Final Evaluation Report

Your Details	
Full Name	Endora Celohoxhaj
Project Title	Advancing Marine Turtle Conservation: A Comprehensive Study of Nesting Habitats and Effective Protection Measures for Caretta caretta in Albania
Application ID	41530-1
Date of this Report	20.10.2024

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Nesting Site Protection		x		The protection of the area through monitoring activities and the identification of sea turtle nesting sites has been achieved effectively. However, our primary objective as conservationists is to ensure higher legal protection for habitats used by sea turtles for nesting. Currently, the area holds the status of a Protected Landscape, but recent changes in Albanian legislation for protected areas, specifically **Law No. 81/2017 "On Protected Areas"** (amended by **Law No. 21/2024, dated 22.02.2024**), have opened the door to significant investments, primarily in the development of luxury resorts (5-star hotels). These large-scale developments pose a serious threat to coastal ecosystems, as infrastructure expansion can result in irreversible damage to sea turtle habitats, potentially compromising nesting success and population sustainability.

				Moreover, with the **Vjosa River recently designated as a national park**, it is crucial to incorporate adjacent habitats into the river's management plans. Including these areas in conservation frameworks would help ensure the preservation of ecologically important zones near the park, which are essential not only for maintaining biodiversity but also for supporting critical habitats for sea turtles.
Identification of threats			x	In addition to strategic investments, one of the primary threats observed in the field is the increasing presence of predators, particularly jackals (**Canis aureus**), which have recently proliferated in the area. A forthcoming study by **PPNEA** will provide detailed insights into the population dynamics of jackals near critical sea turtle nesting habitats. The presence of jackals has significantly hindered nesting success in recent years, with predation on nests identified as the primary reason for the lack of successful hatching events so far. Jackals have been observed targeting nests and consuming eggs, severely impacting reproductive outcomes.

				This year, we also documented an alarming incident where a sea turtle attempting to nest was attacked and killed by jackals before it could lay its eggs. A necropsy conducted on the dead turtle revealed intact eggs inside its reproductive tract. Although the eggs were carefully removed from the mother's body and reburied in the sand, none of them successfully developed, highlighting the challenges posed by predation not only during incubation but also during the nesting process itself. To mitigate these threats, conservation efforts this year included the installation of protective cages around nests to prevent jackal access. However, this intervention alone is insufficient, and a more comprehensive strategy is required to deter jackals from approaching these critical habitats during the nesting season.
Collaboration and Knowledge Sharing		x		Soon to be accomplished through the scientific article. This year marks the first successful nesting season for sea turtles in the Vlora region. Both the number of nests and their outcomes have improved significantly. The data collected during the season will soon be published in a scientific article,

				which we are currently preparing in collaboration with **Prof. Enerit Sacdanaku**, my mentor throughout all the work on sea turtle conservation to date.

2. Describe the three most important outcomes of your project.

a). *This year marks the **first successful sea turtle nesting season in the Vlora region**, with 4 out of 7 nests successfully hatching. This achievement is a major milestone, as it reflects both an increase in the number of nests and improved hatching success. The monitoring efforts, protective measures, and habitat management applied this season have contributed significantly to this outcome. It's crucial to highlight the success of the nests in the Palasa area, which is characterized by a gravel rather than sandy substrate. Local workers reported to the National Agency for Protected Areas (AKZM) about the emergence of hatchlings heading toward the sea.*
In this gravelly region, the challenge lies in identifying the nest, as the hatchlings that emerged were observed moving toward the sea. However, due to the nature of the substrate, it became difficult to track their footprints, making it challenging to pinpoint the exact location of the nests. This situation underscores the need for continuous monitoring and adaptive strategies tailored to different habitat types to enhance conservation efforts in the area.

