



**IMPLEMENTATION OF THE WORK PROGRAMME OF THE SEA  
TURTLE RESCUE CENTRE IN MALI LOŠINJ IN 2022**



Blue World Institute of Marine Research and Conservation  
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FOND ZA ZAŠTITU OKOLIŠA I  
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## 1. INTRODUCTION

Since 2004, in cooperation with the competent veterinary and other expert institutions, Blue World Institute conducts scientific research of sea turtles in the Adriatic in terms of monitoring their migrations and identifying threats and causes of death, with the aim of improvement of knowledge on sea turtles biology and ecology and their effective conservation. Sea Turtle Rescue Centre in Mali Lošinj, which has been operating since 2013, is a step forward in the conservation of species by providing conditions for the recovery of injured individuals which wouldn't survive in the wild.

All activities in the process of handling of strictly protected species of sea turtles with the aim of their rescue, treatment and recovery in order to return them into nature are carried out by the Blue World Institute on the basis of a valid permit from the competent Ministry of Economy and Sustainable Development of the Republic of Croatia (CLASS: UP/I-612-07/20-48/191, REGISTRATION NUMBER: 517-05-1-1-21-4), the Decision on the selection of rescue centres for wild animals (CLASS: 612-07/17-10/03, REGISTRATION NUMBER: 517-07-1-1- 1-17-4) from April 11, 2017 and the Decision for the authorization of rescue centres for wild animals (KLASA: UP/I-352-01/22-17/13, URBROJ: 517-10-1-1-22-2) from April 12, 2022.

During 2022, Blue World Institute's researchers were informed about a total of 19 cases of sea turtles' observations in the area of the Cres-Lošinj archipelago. All recorded individuals were loggerhead sea turtles (*Caretta caretta*). Of the total number of reports, 4 loggerhead turtle individuals were found injured, cold-stunned, or lethargic (Table 1), while the remaining 15 individuals were found dead (Table 2). Furthermore, one loggerhead sea turtle admitted in the previous year continued its recovery in the rescue centre in 2022.

In the same period, within the research activities of the Blue World Institute conducted in the Northern and Central Adriatic, a total of 229 observations of loggerhead sea turtles (*Caretta caretta*) were recorded, of which 5 observations along the western coast of Istria, 212 observations in the Cres-Lošinj archipelago and 12 observations in the area of North Dalmatia.

Table 1: Records of individuals admitted to the Sea Turtle Rescue Centre on Lošinj in 2022

Ordinal number	Record mark of the animal	Species	Date of recovery	Location of recovery	Curved carapace length (CCL)	Reason for animals' admittance	Care closure date	Reason for care closure
1.	BURA	<i>Caretta caretta</i>	01.03.2022	Port of Veli Lošinj	22 cm	Exhausted/dehydrated - no external injuries	16.06.2022	Release into the sea
2.	SATURN	<i>Caretta caretta</i>	01.03.2022	Port of Veli Lošinj	69 cm	Exhausted/dehydrated - no external injuries	01.07.2022	Release into the sea
3.	VELI	<i>Caretta caretta</i>	01.03.2022	Port of Veli Lošinj	21,5 cm	Exhausted/dehydrated - no external injuries	14.10.2022	Release into the sea
4.	GROM	<i>Caretta caretta</i>	20.06.2022	Kovčanje bay, Mali Lošinj	31 cm	Injured	20.07.2022	Death

Table 2: Records of dead sea turtles observations in the area of the Cres-Lošinj archipelago in 2022

Ordinal number	Species	Date	Location	Curved carapace length (CCL)	Flipper tags	Decomposition state (code)
1.	<i>Caretta caretta</i>	07.01.2022	Borik beach, Mali Lošinj	42 cm	No	Minimal decomposition (code 2)
2.	<i>Caretta caretta</i>	10.03.2022	Mrtvaška bay, Lošinj	69 cm	No	Mummified carcass (code 4)
3.	<i>Caretta caretta</i>	15.04.2022	Vele Srakane	-	No	Minimal decomposition (code 2)
4.	<i>Caretta caretta</i>	23.04.2022	Nerezine	32,5 cm	No	Moderate/Advanced decomposition (code 3)
5.	<i>Caretta caretta</i>	02.05.2022	Velopin beach, Mali Lošinj	34 cm	No	Minimal decomposition (code 2)
6.	<i>Caretta caretta</i>	14.05.2022	Rovenska beach, Veli Lošinj	34 cm	No	Moderate/Advanced decomposition (code 3)
7.	<i>Caretta caretta</i>	27.06.2022	Ilovik	-	No	Moderate/Advanced decomposition (code 3)
8.	<i>Caretta caretta</i>	28.06.2022	Rovenska bay, Veli Lošinj	-	-	Moderate/Advanced decomposition (code 3)

