Appendix

List of species

List of species of flora and fauna located on the beach of Castelldefels. The location refers to the area where the species was found, and the method, the capture or observation system.

	Location	
	d	dune
	M.P	Medilittoral beach
	IP	Infralittoral beach
	SE	Supralittoral breakwater
	me	Medilittoral breakwater
	i.e	Infralittoral breakwater
	method	
	d	direct
	Q	quantitative
	p	Fishing contests
	G	cages

	place	method
SEAWEED		
Chlorohyceae (green algae)		
Blidingia sp	me	d
Ulva s	me	d
Phaeophyceae (Brown algae)		
Colpomenia sp.	i.e	d
Rhodophyceae (red algae)		
Corallina sp	i.e	d
Jania Rubens	i.e	d
PHANEROGAMES		
Agropyron junceum	d	d
Ammophila arenaria	d	d
Cakile maritime	d	d
Calystegia soldanella	d	d
Carpobrotus edulis	d	d
Cyperus capitatus	d	d
Echinophora spinosa	d	d
Eryngium maritimum	d	d
Euphorbia paralias	d	d
Lagurus ovatus	d	d
Lobularia maritime	d	d
Medicago marine	d	d
Pancratium maritimum	d	d
Polygonum maritimum	d	d
Scabiosa arthropurpurea	d	d

	place	method
Sporobolus pungens	d	d
Galician Tamarix	d	d
Tribulus terrestris	d	d
Xanthium echinatum	d	d
CNIDARIANS		
Class Hydrozoa		
Podocoryna carnea	IP	d
Old lady	IP	d
Class Scyphozoa		
Chrysaora hysoscella	IP	d
Cotylorhiza tuberculata	IP	d
Rhizostoma pulmo	IP	d
MOLLUSCS		
Class Grastropoda		
Acteon tornatilis	IP	d
Bittium reticulatum reticulatum	IP	d
Bolinus brandaris	IP	G
Canceled Chancellery	IP	d
Fasciolaria lignaria	IP	d
Fisserella nubeculaIPD		
Hinia reticulata reticulata	IP	d
Littorina neritoides	SE	d
Hebraeus Naticarius	IP	d
Neverita josephinae	IP	d
Patella caerulea	SE	d

	place	method
Patella caerulea var. subplane	SE	d
Sphaeronassa mutabilis	IP	d
Thai haemastoma	i.e	d
Mediterranean Turritella	IP	d
Pisan Thebes	d	d
Class Bivalvia		
Acanthocardia tuberculata	IP	d
Callista chione	IP	d
Chamelea hen	IP	d
chlamys varia	IP	G
Donax trunculus	IP	d
Dosinia lupinus	IP	d
Ensis siliqua minor	IP	D/Q/G
Glycymeris glycymeris	IP	d
Mactra coralline	IP	D/G
Mactra corallina lignaria	IP	d
Mysia undata	IP	d
Mytilus galloprovincialis	PM/IP	d
Tapas decussatus	IP	d
Tellina fabuloides	IP	d
Sharp tail	IP	d
Tellina flat	IP	d
Tellina pulchella	IP	d
Pecten Jacobeans	IP	d
Venerupsis rhomboids	IP	D/G

	place	method
Class Cephalopoda		
Octopus vulgaris	i.e	d
POLYCHETE ANNELIDS		
Glycera tridactyla	M.P	Q
Nerine cirratulus	M.P	Q
Ophelia radiata	M.P	Q
CRUSTACEANS		
Order Mysidacea		
Gastrosacchus sanctus	M.P	Q
Order Isopoda		
Eurydice affinis	M.P	Q
Idotea metallica	SE	d
Order Amphipoda		
Gammarus planicrurus	M.P	Q
Hippomedon denticulatus	M.P	Q
Siphonoecetes kroyeranus	M.P	Q
Order Decapoda		
Diogenes pugilator	IP	d
Pachygrapsus marmoratus	SE	d
Polybius vernalis	IP	d
Portumnus lattipes	IP	d
Subclass Cirripeda		
Balanus sp	i.e	d
Chthamalus stellatus	SE	d

	place	method
INSECTS		
Egyptian Scantius	d	d
Scarabaeus sace	d	d
Truxalis nasuta	d	d
BRYOZOA		
Myriapora truncata	i.e	d
EQUINODERMS		
Arbacia lixula	i.e	d
TUNICATES		
Microcosmus sulcatus	i.e	d
FISH		
Boops boops L.	IP	p
Chelon labrosus Risso	IP	p
Conger conger L.	IP	p
Dicentrarchus labrax L.	IP	p
Diplodus sargus L.	i.e	d
Diplodus vulgaris Geoffroy	i.e	d
Lithognathus mormyrus L.	IP	p
Mullus surmuletus	i.e	d
Ophichthus rufus Rafinesque	IP	p
Pagellus acarne L.	IP	p
Parablenius gattorugine	i.e	d
Parablenius rouxi	i.e	d
Parablenius zvonimiri	i.e	d
Pomatochistus minutus	IP	p

	place	method
Raja sp.	IP	G
Sarpa sail	i.e	d
Sciaena umbra L.	IP	p
Solea vulgaris vulgaris L.	IP	p
Trachynotus ovatus L.	IP	p

Seaweed

Algae, unlike most of the plants we see around us, do not have differentiated tissues: they do not have leaves, roots, flowers or fruits. All the cells in your body are similar, and form a tissue that is known by the name ofthallusDespite this structural simplicity, algae form a very heterogeneous group. There are microscopic algae, which form the plant plankton, while the largest species reach 30 meters in length. Although most of the species live in fresh and salt water, it is also possible to find them in wet places, on rocks and logs, on the ground, in the snow, and even in hot springs. Traditionally, macroscopic algae, those that can be seen at first glance, are classified into three groups according to their color, which depends on the nature of their photosynthetic pigments. In this way, it is common to refer to green, brown and red algae. The morphology of the algae is also very varied. There are flattened forms, with more or less extensive sheets, linear or filamentous forms,

Blidingia sp.

Description: Tubular thallus, slightly flattened, generally unbranched, intense green.

Dimensions: It reaches 3 cm in height.

Distribution: All along the European coast, from Scandinavia to the Canary Islands, the Mediterranean and the Black Sea.

Ecology and biology: Annual species, at water level and in the zone of influence of waves and splashes. Common in breakwaters, breakwaters and loose blocks.

Ulva sp.

Common name:Sea lettuce

Description: Laminar green algae, more or less dark depending on the species. Irregular shapes, attached to the substrate by a small disk.

Dimensions: Variable according to the species and the development of the specimen, it can reach 40 cm.

Distribution: On all European coasts, from Scandinavia to the Canary Islands, the Mediterranean and the Black Sea.

Ecology and biology: Frequent in breakwaters and shallow, well-lit waters. It is present all year round, although it reaches its maximum development in winter and spring. It tolerates pollution and fresh water inputs well.

Corallina sp.

Description: Erect algae. Thallus impregnated with calcium carbonate and with a very characteristic morphology, like the knuckles of the legs of arthropods, which gives it an articulated appearance. Pinnate branching from the main axis. Variable color, from pink to violet gray.

Dimensions: Variable according to the species and the development of the specimen, but it does not often exceed 7 cm in length.

Distribution: In Europe it is present from the British Isles to Mauritania, the Mediterranean and the Black Sea.

Ecology and biology: Perennial species, characteristic of the upper zone of the infralittoral, preferably in beaten places. Withstands emersion well.

Jania Rubens (Linnaeus) Lamouroux

Description: Pink thallus with a violet hue, impregnated with calcium carbonate and a morphology reminiscent of thecoralline,but more stylized, with knuckles rather longer than wide.

Dimensions: Up to 3 cm in length.

Distribution: In Europe, from Scandinavia to Mauritania, the Mediterranean and the Black Sea.

Ecology and biology: Probably perennial, infralittoral, lives in flooded areas and supports the nearby presence of sand. It often grows epiphyte on other larger algae.

Colpomenia sp.

Description: Very characteristic algae, with the appearance of flattened yellowish bags that stick to rocks.

Dimensions: They can reach 8 cm in diameter and 3 cm in height, although smaller sizes abound. Sometimes several individuals grow together, which appear to be one large individual.

Distribution: The various species of the genusColpomeniathey are widely distributed in all the temperate and tropical seas of the planet.

Ecology and biology: It lives from the surface to a depth of 3 m.

Phanerogams

Generalitats

The upper floors, more properly speakingspermatophytes (seed plants) are mostly terrestrial and usually green plants that produce flowers and seeds. Linné gave them the name ofphanerogams,meaning plants with apparent sexual organs (as opposed to cryptogams). The group has approximately 250,000 species.

In the Països Catalans, there is a spontaneous flora of phanerogams that borders on 3,500 species.

Spermatophytes typically have rel, stem and leaves, and this vegetative assembly is namedcormThe great complexity of their internal organization is what has allowed phanerogams to colonize the aerial environment.

Spermatophytes have heteromorphic alternation of generations, with the sporophyte (plant with stem, leaves and rel) and the gametophyte. The reproductive process encompasses many stages, organs, and structures, including flowers, pollen, spores, seeds, and fruits.

Agropyron junceum (Linnaeus)

Common names: Catalan:Mediterranean gooseberry.Spanish:Agropyron

Description: Grassy plant, perennial, 20 to 60 cm high, with a low, long, narrow and hard rhizome. Stems unbranched, smooth, only with knots at the bottom, erect and flattened. Smooth sheathed leaves, overlapping with blunt ligules. Hard limb up to 35 cm long, flat, although tending to curl, pointed, bundle distinctly veined, with very pubescent veins. Spikes strong, up to 20 cm long, straight or arched, fragile. Sessile spikelets, laterally compressed, 3 to 8 flowers. Glumes almost equal, straight and rigid, elongated and blunt, with 9 or 11 nerves. Glumella thick, rigid, pentanerved and blunt.

