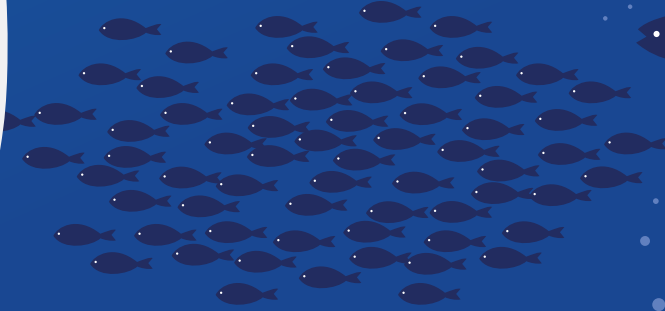
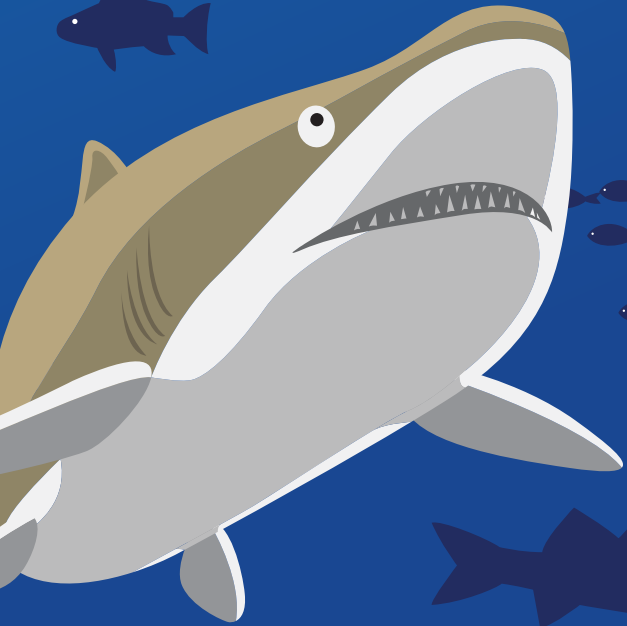




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The National Aquarium of Türkiye

WHAT YOU NEED TO KNOW BEFORE COMING TO THE AQUARIUM



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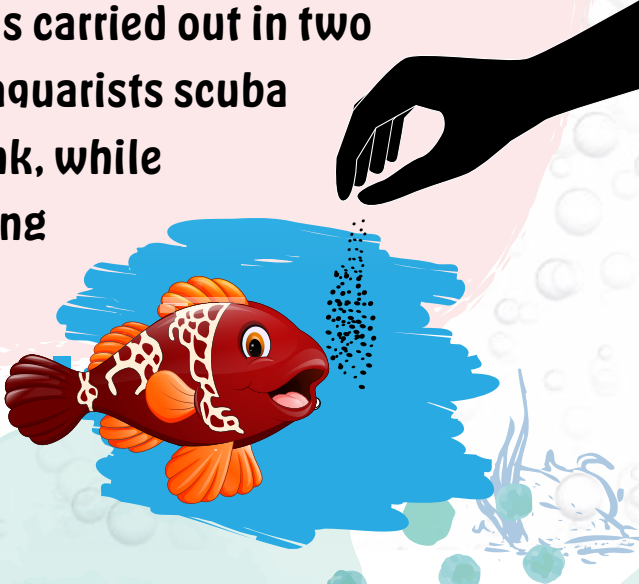


