapace. The reddish color is due to pressure during death and blood filling from the heart.
   - The kidneys and reproductive organs were left attached to the carapace, with normal size and consistency.
   - There is a large open wound on the neck, but it is difficult to determine whether the injury is from a ship's propeller or a predator.

Conclusion: The cause of death is trauma to the neck and head.

Image 3. Stranded Green Sea Turtle (C. mydas) in Nyang Nyang Beach
Data and documentation by: Yayasan Westerlaken Alliance Indonesia

2. On December 14th, 2023, Yayasan Westerlaken Alliance Indonesia received a report of a stranded turtle from the environmental cleanliness team of the DLHK (Environmental Agency) of Badung Regency at 06:57 WITA. Based on field observations, the preliminary suspicion is that the turtle is an Olive Ridley Turtle (*L. olivacea*), male, with a carapace size of 82 x 80 cm.

Yayasan Westerlaken Alliance Indonesia, in collaboration with the DLHK Badung Regency cleanliness team, brought the turtle to our office for a necropsy. The necropsy (post-mortem examination) process was carried out to determine the cause of death from a medical perspective. However, it was not possible to conclude the cause of death for this Olive Ridley Turtle due to the severely decayed and destroyed condition of the internal organs (code 4). Yayasan Westerlaken Alliance Indonesia buried the turtle carcass in the vicinity of our office premises.

Image 4. Stranded Olive Ridley Turtle (Lepidochelys olivacea) in Batu Beliq Beach
Data and documentation by: Yayasan Westerlaken Alliance Indonesia

Here are the details of handling each stranded turtle species (aside from those already described), totaling 11 others. We didn't necropsy on the stranded turtle because some turtles were immediately rescued and buried (if found dead), while others were rehabilitated. Some turtles we found were already in a state of decay (code 3-4), so necropsy wasn't conducted.

1. Stranded Olive Ridley Sea Turtle (*Lepidochelys olivacea*) on Jimbaran Beach

On January 11, 2023 stranded olive ridley sea turtle founded by Field Officer of DLHK Badung. Case handled by Pak Sukeariama. From the picture below we know that this turtle is female.

Image 5. Stranded Olive Ridley Sea Turtle (L. olivacea) on Jimbaran Beach
Data and documentation by: DLHK Badung

2. Stranded Green Sea Turtle (*C. mydas*) on Kedonganan Beach

On January 12, 2023 green sea turtle got stranded. The gender of the dead stranded turtle was female with a size of 87 x 58 cm. Case handled by Yayasan Westerlaken Alliance Indonesia. It seems that the local community has already buried this turtle because the next day, along with BPSPL Denpasar, we were planning to bury the carcass. However, the turtle carcass has disappeared along with the surrounding debris.

Image 6. Stranded Green Sea Turtle (C. mydas) on Kedonganan Beach
Data and documentation by: Yayasan Westerlaken Alliance Indonesia

3. Stranded Olive Ridley Sea Turtle (*L. olivacea*) on Kuta Beach (January 16, 2023)

The size of this stranded turtle is 51 x 55 cm and she is Female. Limp conditions due to large waves and being treated/rehabilitated at TCEC Serangan. Case handled by BSTS Kuta and TCEC Serangan.

Image 7. Stranded Olive Ridley Sea Turtle (L. olivacea) on Kuta Beach
Data and documentation by: Pak Made Sukanta - TCEC Serangan

4. Stranded Olive Ridley Sea Turtle (*L. olivacea*) on Kuta Beach (January 17, 2023)

The size of this stranded turtle is 54 x 57 cm, limp conditions due to large waves and being treated/rehabilitated at TCEC Serangan. From the picture below, we know the gender is female.

Image 8. Stranded Olive Ridley Sea Turtle (L. olivacea) on Kuta Beach
Data and documentation by: Pak Made Sukanta - TCEC Serangan

5. Stranded Olive Ridley Sea Turtle (*L. olivacea*) on Lovina Beach (January 28, 2023)

Stranded and very thin. This turtle was then rehabilitated at the JSI/JAAN seapen.