Ecology and distribution: Blooms from June to August. It lives in the beach dunes and tolerates saline soils well. It is found throughout Western Europe.

Ammophila arenaria (Linnaeus)

Common names: Catalan:eraserSpanish:eraser

Description: Grassy plant, perennial, strong, 60 to 120 cm long, whitish or greenish in color, which can form dense grasslands. The rhizome, which spreads through the sand, gives rise to erect stems more or less buried in the sand. The flowering stems have 3 leaves that embrace them with their reddish sheath. The pods are elongated into ligules up to 3 cm long and widely divided. Limb up to 50 cm long and about 5 cm wide. Spikes of one flower, very compressed laterally, 15 mm long. Glumes almost equal in length.

Ecology and distribution: It is a cosmopolitan grass plant that lives in the upper part of the dunes of the beaches. It blooms from May to July in a long, cylindrical and dense spiciform panicle. It is found throughout the Mediterranean and Atlantic coast. This species is often used to fix moving dunes.

Cakile maritima (scope)

Common names: Catalan:Sea radishSpanish:Maritime caterpillar

Description: Plant of the brassicaceae or cruciferous family. It is a decumbent and succulent herb, with pinnate leaves and pink flowers. Rhombic-shaped films, with the partition arranged transversely and with a grain on each side. Indehiscent fruit. It can reach 40 cm in height. It is light green. Ecology and distribution: Blooms from July to October. It is quite common in coastal sands.

Calystegia soldanella (Linnaeus)

Common names: Catalan:Sea bellSpanish:maritime corregula

Description: It is a convolvulus plant, perennial, vivacious, with prostrate and weakly fickle stems, opposite, fleshy, very glabrous leaves,

with the long petiole and obtuse, kidney-shaped limb. Flowers solitary at the apex of long axillary peduncles. Pink and white.

Ecology and distribution: Flowering from June to August. It lives in the dunes all along the coast.

Carpobrotus edulis (Linnaeus)

Description: Catalan:Balm, cat's nail.Spanish:cat's claw

Aizoaceae plant, of African origin. It is a creeping herb, with fleshy leaves and trigones. The branches can reach several meters in length. The stem has an oval and polygonal section. Leaves opposite and welded in pairs at the base, triangular cut, thinned towards the tip. Solitary, pedunculated flowers, about 9 cm in diameter. Many liguliform petals, of an intense pink color.

Ecology and distribution: It is a plant very suitable in dry climates and, for this reason, it can be found naturalized on the sands of beaches and other humanized places.

Cyperus capitatus (Vandelli)

Common names: Catalan:Mansega marine

Description: Plant of the Cyperaceae family. This species only lives on beaches and coastal dunes. It develops a compact inflorescence, with large spikelets 2 cm long by 3-4 mm wide; at the base of the inflorescence, there are several bracteal leaves that extend far beyond the flowers and that give it a very characteristic physiognomy. The leaves are flat and thick. The whole plant, except the flowers, has a glaucous green color.

Ecology and distribution: This species, like many others on the beaches, has underground rhizomes that allow it to colonize the dune system.

Echinophora spinosa

Common names: Catalan:Sea bassSpanish:Sea carrot

Description: Plant of the umbelliferae family, perennial, up to 0.5 m high. The leaves, very divided, are partially transformed into thorns. Small, umbrella-shaped, white flowers.

Ecology and distribution: This species is characteristic of coastal sandbars.

Eryngium maritimum (Linnaeus)

Common names: Catalan:Sea panicSpanish:Sea thistle

Description: Plant of the panicle family, robust, perennial and biennial. Color between green and gray, from 15 to 60 cm high. Erect stems, rigid, with the upper part with divergent ramifications. Young and robust leaves that later become rigid, leathery, thick, heavily reticulated. Rounded reniform sheet, heart-shaped base and upper part with 3 or 5 lobes, toothed, forming entrances and spines. Basal leaves in rosette. Sessile flowers in the axils of tridentate bracts.

Ecology and distribution: Flowering from June to October. It is found in the coastal sands.

Lagurus ovatus (Linnaeus)

Common names: Catalan:Doe's tail, moose, hare's tail, rat's tail. Spanish:hare tail

Description: Annual grass, ascending and erect, from 10 to 50 cm high. Sheath slightly inflated and directed backwards. Limb relatively short, up to 6 cm long and 8 mm wide. Ligule 3 mm, blunt. Spikelet of one flower, glumes of fine pubescence.

Ecology and distribution: Blooms from April to July. Common in coastal flora, in sandy soils and very rare inland. Very common in southern Europe. It is used as an ornamental plant.

Lobularia maritima (Linnaeus)

Common names: Catalan:Morrisà bord, salivetes del good Jesús, white heads, sempernflor.Spanish:Mastuerzo maritime.

Description: Perennial plant, weakly lignified in the lower part. From 10 to 40 cm high, with numerous stems branched below and ascending or extended. Leaves up to 3 cm long and 2-5 mm wide, linear or lanceolate, generally pointed and with white pubescence. Inflorescence in depressed clusters. Flowers with a long peduncle, white or pink, with a strong smell, with 4 petals about 3 mm long.

Ecology and distribution: Flowering, from April to September. In stony or sandy soils, near the sea. It is found throughout the Mediterranean coast.

Medicago marine (Linnaeus)

Common names: Catalan:Sea alfalfaSpanish:Beach cart

Description: Perennial papilionaceae, up to 50 cm, spreading but ascending at the ends. Very tomentosa. Alternate trilobed leaves, with oval leaflets, slightly pointed and folded, up to 1 cm long. Two sparsely toothed stipules at the base of the petiole. Sulphur-yellow flowers, up to 8 mm long, in racemes of 5 to 10, with a peduncle of the raceme of one cm. Fruit in the form of a twisted pod, densely hairy, 7 mm in diameter and with spines up to 2 mm.

Ecology and distribution: Flowering from April to August. On sandy surfaces and dunes. Mediterranean, Black Sea coast and the Atlantic, as far as Brittany.

Pancratium maritimum (Linnaeus)

Common names: Catalan:Sea lily.Spanish:sea lily

Description: Showy plant of the Amaryllidaceae family. Perennial with a large bulb ending in a long neck, located deep in the soil and with long fleshy roots. The bulb is reddish yellow with dark skin. It has 5 to 6 leaves that appear before the flower, relatively fleshy, green or gray, linear, widened upwards, coiled in a spiral and 50 cm long. From 3 to 15 large, trumpet-shaped, white, strongly scented flowers. In addition to six tepals, there is a crown divided into twelve lobes that alternate every two with the stamens.

Ecology and distribution: Flowering from May to September. It is found on the sand of the beaches and in the dunes. Throughout the Mediterranean basin and the Atlantic to France.

Polygonum maritimum (Linnaeus)

Common names: Catalan:Marine walkwaysSpanish:Maritime polygon

Description: From the Polygonaceae family, it is a robust herbaceous plant or shrub. Stem up to 50 cm, erect on the ground or ascending on the young plant, in the form of a strong rod, rough and ribbed, green, branched and with leaves and branches that shorten progressively. Alternate, pinnate, widened leaves that change color to bluish-black when dry. Limb elliptic and elongated, up to 2.5 cm long. Pedunculate flowers, single or in clusters.

Ecology and distribution: Flowering from June to August. It is found on the sand of the beaches and between the stones. Its distribution ranges from the Black Sea to the Mediterranean, the Atlantic coast and the Channel Islands.

Salsola kali (Linnaeus)

Common names: Catalan:barrelSpanish:Spiky barrel

Description: Plant of the Chenopodiaceae family, annual, fleshy, up to 60 cm high, very branched and with lateral branches extending above the ground, pale green in color and with fine hairy pubescence. Cylindrical stems, dark and with reddish stripes on a light greenish background. Spiny but fat leaves. Once dry, it remains rigid and the wind breaks it and makes it roll, scattering the fruits everywhere.

Ecology and distribution: Flowering from July to October. It is found on all European coasts. It is a very versatile species and its appearance changes a lot according to the habitat conditions.

Scabiosa atropurpurea (Linnaeus)

Common names: Catalan:Scabiosa, widow.Spanish:widow

Description: Plant of the dipsacaceae family. Very branched grass from the base, where it may be slightly lignified. The leaves are much divided, with irregular lobes and with the terminal segment larger than the others. The flowers are violet in color, gathered in clusters where the peripheral flowers have the largest petals.

Ecology and distribution: It blooms practically throughout the year and lives by the roadside, in grasslands and in disturbed places. Also in the dunes and sandbars of the coast. It is found on all European coasts.

Sporobolus pungens (Schreber) Kunth

Common names: Catalan:sporobolus

Description: Small grass that makes long stolons. Small and hard leaves. The inflorescence, at the top of the stems, is relatively short and lax for the size of the plant.

Ecology and distribution: Blooms in late spring and summer. Colonize the first beach line.

Galician Tamarix (Linnaeus)

Common names: Catalan:TamariuSpanish:tamarind

Description: Tamarind plant in the form of trees or bushes. Very small leaves, with a scaly appearance. Very small flowers, grouped in dense specific inflorescences. The whorls of the perianth are tetramerous or pentamerous, and the number of stamens varies between four and ten.

Ecology and distribution: It is typical of dry and brackish places.

