Javier Murcia

MAR MENOR
A MAGIC LAGOON

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MAR MENOR. A MAGIC LAGOON

HISTORY

This sea is a sea that is clustered between two strips of land, roaring with sirocco and lebeche ...; it's a dense old wine of salts and iodine.

It is a sea for full-bodied youth;
and it is a sea for beings that already know
what the sea takes with it, from the land.
It is a sea without riders, it does not gallop.

And this odour of millennia that
imbues its shores of pine and palm trees,
it is of the sea on the sea: it is already celestial
like the hands of archangels left behind.

Oh, its light and its sound, its great clouds
that the easterly wind detaches from the heavens
and overturns in the fields, like rivers
that return from God, the sea of bronze!.

Carmen Conde.
The poems of Mar Menor

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FOREWORD

When we contemplate our Mar Menor, we have the satisfaction of being able to verify that we are making progress in the process towards its full recovery. The latest data obtained by the various analyses carried out to date indicate that this emblematic natural area of our Region is showing very positive symptoms of returning to its fragile natural balance.

It would be irresponsible to deny that, in recent years, the Mar Menor has experienced great difficulties which have in turn generated concern and unrest, not only in those who live directly or indirectly in its surroundings, but among all of us who feel it as something of our own.

The Region of Murcia was able to react to the signs indicating its deterioration, launching a series of initiatives in different areas: political, business, civil and academic, to respond to the needs of such a special, unique ecosystem.

The respective controls were increased to levels that enable us to state today that the Mar Menor is the most tested and monitored natural space in Spain. Technicians of proven track record and from different institutions and different scientific disciplines are provided with data which they use to take decisions on the most appropriate actions to improve the situation of the Mar Menor.

This work has been carried out responsibly and has been met with success, as demonstrated by the parameters obtained in recent months and which back up the widespread feeling among the local residents that the Mar Menor has not been in such a good condition for many years.

However, it would be a mistake to become complacent and to drop our guard in the face of a situation that could recur in the future. Our satisfaction with the advances obtained is tempered with a healthy concern that allows us to continue working with the same conviction in favour of the Mar Menor, without sparing human or financial means.

This book focuses on an almost unknown underwater world that is mostly hidden from our eyes, but one which certain privileged people, such as the author of the photographs, Javier Murcia, often access.

Javier has captured the biological richness of the Mar Menor, an ecosystem full of life, in images of great technical quality. There is no more conclusive evidence than the photographs that illustrate this work to state that, fortunately, the Mar Menor is an immense living being with an enormous capacity for recovery when provided with the necessary protection.

Congratulations to the author for his work, his tenacity and his professionalism in obtaining a graphic testimony that allows us to appreciate both the incredible wealth, in all its aspects, of the Mar Menor and the sense of pride that this unique European natural space generates for the people of the Region of Murcia. For this reason, the protection of Mar Menor is a duty that is shared by all, a duty that is not limited to authorities or to scientists, but rather a duty that must be assumed by society as a whole.

Each and every one of us, within the scope of our own level of responsibility, has the obligation to ensure that the conservation of the Mar Menor is compatible with the different activities that take place around it. Our mission is to preserve it in the best possible conditions, in order prevent that the explosion of life whose beauty Javier Murcia reveals to us in his images is ever threatened again, thus allowing it to be admired and enjoyed by future generations, in the same way as it has been until now.

FERNANDO LÓPEZ MIRAS
President of the Region of Murcia

INTRODUCTION

MAR MENOR

Coastal lagoons are expanses of shallow, salty or brackish waters near the coast which are separated from the sea by a permeable barrier, usually of sand, and exposed to the constant and direct influence of the land and the sea.

The Mar Menor is a hypersaline lagoon located in the southeast of the Iberian peninsula, within the Autonomous Community of the Region of Murcia. This geographic territory comprises, totally or partially, the coastal municipal districts of San Pedro del Pinatar, San Javier, Los Alcázares and Cartagena. The lagoon has an approximate area of 135 km2 and an average depth of 4-4.2 m.

The Mar Menor is the largest coastal lagoon in the western Mediterranean and is divided into two sub-basins: the north and the south. It is separated from the Mediterranean Sea by a sandy bar: la Manga del Mar Menor, which is 22 km long and has a maximum width of 1 km.

A series of channels links the waters of the Mar Menor with those of the Mediterranean. The channel which registers the greatest exchange of water between the two is called el Estacio, with an approximate capacity of one million cubic metres. Marchamalo, La Torre and Ventorrillo are the other three channels that connect the Mar Menor with the sea.

There are five islands of volcanic nature within the lagoon, divided into two groups: larger islands and smaller islands.

The largest islands are Barón, which covers an area of 93.8 ha and stands at a height of 104 m above sea level, Perdiguera, the second in size and standing at 45 m above sea level and 25.7 ha; and el Ciervo, which occupies 17 ha and rises 46 m above sea level.

The smaller islands are el Sujeto, which measures 2.5 ha, and la Redonda, which measures 2.4 ha, both close to La Manga and places of great importance for the nesting of birds.

The lagoon was formed in the Quaternary. At first it took the form of a bay open to the Mediterranean Sea, stretching from Cabo de Palos to el Mojón (San Pedro del Pinatar). Ravines and the predominant marine currents combined to deposit sediment until a narrow sandy strip was formed, closing the bay and giving rise to what is known today as La Manga del Mar Menor. The Mar Menor region has a semi-arid subtropical Mediterranean climate. The proximity of the sea moderates somewhat the extreme conditions that exist in other inland areas, resulting in an average annual temperature of 17 ºC.

One of the most notable features of the lagoon is its hypersaline waters, which register variable temperatures ranging from 9 ºC in winter to 31 ºC in the summer. Due to intense evaporation, its waters have levels of salinity of around 42% and 49%, although there are notable differences between the thermosal characteristics of the north and south basins, due to the greater number of channels or “golas” in the former.

Javier Murcia Requena

PHOTOGRAPHS

Cymodocea nodosa is a marine phanerogam that has a marked growth cycle. In spring and summer the plant enters its most active period and registers its highest growth rate. Its bundles can be formed by 5 to 7 leaves. From October to March, it enters a period of slow growth during which its bundles are formed by only 2 or 3 leaves.

Cymodocea nodosa can occupy large areas of sandy or muddy bottoms with organic particles and protected, well-lit areas, and its habitat ranges from surface waters to a maximum depth of 7 metres in Mar Menor.

Ruppia cirrhosa is an herbaceous plant formed by roots, stem, leaves and flowers. The filamentous stem is of the rhizome type and forms a dense network buried in the soft sediments.

Detail of *Ruppia cirrhosa* stems.

