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THE TARTALAZIO REGIONAL NETWORK: AN INSTITUTIONAL APPROACH TO SEA TURTLE CONSERVATION

LA RETE REGIONALE TARTALAZIO: UN APPROCCIO ISTITUZIONALE ALLA CONSERVAZIONE DELLE TARTARUGHE MARINE

Abstract - The TartaLazio network was established by the Lazio Region in 2017, having as its objective the implementation of a continuous monitoring system of sea turtles and their conservation status. Since its establishment, for the first time in Lazio was carried out a systematic collection of data on sea turtle strandings. The rapid increase in the number of nests along the Italian coasts has extended the network tasks. The network coordinates various entities and organizations. Since 2017, hundreds of volunteers and stakeholders have been involved in the monitoring of the beaches and the management of the nests. A coordination group, made up of specialists, was authorized by MITE (Ministero della Transizione Ecologica) to operate in the context of a detailed multi-year research project. Data on more than 300 stranded specimens were collected between 2016 and 2023 (mainly *Caretta caretta* but also *Chelonia mydas* and *Dermochelys coriacea*) and on 42 nests.

Keywords: *Caretta caretta*, monitoring, nesting, strandings, volunteers

Introduction - The systematic data collection from stranded sea turtles and nests, also from a community-based conservation perspective, can provide decision-makers with useful biological information to improve the conservation and management of these species. The TartaLazio network was established by the Lazio Regional administration for the recovery, rescue and management of sea turtles for the purposes of rehabilitation and for the manipulation and release for scientific purposes with a first regional determination in September 2012; on 5th July 2017, it obtained recognition of its aims as an institutional activity of the Lazio Region with D.G.R. (Regional Decree) n. 382. Its main objective is the implementation of a monitoring and study system aimed at the conservation of sea turtle species, particularly *Caretta caretta* Linnaeus, 1758, which are present along the coasts of the Lazio Region, in compliance with the Habitat Directive 92/43/EEC and the Presidential Decree 357/97.

At first, the network activity was initially focused on the strandings of living and deceased individuals. Since 2016, the year in which the first documented case of *Caretta caretta* nesting on the Lazio coast was recorded, it has also expanded to the protection of nests and the protection of the hatchlings.

Since 2020, due to the significant and growing increase in nesting, it has launched, also thanks to the contribution of staff external to the Lazio Region with great experience, a research project aimed at the overall conservation of sea turtles which continues still today with growing investments and important results.

Materials and methods - The actions by TartaLazio, coordinated by the Regional Bureau for environmental matters, are carried out mainly by the work of the regional

staff and by the regional Protected Areas with the assistance of a team formed by external collaborators and consultants: the staff of the Marine Protected Area of the Islands of Ventotene and Santo Stefano and of the Circeo National Park, participate to the activities.

Indispensable partners are the maritime authority of the Coast Guard while the Marine Turtle Research Center of Portici (Zoological Station "Anton Dohrn" of Naples), Zoomarine Trust ONLUS, which participates as a First Aid Centre, the Departments of Veterinary Public Health of the ASL and the Experimental Zooprohylactic Institute of Lazio and Tuscany support the network with technical/scientific and specialist contributions. Finally, of fundamental importance is the support provided by active citizens, both individually and as stakeholder organizations and environmental associations, which assists the research team in the recovery of stranded individuals and in beach monitoring and nest protection activities.

In order to increase the level of awareness and the dissemination of concepts related to the protection of these protected species, starting from 2022, specialist seminar days have been held to train an increasingly numerous and competent group of volunteers to collaborate with the network.

The group of specialists of the TartaLazio research team has been operating since 2020 by virtue of authorizations issued by the Ministry of the Environment as part of a detailed multi-year research project: research protocols have been adopted to face the specific situation of the beaches of the Lazio Region.

TartaLazio also collaborates with the Presidency of the Republic for the use of the beach of the Castelporziano Presidential Estate as an hatchery for nests which have been relocated from "difficult" beaches.

Since 2023, the Lazio Region, through the TartaLazio Network, is a partner of the European LIFE TURTLENEST project to develop urgent actions for the conservation of *Caretta caretta* in a warming Mediterranean Sea and the management of emerging nesting sites in the Western basin to sustain species resilience to climate change.

Results - The systematic and constant collection of data relating to sea turtle strandings was organized during 2016 and, from January 2017 until December 2023, allowed to recover (stranded, in fishing gear or in difficulty at sea) 327 turtle specimens, 318 of which (97.24%) were *Caretta caretta*, 2 *Chelonia mydas* Linnaeus, 1758, 1 *Dermochelys coriacea* Vandelli, 1761 and 6 unidentified. Among these, 65 specimens were recovered still alive and moved to the rescue centers, and then released to the sea.

The number of *Caretta caretta* strandings recorded annually is essentially constant (N= 285; Mean = 23.75; SD = 11.53) except for the year 2021, whose high number represented an anomaly that has yet to be understood.

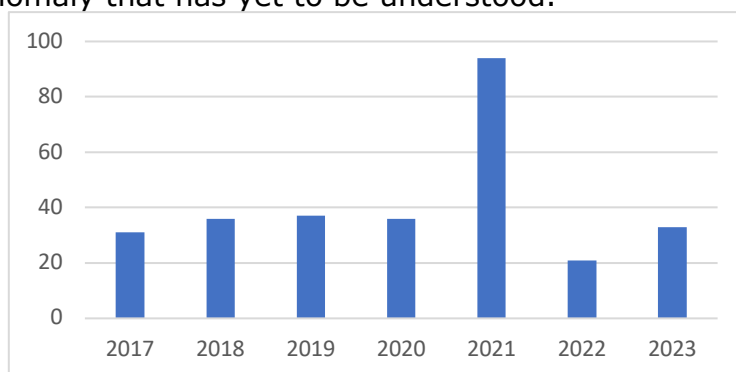


Fig.1 - Strandings of *Caretta caretta* along the coast of Lazio Region per year
Spiaggiamenti di *Caretta caretta* lungo le coste della Regione Lazio per anno

A further evaluation of the frequency of stranding events during the year allows us to highlight how in the first two quarters of the year, between the months of January and June, the number of recorded strandings of *Caretta caretta* specimens is greater than those in the second half of the year, July – December (Tab. 1).

