Slide 2 – 3 - 4 - The Aquarium of Naples is the last remaining example of nineteenth century Aquarium in the world. It was opened to the public on 12 January 1874 as an integral part of the Stazione Zoologica of Naples (SZN), which is a public research institute specialised in the field of marine biology. Since then, the Aquarium has always had a strong scientific background focusing on both common and rare marine vertebrates and invertebrates living in the Mediterranean. In particular the species arrive from the Gulf of Naples , which is an area very representative of the Mediterranean Sea.

Slide 5 - Face the visible reduction of marine resources for habitat degradation, overfishing and pollution, the Aquarium started to search for its sustainability for the conservation of Mediterranean life.

Slide 6 - Among the various conservation activities of the Aquarium, the most significant is that of the cure and reintroduction into the sea of marine turtles found in difficulties and which are victims of sea traffic, pollution and indiscriminate fishing. For these, a specific programme has been developed which until today has become always more complex both

scientifically and practically.

Slide 7 – In particular, The rescue and medical treatment of injured or otherwise impaired marine turtles has long been recognized as a measure to reduce turtle mortality. With the aim to re-introduce healthy specimens back into the sea the Aquarium , has been rescuing marine turtles for over 20 years

Slide 8 - After treatment, the sea Turtles are transferred in bigger tanks and undergo a rehabilitation period to assess their full recovery and good health condition.. Special current systems were set up to test the turtles' capacity to swim and these results were also confronted with data from free-ranging animals.
The experiences gained in running the "Turtle Point" stressed the importance of the rehabilitation phase in large tanks where the turtles' capability to swim, feed and maintain buoyancy could be ascertained. However, water depth was still limited and for some specimens, which had suffered severe injuries and long treatment periods, the rehabilitation in shallow tanks could not reveal their diving ability.

Slide 9 - Therefore, to improve this significant aspect for marine turtles, in 2007 we had the opportunity to close and border a marine area located in a small volcanic island, where bathing and shipping has always been

prohibited because of the presence of a remand home.

Slide 10 - A 900 square meters area with a maximum depth of 5 m within the bay was enclosed with a 130 m long aquaculture net, which was supported by buoys and fixed on the bottom by scuba-divers.
The bay was used to rehabilitate some individuals subject to long treatment periods and for the study of some key aspects of their behavior useful for designing wild species re-introduction programs.

To evaluate the rehabilitation status of the treated turtles, diving patterns and daily rhythms of the loggerhead turtles (*Caretta caretta*) in the closed area were compared with those of individuals kept in the tanks

Slide 11 - Here you can see the results obtained in 2007-2009 period, during the summer months when a total of 13 turtles (maximum 5 at the time) were released in the Bay

Slide 12 - The turtles' behavior was monitored daily by observers outside the water and by in-water surveys.
Twice a week turtles were fed with supplements made of fresh fish and squid.

Slide 13 - water depth was measured every 4 minutes by the Time Depth recorder – G5 model- made by CEFAS (UK)

Slide 14 – the turtles were equipped with time depth recorders, first in the

tank, and then when released in the Turtle Bay.

Slide 15 - Data loggers registered very regular diving patterns as for turtles kept in captivity, which used to spend most of the time inactive at the bottom of the tank. In the turtle bay instead, turtles developed a circadian diving pattern. Resting dives, which are recognizable by the typical u-shaped profile, occurred during the night and frequent active dives occurred during the day.

Slide 16 - The change in diving behaviour is here illustrated by the variation in the number of diurnal and nocturnal u-dives which were very frequent in captivity. After the transfer to the Turtle Bay, an acclimatization phase followed: turtles started exploring and familiarising with the new environment without settling down to rest on the sea floor. After three days the turtle started to rest on the bottom of the bay, but the **number** of u-dives were more frequent during the night than during the day.

Slide 17 – resting dives duration has been proven longer in the night, from 5 up to 42 min

Slide 18 – resting dives depth has been shown different, according to sea turtles individual preferences

Slide 19 – As for vertical distribution: the image shows changes in the use of water column between captivity conditions and the bay. In the tanks

turtles remained most of the time on the bottom, whereas in the turtle bay they used to spend much more time swimming in mid water, while the percentage of resting time on the bottom was lower compared to turtles in captivity.

Slide 20 – As for in water and outside water additional direct observations in the turtle bay, several natural behaviours were recorded, namely food searching on the bottom of the sea, resting and defense of the resting spot against other turtles approaching the site. As for feeding, it has been observed that soon after the release into the bay, sea turtles choose dead food, despite the availability of live prey. Later on, sea turtles began foraging live prey in the bay.

Specific territorial behaviours have been observed, namely the interaction with conspecifics and the protection of the resting site by following and keeping the outsider away.

Slide 21 - according to outside observations, sea turtles were found choosing zones which are closer to the net. As displayed in the image, the Bay has been divided into sectors to facilitate sea turtles distribution observations. In particular, sea turtles presence and absence have been reported into the said sectors.
Histograms represent just relative comparisons and not absolute measures.

Slide 22 – The overall results were both unexpected and encouraging.
Here I will present some particular cases. This turtle had previously floated

in the tank, and was not able to descend to the bottom. Within the turtle Bay, however, it was perfectly capable of diving, feeding and resting on the bottom of the sea.

Within the restricted space of the tank this turtle moved with no apparent difficulties. In the Turtle Bay however, it became clear that it the turtle was not ready to be releases, because it favored only one front flipper during diving [movie].

Slide 23 - Also this one-side blind turtle proved to be capable of searching the bottom and feeding there

Slide 24 - Finally, some special cases, after rehabilitation in the Bay, were monitored via satellite telemetry after their release back to the sea. I show you this recently tracked animal that had a serious head injury and migrated to a known forging and overwintering area in Libya, traveling more than 900 km.

Slide 24 – In conclusion, a semi natural Bay has proven to be a valuable rehabilitation tool, for endangered sea turtles as well as an efficient methodology to assess whether the turtle is ready for releasing

Slide 25 – For three days after the release ,turtles are disoriented and swim constantly.
Diving behaviour changes and is stimulated by the environment.

Moreover, the three days “Swimming frenzy” of released turtles highlight the importance of choosing an appropriate release area where turtles can acclimate undisturbed.

Slide 26 - Besides being a rehabilitation area for marine turtles , the bay is currently used as “*Vivarium*” , that is breeding ground and nursery for particular endangered marine species displayed in the Aquarium.

There are many organisms which reproduce in the tanks of the Aquarium but we can’t always guarantee the survival of their offspring. Therefore, as the case may be, pregnant females (shellfishes and decapods), eggs (mollusks and dogfishes) or juvenile stage (electric rays and tube anemones) are transferred to the bay.

Slide 27 - Some protected species are brought into the bay with the aim of increasing their population. For example, juvenile sea-horses, after being born in the Aquarium where they are protected during their early life, are released back into their natural environment.

Slide 28 - As the protected species of ***Pinna Nobilis*** (noble pen shells), which was really common in the Gulf in the past and now very rare due to overfishing, our concern is to take it from local fishermen. Instead of keeping this species in the Aquarium, where it wouldn’t be able to survive for long, we prefer planting it into the central areas of the bay at a depth of 7 meters. Valves without the fruit inside are placed in the tank not to keep them away from the public. Therefore, sustainability is guaranteed because the recourse to new individuals is avoided and the results are long-lasting.