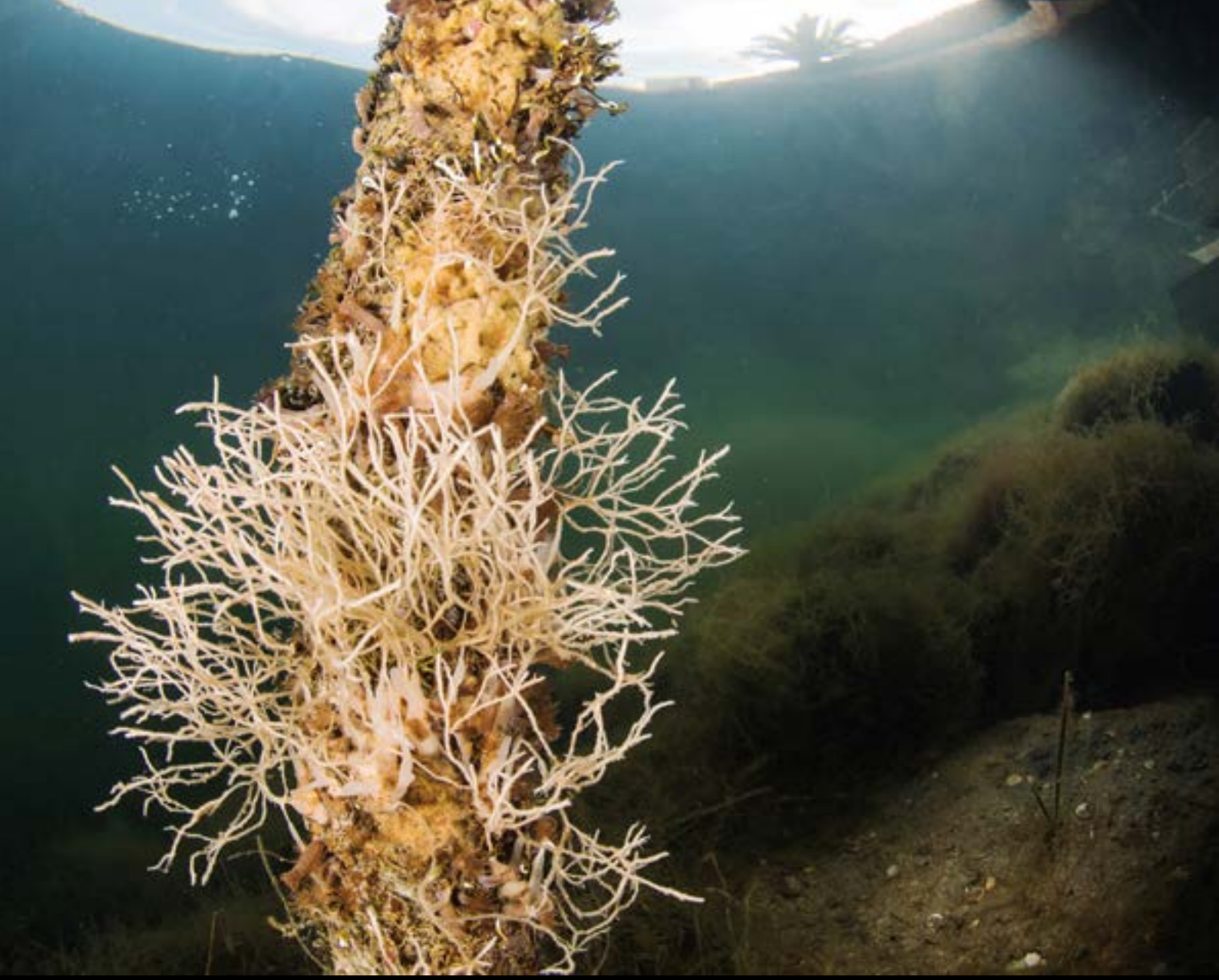
Meadow of *Cymodocea nodosa.*

Ruppia cirrhosa in spring.

Meadow of *Cymodocea nodosa* in summer.

Due to the darkness created by spas, platforms and dark areas in the rocks around the islands, it is possible to find large sponges such as the *Haliclona mediterranea*. Its coloration can vary from dark violet to light pink.

Sponges, such as *Pellina semitubulosa*, are filtering organisms that feed on microbacteria, organic remains and small algae. Water penetrates through holes called osculum thanks to a water current created by the movement of special cells called choanocytes.



Some sponges have very extravagant shapes with very unusual, irregular growths. The lack of strong currents and waves may be one of the determining factors.

Detail of a sponge's osculum.

Large colony of *Pellina semitubulosa.*

Sponges are highly-efficient filtering mechanisms.

Sponges, or porifera, are immobile (sessile) organisms.

The umbrella of *Cotylorhiza tuberculata* can reach about 30 cm in diameter. It shaped like a fried egg, is intense yellow, its surface is smooth and it has a central, hemispherical wart-free elevation.

Cotylorhiza tuberculata is subject to the prevailing currents and winds, although it is able to swim very slowly. It is present in abundance in the Mar Menor, where it can be found in large concentrations during the summer.

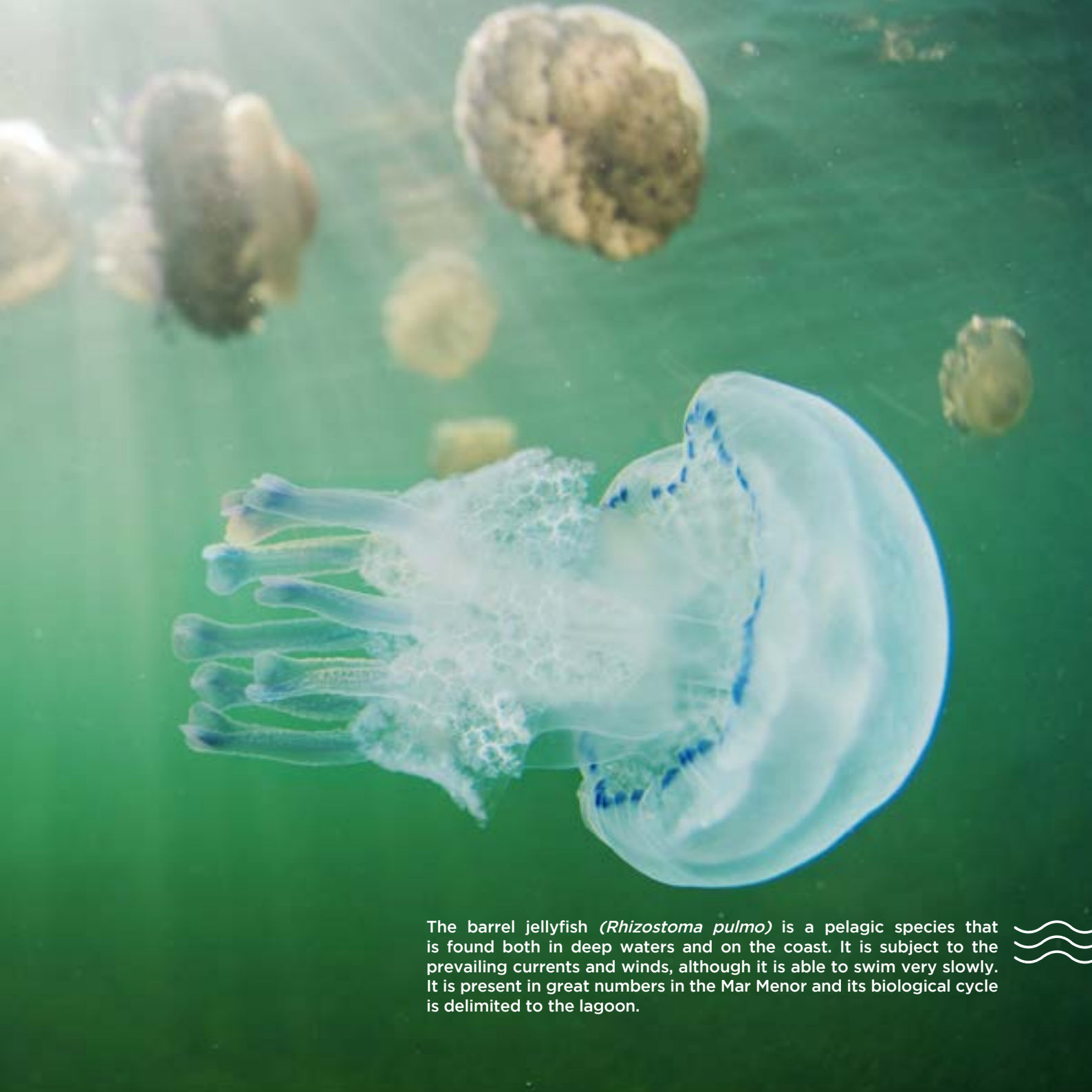
Its colour can vary between greenish or brownish-orange tones, depending on the amount of algae that live symbiotically in it.

It is not a dangerous species, since its tentacles register very low toxicity.

Of the three jellyfish present in the Mar Menor, *Cotylorhiza tuberculata* is the third to make its appearance, increasing in number at the beginning of summer and remaining until November or even December.

Detail of the tubular appendages finished in bluish - violet or white buttons.

A partially-albino example, with white umbrella.



The barrel jellyfish *(Rhizostoma pulmo)* is a pelagic species that is found both in deep waters and on the coast. It is subject to the prevailing currents and winds, although it is able to swim very slowly. It is present in great numbers in the Mar Menor and its biological cycle is delimited to the lagoon.

Aurelia aurita. Known as the saucer jelly or moon jellyfish, it is a transparent, plate-shaped organism with short tentacles. It is mainly concentrated in coastal lagoons and closed bays. Its sting is practically harmless.

The *Rhizostoma pulmo*'s membrane can measure up to 70 cm in diameter and one meter in length. It is dome-shaped, with a smooth surface, while the edge is formed by 80 marginal lobes which are intense blue or violet.

Young *Rhizostoma pulmo.*

The membrane of the *Aurelia aurita* can measure between 20 and 40 cm in diameter.