Tribulus terrestris (Linnaeus)

Common names: Catalan:Queixal de vella, clover.Spanish:Abrojo, breakwater.

Description: Zygophyllaceae plant, annual, with prostrate stems, very branched, and paripinnate leaves that have five to eight pairs of leaflets. The flowers are yellow and relatively small, and the fruit is very showy, with a capsule made up of 5 carpels that are sheathed and heavily adorned with spines and tubercles.

Ecology and distribution: It is found on roadsides and in places with a strong Mediterranean influence.

Xanthium echinatum (murray)

Description: Grass with broad, light green leaves, a little soft to the touch and reminiscent of the leaves of some mallows. They have ovoid female heads covered with stings with two beaks at the top.

Ecology and distribution: Lives in disturbed areas with moist soils. Blooms in summer and autumn. Introduced species from America.

Cnidarians

Cnidarians are exclusively aquatic animals, structurally very simple, whose organism is formed only by two layers of cells. Generally its body has the shape of a sack and a single opening, which is both mouth and anus, and is surrounded by tentacles. The entire interior of the animal corresponds to the gastric cavity, the stomach, where it digests its prey. A particular aspect of this group of animals are stinging cells, called cnidocists,that when faced with an external stimulus (a rub, a change in pressure) they shoot a dart attached to a filament that sticks into the body of its victim and injects a poisonous substance capable of killing or paralyzing it. Cnidarians can live attached to the substrate, and are called polyps,or live floating in the sea, and then they are calledjellyfish Likewise, they can lead a solitary life or form large colonies, as is the case with coral reefs or gorgonians. Another interesting aspect of their biology is that they have more or less complex reproductive cycles, where polyps and jellyfish, solitary animals and colonies can alternate. From the point of view of their classification, we find the anthozoa, solitary or colonial polyps of sessile life, such as anemones, corals and gorgonians; the hydrozoa, animals that alternate a colonial polyp phase with another free-living one, and the scyphozoa, the large jellyfish that only sometimes present a very reduced polyp phase.

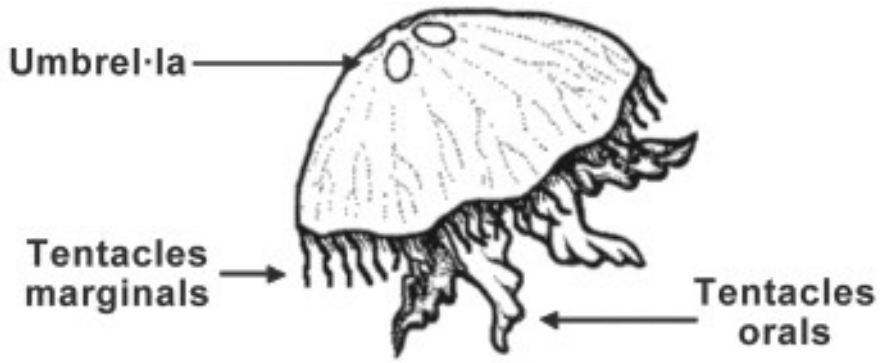

Figure 20.General characteristics of a jellyfish.

Podocoryna carnea (M. Sars)

Description: Small-sized hydrozoan that forms crawling and encrusting colonies, regularly on snail shells inhabited by hermit crabs.

Distribution: Atlantic and Mediterranean.

Ecology and biology: On sandy bottoms and harbor areas.

Old lady (Linnaeus, 1758)

Common names: Catalan:Saint Peter's boat.Spanish:sailboatFrench: Barque de Saint Pierre.English:By-the-wind-sailer.German:Segelqualle Italian:Barchette di San Pietro.

Description: Hydrozoan colony that hangs from a discoidal swimming apparatus, full of gas and where at the top there is a transparent longitudinal crest in the shape of a sail, blue in color, which allows it to be propelled by the wind. Different tentacles of small length hang from the bottom.

Dimensions: Diameter up to 8 cm.

Distribution: Atlantic and Mediterranean.

Ecology and biology: Pelagic. Predator that feeds on small organisms caught with its tentacles. It can form swarms, especially in autumn.

Chrysaora hysoscellaEsch (Linnaeus)

Common names: Catalan:Borm radiatedSpanish:Aguamar, umbrella, radiant heat.French:Acalèphe rayonné.English:Compass fellyfish. German:KompassqualleItalian:Radiant heating

Description: Umbrella rather flattened, with 32 lobes on the margin and 24 tentacles alternating with the 8 sensory organs. 4 oral arms longer than tentacles. Color yellowish white, with 16 characteristic radial bands of darker yellow.

Dimensions: Diameter of the umbrella up to 300 mm.

Distribution: European coasts of the Atlantic and the Mediterranean. Similar species are spread over all the seas of the planet.

Ecology and biology: Pelagic. Its sting is dangerous for humans.

Cotylorhiza tuberculata (Agassiz)

Common names: Catalan:Yellow BormSpanish:Aguacuajada, acalefo frizzado.French:Acalèphe crêpe.Italian:Acalefo increspato.

Description: Flattened umbrella with a dome-like elevation in the center. 16 peripheral lobes that separate into more than 100 small, 8 sensory organs. Among the 8 mouth arms are many appendages with characteristic blue-violet warts. Green-brown color due to symbiont algae.

Dimensions: Umbrella diameter up to 200 mm.

Distribution: In open waters of the Mediterranean, occasionally washed up to the coast.

Ecology and biology: Pelagic. Close to the coasts. Can form swarms. It feeds on plankton, which it captures through holes that open in its oral tentacles.

Rhizostoma pulmo (Agassiz)

Synonyms:Rhizostoma octopus.

Common names: Catalan:blue bormSpanish:Aguamala, acalefo azul. French:Rhizostome.English:Shiff arms fellyfish.German:Warzelmund squalls.Italian:Mother's lungs

Description: Elongated umbel, sometimes taller than wide. Without peripheral tentacles but with 96 marginal lobes, 16 sensory organs and 8 fused oral arms. White-yellowish color, bell margin and appendix blue-violet.

Dimensions: Diameter of the umbrella, up to 900 mm.

Distribution: In coastal waters of the European Atlantic, to the south of the Scandinavian peninsula and the Mediterranean.

Ecology and biology: Pelagic. It is the largest jellyfish in the Mediterranean. There may be fish associated with it of the genera Whoops, Seriolai TrachurusIt feeds on plankton, which it captures through holes that open in its oral tentacles. It does not appear to produce apparent stings in man. Common in coastal waters. Observed on Castelldefels beach continuously, at least from July to November.

molluscs

Gastropod molluscs

It is the class of mollusk with the largest number of species (near 100,000 worldwide, of which 80,000 are marine and nearly 1,000 live in the Mediterranean). Gastropods have an asymmetrical body, with a well-differentiated head and a muscular ventral foot, highly developed or rudimentary depending on the species. The asymmetric organization of the body is a consequence of a twisting of the sac of the viscera, produced during the larval period from a primitive condition of bilateral symmetry.

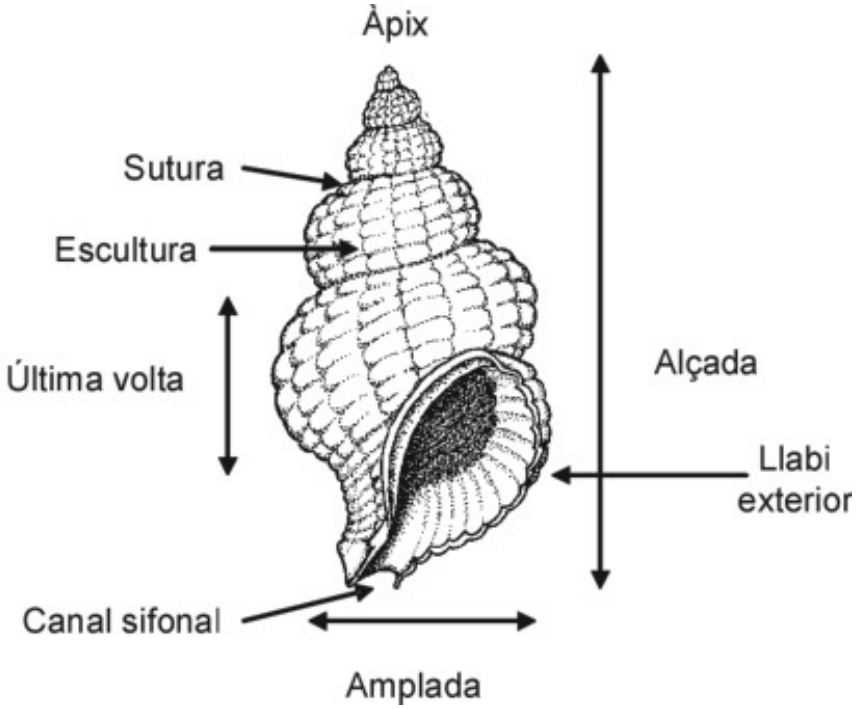

Figure 21.General characteristics of a gastropod mollusk.

Most gastropods have a chewing apparatus composed of a radula formed by a set of small teeth that serve to grind plant or animal food. The shell can be small and internal or very developed and external, and is made up of a single piece.

Its shape can be very varied: conical, helical, with a smooth surface or with spikes, etc. An important characteristic of the gastropod shell is the siphonal canal, which is an extension of the lower lip, through which the siphon passes, which is the organ with which some species of this class breathe.

Acteon tornatilis (Linnaeus, 1758)

Description: Cylindrical-oval shell, made up almost exclusively of the last round. Approximately 6 turns with conspicuous sutures. The opening has a strong tooth. Pink-brown color, sometimes with lighter bands.