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FEEDING

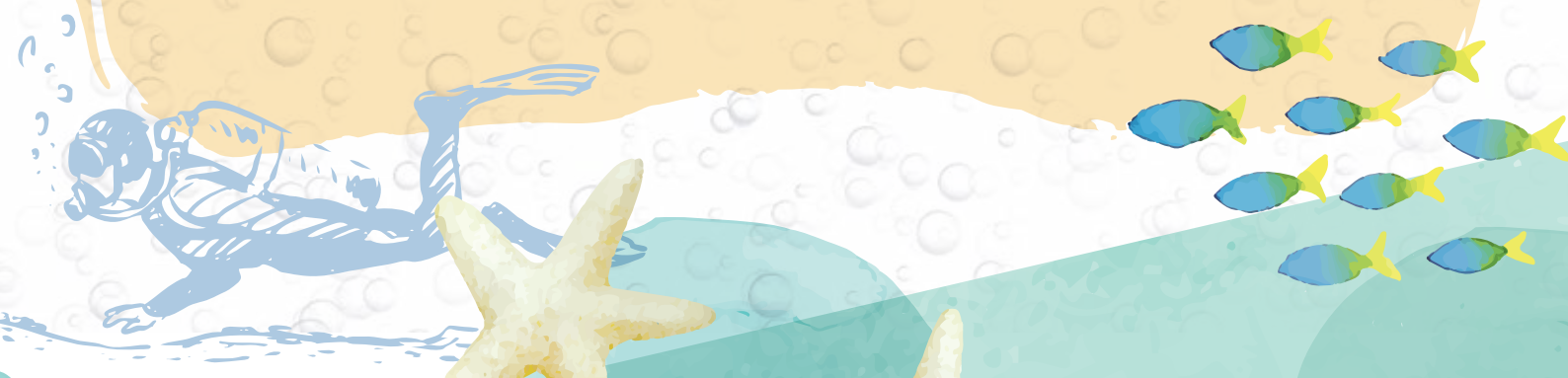
In feeding the creatures in the aquarium, it is extremely important to use fresh foods. The products we use are mainly seafood such as whiting, mackerel, granivory, silverfish, squid, mussels and shrimp, and we store them in the -18°C warehouse in our facility. We also store capelin, herring and sprattus fish for Gentoo penguins in the same way. Apart from these, frozen artemia, mysis, krill and similar zooplankton species are also stored to feed small fish. In order to make these materials suitable for use by the fish, we keep them in our refrigerator at $+4^{\circ}\text{C}$ the day before and let them thaw. The thawed food is cut specifically for different types and sizes of fish, and special vitamins and minerals are mixed into them and distributed into containers that have been previously grouped specifically for each aquarium. Feeding is carried out in two ways in the daily routine. One group of aquarists scuba dives into the main tank to feed the tank, while another group feeds the surface-feeding aquariums.