Young example of *Cassiopea sp.*, or upside-down jellyfish. Another new species in the lagoon.

Phyllorhiza punctata, another invasive species in the Mar Menor.

Detail of a *hydrozoan* colony. The small polyps are extended to hunt tiny plankton.

The isopod crustacean *Mothocya epimerica* is a fish ectoparasite. In the Mar Menor, it tends to attack the big-scale sand smelt *(Atherina boyeri)* with the greatest virulence. In general, these crustaceans are attached to the fish's skin, gills or walls of the mouth cavity.

Parasitic isopod crustaceans are commonly referred to as “sea lice”. The buccal appendages are modified to suck (incorporated into an oral suction cone) and to hold.

Crustacean amphipod or “sea louse” over the mouth of a black-striped pipefish.

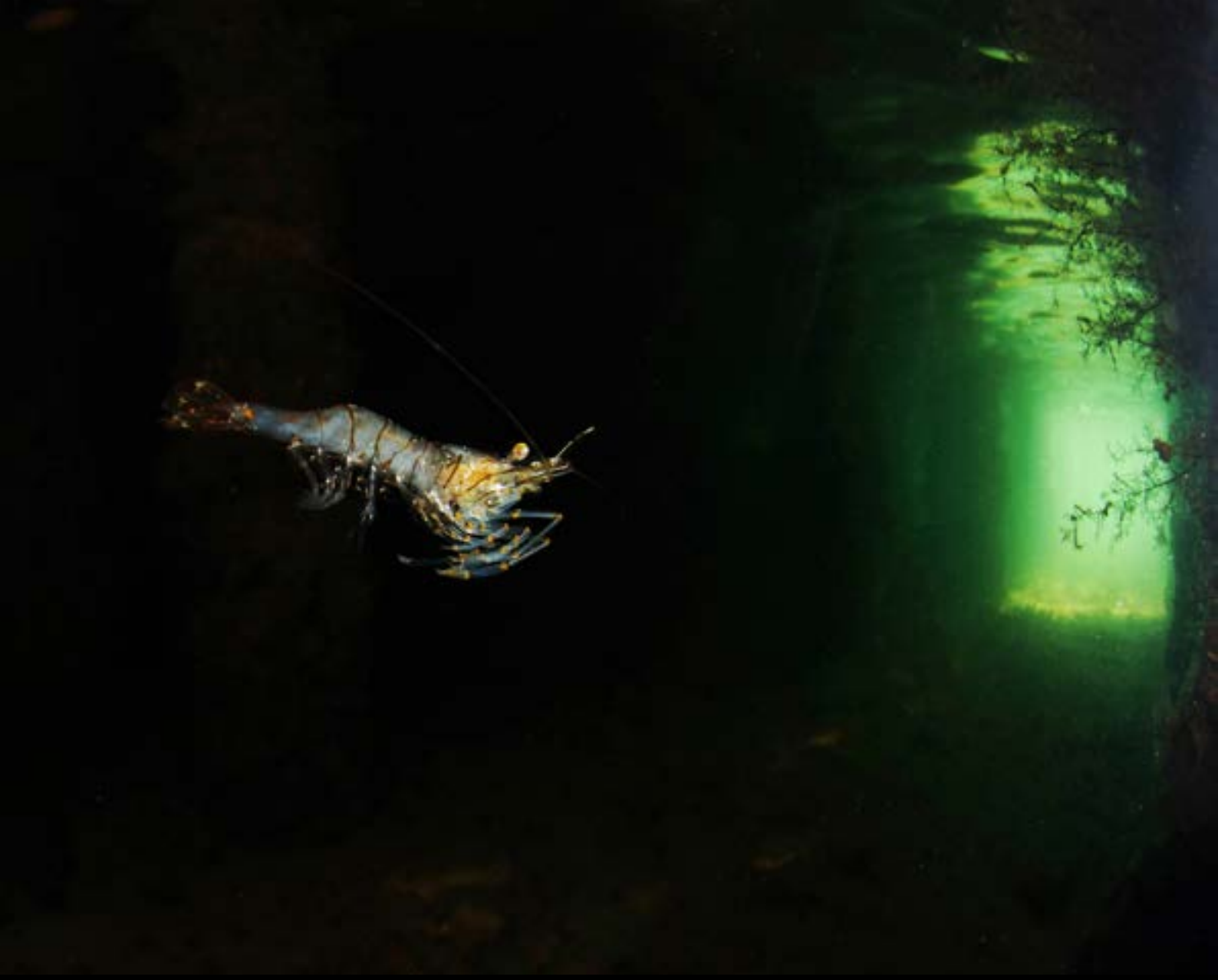
Sphaeroma serratum feeds on algae and detritus.

Mothocya epimerica can cause serious injury.

The Mar Menor striped shrimp *(Melicertus kerathurus)* is related to the shrimp and the prawn.

The rockpool shrimp *(Palaemon elegans)* has an average length of about 5 or 6 cm.

The Mar Menor striped shrimp *(Melicertus kerathurus)* sets out at night in search of food; it is an omnivorous species that feeds on crustaceans, molluscs, worms, polychaetes and algae.



The rockpool shrimp *(Palaemon elegans)*, lives at a depth of a few centimetres. It is typically found in rocky bottoms, and is very common in tide pools, lagoons and estuaries; it can also be found in soft beds with abundant vegetation, as in the Mar Menor.

Detail of the chela and the eye of a warty crab *(Eriphia verrucosa)*.

The striped shrimp *(Melicertus kerathurus)* is an euryhaline species, which can tolerate significant variations in environmental salinity. Consequently, it can be found in coastal lagoons.

The Mar Menor striped shrimp *(Melicertus kerathurus)* is nocturnal, spending the day buried in soft beds.

*T*he rockpool shrimp *(Palaemon elegans)* cohabits with other species, such as the marbled crab *(Pachygrapsus marmoratus)*.

The Mar Menor striped shrimp *(Melicertus kerathurus)* photographed at sunset.

Palaemon elegans follows an omnivorous diet.

The green crab *(Carcinus aestuarii)* is a carnivorous species that also feeds on carrion. It usually seeks out dead fish in fishing nets. The ovigerous females can be observed from January to April. Their eggs are small and very numerous and the larvae are greenish in colour.

Carcinus aesturiia lives in the intertidal and sub-littoral zone. It is found in all types of substrates: rocky bottoms, sandy or muddy bottoms and meadows of phanerogams and algae.

The blue crab, or the Atlantic blue crab, *Callinectes sapidus*, is a new species in the lagoon. Its size (it measures more than 20 cm), together with its aggressiveness and strength, makes it an extremely strong species.

The green shore crab *(Carcinus maenas)* is very appreciated gastronomically, especially in the period between sheddings.

*Pirimela denticulata i*s a small crab which lives in sandy beds.

Panopeus africanus is a new species in the Mar Menor.

The shedding of a *Brachynotus sexdentatus.*

The elisia *(Elysia timida)* is a sub-littoral gastropod mollusc found only in surface waters. It inhabits rocky bottoms with algae of the *Acetabularia* genus, on which it feeds.

The banded murex *(Hexaplex trunculus)* is an active and scavenger predator that pierces its prey by softening its shell with acidic secretions from a special organ in its foot. The image shows two groups of banded murex laying multiple clutches.

Bursatella leachii is a gastropod mollusc from the Red Sea that was first seen in the Mar Menor in 2008. It feeds on algae. In the Mar Menor, the laying of clutches takes place throughout the year, although it intensifies from the end of August to November; the eggs are deposited between algae (usually between *Caulerpa prolifera)*.

Brown bubble snail *(Haminoea hydatis)* depositing a clutch.

Rissoa ventricosa feeds on algae.

Gibbula ardens feeds on the microscopic algae that cover the rocks and debris.

Neapolitan spurilla *(Spurilla neapolitana)* on a *Gobius sp.*, clutch.

The noble pen shell *(Pinna nobilis)* is the largest bivalve mollusc in the Mediterranean and the second largest in the world. It appeared in the Mar Menor in the 1980s and, despite the high levels of mortality it has suffered in the Mediterranean, certain of the populations found in the lagoon have not been infected by the Haplosporidium genus protozoan that, in all probability, represents the pathogen responsible for such mortality.

The noble pen shell is usually around 75 cm in length, although it can reach around one metre. Its shell is usually covered with numerous organisms, including sponges, anemones and other invertebrates.