Dimensions: height, 18 mm; width, 7 mm.

Distribution: Very common in the Mediterranean.

Ecology and biology: It crawls through the sand, where it can dig and hide. Shallow depth. Although the shell appears to belong to a prosobranch mollusk, it is actually an opisthobranch (most species in this group have lost their shell, and are calledsea slugs).

Bittium reticulatum reticulatum (Da Costa, 1778)

Common Names: English:Needle shell.German:Netzhornschnecke.

Description: Small, narrow, tower-shaped shell. Spirals with granular spiral bands. Numerous radial ribs and four spiral bands that give rise to a granular lattice.

Dimensions: diameter, 3 mm; height, 11 mm.

Distribution: Very common throughout the Mediterranean.

Ecology and biology: Between the sand, from the mid-littoral zone to a great depth.

Bolinus brandaris (Linnaeus, 1758)

Synonyms:Murex brandaris
Common names: Catalan:Spike screw.Spanish:CañadillaFrench: Rocher épineux, chicory, droite-épine, bious harpu.English:Spinous murex.Italian:Murice spinosa.German:Brandhorn, Stalchelschnecke.

Description: The shell of this snail is unmistakable: the whorl makes about six turns, forming a long and rather narrow siphon channel. As for the thorns, they can be of very variable quantity, shape and size. The color can range from pink to yellowish-white or gray. The animal has a horny operculum that perfectly closes the opening.

Dimensions: height, 80 mm.

Ecology and biology: It feeds on bivalve molluscs, especially the egg (Mactra corallina),very abundant in the sandy bottoms of Castelldefels.

Distribution: Very common throughout the Mediterranean.

Chancellery canceled (Linnaeus, 1758)

Description: Solid shell, globular in shape, with a characteristic sculpture with nodules and ribs. The columella has two folds and the lip is thick and toothed.

Dimensions: height, 34 mm.

Distribution: It is described as a rare species and is only found in the south-western Mediterranean.

Ecology and biology: On sandy bottoms, up to great depths.

Fasciolaria lignaria (Linnaeus, 1758)

Synonyms:Fasciolaria tarentina.

Common Names: English:Tarentine tulip shell.German:Mitteländische Spindelschnecke.

Description: Fusiform shell, high spiral and vaults with more or less large tubercles. It has a rather long, straight and open siphon channel. Brown or yellowish color, without specific patterns.

Dimensions: height, 30 mm.

Distribution: Common throughout the Mediterranean.

Ecology and biology: On sandy or rocky bottoms.

Fissurella nubecula (Linnaeus, 1758)

Common Names: English:Keyhole.

Description: Conical shell with an elongated hole located before the center and with a dark colored margin on the inner face. The shell is narrower anteriorly than posteriorly. It has radial ribs and very fine spiral bands. The color is very variable; generally dark with lighter spiral and radial bands. The inner face is white except for the margin of the orifice, which is darker.

Dimensions: height, 20 mm; width, 12 mm.

Distribution: Common throughout the Mediterranean.

Ecology and biology: Lives on the rocks or stones of the bottom in the sublittoral zone.

Hinia reticulata mamillata (Risso, 1758)

Synonyms:Nassa reticulata.

Common names: Catalan:Daisy.Spanish:Reticulated daisy. French: Nasse reticulated.English:Nettle dogwhelk.German:Gemeine Netzreuse.

Description: Solid, elongated shell with twists and ribs that form a characteristic reticulated sculpture. theHinia reticualata reticualatais another very similar species, but differs from theH. reticulata

camisolein which it presents a very obvious columellar callus that extends over part of the last whorl. The coloring is variable: between pink, yellowish and strong brown.

Dimensions: height, 30 mm.

Distribution: Common throughout the Mediterranean and especially in the Adriatic.

Ecology and biology: On sandy bottoms, at shallow depths.

Littorina neritoides (Linnaeus, 1758)

Common names: Catalan:Black snailSpanish:dwarf periwinkleFrench: Littorine bleu, periwinkle noir.English:Little periwinkle.Italian:Maruzziella German:Gewöhnliche, Zwergstrandschnecke.

Description: Screw with small and resistant shell, with few spirals; the last one, big and pumped. Light brown color.

Dimensions: height, 9 mm.

Distribution: Very common throughout the Mediterranean.

Ecology and biology: Lives in groups in rock crevices or on breakwaters, in the splash zone, as it can withstand long periods without getting wet. It is a representative species of the supralittoral community.

Naticarius hebraeus (Martin, 1786)

Synonyms:Natica maculatus, Neverita hebraea.

Common names: Catalan:Moon screwSpanish:Moon snail French: Navel snailEnglish:Moon shell.Italian:Maruzza konaca German: Nabelschnecke.

Description: Robust and globose shell, with a smooth surface, without growth lines. Height lower than width. The base has a wide and deep navel; the stoma is semicircular and has a thin outer lip. So

in terms of coloration, on a background of color between white and gray, it has many brown spots of varying extent, sometimes fused to form larger spots. These snails have a brown chitinous opercle that covers the entire stoma when the animal is inside the shell.

Dimensions: height, 25 mm; width, 28 mm.

Distribution: Common throughout the Mediterranean.

Ecology and biology: It lives in sandy bottoms, where it is able to bury itself when it feels threatened. From 2-3 meters deep. The living animal has a mantle that can partially cover the shell. It is a predatory species and feeds almost exclusively on bivalve molluscs: it makes an almost perfect circular hole in the prey's shell, with the help of the radula (tongue armed with numerous tiny teeth) and chemical substances it secretes to dissolve the calcium carbonate in the shells. This operation may take a few hours. It can also feed, occasionally, on individuals of its species. Then drill the base of the last turn of the shell.

Neverita josephinae (Risso, 1826)

Common names: Catalan:Moon screwSpanish:Moon snail French: Navel snailEnglish:Moon shell.Italian:Maruzza konaca German: Nabelschnecke.

Description: Shell very similar to that of theHebraeus Naticarius, but the coloring is uniformly white with bluish hues. It also differs because it has a brown callus that almost completely covers the navel and because it is much wider than long.

Dimensions: height, 16 mm; width, 25 mm.

Distribution: The same as theN. Hebrews.

Ecology and biology: Like the previous species, it lives in sandy bottoms, where it is able to bury itself when it feels threatened. From 2-3 meters deep, and feeds on bivalve molluscs.

Patella caerulein (Linnaeus, 1758)

Synonyms:Patella coerulea.

Common names: Catalan:Pagellida, hat.Spanish:LapaFrench: Patella, arapedus, alapia.English:cleanItalian:Pantanella, patella.German: Gewöhnliche, Napfschmercke.

Description: Thick shell, conical in appearance, position of the apex more or less elevated and subcentral; margin ovoid or polygonal, with the narrowest anterior part. The external ornamentation consists of a series of small radial grooves that may disappear in some cases, or give rise to strong ribs in other cases; the concentric ornamentation, formed by the striae of growth, is not very apparent. The coloration is variable, from bleached forms spotted with brown to red and gray ones, irregularly spotted with white. The internal face is also variable.

Dimensions: height, 26 mm; width, 32 mm; thickness, 10 mm.

Distribution: Throughout the Mediterranean.

Ecology and biology: Patellids are gastropod molluscs that, instead of having a spirally coiled shell, have a conical shape. They live tightly attached to hard substrates, especially reef rocks, even above the tide line, as they can withstand long periods of time out of water. In many cases, the shell can be covered with encrustations of algae, polychaetes, etc. In some regions, the hat is collected because it has a gastronomic interest.

Patella caerulea var. subplane (Poitiez & Michaud)

Common names: Catalan:Pagellida, hat.Spanish:LapaFrench: Patella, arapedus, alapia.English:cleanItalian:Pantanella, patella.German: Gewöhnliche, Napfschmercke.

Description: Shell similar to the previous one but substantially more flattened, octagonal in shape, with about 7 or 8 radial ribs, much more evident than in the case of theP. Caerulea.

Dimensions: As theP. Caerulea.

Distribution: Throughout the Mediterranean.

Sphaeronassa mutabilis (Linnaeus, 1758)

Synonyms:Nassa mutabilis, Nassa inflata, Nassarius mutabilis. Common names: Catalan:smooth daisySpanish:smooth margaritaFrench: Nasse PolieItalian:smooth noseGerman:Veränderliche Reusenchnecke.

Description: Globose and smooth shell, with 5 or 6 whorls, the last one being very broad. The sutures are very obvious. It presents columellar callus on the last turn. The color is light brown with darker longitudinal markings or bands.

Dimensions: height, 24 mm.

Distribution: Common throughout the Mediterranean.

Ecology and biology: On sandy or muddy bottoms, at shallow depths. It is common to find this snail on the bars of tapas bars in southern Spain and Cantabria.

Thais haemastoma (Linnaeus, 1758)

Synonyms:Purpura haemastoma.

Common Names: English:Rock shell.German:Rotmund-Leistenschnecke.

Description: Round and ovoid shell, short spiral, approximately 5 turns, with short protuberances arranged in a spiral. Wide opening with short siphon channel. Outer lip very toothed. Live, it has a dark brown opercle. External coloring brown. The internal coloring is very characteristic: bright orange on the lip and pink on the innermost face.

Dimensions: maximum height, 80 mm.

Distribution: Common throughout the Mediterranean.

Ecology and biology: Lives among the rocks of the submerged coastal zone. It is difficult to see because it is very camouflaged, since it can have incrustations and algae attached to the shell. As with the Bolinus brandaris,the ancient Romans used this mollusk to obtain coloring pigments for clothing.