Photo: Kostandin Xhaho

Photo: Nexhip Hysolakoj

b). *Comprehensive* ***data on nesting activity***, ***hatch success***, *environmental conditions, and predation incidents were gathered for the first time in the region.*

c). *This year marked Albania's* ***first-ever attempt at relocating sea turtle eggs***, *which ended successfully. This breakthrough demonstrates that relocation can be a viable strategy for protecting vulnerable nests, providing new opportunities for conservation efforts. The achievement will be highlighted in the upcoming scientific article, offering valuable guidance for future interventions in Albania and the region.*

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

1. The project faced several challenges, particularly related to the limited availability of volunteers during the summer season. Many students seek paid employment during this time, making it difficult for them to commit to volunteer work, especially as this period coincides with their exam season. Despite the low number of student volunteers, significant support came from the Regional Administration of Protected Areas in Vlora, as well as collaboration with Prof. Enerit Sacdanaku, who was implementing a separate project focused on sea turtles funded by Global Environment Facility/Small grants Programme (GEF/SPG). This partnership was highly effective, allowing for the coverage of additional areas and enhancing the overall impact of both projects. The collaboration not only strengthened the conservation efforts but also facilitated knowledge sharing and resource allocation, leading to a more comprehensive approach to sea turtle conservation in the region.

2. The nesting period requires constant monitoring, 24/7, which is challenging due to insufficient funding. Hatchlings can emerge at any time, and without continuous observation, the risk of predation during their vulnerable emergence from the nest increases significantly. Therefore, enhanced monitoring during this critical period is essential to ensure the successful return of hatchlings to the sea. Although we were unable to witness the emergence of every successful nest, we were able to assess their success rates afterward. Ultimately, it was determined that 5 out of the successful nests had a hatching success rate exceeding 50%. This data highlights the effectiveness of the nests and underscores the importance of further support and resources to improve monitoring efforts in the future. Enhanced funding would enable us to ensure more comprehensive coverage and better protection for both the nests and the hatchlings during their critical transition to the sea.

3. The organization of unauthorized activities within protected areas poses a significant threat to local ecosystems. This year, a large illegal festival titled "Illegal Techno" was held on the beach at the delta of the Vjosa River, attracting around 1,000 attendees. The festival's activities such as campers, including loud music, campfires, and bright lights, were particularly disruptive during the critical period of sea turtle hatchling emergence, as they coincide with the nesting sites of these endangered species. In response to this situation, we alerted the police to take necessary measures against such uncontrolled events, which are detrimental to biodiversity in protected areas—not only for sea turtles but for the entire ecosystem. Although the festival was originally scheduled to last for two weeks, police intervention helped to reduce its duration to just three days, demonstrating the

importance of vigilance and active enforcement in protecting vulnerable habitats.

4. Describe the involvement of local communities and how they have benefitted from the project.

The involvement of the fishing community has been a key element of this project, as they are often the first to enter the area in the early morning hours. Their ability to observe and report any sea turtle tracks is invaluable. The fishermen serve as crucial eyes and ears on the ground, promptly have notified us of any nesting activities they witness. Engaging fishermen fosters trust and collaboration between conservationists and the local fishing community. This relationship is vital for promoting sustainable practices and ensuring mutual benefits. With the local fishermen actively participating in monitoring, we can achieve better conservation outcomes, as their knowledge and familiarity with the area enhance our efforts.

By learning about the ecological roles of sea turtles and their interactions within marine ecosystems, fishermen have developed a deeper appreciation for the biodiversity that exists in their waters. This understanding helps them recognize the importance of maintaining healthy ecosystems for sustainable fishing. Fishermen are now more aware that the sustainable management of marine resources is critical for their long-term livelihoods. By protecting the marine environment, they can ensure a healthier ecosystem that supports fish populations and, in turn, their fishing activities.

It is important to highlight the role of **Adrian**, a fisherman from Vjosa, who has consistently shown curiosity in learning more about sea turtles and has been an active participant in their conservation. This year, through the project, Adrian had the opportunity to witness a sea turtle laying eggs. Recognizing the significance of the event, he promptly reported the sighting and remained on-site until the turtle safely returned to the sea.
His vigilance ensured that the eggs were immediately protected from predators, as he helped set up a cage around the nest to shield it from potential threats. Adrian's proactive involvement not only exemplifies his commitment to marine conservation but also reflects the positive impact of community engagement in safeguarding vulnerable species. His actions serve as an inspiration to others in the fishing community, highlighting the vital role they play in protecting marine biodiversity.