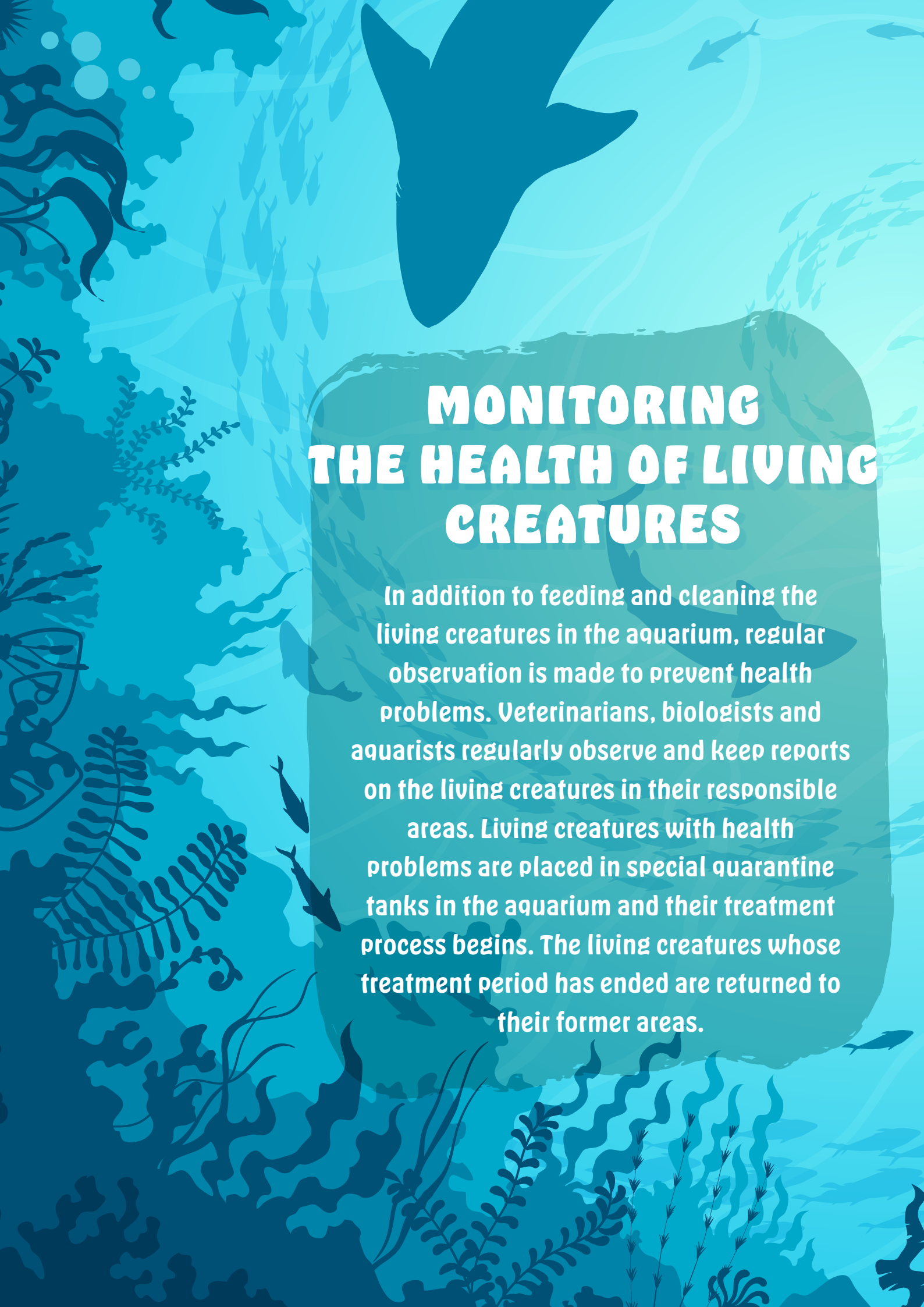




TANK CLEANING

Another task of aquarists is to clean the decorations, acrylics in the aquarium by diving into aquariums(tanks) and siphoning the aquarium. This process is usually carried out in two stages. In the first stage, in the morning, aquarists dive to clean the acrylic and decor of the target tank. In the afternoon, the same tank is siphoning to clean the materials that have settled at the bottom. These operations are carried out routinely for each tank.





MONITORING THE HEALTH OF LIVING CREATURES

In addition to feeding and cleaning the living creatures in the aquarium, regular observation is made to prevent health problems. Veterinarians, biologists and aquarists regularly observe and keep reports on the living creatures in their responsible areas. Living creatures with health problems are placed in special quarantine tanks in the aquarium and their treatment process begins. The living creatures whose treatment period has ended are returned to their former areas.



DIVING OPERATIONS

Diving operations vary depending on the tank to be dived. SCUBA equipment is used in deep tanks, while hookah diving system is used in shallow tanks. Common equipment for both types of diving: Diving suit (wetsuit), diving gloves, diving mask and diving boots.