Turritella mediterranea (Monterosato, 1890)

Synonyms:Turritella biplicata,Bronn;Archimediella triplicata.

Common names: Catalan:barrinaSpanish:little towerFrench:Turritelle English:Screw shell.German:Gemeine Turmschnecke.

Description: Pointed and tower-shaped shell, with many turns. Flattened spirals, with three strong and several weak spiral bands. Variable coloring, from pink to dark brown. Usually the last turn is broken or missing.

Dimensions: height, 25-30 mm.

Distribution: Common throughout the Mediterranean.

Ecology and biology: Frequent in soft bottoms, rarely exceeding 25 meters of depth.

Theba (Euparypha) pisana (Müller, 1774)

Synonyms:Euparypha pisana.

Description: Rounded and globose shell. Yellowish color with lighter bands, although it can be very variable.

Dimensions: height, 14 mm; width, 20 mm.

Distribution: Mediterranean countries and the Atlantic coast.

Ecology and biology: In summer, it is common to find many snails of this species at rest, attached by means of the epiphragm to thistles, fennel and dune plants.

During the first year of life, the shell is quite flat and with a well-pronounced keel, while from the second year, it begins to become rounded.

Bivalve molluscs

Bivalves are a class of molluscs less numerous than gastropods, but better known, either because of their wide distribution or because of their commercial and food value. Bivalves are exclusively aquatic and all have a shell made up of two pieces or valves, hence the name of this class. The valves are usually joined by a hinge formed by a more or less complex set of teeth, plates and dimples and a ligament. They can be opened or closed thanks to two abductor muscles, the anterior and the posterior, whose imprint is very evident on the inner face of the shell. The shell can be equivalent if the two valves are equal or unequal otherwise.

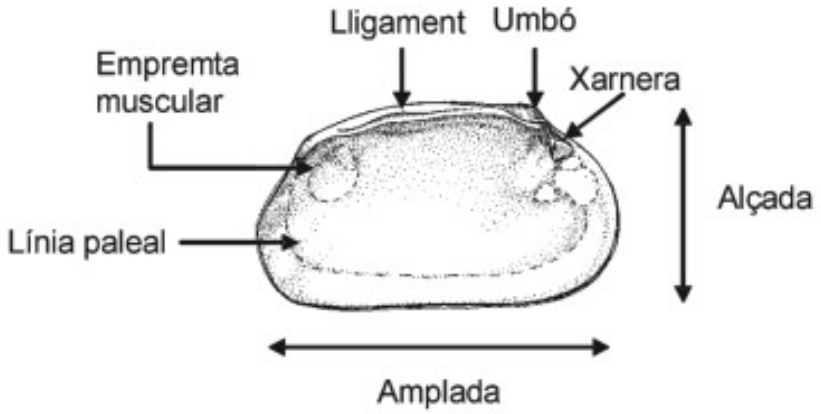

Figure 22.General characteristics of a bivalve mollusk.

On the external surface of the shell you can recognize the lines of growth from the umbrons, which are the most pointed points of the shell. As in the case of gastropods, the surface of the shell may be smooth, with very marked ridges, with spines, etc., and the two valves may close perfectly or leave openings for the foot and respiratory and alimentary siphons.

Acanthocardia tuberculata (Linnaeus, 1758)

Synonyms:Rudicardium tuberculatum, Cardium nodosum, Cardium tuberculatum (Linnaeus, 1758).

Common names: Catalan:Warty cockroach.Spanish:Barberecho verrugosa.French:Coque à verrues, bucarde à tubercles.English:Rough cockle.Italian:Tuberculous heart.German:Warzige Herzmuschel.

Description: Very robust shell, with numerous and tuberculated ribs. Sometimes and due to erosion, these prominences can be imperceptible. The coloring is very variable and can range from white to brown with transverse stripes of darker colors.

Dimensions: Although shells of many sizes can be found on the beach, the averages are as follows: height, 45 mm; width, 45 mm; thickness, 30 mm, and maximums of 60-60-40 mm.

Distribution: In the Atlantic, from the south of England to Morocco. Very common species throughout the Mediterranean. It is the most common species of the genus Acanthocardia.

Ecology and biology: Lives buried in sand or mud below 10 meters. It belongs to the same family as theCerastoderma edule, the commercial cockroach.

Callista chione (Linnaeus,1758)

Synonyms:Cytherea chione, Pitaria chione, Meretrix chione.

Common names: Catalan:Glitter, blood shell.Spanish:Almejón de sangre, butterfly, severena.French:Grande clamourde, verni.English: Brown venus, smooth venus.Italian:Cappa chione, issolone, cappa liscia, venere chione.German:Braune Venusmuschel.

Description:Shell large and solid, subtriangular in shape, shiny externally. It has fine concentric lines. The margins of the shell are smooth. Light brown external color with radial and concentric bands of darker shades. The inner face is white like that of porcelain.

Dimensions: width, 77 mm; height, 64 mm; thickness, 27 mm.

Distribution: Very common throughout the Mediterranean.

Ecology and biology: It digs in muddy and sandy bottoms thanks to its very muscular and intense red foot. It can be found in deep water. Luenta is marketed as a species of gastronomic interest. In Catalonia, in 2003, 6,335 kg were caught. Its minimum legal size is 29 mm.

Chamelea gallina gallina (Linnaeus, 1758)

Synonyms:Venus hen, Venus Lusitanica.

Common names: Catalan:Roussillon.Spanish:chirlaFrench:Clovisse rayéEnglish:Common little-neck, striped venus-shell.Italian:Cappa gallina, biberazza.German:Gemini Venusmuschel.

Description: Subtriangular shell. The surface of the valves is covered with very close and obvious concentric ribs. The coloration is very variable, with radial stripes of different shades or zigzag lines in the direction of the growth of the shell.

Dimensions: height, 28 mm; width, 26 mm; thickness, 8 mm.

Distribution: Very common and appreciated throughout the Mediterranean, also in the Atlantic.

Ecology and biology: Inhabitant of sandy bottoms, from 3-4 meters to 100. It feeds, like most sand bivalves, on suspended organic matter. It is a very popular species in Catalonia, although the majority of those found on the market come from Italy and specifically, from the mouth of the Po (Adriatic Sea). The minimum commercial size is 25 mm in length and the maximum size is 50. In 2003, 17,860 kg of this species were caught in Catalonia.

Chlamys varia (Linnaeus, 1758)

Common names: Catalan:Various shells.Spanish:ZamburiñaFrench: Petine vanne, péctoncle.English:Variegated scallop, variant scallop.Italian: Pettine varioGerman:Bunte Kammuschel.

Description: Species with unequal valves; one is slightly more convex than the other. The front ear is slightly longer than the back. It has numerous ribs with small teeth, which are sometimes imperceptible due to erosion. The margins of the shells are serrated. The external coloring can be very varied, but in general it is brownish or violet. The inner face is of lighter tones.

Dimensions: width, 30 mm; height, 36 mm; thickness, 12 mm.

Distribution: Very common throughout the Mediterranean.

Ecology and biology: Lives free or attached to the rocky substrate, thanks to the bissus filaments, like the mussel.

Donax trunculus (Linnaeus, 1758)

Synonyms:Serrula trunculus

Common names: Catalan:TellerinaSpanish:kitchenFrench:Haricot de mer, trialle, donace des canaros.English:Wedge shell, coquina clam. Italian:Calcinello troncato, trilateral, tellina.German:Sägezähnchen

Description: Solid, elongated shell. The external surface is smooth, but may have a subtle, transparent periosteum. The color is very variable, with stripes that can be brown, pink, white, etc. The inner face has a more or less extensive area of violet color.

Dimensions: height, 44 mm; width, 24 mm; thickness, 10 mm.

Distribution: Very common in the Mediterranean and the Atlantic.

Ecology and biology: Littoral and submerged area, on a sandy bottom. His muscular and very mobile foot uses it to burrow and does so with ease. Tellerina is highly valued throughout the Mediterranean basin and is therefore commonly fished and has a certain commercial value. The fishing gear used is the manual rake up to 1 meter deep and the boat with cages at greater depths. The minimum legal size is 27.2 mm in length; width, 15 mm, and thickness, 8.3 mm. The maximum size is considered to be 50 mm in length. As in the case ofmactra,it is easy to see marks of naticide on dead shells. Tellerina catches in Catalonia in 2003 were 123,674 kg.

Dosinia lupinus (Linnaeus, 1758)

Description: Rounded, smooth shell, with very fine concentric lines of growth. It is characterized by a small heart-shaped dimple (if we observe the two closed valves) right next to the umbrons, which are directed anteriorly. The external color is bright white with more or less dark bands.

Dimensions: width, 28 mm; height, 28 mm; thickness, 13 mm.

Distribution: Very common throughout the Mediterranean.

Ecology and biology: In sandy bottoms, where it lives buried.

Ensis siliqua minor (Chenu, 1843)

Synonyms:Ensis minor

Common names: Catalan:Handle, knife.Spanish:straight razorFrench: Shiny knifeEnglish:Sword razor.Italian:Our capalonga, manico di cotello. German:Messermuschel.

Description: Long and narrow shell, of fragile consistency; valves similar, dorsal and ventral margins almost parallel, external ligament dark. The valves are not closed at the anterior and posterior ends, as the respiratory and alimentary siphons come out of one and the excavating foot, very long and robust, from the other. The external color is whitish with thin longitudinal brown stripes and also brown transverse stripes, and the valve is divided diagonally into two triangles. Internally, the valves are whitish, but, through transparency, the external drawings can be seen.