The noble pen shells are of vital importance for the cleaning of waters, since they are magnificent filtering organisms.

Noble pen shells in the Mar Menor.

Young example of *Pinna nobilis*, measuring a few centimetres.

The lagoon cockle *(Cerastoderma glaucum)* is the most abundant bivalve mollusc present in the soft beds of the Mar Menor.

The clam *(Mactra sp.)* mainly feeds on plankton ingested by filtration.

Schizoporella errata is a bryozoan found in shallow water. It normally dwells on rocks, artificial structures or on any other submerged support, always in scarcely-illuminated locations. It is present in abundance in the Mar Menor and usually grows in very large amounts under the support poles of the spas.

The Spaghetti bryozoan *(Amathia verticillata)* is a colonial species with a structure similar to that of a shrub. It is present in abundance in the Mar Menor. It can be found in any type of bottom, although always on a hard substrate.

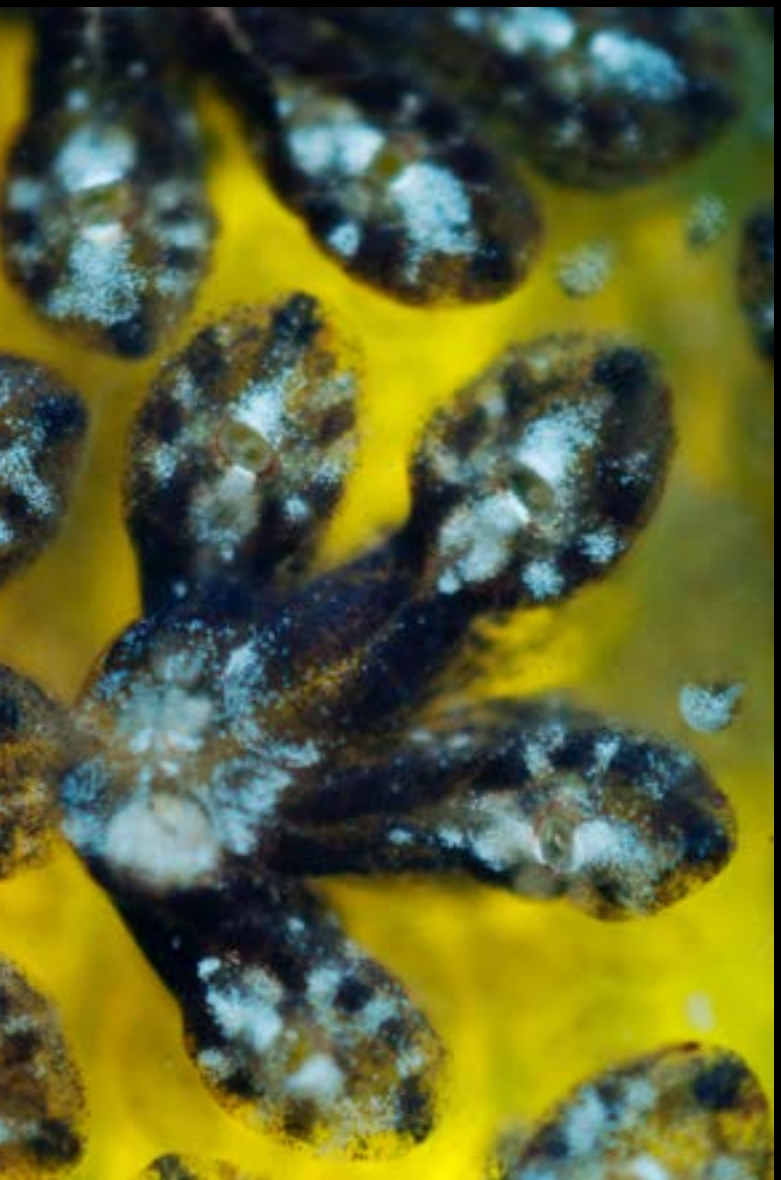
Holothuria polii is one of the few echinoderms that inhabit the Mar Menor. It feeds on organic matter and its droppings look like little sand sausages. It does not display sexual dimorphism, so the male can not be differentiated from the female. The picture shows a male releasing sperm into the water during the summer.

Botryllus schlosseri is a colonial ascidia that grows forming aggregates of about 4 or 5 cm.

Several specimens of *Oestergrenia digitata*, another typical holoturia found in the Mar Menor.

Holothuria polii is an animal of great biological importance, due to its ability to continuously move sediment.

Botryllus leachi is a colonial ascidian and feeds on phytoplankton.



Mangrove tunicate *(Ecteinascidia turbinata).*

One of the most important fish to be found in the Mar Menor is the eel *(Anguilla anguilla)*, as it is in danger of extinction.

It is a nocturnal species that is currently in a situation of vulnerability throughout Spain, and is almost threatened in the Mar Menor and other coastal wetlands.

The eel is a catadromous species, that is to say, it spends a great part of its life in fresh waters and reproduces in the sea (Sargasso Sea). Males remain mainly in littoral waters and river mouths, while females swim up river courses.

The Spanish toothcarp *(Aphanius iberus)* is an endemic species of the Iberian Peninsula that has been declared endangered. It is an euryhaline and eurytherm fish, able to accommodate a wide range of water temperatures and salinities. Consequently, it can inhabit coastal lagoons, salt lakes, river mouths, as well as bodies of fresh water.

The Spanish toothcarp is a small fish that rarely exceeds 5 cm in length. Its body is chubby. It displays a marked sexual dimorphism. The males are smaller, more stylized and have larger and more coloured fins than the females.

The Spanish toothcarp females are larger than the males and their body has a brown coloration with dark spots that tend to form short stripes.

The big-scale sand smelt is an euryhaline and euriterma species, capable of surviving in continental waters.

The big-scale sand smelt *(Atherina boyeri)* is carnivorous. It is highly-appreciated as a gastronomic delicacy in the southeast of the peninsula.

The black-striped pipefish *(Syngnathus abaster)* camouflaging itself among *Cymodocea nodosa*.

Although the black-striped pipefish *(Syngnathus abaster)* is a nationally threatened species, it is abundant in the Mar Menor.

The black-striped pipefish reaches a maximum length of 25 cm, although smaller specimens are more frequent. Its body is similar in shape to that of a snake and is much more plump than that of other of its congeners; it has a ringed body, but it is smoother than other pipefish.

The adult females are differentiated by their vertical striations and the males by their brooding pouch. The juveniles are identical to their progenitors, in miniature.

The brooding pouch of the male black-striped pipefish is formed by two skin folds, which enlarge notably in the rear part of the body. In spring they release the young.

Adult male black-striped pipefish.

Couple of black-striped pipefish *(Syngnathus abaster).*

Juvenile black-striped pipefish measuring hardly two centimetres.

Black-striped pipefish parasitized with an aquatic sowbug *(Sphaeroma serratum).*

The broadnosed pipefish *(Syngnathus typhle)* can measure up to 40 cm in length. Its body is very elongated, somewhat thicker than that of other species of the same genus and is protected by dorsal and caudal bony rings. The snout is long and laterally flattened. The males have a brooding pouch located in the ventral section.

Syngnathus typhle is not abundant in the Mar Menor. It usually lives in meadows of phanerogams *(Ruppia cirrhosa* and *Cymodocea nodosa*), where it is well camouflaged thanks to its shape and colour.

The coloration of the broadnosed pipefish is highly variable, usually somewhere between brown, gray and green tones with irregularly distributed light and dark patches, while the belly is lighter.

Detail of the eggs inside the partially-opened brooding pouch.

Detail of the eye of a *Syngnathus typhle.*

Male adult pregnant with seahorse *(Hippocampus guttulatus).*

Adult seahorse photographed at dawn.

After a period of gestation that varies according to the temperature of the water, the male releases the young juveniles from his pouch by means of contractions similar to those of a conventional birth. As of that moment, the newborns look the same as their parents.

The male is responsible for incubating the embryos inside a pouch located in his ventral area. The eggs are transferred by the female to the male in several batches during courtship (image). The incubation, depending on the water temperature, lasts 4 to 5 weeks.

Seahorses belong to the *Syngnathidae* family, which means “fused jaw”. They are characterized by their vertical posture, inclined head, tubular snout with a small, tipped mouth. Its tail is strong and prehensile.