5. Are there any plans to continue this work?

The continuation of our work is crucial, as we have collected samples from each nest for future histological, pathological, and post-mortem studies. We will soon collaborate with Andreji Gajic and SharkLabAdria to analyze these samples and gather further data regarding the development of the eggs. We are working on a solid paper to disseminate the results.

Additionally, an important element that was lacking during this year's project was the measurement of sand temperatures. Out of two relocated nests, one achieved

a success rate of 98%, while the other had a success rate of 0%. It is essential to emphasize that relocating nests near the Vjosa river mouth is critical due to the significant tidal fluctuations in this area. Without relocation, the chances for the development of the nests would have been zero. To ensure successful relocation, understanding the temperature of the sand is vital. This requires specialized thermometers that provide continuous data on temperatures during various stages of egg development. By monitoring these temperature changes, we can make informed decisions regarding the timing and conditions necessary for successful egg relocation, ultimately enhancing our conservation efforts for sea turtles in the region.

We have observed a significant increase in the number of sea turtle nests over the years, which underscores the necessity for continuous monitoring to protect the eggs in a timely manner and to relocate them if necessary. Timely protection involves managing populations of predators, such as jackals and other scavengers, in the area. One method to protect the eggs, in addition to placing cages around nests, is to deploy devices designed to deter predators like jackals in areas where we have nests. However, these devices alone do not completely prevent predation, so a comprehensive strategy must be developed in collaboration with the National Agency for Protected Areas.

It is very important for us to continue this project next year with the support of Rufford. We need to go beyond collecting basic data and focus on more detailed research, including habitat mapping and sample analysis. This will allow us to gain deeper scientific insights and ensure more effective conservation strategies for the future.

6. How do you plan to share the results of your work with others?

Nothing holds value unless it is published. So far, there are no published data regarding sea turtle nesting in Albania. Together with Prof. Enerit Sacdanaku and the Regional Administration of Protected Areas in Vlora, we are preparing a scientific article to publish the collected data. This article will be significant as it will contribute to the existing body of knowledge on sea turtles and will acknowledge the support of the Rufford Foundation for our work. By disseminating our findings, we aim to raise awareness and promote further research and conservation efforts in the region.

In 2025, the 8th Conference on Marine Turtles will be held in Greece. Following my participation in the 7th Conference in Morocco, I aim to attend this event with my team. If we secure the necessary funding, we plan to present the outcomes of our sea turtle conservation project in the Vlora region, sharing our findings and success stories with the international conservation community to raise global awareness and inspire further efforts.

7. Looking ahead, what do you feel are the important next steps?

1. Advocate for the legal protection of sea turtle habitats, not only as part of the Pishe-Poro-Nartë Protected Landscape but also as designated priority habitats (dunes) under the Habitats Directive. This will involve:

- Engaging with local and national authorities to recognize and elevate the conservation status of these critical habitats.
- Developing policies that specifically address the needs of sea turtle nesting sites and their surrounding environments.

2. Implement ongoing monitoring programs at nesting sites to collect more comprehensive data. This will include:
    - Regular assessments of nesting success rates and environmental conditions.
    - Monitoring of predator populations and their impacts on nests.
    - Utilizing technology (e.g., cameras, sensors) to gather real-time data on nesting activities and environmental parameters.

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

During this project, information panels were produced regarding the information about Caretta caretta and tracks that can be observed together with the contacts needed in case of observation.