Dimensions: length, 90 mm; width, 13 mm; thickness, 7 mm.

Distribution: Common throughout the Mediterranean.

Ecology and biology: In the sand samples collected in the breakwater area, juvenile individuals of this species already appear, completely transparent and measuring 5 to 8 millimeters. As they grow, they seek deeper water, where there is less water movement and the substrate is more structured. Angler fishers usually take huge quantities of specimens that are on average 40 millimeters long, and which logically return to the sea as they have no economic interest.

Glycymeris glycymeris (Linnaeus, 1758)

Common names: Catalan:PeckinotSpanish:Sea almondFrench: Sea almondsEnglish:Dog-cockle.Italian:Common donkey foot.German: Gemeine Samtmuschel, Meermandel.

Description: Large, rounded shell, of strong consistency, with concentric bands. Dark brown color with a variety of lighter bands. On the inner side, white in color, it has a hinge with a rounded margin and 5-6 teeth on each side.

Dimensions: width, 45 mm; height; 43mm; thickness, 22 mm.

Distribution: Atlantic and Mediterranean.

Ecology and biology: In sublittoral soft bottoms. It is common to find empty shells on the beach after sea storms.

Mactra corallina (Linnaeus, 1758)

Common names: Catalan:white eggSpanish:White smooth clam.French: Mactre, blanketItalian:Madia bianca

Description: Light shell, subtriangular in shape. The surface of the valves is smooth, with very thin concentric growth striae. The color is white, although they may have a light brown periostracum.

Dimensions: (maximum) height, 55 mm; width; 55 mm; thickness, 25 mm.

Distribution: Very common throughout the Mediterranean.

Ecology and biology: Littoral and submerged area, on a sandy bottom. This species can be found as a commercial species in fish markets in Italy.

Mactra corallina lignaria (Monterosato)

Synonyms:Mactra corallina corallina (Linnaeus, 1758),Mactra glauca, Mactra corallina stultorum.

Common names: Catalan:Egg, friar's cockroach.Spanish:Smooth clam French:macterEnglish:Rayed trough shell.Italian:Coral reef German:Tromuschel.

Description: Similar to theM. corallina,but it has a violet color inside the valves and on the outside it has violet lines that go from the apex to the external margin and concentric bands of the same color. For some experts, this species is a variety of theM. corallina.

Dimensions: The same as theM. Corallina.

Distribution: Atlantic and very common throughout the Mediterranean.

Ecology and biology: Littoral and submerged area, on a sandy bottom. It is common to find empty shells on the beach with a perfectly circular hole made by a naticidal snail, which sucks the animal inside and eats it. the name ofeggit comes to him because breaking the shell reminds him of the way a hen's egg does.

Mysia undata (Pennant, 1777)

Description: Rounded, smooth, light and shiny shell, with very fine concentric growth lines. The coloring is white.

Dimensions: width, 19 mm; height, 18 mm; thickness, 8 mm.

Distribution: Common throughout the Mediterranean.

Ecology and biology: In sandy bottoms, where it lives buried.

Mytilus galloprovincialis (Lamarck, 1819)

Synonyms:Mytilus edulis galloprovincialis.

Common names: Catalan:Mediterranean mussel.Spanish:Blond mussel, Mediterranean mussel.French:Mediterranean mussel, mousclé, Provence mussel.English:Mediterranean mousse.Italian:Mitilo, cozza, peozio, muscolo. German:Miesmuschel, Mittelmeermiesmuschel.

Description: Elongated shell, rounded upper margin, without forming an angle with the hinge. The previous part ends in a peak

slightly tilted downwards. External color blue-black and shiny, although periosteum is sometimes present. The inner side of the shell has a greyish blue color with iridescence and is opaque. Externally, it can present numerous incrustations of other epiphytic organisms, such as polychaete annelids or bryozoans.

Dimensions: height, 70 mm; width, 34 mm; thickness, 18 mm, although in nature we can find many sizes.

Distribution: Very common in the Mediterranean.

Ecology and biology: Native species of the Mediterranean Sea. For a long time the Mediterranean mussel had been considered a different species from the Atlantic mussel (Mytilus edulis).It is currently considered a subspecies of the Atlantic mussel.

Unlike other species of bivalves, the rock mussel lives attached to any hard substrate, such as breakwater rocks, buoys or even remnants of fishing nets, ropes, etc., and it does so thanks to a substance, called byssus, secreted by glands in the foot. The bissus, when leaving the body of the mollusk, solidifies, hardens and becomes the filaments we know. It can be found in water up to 15-20 meters. It is a species that is highly appreciated gastronomically, but due to its filtering regime, you must be very careful when eating it if you do not know its origin, since it can accumulate toxic substances that can be found in the water .

Tapas decussatus (Linnaeus, 1758)

Synonyms:Venerupis decussata, Amydala decussata, Ruditapes decussatus.

Common names: Catalan:clamSpanish:thin clamFrench:Clovisse reticulé, clam.English:Calico clam, checkerboard.Italian:Vongolo nera, cappa incrocicchiata.German:Grobe Teppichmuschel.

Description: Rounded shell, heavy and trimmed at the back. The external surface has the pattern of concentric bands of growth and radial ones, which form a very fine trellis. The color is from pink to brown, with different possibilities of darker and lighter line drawings. The internal part is white.

Dimensions: width, 42 mm; height, 32 mm; thickness, 18 mm.

Distribution: The Atlantic, from Norway to the Mediterranean.

Ecology and biology: It lives, like most filtering bivalves, in sandy and muddy bottoms, and is one of the common species. It is highly appreciated from a gastronomic point of view. In 2003, 11,500 kg were caught in Catalonia, with a crop production of 7,000 kg. In the markets, however, the most common is the Japanese clam (Ruditapes philippinarum),with a crop production of around 200,000 kg. The legal minimum size is 25 mm.

Tellina fabuloides (Monterosato, 1884)

Description: Very fragile shell, flat, transparent and with a smooth surface. White coloring.

Dimensions: width, 12 mm; height, 7 mm; thickness, 2 mm.

Distribution: Fairly common throughout the Mediterranean.

Ecology and biology: In the submerged coastal zone, in sand or mud.

Sharp tail (Poli, 1795)

Description: Smooth shell, similar to theTellina flatbut with a shell that is more elongated, flatter and narrower at the back. Off-white color with concentric lines of variable coloration. The inner face is pale orange.

Dimensions: width, 47 mm; height, 25 mm; thickness, 8 mm.

Distribution: Common throughout the Mediterranean.

Ecology and biology: The same habitat as theTellina flat

Tellina planata (Linnaeus, 1758)

Description: Fragile shell, oval and flattened. The surface is smooth, sometimes with a subtle light brown periostracum. The right margin forms a ripple near the hinge. With both valves closed, there is an opening precisely along the margin where this undulation occurs. The coloring is white - pink.

Dimensions: (maximum) height, 58 mm; width, 40 mm; thickness, 14 mm.

Distribution: Throughout the Mediterranean.

Ecology and biology: Dig in the sand where two siphons protrude. It lives in the littoral and submerged area, in sandy or muddy bottoms.

Tellina pulchella (Lamarck, 1818)

Synonyms:Tellinella pulchella, Tellinella rostrata.

Common names: Catalan:Taina rostradaSpanish:Inclined tailbone. French:Telline courbée.Italian:Tellina rostrata.German:Sonnenmuschel.

Description: Flat, fragile and thin shell, subtrapezoidal in shape. The hind limb is slightly rostral and curves towards the right side. The valves are more or less intense and bright pink, and the surface is crossed by striae or radial bands of a lighter color. The pattern consists only of faint growth striae. The inner face is also deep pink.

Dimensions: width, 38 mm; height, 24 mm.

Distribution: It is found only in the Mediterranean.

Ecology and biology: On all sedimentary bottoms. It is frequent or very frequent. It appears along with theDonax trunculusin tellerina fishing cages.

Pecten jacobeus (Linnaeus, 1758)

Common names: Catalan:Vano, pilgrim's shell.Spanish:Pilgrim's shellFrench:Shell Saint-Jacques, vanne.English:Pilgrim's scallop. Italian:Ventaglio, holy cloak, conchiglia dei pellegrini.German:Jacobs-Pilgermuschel.

Description: Valves very different from each other, the right is pumped and the left, flattened. Fourteen or sixteen broad radial ribs, both auricles equal. The color of the right valve is whitish and the left one dark brown. Some specimens can reach 200 mm in width.

Dimensions: width, 30 mm; height, 28 mm; thickness, 5 mm.

Distribution: Very common throughout the Mediterranean.

Ecology and biology: It is found regularly and frequently on all sedimentary bottoms. Its meat is highly prized in French and Spanish cuisines. In addition, many restaurants use the shell of large specimens to serve other dishes, such as fish gratin. It is a species of bivalve that is also produced in cultivation.

Venerupsis rhomboides (Pennant, 1777)

Description: Ovaloid shell with numerous and very fine growth and radial lines. Coloration is highly variable, usually brownish with light and dark spots or lines.

Dimensions: width, 45 mm; height, 30 mm; thickness, 18 mm.

Distribution: Common throughout the Mediterranean Sea.

Ecology and biology: In the submerged coastal zone, in sand or mud.