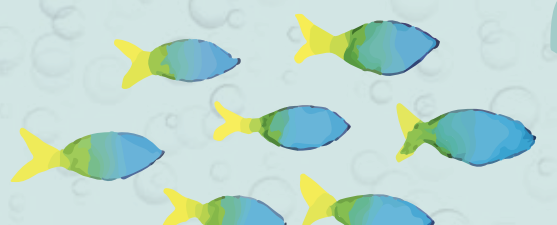
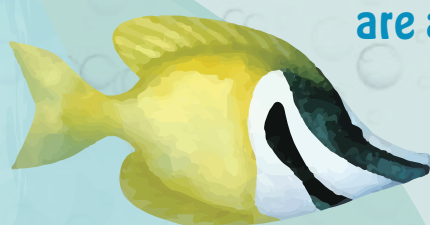
ISTANBUL AQUARIUM REHABILITATION AND HEALTH SERVICES

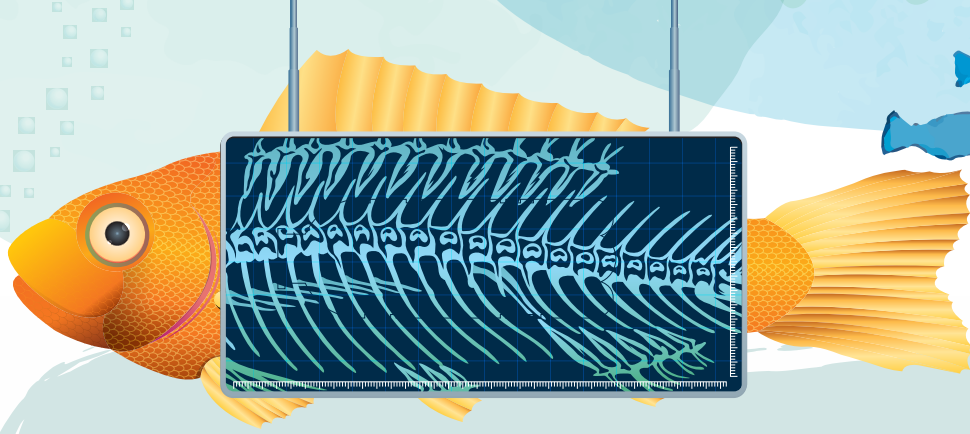


Since Istanbul Aquarium hosts different species such as birds, mammals, reptiles and amphibians, in addition to aquatic animals, the diagnosis and treatment processes of each creature may differ from each other. At the same time, because we are a sea turtle rehabilitation center, we treat sea turtles with various health problems and return them to nature.



First of all, if we start with aquatic creatures, the quality of the water in which these creatures spend all their time is very important. Deterioration of water quality is the main source of stress for living creatures, and various health problems can occur as a result. Water quality tests and controls are carried out daily and weekly to ensure the continuity of water quality in accordance with natural habitats. Also, diseases can occur in the aquarium for various reasons. In cases where it is necessary for a definitive diagnosis of the disease, samples are sent to reference laboratories. During this process, the living creatures whose disease has been detected are transferred to our quarantine pools and the appropriate treatment protocol is started. Our living creatures whose treatment has been completed are also transferred back to the environment in the same way.





We also aim to ensure the reproduction of various aquatic creatures that are in danger of extinction within the borders of the country and to return them to nature after the necessary adaptations are made.