Tab.1 - Seasonal strandings of *Caretta caretta* along the coasts of Lazio Region (2017-2023)
Spiaggiamenti stagionali di Caretta caretta lungo le coste della Regione Lazio (2017-2023)

	Total (2017-2023)	Mean per year	SD
Jan-Mar	80	11,83	11,02
Apr-Jun	112	16,67	5,61
Jul-Sept	43	6,67	5,79
Oct-Dec	50	7,5	4,42

The progressive increase in the number of nests identified along the Italian coasts, including those of Lazio, in recent years is highlighting a rapidly growing trend (Fig. 2), making us witnesses of what, in all probability, can be considered a new colonization of the Western Mediterranean (Carreras *et al.*, 2018; Mancino *et al.*, 2022).

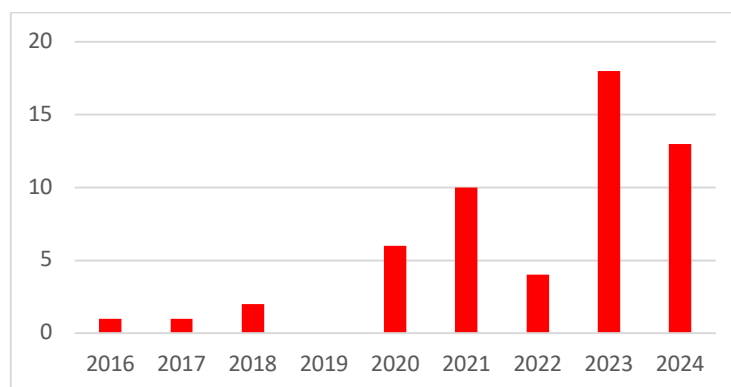


Fig. 2 – Nests of *Caretta caretta* along the coast of Lazio Region per year
Nidi di Caretta caretta lungo le coste della Regione Lazio per anno

The Lazio coastline extends over over 360 km (including the islands of the Pontine archipelago), 220 of which are low and sandy coasts, potentially suitable for turtle nesting. However, most of the coasts of the Region, are affected by anthropic activities or modifications (harbours, works against coastal erosion, tourist activities, artificial lighting, and other) which prevent or put at risk the success of nesting. Therefore, when it is absolutely necessary, nests are translocated from the original laying site to beaches that offer a greater potential for success. This technique, if well performed, guarantees hatching successes close to those of nests in natural conditions.

Eggs laying have been observed between the first half of June (15th June 2023) and the first half of August (12th August 2023), with a peak in the first half of July. The average duration of incubation is approximately 54 days. Some data relating to the nests in Lazio (2016-2023) are reported in Tab. 2, compared with those published more recently for Italy (Hochscheid *et al.*, 2022).

Tab. 2 - Some data about nestings of *Caretta caretta* along the coasts of Lazio Region (2016-2023) compared with those from Hochscheid *et al.*, 2022
Alcuni dati relativi alle nidificazioni di Caretta caretta lungo le coste della Regione Lazio (2016-2023) confrontati con quelli pubblicati da Hochscheid et al., 2022

	Clutch size			Incubation duration				Emergence Success [%]			Hatching Success [%]		
	Mean ±SE	Min-Max	N	Mean±SE	Min-Max	N		Mean	Min-Max	N	Mean	Min-Max	N
Lazio 16-23	89.3 ± 3.86	13-139	38	54.65 ± 0.78	48-64	23	Natural	48.88	0-93.75	18	59.05	0-94.79	18
							Relocated	39.46	0-88.06	19	51.31	0-89.55	19
Italy 10-20	92 ± 2.2	18-160	108	53.01 ± 0.1	42-73	65	Natural	64.5	0-97.9	54	73.0	0-95.5	50
							Relocated	56.5	0-93.4	29	61.0	0-97.3	29

Part of the data collected, both regarding strandings and nesting, are made available to citizens with the online publication on the Geoportal of the Lazio Region (<https://geoportale.regione.lazio.it>)

Conclusions - The systematic collection of data from stranded sea turtles and nests, also from the point of view of conservation at community level, proves to be an important source of information and indications. The analysis and processing of these data can provide decision-makers with biological and ethological information useful for making conservation strategies and management methods more effective.

The width of the area potentially available for sea turtle nesting makes monitoring and surveillance activities extremely difficult; therefore, the support of citizenship in an associated or individual forms proves to be an element of great value. To date the number of volunteers who are trained and collaborate in the conservation activities conducted by the TartaLazio team of researchers consists of several hundred participants; the objective to aim for is the constant and continuous increase of them and their skills. The need to spread knowledge about the behavior and biology of these marine creatures remains central to all citizens, particularly in coastal territories, in order to have a large and widespread network of coastal "watchers", ready to report to the competent authorities every single sea turtle sighting.

The Regional Administration of Lazio, through its organization TartaLazio, represents the first Italian case in which a local administration is not only directly involved but is actually the architect of concrete conservation actions and scientific research projects for the protection of these internationally protected species.

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