Adult male specimen of *Hippocampus guttulatus.*

The juveniles prefer shallow waters with vegetation.

Pair of young sea horses in *Cymodocea nodosa* meadow.

The colouration of seahorses varies, as in this intensely yellow example.

The world population of seahorses has declined in recent decades for several reasons: degradation of their habitat, the interest they arouse in traditional Chinese medicine, in the aquarium industry and in the souvenir industry.

It has been proven that seahorses communicate by rubbing parts of their skulls, which produces a loud cracking sound. During courtship, these sounds are stronger and more intense.

The Greeks used the word *"hippocampus"* to describe a mythological beast that carried the sea gods on its back. This creature was half fish and half horse. In the picture, a young seahorse measuring 2 cm.

The golden bream *(Sparus aurata)* breeds between October and December. Although they can move in small groups, it is more common to see individual examples or pairs. Young example are usually found in abundance in the shallow, sandy bottoms of the Mar Menor.

In the Mar Menor there are several species pertaining to the *Mugilidae* family. They are characterized by a more or less flattened cephalic region and an angular mouth opening. The upper lip is usually thickened, while the lower lip has a laminar edge. Its body is fusiform and very elongated.

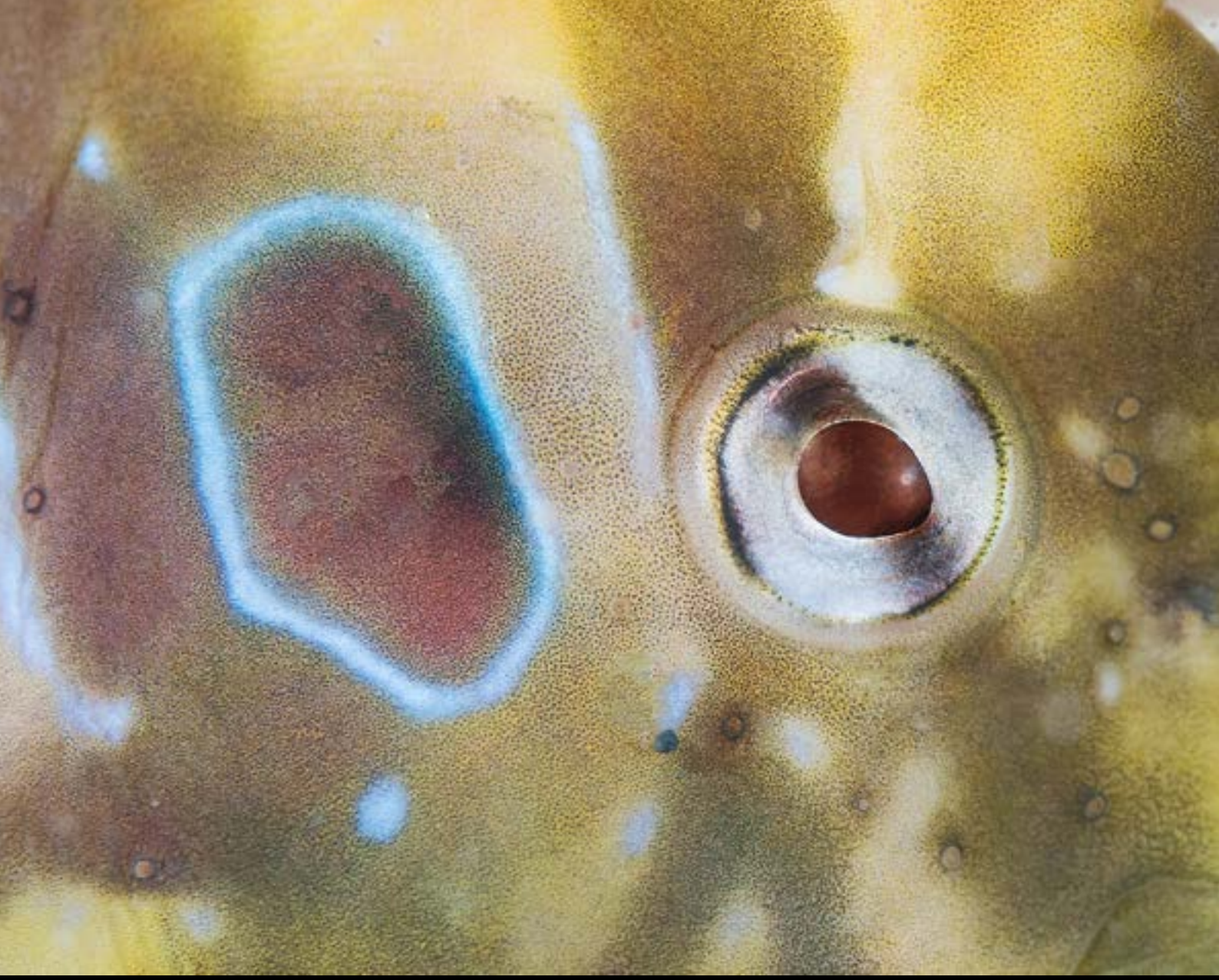
Young mullet or golden grey mullet *(Liza aurata)*.

The imperial needle *(Tylosurus acus imperialis)* is an Atlantic species that is found with increasing frequency in the Mar Menor. It can grow to 140 cm in size and is highly appreciated as a gastronomic delicacy.

The wrasses are small fish that are increasingly abundant in the Mar Menor.

Shoal of anchovies *(Engraulis encrasicolus)* in the Mar Menor.

One of the most abundant fish in the Mar Menor is the peacock blenny *(Salaria pavo)*. This blenny basically feeds on small marine invertebrates. The reproduction period begins at the beginning of April and can last until well into the summer, when the waters are warmer. The males grow a bright yellow crest during this time and are responsible for monitoring the clutch until the moment of hatching.



The peacock blenny lives in shallow waters, from less than 0.5 m to about 2 m deep. This species likes inhabiting rocky bottoms composed of loose rocks and hollows, or soft bottoms dotted by rocks or other objects.

The peacock blenny deposits its clutch on hard substrates: rocks (under stones, small holes, fissures), in empty the shells of bivalves and gastropods and even in inside the remains of rubbish, such as cans, glass bottles and other utensils of anthropic origin.

The Sailfin dragonet *(Callionymus pusillus)* is a small fish with a characteristic dorsal fin. It is only found in soft bottoms.

The sand goby *(Pomatoschistus minutus)* can measure up to 6.5 cm in length. The females have paler pectoral regions and the pelvic discs than the males and a black spot under the chin. In the image, a male in defensive posture.

Goby eggs are piriform (pear-shaped) with numerous filaments that anchor to the substrate. As they mature, and after the absorption of the yolk sac, they hatch and release the postlarvae that live in the plankton for a few weeks before adopting a life at the bottom (benthic).