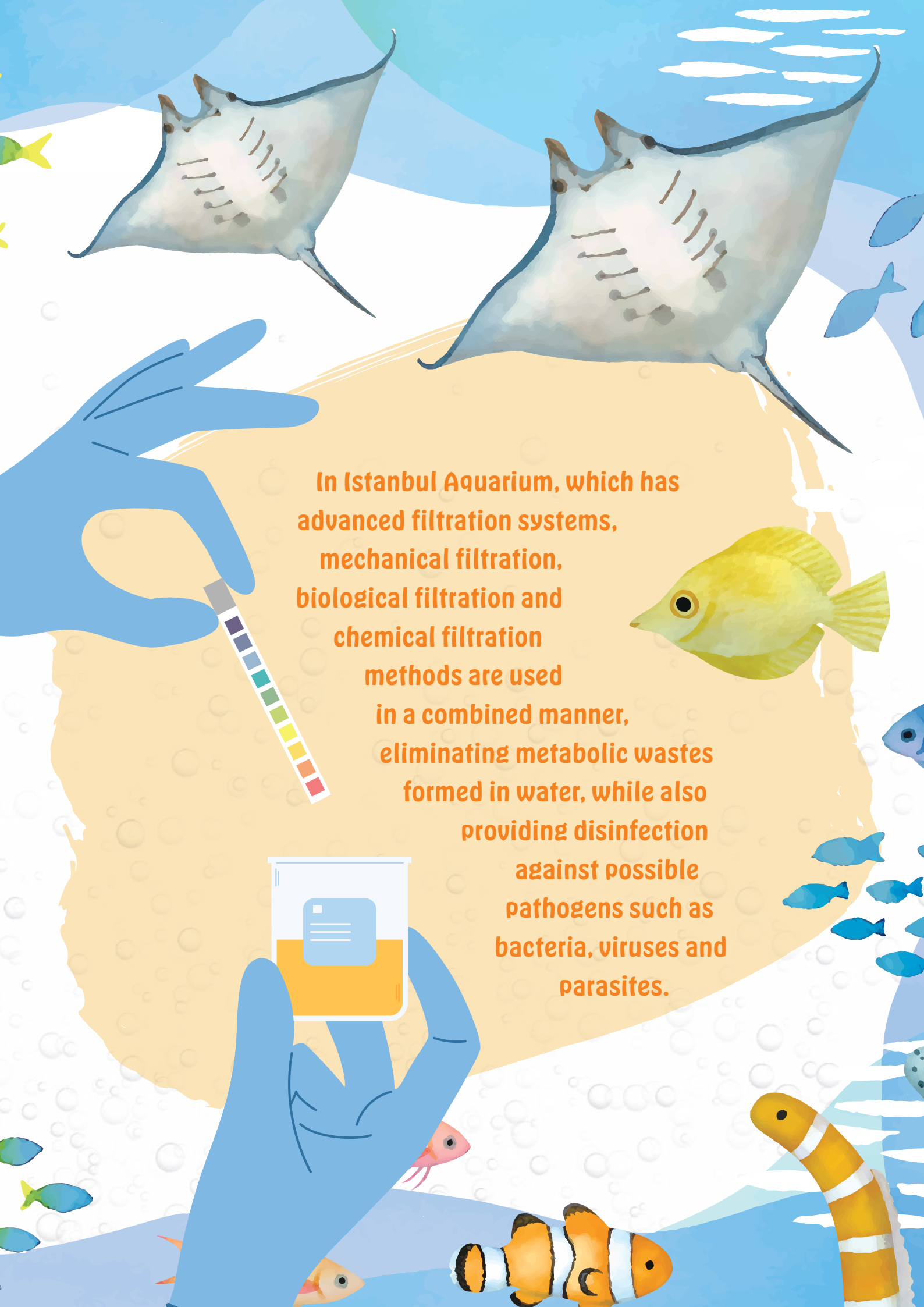
Different diagnosis and treatment methods are followed for penguins. First of all, in order to maximize their quality of life, samples are taken from the ambient air and ground surface of their living spaces on a monthly basis. These samples are sent to the reference laboratory and the cleanliness of the Penguin habitat is inspected. In addition to the inspection of living spaces, blood samples are taken for routine health control of the creatures to check if there are any diseases. If the disease is detected, the necessary treatment process is started after a definitive diagnosis is made. In addition, the amount of food the penguins eat and their weight are monitored daily. Similar protocols are being applied for other land creatures such as mammals, reptiles and amphibians. The cleanliness and maintenance of the living areas are inspected daily. We do regular health screenings and make sure that the creatures are healthy.