9.	<i>Caretta caretta</i>	01.07.2022	Rovenska bay, Veli Lošinj	32 cm	No	Moderate/Advanced decomposition (code 3)
10.	<i>Caretta caretta</i>	07.07.2022	Pržine beach, Ilovik	-	No	Mummified carcass (code 4)
11.	<i>Caretta caretta</i>	29.09.2022	Čikat bay, Mali Lošinj	58,5 cm	No	Moderate/Advanced decomposition (code 3)
12.	<i>Caretta caretta</i>	24.10.2022	Ćunski lighthouse	37 cm	No	Mummified carcass (code 4)
13.	<i>Caretta caretta</i>	16.11.2022	Veli žal beach, Mali Lošinj	61 cm	No	Good, fresh carcass (code 1)
14.	<i>Caretta caretta</i>	18.11.2022	Čikat beach, Mali Lošinj	59 cm	No	Good, fresh carcass (code 1)
15.	<i>Caretta caretta</i>	01.12.2022	Velopin, Mali Lošinj	42,5 cm	No	Good, fresh carcass (code 1)

Note:

Decomposition code is determined according to the Sea Turtle Management Manual edited by Lisa Poppi and Antonio di Bello within the NETCET project in 2015

## 2. IMPLEMENTATION OF THE ANIMAL RECOVERY PROCEDURES

While providing care and treatment to the animals at the Sea Turtle Rescue Centre in Mali Lošinj, the procedures established by own experience and cooperation with eminent experts in the care of sea turtles are followed.

Veterinary care for sea turtles in the Sea Turtle Rescue Centre is provided by veterinarian Tina Belaj, DVM.

### MALIN - DRAGA

Malin – Draga is juvenile loggerhead sea turtle (*Caretta caretta*) whose recovery was continued from the previous year. The turtle was admitted on August 16, 2021, extremely lethargic and malnourished with several superficial injuries, probably caused by hitting the rocks (Figure 1). Bacterial infection of the respiratory tract has been diagnosed as the cause of the poor general health condition of the animal. In addition to antibiotic therapy, it was prescribed anthelmintics due to subsequently confirmed parasitic invasion. After successful recovery, the turtle was released into the wild on May 23, 2022. Before the release it was flipper tagged (HR1226, HR1227).



Figure 1. Malin - Draga when admitted to the Sea Turtle Rescue Centre

### BURA

Bura is one of three sea turtles that were admitted to the Sea Turtle Rescue Centre on Lošinj on March 1, 2022, when their hibernation process was abruptly interrupted due to the strong storm. This juvenile loggerhead turtle (*Caretta caretta*) with a carapace length of 22 cm and a weight of 1.3 kg was found in the port of Veli Lošinj, cold-stunned and unable to dive (Figure 2). It was kept on recovery because the chances of survival in such conditions were very low. After the examination, it was found that there were no external injuries. The turtle was warmed and stabilized, and the care about it continued until June 16, 2022, when the temperature conditions were suitable for its return to nature.





Figure 2. Bura when admitted to the Sea Turtle Rescue Centre

## SATURN

This adult female loggerhead turtle (*Caretta caretta*) with a carapace length of 69 cm was spotted on March 1, 2022, floating in the port of Veli Lošinj. The turtle was admitted cold-stunned due to unfavourable weather conditions (Figure 3). Long exposure to low temperatures led to a decrease in vital functions. Upon admission, we warmed and stabilized the turtle using supportive therapy. After successful recovery, the turtle was returned to nature on July 1, 2022. She was previously tagged with metal flipper tags (HR1228, HR1229) and with a satellite transmitter and GPS-GSM transmitter (FS81) with the aim of monitoring her further movement.



Figure 3. Saturn at the time of finding and upon admission to the Sea Turtle Rescue Centre

## VELI

Another juvenile loggerhead turtle (*Caretta caretta*) with a carapace length of 21.5 cm was received on March 1, 2022. It was also observed floating in the port of Veli Lošinj, unable to dive. Although without visible external injuries, the turtle was received cold-stunned and extremely malnourished

(Figure 4). Upon the improvement of its condition and achieving the optimal body weight, it was assessed as capable of living independently in nature and released into the sea on October 14, 2022.



Figure 4. Veli at the time of finding and upon admission to the Sea Turtle Rescue Centre

## GROM

On June 20, 2022, we received a report about the sighting of a sea turtle in Kovčanje bay in Mali Lošinj, which, unfortunately, was injured by a boat propeller. This juvenile loggerhead turtle (*Caretta caretta*) was received with carapace fractures and a skull fracture involving the area of the right nostril and left orbit (Figure 5). Despite the systemic therapy and daily treatment of the injuries to promote healing, the turtle died on July 20, 2022, due to the severity of the injuries.