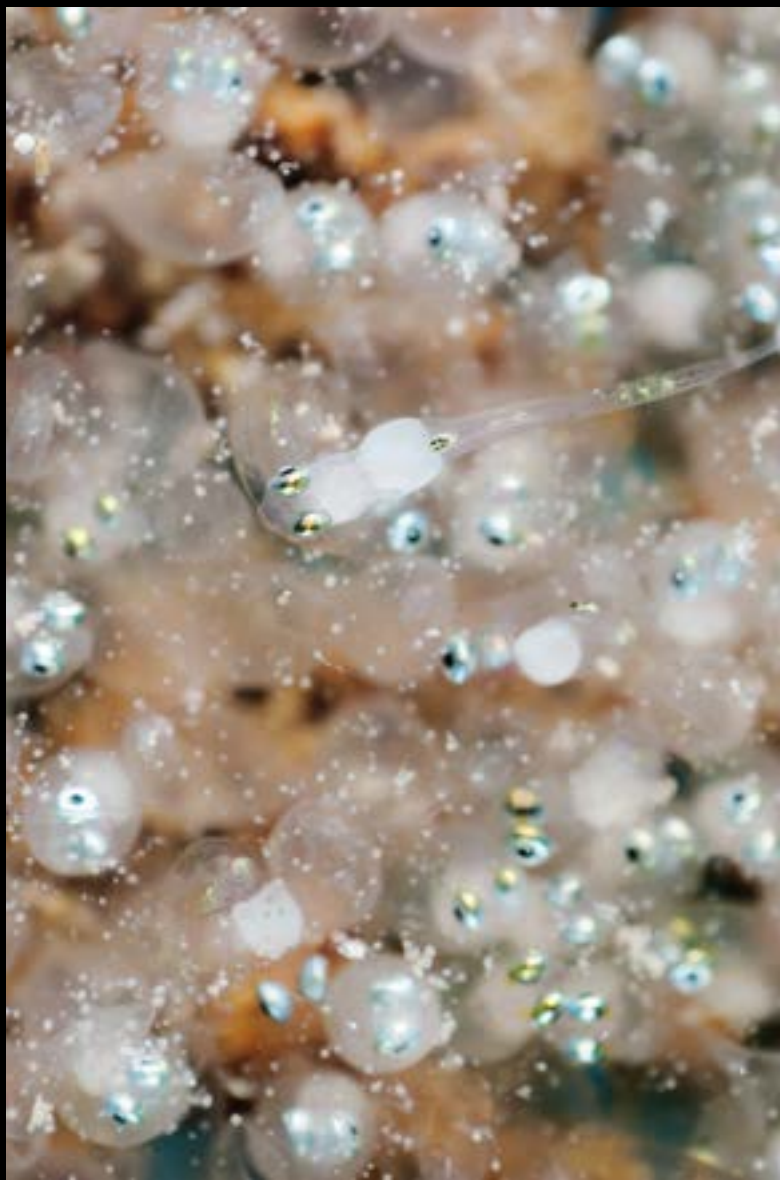
The reproduction period of the marbled goby *(Pomatoschistus marmoratus)* takes place in the spring, when the males become more aggressive and territorial. They only allow the females to enter their nest to reproduce and to lay their eggs, which they do under any available object (stones, empty shells, etc.), guarded at all times by the male.

The miller's thumb *(Cottus gobio)*, one of the rarest fish in the Mar Menor and the entire Mediterranean.

The sand goby *(Pomatoschistus minutus)* is capable of burying itself.

A rock goby *(Gobius paganellus)* at sunset.

Goby eggs with a newly-hatched juvenile.



The giant goby *(Gobius cobitis)* is a typical species of rocky bottoms that can sometimes be found in tide pools. It usually appears in solitary in shallow waters, being an extremely territorial species. In the Mar Menor it is abundant in ports, breakwaters, spas and around the islands.

During the breeding season of the black goby *(Gobius niger)* there are confrontations between males, which make gestures of threats and fights with the snout, and are even known to emit screeching sounds during the conflict. The individuals of this species can live for up to four years.

The giant goby *(Gobius cobitis)* feeds mainly on marine invertebrates (crustaceans, worms, etc.) and small fish. During the breeding season, between March and May, they become aggressive and territorial.

Black goby breeding male *(Gobius niger)* guarding its clutch.

Typical piriform clutch of *Gobius niger*.

Adult male giant goby *(Gobius cobitis)* ventilating its clutch.

Adult specimen of *Gobius cobitis* devouring a juvenile shrimp.

The sole *(Solea sp.)* is a benthic fish that lives on sand or mud bottoms. Reproduction takes place between February and the end of spring and the females can lay more than 100,000 eggs. It is one of the longest living fish in our waters, able to reach the age of 20, and can weigh more than 3 kilos.

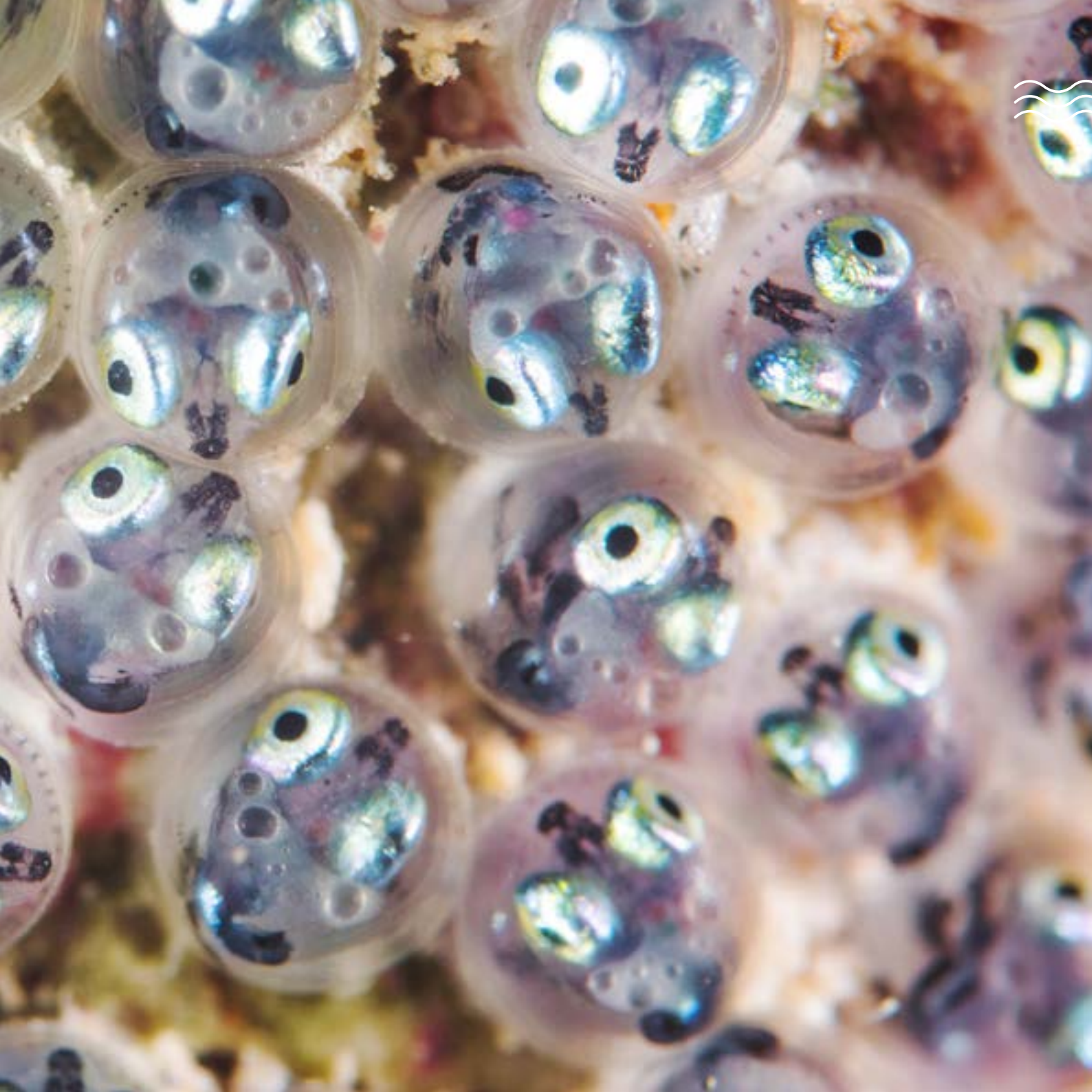
Mimetic coloration of a sole. Detail of the skin and its scales.

They hunt at night and locate their prey by mechanoreceptors.