MONITORING OF WATER QUALITY AND CLEANING OF AQUARIUM WATER

Istanbul Aquarium has a closed circuit system. The water is continuously cleaned and returned to the exhibition tanks, thus an environmentally friendly, sustainable and economical path is followed. In order to monitor the water quality, physical and chemical parameters such as pH, Dissolved oxygen, Temperature, Salinity, Ammonia, Nitrite, Nitrate, Calcium, Magnesium are monitored by providing daily, weekly and monthly controls. In cases where water change is required, water changes are made with fresh water.

An illustration of an aquarium tank. In the center, a large orange oval represents the water. Two blue-gloved hands are shown: one on the left holding a test strip with a color gradient from purple to red, and one on the bottom holding a small white container with orange liquid. The background is blue with white wavy lines representing water. Various fish are depicted: two large grey stingrays at the top, a yellow tang on the right, a clownfish at the bottom, and several small blue fish. Bubbles are scattered throughout the water.

In Istanbul Aquarium, which has advanced filtration systems, mechanical filtration, biological filtration and chemical filtration methods are used in a combined manner, eliminating metabolic wastes formed in water, while also providing disinfection against possible pathogens such as bacteria, viruses and parasites.

RAJA-SCYLORHINUS-CHILOSCYLLIUM PRODUCED IN THE AQUARIUM

We are carrying out production and growth studies on the species *Scyliorhinus stellaris*, *Scyliorhinus canicula* and *Raja radula*, which exist in our seas and whose numbers tend to decrease day by day. We started our first study in 2019 by collecting eggs from the *S. stellaris* species in exhibition tanks. We then continued our study by collecting eggs from *S. canicula* and *R. radula* species.

The eggs from the three species in the exhibition area were taken to incubation tanks. The eggs were placed

in tanks with the same parameters (temperature: 17°C, salinity: 27 ppt) as the conditions in the exhibition area where the broodstock individuals were located. Embryo development was monitored in these

tanks, and the eggs that formed embryos were taken to special tanks for each species and separated in quarantine. All types were taken to different tanks in order to eliminate the risk of cannibalism. In our previous trial study, it was observed that different species bite each other when they are together.

However, cannibalism has not been observed between the same species in the studies we have conducted. The water parameters in the quarantine; temperature: 21-22°C, salinity: 30 ppt, dissolved oxygen > 90 mg/L are applied in the same way for all three species.



Our bamboo sharks (*Chiloscyllium punctatum*), which are located in the Pacific section of our exhibition area, also lay eggs regularly. The eggs in this tank are first taken to the incubation tank, and after the embryo formation is observed, they are transferred to special tanks prepared for these sharks in quarantine and their care is continued. S C Y Scyliorhinus stellaris, P. canicula, R. the radula, & C. punctatum species reproduce oviparously. Oviparous reproduction can be defined as the development of an embryo in an external environment from an egg that has been fertilized by internal fertilization. S. stellaris and S. canicula, being species of the same genus, show many similarities in their egg stages.



The developmental stages of hatched shark and stingray eggs can be listed as follows:

Stage 1

An embryo is formed inside the egg.



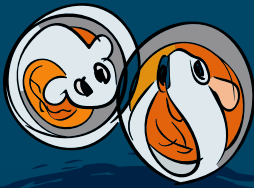
Stage 2

This is the stage when organs are formed. The heart begins to form. The tail and skeletal system develop, tail movements increase at this stage. Towards the end of this stage, the gill filaments begin to develop.



Stage 3

The gill filaments of the embryo become smaller towards the end of the Stage 4. The dorsal and ventral fins begin to extend towards the tail. The length of the embryo exceeds the length of the yolk sac.



Stage 4

The shrunken gill filaments disappear at the end of this stage, and 5 pairs of gill openings are formed. Mouth formation is completed, and with the thickening of the skin, the shape of a shark and stingray becomes apparent.



Stage 5

Pigmentation intensifies. By consuming the yolk sac, it becomes ready to hatch.