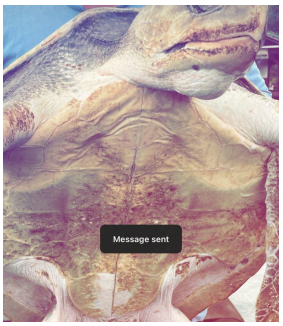

Image 7. Stranded Olive Ridley Sea Turtle (L. olivacea) on Lovina Beach
Data and documentation by: Femke Den Haas - JSI/JAAN

6. Stranded Loggerhead Turtle (*E. imbricata*) on Kuta Beach (March 2, 2023)

Necropsy on a stranded turtles. Case handled by TCEC Serangan, I am flying vet, klinik hewan purnama, Dwi Agustini.

Image 8. Stranded Loggerhead Turtle (E. imbricata) on Kuta Beach
Data and documentation by: Pak Made Sukanta - TCEC Serangan

7. Stranded Green Sea Turtle (*C. mydas*) on Perancak Beach (March 13, 2023)

Stranded dead, carapace size 63 x 59 cm, The condition of the Turtle found no traces of entanglement in nets, ropes, blunt objects and absolutely no bruises. Case handled by Pak Anom - Kurma Asih.

Image 9. Stranded Green Sea Turtle (C. mydas) on Perancak Beach
Data and documentation by: Pak Anom - Kurma Asih

8. Stranded Green Sea Turtle (*C. mydas*) on Jimbaran Beach (April 11, 2023)

Stranded dead, the shell already broke and already rotten. Case handled by DLHK Kabupaten Badung.

Image 10. Stranded Green Sea Turtle (C. mydas) on Jimbaran Beach
Data and documentation by: DLHK Badung

9. Stranded Green Sea Turtle (*C. mydas*) on Perancak Beach (August 20, 2023)

Stranded dead with its front flipper entangled in a plastic string, and on its shell, there is a white-colored number 57 painted/tagged. Female. The shell size is 70 cm long and 68 cm wide. Handling identification/burial will be conducted in collaboration with the Jembrana District Natural Resources Conservation Agency (BKSDA) Resort.

Image 11. Stranded Green Sea Turtle (C. mydas) on Perancak Beach
Data and documentation by: Pak Anom Kurma Asih

10. Stranded Olive Ridley Sea Turtle (*L. olivacea*) on Perancak Beach (September 17, 2023)

Stranded dead with bloated condition. The carapace size is 64 cm in length and 62 cm in wide. Buried and already reported to Jembrana District Natural Resources Conservation Agency (BKSDA) Resort.

Image 12. Stranded Olive Ridley Sea Turtle (L. olivacea) on Perancak Beach
Data and documentation by: Pak Anom - Kurma Asih

11. Stranded Green Sea Turtle (*C. mydas*) on Pengambengan Beach (November 9, 2023)

Tangled dead because of fishnet with bloated condition. The carapace size was 100 cm (length) and 60 cm (width). Buried and already reported to PSDKP Jembrana.

Image 13. Stranded Green Sea Turtle (C. mydas) on Pengambengan Beach
Data and documentation by: Andri - PSDKP

Conclusion

This report is based on information received from various sources. The collaboration of stakeholders involved in turtle conservation in Bali is essential to create a well-structured database that can serve as a reference for future data. We express our gratitude to DLHK Kabupaten Badung, BPSPL Denpasar, BPKP2K, TCEC Serangan, and the residents for their contributions to data collection, field handling, and the completion of this report.

Recommendations

Yayasan Westerlaken Alliance Indonesia proposes several recommendations for better database management in the future:

- Conduct further awareness campaigns on turtle conservation, especially for coastal communities.
- Propose a unified reporting system for stranded turtle incidents.
- Engage with stakeholders from both government and NGOs in turtle conservation efforts.
- Continue data collection activities in the coming years.

For further information, please contact the caseworker: **Pande Ketut Cahya Krisnanta Arioka, S.Si. (082211872080/081238445600)**.

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