Polychaete annelids

Polychaetes are the largest and most diverse group of annelid worms. There are more than 8,000 species, almost all marine. The shape of the body can be very varied but, in almost all of them, the prostomy or cephalic part, the segmented body, and the pygidium or terminal part can be differentiated. In the prostomy there are important sensory organs such as eyes, antennae or palps, which vary in shape and number according to the species. The body segments are characterized by having lateral appendages, calledyou canor parapodia, which are a fleshy extension of the body. On the parapodia are inserted bundles of silks or chitinous chaetae that give this group of annelids their name. The first segment of the body, after the prostomium, is calledperistomeormouth segment,where the mouth opens, in a ventral position. The pygidium is the terminal part of the body, where the anus opens.

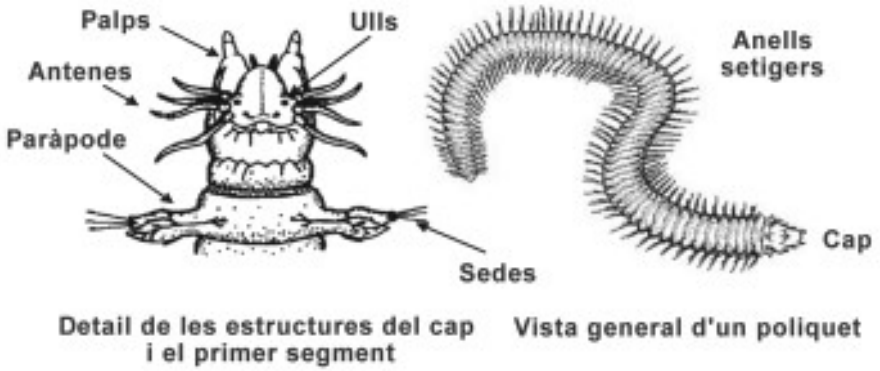

Figure 23.General characteristics of a polychaete annelid.

Polychaetes can live freely in sand or among algae, or in chitinous or calcareous tubes made by themselves, on stones or on shells of molluscs or other marine animals.

Glycera tridactylaSchmarda, 1861

Description: Very elongated body, with a maximum length of 100 mm and around 200 setigerous segments. The prostomium is conical and very sharp, and about 14-16 rings can be distinguished. The proboscis, massive, has a sieved surface of papillae of two types and four hooked jaws. Parapodia with 2 conical and obtuse presetal lips of similar length; 2 postsetal lips, one similar to the previous ones and the ventral one, more rounded. Dorsal cirrus in the form of a globular papilla located at the base of the parapodium, and the ventral cirrus similar to the presetal lips. Dorsal gills cylindrical, longer than the lips of the parapod and not retractable. Single dorsal setae in a fascicle. The ventral silks are arranged in two fascicles, they are compound, homogonous and with a long and finely denticulate spinous joint. Two filiform anal cirrus.

distribution:cosmopolitan

Ecology and biology: This carnivorous polychaete lives in well-calibrated fine sands; infralittoral sandy substrates, below the wave breaking zone; communities of sandy, muddy and detrital infralittoral and circumlittoral bottoms.

Nerine cirratulus (OF Müller, 1806).

Description: The specimens of this spionid are 40 to 70 mm long by 3 to 4 mm wide. The body is relatively long and thin, with 130 - 150 segments. The prostomium has the shape of an elongated cone and is provided with two pairs of eyes, of which the two anterior ones are much more separated than the posterior ones. They present cirriform gills from the second setigerous segment, which are missing only in the last 5-6 segments. Dorsal silks

and capillary ventrals, slightly limbed; 10 to 12 bidentate encapsulated silks on the ventral branch from the 40th setiger; from 2 to 5 in the dorsal branch from the 60th-65th setiger. The anal segment presents a kind of membranous cup with scalloped or whole edges. The coloring is bluish green due to a pigment of this color. It belongs to the superficial depositivores, it captures the particles that serve as food from the surface layer of the sediment by means of a pair of palps located in the prostomy. As for the habitat, this species is characteristic of mediolittoral fine sands and also of sands of very homogeneous composition and almost exclusively with medium elements.

Ophelia radiata (Delle Chiaje, 1828)

Description: Body thickened anteriorly, provided with 33 segments: 32 setigerous segments and the anal. The maximum length ranges between 40 and 60 mm and the width is about 5 mm. The prostomium is small, conical and very sharp. From setiger 10 a well-marked ventral furrow can be distinguished. The body has 14 ligulate gills, the last of which is often very reduced. Capillary dorsal and ventral silks. The anus is surrounded by 14-16 papillae of small size, plus two thicker ones, located centrally. The color in life is violet pink with iridescent reflections. At the time of reproduction, the males take on milky white tones, while the females have a greenish coloration. From the trophic point of view, they belong to the superficial depositors.

Habitat: They are distributed in intertidal areas and in the first meters of the infralittoral, always in sandy areas, covered with thick sand.

crustaceans

Crustaceans, along with insects, arachnids and myriapods (centipedes), belong to the group of arthropods, the animals that have jointed legs. Indeed, the wordarthropodmeans exactly this, jointed feetActually all its appendages, including the jaws and antennae, are articulated. The pieces that make them up are called knucklesAn important aspect of crustaceans is their shell, which can be more or less thick. The shell is a rigid structure, and therefore, in order to grow, they must shed the old shell and develop a new, larger one.

Crustaceans form a very large and diversified group. The best-known species, due to their large size, belong to the group of decapods (crabs, shrimps and lobsters), which are characterized by having ten legs and a well-developed shell made of chitin (the same substance that forms the shell of insects) and hardened with calcium carbonate.

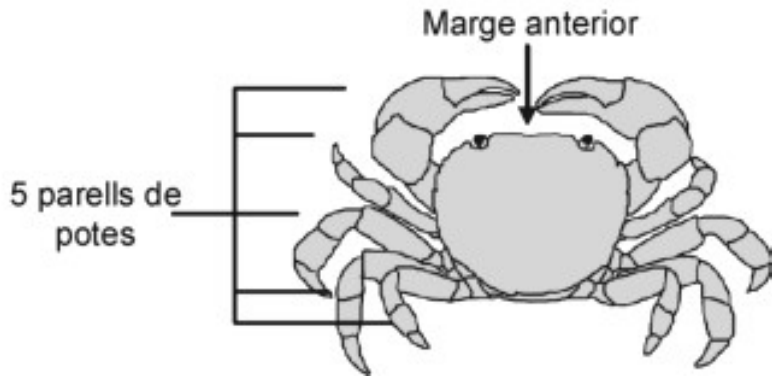

Figure 24.General characteristics of a decapod crustacean.

Some species have a well-developed abdomen (shrimps, lobsters), while others have a very small one (crabs). There are many other groups of smaller crustaceans with very different anatomical characteristics. Missidaci are small and elongated, shaped like a shrimp. The shell only covers the first thoracic segments. They have seven pairs of legs and pedunculated eyes.

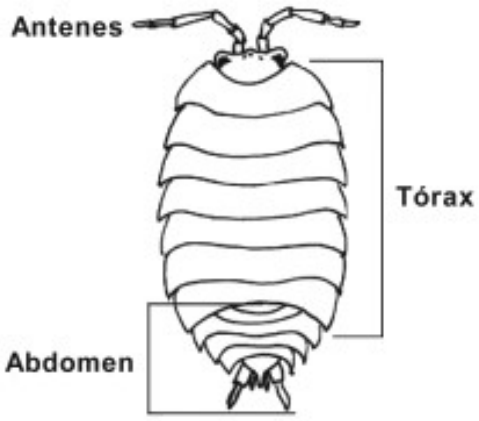

Figure 25.General characteristics of an Isopod crustacean.

Isopods are animals with flattened bodies and have the head fused with the first two segments. Isopods are small in size and prefer aquatic life, although some species live in terrestrial environments. The body is flattened and the head is fused to the first two thoracic segments. The abdomen is short and the shell is very poorly developed. They have 5 to 7 pairs of legs, two pairs of antennae and pedunculated eyes.

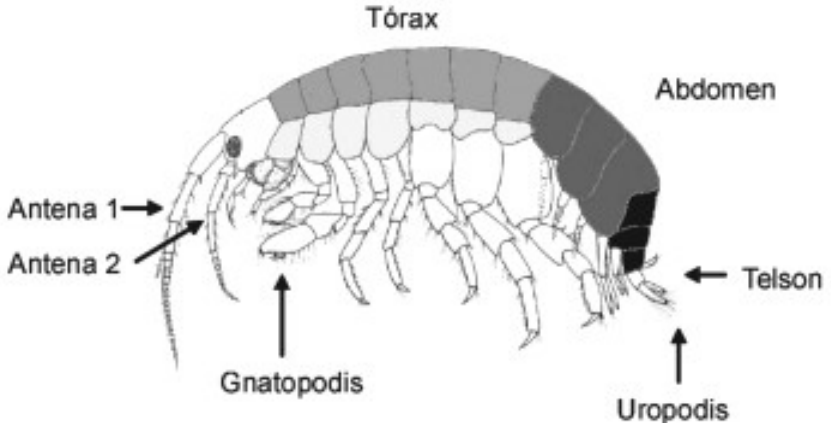

Figure 26.General characteristics of an Amphipod crustacean.

Amphipods are also small in size, but have laterally flattened bodies. Its body shows 7 segments in the thorax, from which 5 to 7 pairs of legs are born. Frequently, the first and second pair of legs are modified in the form of a pincer. Appendages also appear on the abdomen, often highly modified, to perform functions such as jumping or holding eggs.