IUCN CATEGORIES:

Scyliorhinus stellaris : VU

Scyliorhinus canicula : LC

Raja radula : EN

Chiloscyllium punctatum : NT

INTERNATIONAL UNION FOR CONSERVATION OF NATURE (IUCN)

The IUCN (International Union for Conservation of Nature) is an international organization working on nature conservation and sustainable use worldwide. Founded in 1948, it cooperates with different stakeholders such as governments, non-governmental organizations, scientists and local communities.



IUCN in terms of species diversity

The IUCN develops and implements various strategies to protect species diversity. The organization provides guidance on species conservation, habitat conservation and sustainable management of biodiversity. Species diversity is of critical importance for the health of ecosystems and for human life.

IUCN Red List

The IUCN Red List is the most comprehensive and reliable source for assessing the conservation status of species worldwide. This list determines whether species are at risk of extinction and is divided into the following categories:

Critically Endangered

Species with the highest risk of extinction.

Endangered

Species at risk of extinction.

Vulnerable

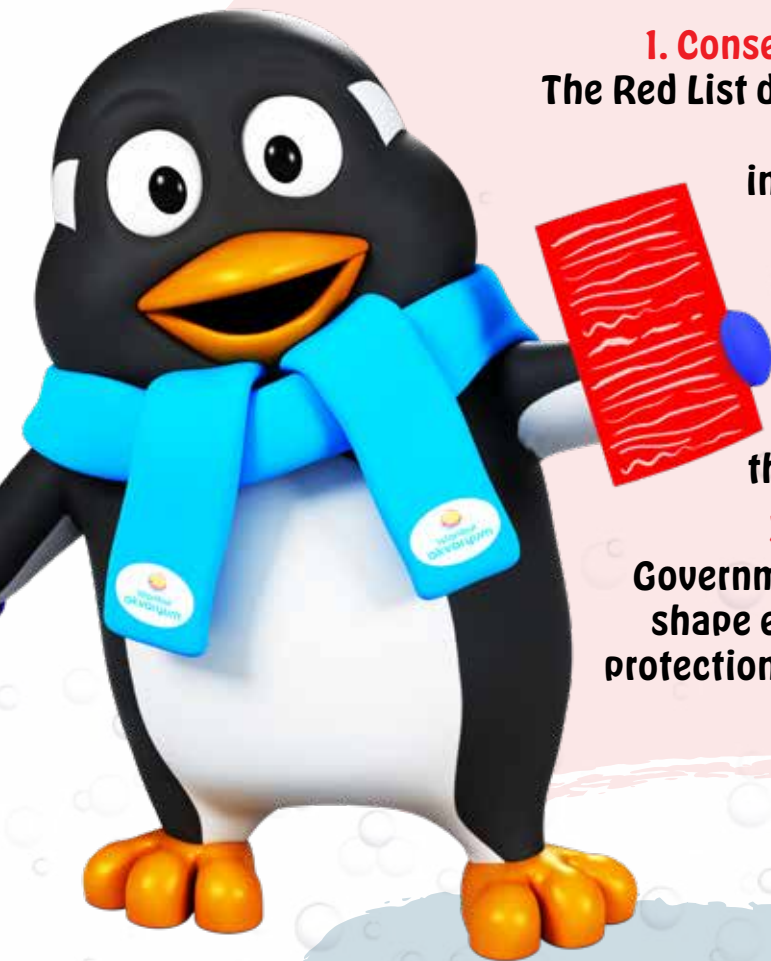
Species that are likely to be endangered.

Near Threatened

Species at risk of becoming endangered in the future.

Least Concern

Non-endangered species.



The Importance of the Red List

1. Conservation Strategies:

The Red List determines the priorities of conservation efforts and indicates which species should be protected.

2. Raising Awareness:

Tells people about the importance of species conservation and highlights the effects of biodiversity loss.

3. Policy Development:

Governments and organizations can shape environmental policies and protection programs using the Red List.