Data dissemination occurred through the official website and social media pages of PPNEA after the project's conclusion. This approach was taken to safeguard the nests from any potential harm caused by malicious actors, allowing for the careful release of information at a later time.
https://www.facebook.com/ppnea/videos/2885692461581398

https://www.facebook.com/ppnea/videos/442281035633800

9. Provide a full list of all the members of your team and their role in the project.

MSc. Kostandin Xhaho, the local coordinator of PPNEA, has played a crucial role in this project. He has dedicatedly monitored the nesting sites every morning and evening to identify signs of sea turtles laying eggs. Throughout the project, he has actively maintained communication with local fishermen to gather valuable insights and foster collaboration. During the hatchling emergence period, Kostandin conducted nightly monitoring of the nests, ensuring that any potential activity was observed and documented. His commitment to the project has been instrumental in enhancing our understanding of sea turtle nesting behaviors and improving the conservation efforts in the region.
Contacts: k.xhaho@ppnea.org; Phone no: 355698914244

MSc. Nexhip Hysolakoj, as part of the National Agency for Protected Areas, has been actively involved in the continuous monitoring of protected areas in the Vlorë region. As the monitoring coordinator, he has worked closely with Kostandin Xhaho to locate as many sea turtle nests as possible and ensure their timely protection.
The data collected through this project are significant for NAPA (National Agency for Protected Areas) database, contributing valuable scientific information on biodiversity in protected areas. This collaboration not only enhances our understanding of sea turtle nesting patterns but also strengthens conservation efforts in the region.
Contacts: hnexhip@yahoo.com; Phone no: 355673847379

Prof. Enerit Sacdanaku and Prof. Yakup Kaska have been pivotal figures in the academic and research landscape regarding sea turtles. Their expertise has been invaluable during sea turtle nesting cases and monitoring activities, where they have offered guidance on nest management and the developmental processes of the turtles. Their contributions have helped ensure that conservation efforts are grounded in sound scientific principles, enhancing the overall effectiveness of the project.

Contacts: eneriti@gmail.com; Phone no: 355684103150
caretta@pau.edu.tr; Phone no: +905335735339
Students, **Xheni Bitaj** and **Vitori Ujeniku** have been actively engaged in the project, particularly during the evening monitoring sessions that coincide with the hatchling emergence period.

10. Any other comments?

- **Data from this year of the project (Table below; https://docs.google.com/spreadsheets/d/16aZXK2Hwmp9ylq3oBl9s26czC2RxUHOG/edit?usp=sharing&ouid=112228553105787285157&rtpof=true&sd=true**