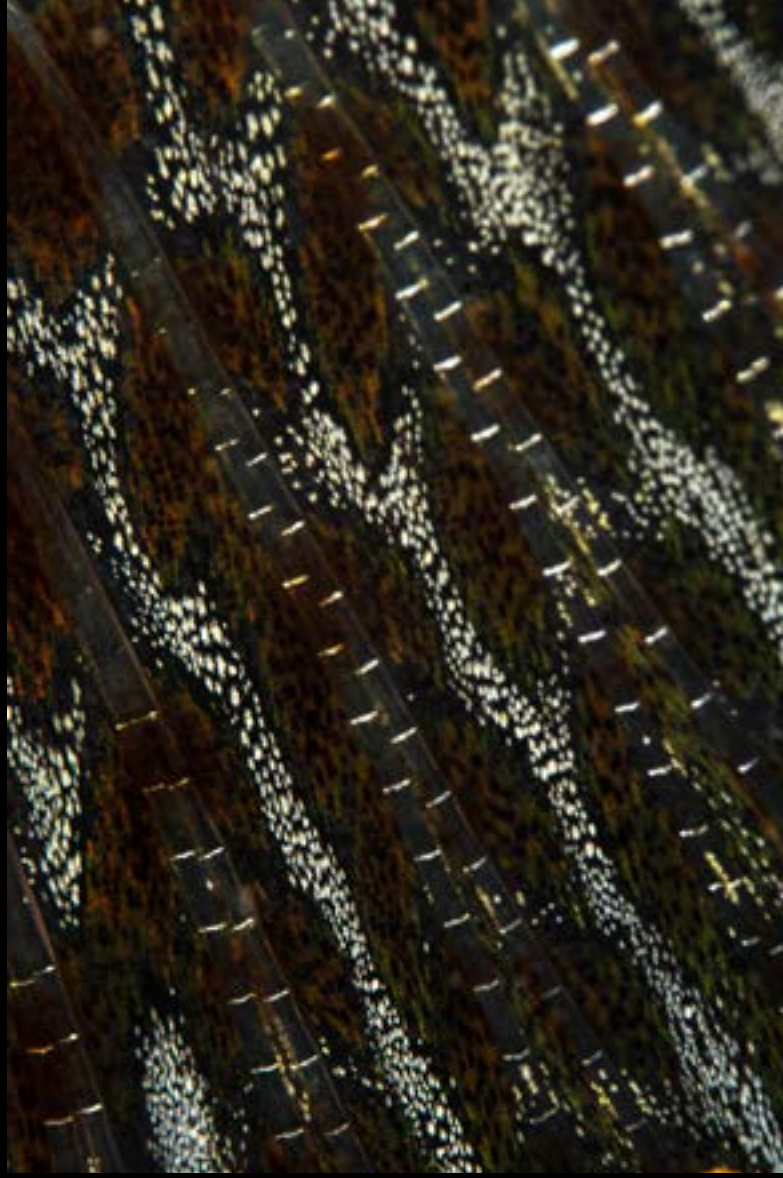
The sole has a large caudal fin.

Common in the soft bottoms close to the reed fishing mazes known as encañizadas. The females are usually larger than the males and there is no sexual dimorphism.

The rust blenny *(Parablennius sanguinolentus)* is a fish that lays its eggs on rocky surfaces. The picture shows the clutch about to hatch.



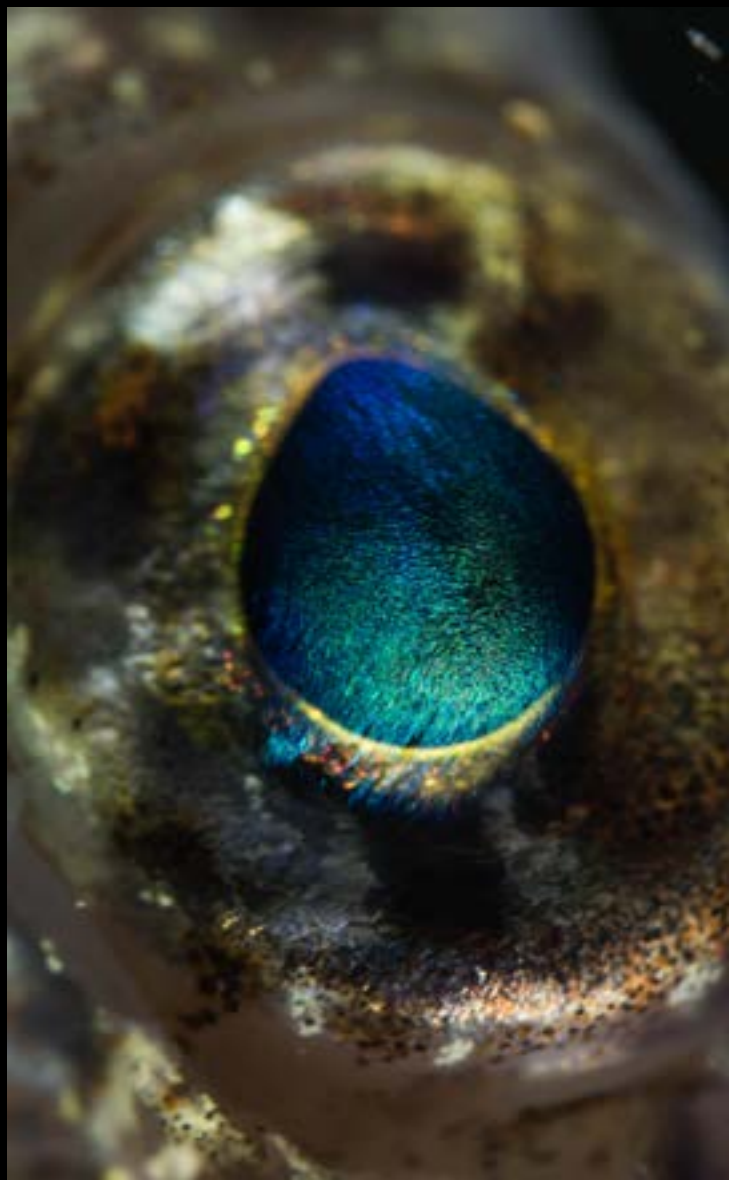
Detail of the rays of the caudal fin of a giant goby *(Gobius cobitis).*



Detail of the rays of the dorsal fin of a black goby *(Gobius niger).*

Detail of the rays of the cloacal fin of a peacock blenny *(Salaria pavo).*

The eye of a *Gobius niger*, one of the most abundant fish in the Mar Menor.



The Mar Menor is an ideal place for waterfowl such as flamingos and cormorants. The greater flamingo *(Phoenicopterus roseus)* is an unmistakable bird, noted for its large size and long legs and neck.

The great cormorant is a species of diving bird that feeds exclusively on fish, with the sand smelt *(Atherina sp.)* being its favourite prey, although it also usually attacks banks of mullets. The adults have completely black plumage, whilst that of the young examples is lighter. They are vulgarly known as “sea crows” because of their dark plumage.

The european shag is a diving bird capable of performing prolonged dives to hunt its favourite prey: fish. This bird is a rarer sight than the great cormorant. It is distinguished by its smaller and slender size, with a smaller head and beak. Its throat is totally black, whilst the corner of its beak is yellow.

The bluethroat *(Luscinia svecica)* lives mainly in the reedbed, from which it only leaves to emit its melodious song from the highest reeds.

The Audouin's gull *(Larus audouinii)* is a medium-sized and agile gull. It has a red beak with a black extreme and a yellow spot on its tip. It usually follows fishermen on their boats.

In winter, large groups of black-necked grebes *(Podiceps nigricollis)* concentrate in our inland sea to feed on larvae, crustaceans, molluscs and small fish.

The common scoter *(Melanitta nigra)* is present in Murcia only during migration, since its breeding areas are to be found in northern Europe and the Arctic regions.

A common sight on the shores is the little egret *(Egretta garzetta)*. It is a medium-sized heron, with white plumage, long black legs -except for the feet, which are yellow- and a long, black, dagger-shaped beak.