The IUCN in its simplest form:

1. Conservation Strategies:

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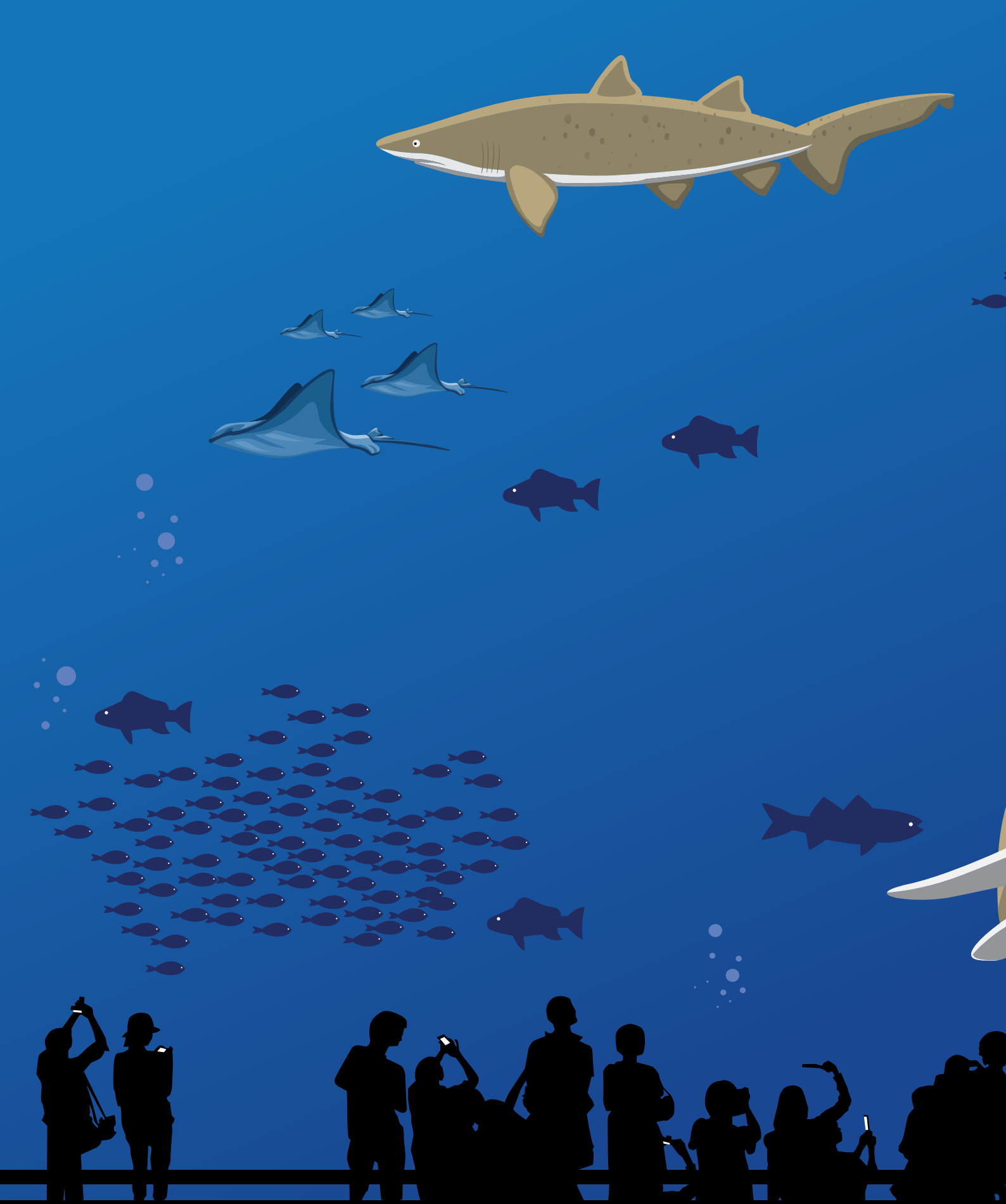
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