MARINE TURTLES-NESTING SEASON 2024

Date	Person involved	Marine turtle present/Data	Nesting acti	Type of monitoring	Place name	Coordinates	Nest/Attempt	Distance from the sea	Nest temperature (if possible)	Nest depth (From surface to the first egg)	No. of eg	Relocation needed	New coordinates	Distance from the sea	Cage installation	Succesful nest	No of eggs
25.10.2023	Endora Celohoxhaj; Kostandin Xhaho; Andrej Gajic	Dead turtle; Cause of death: Hit by a boat; Length: 72 cm; Width 65 cm		By drone and walking	Lungomare												
07.06.2024	Kostandin Xhaho, Endora Celohoxhaj	Dead marine turtle; No external signs; suspicions of dynamite.	No	Tourist observation	Zhapovel, Karaburun												
11.06.2024	Kostandin Xhaho, Endora Celohoxhaj		Yes	By drone and walking	Vjosa Delta	40° 37.804'; 19°20.033'	Nest	26 m		20 cm		No			No	No	
11.06.2024	Kostandin Xhaho, Endora Celohoxhaj	Dead marine turtle: Cause of death: During her egg laying eaten by jackals; Length: 71 cm; Width 66 cm; Flippers 32 cm; Head length 21 cm; Head width 14 cm	Yes	By drone and walking	Vjosa Delta		Nest (eggs taken after necropsy)	14 m			28 mature eggs/ 105 nonmature eggs	Yes	40° 37.788'; 19°20.040'		Yes	No	
26.06.2024	Nexhip Hysolakoj/ REC Albania/ RAPA Vlore	No	Yes	By walking	Hidrovor Beach	40° 37.804'; 19°20.033'	Attempt										
04.07.2024	Kostandin Xhaho	No	Yes	By drone and walking	Vjosa Delta	40° 37.382'; 19°20.485'	Nest	13 m	24.8	12 cm	103	Yes	40° 37.379'; 19°20.303'	35 m	Yes	No	
13.07.2024	Nexhip Hysolakoj/ REC Albania/ RAPA Vlore		Yes	By walking	Hidrovor Beach	40° 35'16"; 19°21'46"	Attempt										
13.07.2024	Nexhip Husolakoj,Kostandin Xhaho	No	Yes	By drone and walking	Hidrovor Beach	40° 35.098'; 19°21.864'	Nest	21.9 m		23 cm		No			Yes	Yes	95
15.07.2024	Nexhip Husolakoj,Kostandin Xhaho	No	Yes	By drone and walking	Hidrovor Beach	40° 34.898'; 19°21.938'	Nest	26 m		30 cm		No			Yes	Yes	72
17.07.2024	Kostandin Xhaho/ online information	Yes	Yes	Tourist observation	Dhermi beach/Drymadhes Inn	40.1535385 19.6125145	Attempt; disturbed by people										
18.07.2025	Kostandin Xhaho	Yes	Yes	By drone and walking	Vjosa Delta	40° 37.382'; 19°20.485'	Nest	22		33		no			yes	Yes	72
19.07.2024	Kostandin Xhaho	No; Nesting tracks width 80 cm	Yes	By drone and walking	Vjosa Delta	40° 37.382'; 19°20.485'	Nest	24 m	32.4	24 cm	75	Yes	40° 37.372'; 19°20.502'	26 m	Yes	Yes	70
23.07.2024	Kostandin Xhaho; Nexhip Hysolakoj; Enerit Sacdanaku	No	Yes	By drone and walking	Dajlani i Madh Beach	40° 32'24"; 19°22'43"	Attempt	18.5m									

* for the nest or possibly 2 nests in Palase we don't have any data regarding the nombe

- **Photos from the fieldwork (https://www.filemail.com/d/mglrdlcngjmsnsm)**

**Please download this pictures before 7 days. If not, let me know so I can send them again*



Photo description: The first nest was a surrogate nest with eggs taken from the body of the dead turtle eaten by jackals. After 50 days we opened the nest and the eggs were not fully developed. Samples are taken to be examined in the future for further data.


Car road (often used by fisherman)

Photos description: Nest 2: This nest was initially laid on a car road, close to the shoreline, where the sea is particularly rough. Due to these unfavorable conditions, we decided to relocate the eggs closer to the dunes to improve their chances of survival. However, after 70 days with no signs of hatching, we carefully excavated the nest to assess the outcome. Unfortunately, the results showed that 95 eggs were undeveloped. Upon inspection, we noticed that the contents of the eggs were pinkish, which suggests the possible presence of a parasite. This hypothesis will be verified through laboratory analysis of collected samples.

Photo description: Nest 4 and 5- Both nests were located close to each other on the Hidrovori beach. Although they were relatively near the sea, the mother turtle had laid them about 3 meters above sea level, thanks to the presence of the high dunes in Narta. After 55 days, the eggs successfully developed, marking a significant success for this nesting season.