Figure 5. Grom when admitted to the Sea Turtle Rescue Centre



### 3. RESEARCH AND CONSERVATION OF SEA TURTLES IN THE ADRIATIC

In addition to the rehabilitation of injured sea turtles, which also includes taking various samples for research purposes and disease diagnosis, activities of research and conservation of sea turtles in the Adriatic were continuously carried out during 2022. Apart from recording data on sea turtle observations as part of the Adriatic Dolphin Project, during the spring and summer months (May-August) of 2022, sea turtle monitoring was carried out in the waters of Šibenik-Knin County. During the field research, the location and time of observation, species, number of individuals, the condition of the animal at the time of observation (alive/dead/injured) and the estimated carapace length of the observed individuals were recorded. Within the Sea Turtle Rescue Centre activities, data on dead sea turtles were also collected. In addition to species determination and recording of morphometric data such as the curved carapace length and curved carapace width, whenever possible the sex of the observed individuals is also determined. In order to assess the most important threats, data on evident injuries such as those caused by entanglement in net or debris and injuries from boat collisions are also recorded, as well as the presence of hooks or plastic. Also, with the aim of determining the cause of death, necropsies are carried out on fresh carcasses and carcasses in minimal decomposition state in cooperation with the Croatian Veterinary Institute. Furthermore, data collection on sea turtle observations in the wild and accidental catch in fishing gear continued through the citizen science application eTurtle developed within the project **"Collective Actions for Improving the Conservation Status of the EU Sea Turtle Populations" - LIFE EUROTURTLES**. Moreover, during 2022 one loggerhead turtle was marked with a satellite transmitter and a newly developed GPS-GSM transmitter simultaneously, in order to monitor its further movement. The aim of the analysis of the telemetry data obtained in this way is to identify areas of greater presence of sea turtles with the aim of establishing the first NATURA 2000 site for loggerhead sea turtles in Croatia. Undoubtedly, this will contribute to the improvement of the conservation status of this species.



Figure 6. Satellite tagging and GPS-GSM tagging of recovered sea turtle Saturn

Furthermore, during the 2022, we continued with the implementation of the project "**Improvement and Increase of the Sea Turtle Rescue Centre Capacity**" (KK.06.5.2.04.0004). The project aims at raising the capacity of the rescue centre to provide first aid in the field, transport, accommodation, and care for sea turtles. The primary goal is to provide conditions for faster and better treatment by the intervention team of trained staff in case of a report of an injured animal that needs first aid in the field as well as adequate care for it to enable full recovery and return to nature. Therefore, the project envisages expanding the capacity of the rescue centre to accommodate a larger number of individuals, but also strengthening the capacity and professional development of the Blue World Institute staff. During 2022, as part of the project activities, the installation of the equipment for two additional recovery tanks (i.e., filtration systems and systems for regulation of water temperature and water quality maintenance) was completed. Furthermore, a sea turtle enclosure for checking the buoyancy and fitness of the animals was placed in the protected cove in the sea. It will be used for the adaptation of the animals that have been recovering for a longer period in the closed tanks of the rescue centre to the environmental conditions. Also, during the year, means of transport for the quick and effective interventions of the intervention team were acquired, such as vessel for fast and efficient coverage of a wide sea area under different weather conditions and vehicle for transporting animals according to the veterinary standards. The constant availability of transport means allows us to increase the number of animals that are delivered to the rescue centre and provided with help. As part of the project team education, employee Tina Belaj, DVM who is in charge of providing veterinary care to sea turtles on recovery, attended training on sea turtle treatment and recovery techniques at the Sea Turtle Rescue Centre in Lampedusa, Italy, and training aimed at diagnostics and experimental research of large marine vertebrates at the public health Institute in Teramo, Italy.



Figure 7. Sea turtle in the sea turtle enclosure

In order to achieve the basic higher goals of the project, which are the increased number of timely reports of injured animals to provide them with necessary help and generally the reduced number of animal injuries caused by human activities, the project also requires the implementation of an appropriate educational program for general public. With the aim of raising public awareness of the need to protect sea turtles, several public events were held during 2022, such as the celebration of the

European Natura 2000 Day, World Turtle Day, and World Sea Turtle Day, as well as the organization of the public releases of recovered sea turtles.

#### 4. FUNDING OF THE CONTINUOUS CARE FOR ANIMALS

The project “Improvement and Increase of the Sea Turtle Rescue Centre Capacity” (KK.06.5.2.04.0004) with a total value of HRK 3.833.068,28 provided the funds for increase and improvement of the existing capacity for rescue and recovery of sea turtles in the Adriatic. The project is co-financed by the European Union from the Cohesion Fund of the European Structural and Investment Funds in the amount of HRK 2.435.790,00. The project is implemented in the period from January 1, 2021, to June 30, 2023.

Care for sea turtles at the Sea Turtle Rescue Centre in Mali Lošinj in 2022 was co-financed with funds provided by the Ministry of the Economy and Sustainable Development of the Republic of Croatia in accordance with the Ordinance on Wildlife Rescue Centres (NN 145/20). The allocated funds were used specifically for the appropriate food and drugs for animals on recovery, ensuring appropriate veterinary care and consumables for the operation and maintenance of the rescue centre.

Finally, the monitoring of sea turtles in the waters of the Šibenik-Knin County in 2022 was financed by the Public Institution Nature of the Šibenik-Knin County in the amount of HRK 48,000.00.

The work program of the Sea Turtle Rescue Centre in Mali Lošinj in 2022 was implemented by Mateja Zekan Lupić, as the rescue centre manager and the person responsible for animal care, and Tina Belaj, DVM, as the person in charge of providing veterinary care to sea turtles on recovery. Person responsible for the monitoring of sea turtles in the waters of the Šibenik-Knin County in 2022 was Grgur Pleslić, PhD, science director of the Blue World Institute.