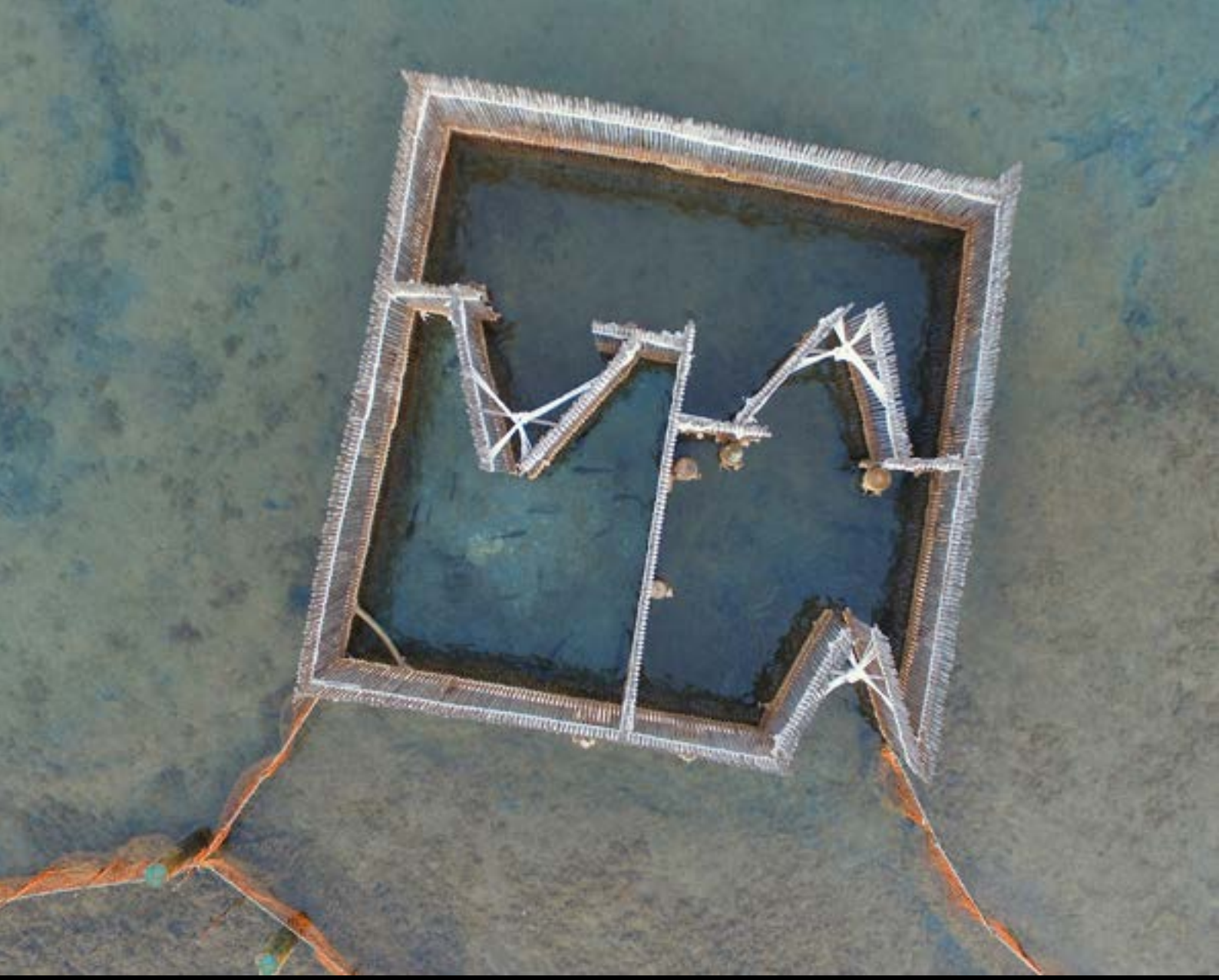
Flamingos *(Phoenicopterus roseus)* are pink because most of their food sources contain organic pigments called carotenoids, present in the crustacean *Artemia salina,* a branchiopod that lives in the ponds of the salinas.

At present, the Mar Menor offers magnificent places to visit, with a mixture of fishing and mining traditions, relatively recently populated areas and an ample gastronomic and leisure offer, in which we can practice water sports, such as sailing or scuba diving.

Fishing has been practiced in the Mar Menor since time immemorial. Among the most appreciated species is the shrimp, which is caught with special nets called langostineras. The nets are cast at night and left until the next day, when they are collected with their bounty of live shellfish and taken straight to the fish markets.

Encañizadas form part of a traditional, non-intensive fishing method which is still used today in the area that links the Mediterranean Sea and the Mar Menor. This fishing system is very selective in terms of the species caught. It is based on a series of circular labyrinths of made from reeds and which are placed in the zones which fish used to pass from one sea to another. The fish are caught when they become trapped in a kind of pen, known as paranzas, where they remain alive until they are sold.

The first vestiges of civilization detected in the area around the Mar Menor date from the Paleolithic age, although there is a greater amount of information and archaeological remains pertaining to settlements from Roman and Arab times.

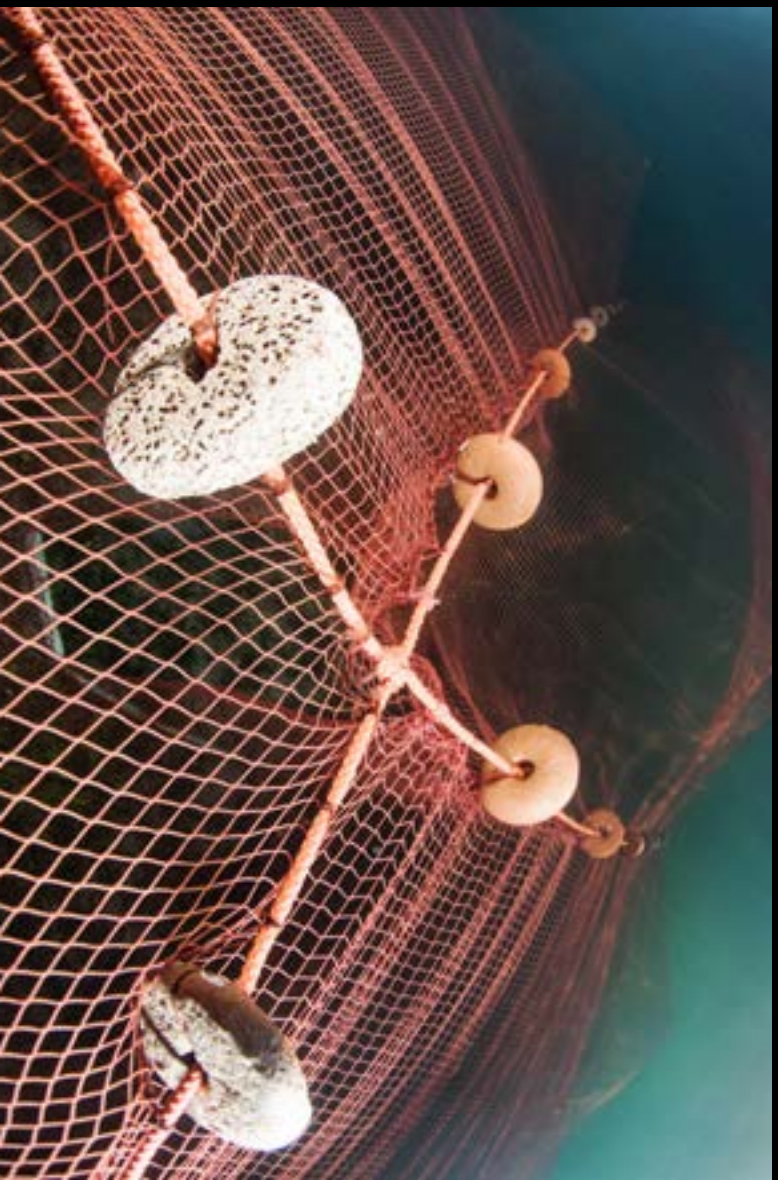


The *encañizadas*, a fishing system introduced by the Arabs, is based on the migratory habits of certain fish, such as mullet and sea bream, which breed in the Mar Menor and migrate to the Mediterranean.

Detail of reeds within an *encañizada*.

Aerial view of *encañizadas*.

Detail of the nets.



A typical structure employed in the Mar Menor's traditional fishing methods.

The main species caught in the Mar Menor are: the eel, the mullet and the sand smelt, although there are also anchovies, prawns, sole, bass, bream and red mullet.

La Calcetera Mill was built in the first third of the twentieth century, and allowed water to be transferred from the channels leading from the Mar Menor to the evaporation ponds in the salt mines. It was in operation until the beginning of the 1970s, when electric pumps were installed to fill the ponds in the salt mines.

The salt ponds around the Mar Menor: Marchamalo, Rasall (Calblanque) and San Pedro del Pinatar have been a source of significant prosperity, although now only San Pedro is active.

The natural environment, good weather, quality of its waters and the unbeatable conditions for the practice of nautical sports make the Mar Menor a reference tourist destination. The best way to spend your time in this area is simply to observe nature itself.

His photographs have been published in diverse books about marine wildlife, posters, calendars and information brochures from some ecologic foundations. His works have been shown in museums and art exhibitions.

Currently he collaborates with regional and national magazines about nature and marine biology issues.

As an author he has published some books such us "Submarine flora and fauna from Mar Menor", "Life under the Mediterranean sea" or "A submarine trip through the Port of Cartagena". He has worked in the interactive book "The green forest, *Posidonia oceanica*" and "Our submarine neighbours". Recently he has collaborated with Domingo Lloris on his book "Marine fish fauna from the Mediterranean sea".

His works have received numerous international awards such us Montphoto, Navara, Asferico, Fotocam, Nature photographer of the year, etc. Recently his workS have been winner at the prestigious competition GDT-European Wildlife Photographer of the Year 2015, 2017 y 2018.

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