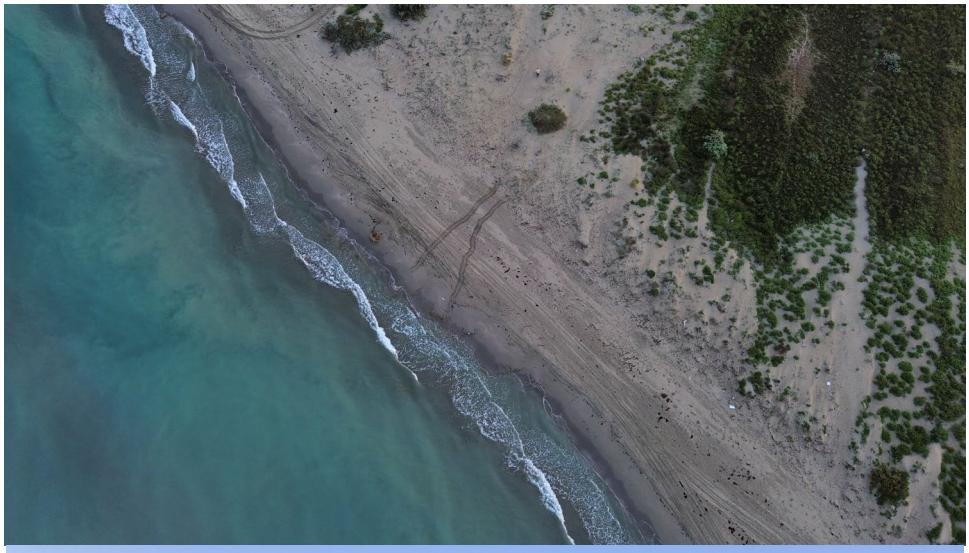

Photo description: **Nest 5** was located near the Vjosa River, where relocation was not necessary since both the distance and elevation from sea level were suitable for the nest's development. However, the nest faced a serious threat from an illegal techno festival held in the area. A large number of cars and irresponsible people moved over the nest site during the festival's final days—just when the hatchlings were expected to emerge.


Photos description: **Nest 6** was one of the relocated nests and proved to be highly successful, with only two eggs undeveloped upon evaluation after the hatchlings emerged. It was the only nest where we arrived in time to witness some hatchlings emerging, as most had already left the nest. Unfortunately, we didn't have the same luck with the other nests, where the hatchlings had already emerged before we could observe the event.

Other information:

Jackal Threat

The marine turtle had been attacked and partially consumed by jackals, a species known to have a significant population in this region.


2x photos intentionally deleted

Photo: Kostandin Xhaho

Turtle morphology	
Species	Caretta caretta
Date	11.06.2024
Place	Vjosa Delta (Kallenga beach)
Observer	Kostandin Xhaho
Carapax length	71 cm
Carapax	66 cm
Head length/width	21 cm/14 cm
Cause of death	Eaten by jackals during laying

The scene indicated that the attack likely occurred during the turtle's egg-laying process, a vulnerable period when marine turtles are exposed to terrestrial predators. To confirm our hypothesis and to assess the reproductive status of the turtle, we conducted an on-site necropsy. This procedure revealed that the turtle carried eggs at various stages of development—some were not yet fully developed, while others were ready for imminent laying.

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Photo: Kostandin Xhaho

Recognizing the importance of these eggs for the conservation of the species, we carefully extracted them. We then proceeded to create a surrogate nest, digging a hole approximately 30 cm deep to replicate the natural nesting environment. After placing the eggs in the new nest, we took preventive measures to protect them from predation. Specifically, we installed a protective cage around the nest site to deter jackals and other potential predators.

Nest	Coordinates	Date	Comments	Expected date of

				hatching
Surrogate nest		12 June	28 eggs; 18 in good conditions	28 July

Non nesting season:

A sea turtle was identified along the promenade in the city of Vlora, and it was found to be dead. Due to the very bad weather conditions, fishing methods were used to retrieve the turtle from the sea and to determine the cause of death. Upon examination, it was observed that the turtle was a female and had died as a result of a head injury inflicted by boats.

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Turtle morphology	
Species	Caretta caretta
Date	25.10.2024
Place	Vlora Bay (nearby lungomare)
Observer	Endora Celohoxhaj; Kostandin Xhaho; Emina Karalic; Andrej Gajic
Carapax length	72 cm
Carapax	65cm

Head length	14cm
Cause of death	Hit on the head

Another turtle was identified in Karaburun, near the area popularly known as "Zhapovel" The turtle was found dead and was missing one flipper. There were no visible external signs to determine the cause of its death.

Turtle morphology	
Species	Caretta caretta
Date	07.06.2024
Place	Karaburun peninsula (Zhapovel beach)
Observer	Touristic boat owner (Mr.
Carapax length	56 cm
Carapax	47 cm
Head length	10 cm

Cause of death	-

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