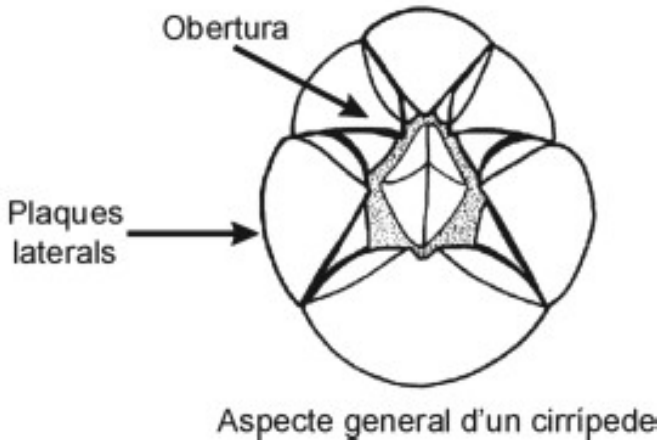

Figure 27.General characteristics of a Cirripede crustacean.

Cirripedes are a special case among crustaceans, as their external appearance and way of life are very different. These are sessile animals, which spend their entire adult lives fixed to the substrate. They are barnacles and sea acorns, animals protected by a hard shell which, unlike that of the rest of the crustaceans, is composed of plates welded together.

missidaci

Gastrosaccus sanctus (Van Benden)

Description: General appearance similar to a small shrimp. The final end of the abdomen, calleduropod,appears unsegmented. The shell

covers the first five free thoracic segments. Pedunculated eyes. A pair of legs transformed into mouthparts (maxillipeds) and seven pairs of rowing legs. The lateral plates of the first segment of the thorax form part of the incubation chamber. Posterior margin of shell with central fold extending anteriorly. Transparent, with yellow and red spots on its dorsal part.

Dimensions: This species reaches 15 mm in length.

Distribution: The Atlantic from the North Sea, the Mediterranean, the Black Sea and the Suez Canal.

Ecology and biology: It lives at a shallow depth, on the bottom, on mud or sand beaches, although it has been found up to 60 m deep. It appears with some frequency within the sediment of these beaches. Common on the surface at night.

isopods

Eurydice affinis (Hansen, 1905)

Description: Body of semi-cylindrical section. Eyes in lateral position, medium size. On the thorax, segments 1 to 3 are markedly wider than segments 4 to 7. The 5 abdominal segments are smaller, and a sixth segment fuses with the telson, the long, rounded-margined terminal appendage . Light color, with dark spots on the back and with a yellowish ventral area.

Distribution: Abundant in the Mediterranean and the southern European Atlantic. Rarer on the coasts of northern Europe.

Ecology and biology: Lives in intertidal sands. It is an organism sensitive to water pollution by organic matter, so its presence is an indicator of the absence of pollution.

Idotea metallica (Forest, 1802)

Description: Flattened body, with seven free segments in the thorax and seven pairs of legs adapted for walking. Elongated shape, with clearly visible antennae pointing backwards. Blue-green color, occasionally with metallic sheens.

Dimensions: Up to 3 cm in length.

Distribution: Cosmopolitan.

Ecology and biology: Separate sexes. It lives from the intertidal zone to a depth of 150 m, preferably on rocky substrates. Often found on floating debris.

amphipods

Gammarus planicrurus (Reid, 1940)

Synonyms:Echinogammarus planicrurus (Reid, 1940).

Description: Laterally flattened body. Well defined head and well developed limbs and abdomen. Side plates clearly marked. The first two pairs of legs modified in the form of claws (gnathopods), strong and well developed. Eyes not pedunculate. Light color without marks.

Dimensions: Up to 9 mm for males and 4 mm for females.

Distribution: All European Atlantic and Mediterranean coasts.

Ecology and biology: It lives in sandy bottoms, in the tidal zone.

Hippomedon denticulatus (Bat, 1857)

Description: Fine body, elongated, compressed and with a slightly ridged surface. The head, which is small, has an equally small face. The antennae are of the same length as the body size in the case of males, while, in the case of females, they are equivalent to half the total length. The antennules are robust especially on the first joint. Gnatopodium 1 imperfectly subcheliform, with the palmar margin very oblique. Gnatopodium 2 subcheliform with carpus larger than propodeum, both joints densely covered with silks. Coxal plates moderately developed, the first partially covering the head. Third epimeral plate with posterior margin straight, with strong spine-like elevation at its lower angle, but without anterior incision. Uropodis birramis, with small spines. Telson split in two thirds of its length, with an apical spine on each lobe. The body surface appears ornamented with a series of transverse orange bands.

Dimensions: The maximum length varies around 14-18 mm.

Distribution: On all European, Atlantic and Mediterranean coasts.

Ecology and biology: It lives from 0 to 900 meters deep, in soft sediments. Sometimes it is very abundant.

Siphonoecetes kroyeranus (Bat, 1856)

Description: Slender body. A thorn on the head, which lengthens the face of the animal. First antenna shorter than half total body length. The second antenna equal to the length of the body. The first two legs transformed into claws. The second of these nails is larger than the first. At the rear end are three appendages called uropodsThe third of these appendages is distinctly larger than the other two. Brown color, with darker areas on the head and at the base of the antennae.

Dimensions: 3 to 5 mm.

Distribution: All European coasts.

Ecology and biology: From 0 to 40 meters deep, on sandy substrates. Build irregular tubes with sand and shell scraps.

decapods

Diogenes pugilator (Roux)

Common names: Catalan:Bernat sand hermit.Spanish:Warrior hermit, sand witch.French:Pagure du sableEnglish:Sand hermit crab. German:Einsiedler Strand.Italian:Paguro di sabbia

Description: Pincers of the first pair of unequal walking legs, those on the left almost twice as large as those on the right. The second and third pair of legs, with claws, and the fourth and fifth, very reduced. Antennae with hairs. black eyes The color of the tweezers is with white tips. The body is pale in color with some red transverse bands on the legs.

Dimensions: 10 mm shell. Total length up to 25 mm.

Ecology and biology: In gastropod shells, in shallow waters, on sand.

Pachygrapsus marmoratus (Fabricius, 1787)

Common Names:Runner crab, rock crab.

Description: Quadrangular shell, convex and without well-differentiated regions. Frontal margin straight, with four lobes. All legs end in a nail. The back is green, with darker transverse patterns. The ventral area is ivory white.

Dimensions: The shell reaches 4 cm in length.

Distribution: Present on all European coasts, in the Mediterranean Sea and the Black Sea.

Ecology and biology: Frequent on rocks in the tidal zone. Regular inhabitant of breakwaters and breakwaters, where it moves quickly. Easy to observe out of the water.

Polybius vernalis (Risso, 1827)

Synonyms:Macropipus vernalis (Risso, 1827);Liocarcinus vernalis (Risso, 1827);Macropipus barbarus (Lucas, 1846).

Description: Very similar species to others of the same genus with which it is often confused. In Atlantic specimens the shell is generally hairless. On the other hand, in the specimens from the Mediterranean, the forehead and legs appear covered with a dense and short hair. Shell wider than long, tapering posteriorly. Front with three sharp teeth, not protruding. The central tooth is smaller than the lateral teeth. Anterior lateral margin with five nearly equal, forward-curved teeth. The final end of the last pair of legs flattened, shovel-shaped. Granular surface. Variable colouring, grey, brown or green, with small light and dark spots that make it go unnoticed in the sand.

Dimensions: Shell up to 4 cm wide and long.

Distribution: Present on all European coasts.

Ecology and biology: It is very common to find it buried in the sand, from the edge of the beach to a depth of 100 meters. Withstands brackish water.

Portumnus latipes (Pennant, 1777)

Description: Heart-shaped shell. Frontal margin with three teeth, the central one the longest. Shell slightly longer than wide, smooth and without tubercles or other structures. Anterior lateral margin with five teeth, the third and fourth slightly pronounced. Reddish brown color, with small white spots. Sometimes it has a larger white spot on its front. The final end of the last pair of legs flattened, shovel-shaped.

Dimensions: Up to 2.5 cm wide and 2.3 cm long.

Distribution: Present on all European coasts, up to the North Sea, the Mediterranean Sea and the Black Sea.

Ecology and biology: Very common, lives buried in the sand at a shallow depth.

Cirripedes

Balanus sp.

Common names: Catalan:sea acornSpanish:Big sea acorn.

Description: 6 species of this genus have been described in the Mediterranean, of which theBalanus perforatusis the best known. Cone-shaped body. Thick shell formed by 6 smooth or ribbed surface plates. Yellowish or brown color.

Dimensions: Up to 3 cm in diameter and 2 cm in height.

Distribution: Mediterranean and Atlantic.

Ecology and biology: In the infralittoral and circumlittoral, on poorly lit rocky bottoms with strong hydrodynamism.

Chthamalus stellatus (Poli)

Common names: Catalan:Breakwater acorn.Spanish:Sea acorn French:Chtaamle étoilée.English:star barnacleItalian:canine tooth German:Seepockee.

Description: Shell with 6 very wrinkled plates and membranous base. Oval opening with 4 teeth.

Dimensions: Diameter up to 6 mm.

Ecology and biology: On rocky coasts and harbor breakwaters, above where the waves break. It can be mixed with theC. Montagui,and sometimes they get confused.

insects

The group of insects is made up of a million known species. It is, therefore, the group with the largest number of species in the entire animal kingdom and they are the only invertebrates capable of flight. The entomologist EB Ford calculated that the number of specimens of soil insects that can live in a surface of 4,047 m2 and 23 cm deep of a meadow, is 230 million.

Insects are very versatile, they can live in very cold extremes (a few degrees below zero) or very high (hot springs or deserts).

Their food regimes are also very varied and they can obtain energy resources from such unusual materials as oil, wood, skins, tobacco, excrement and corpses, although there are also predators, phytophages or parasites .

Despite being a very diversified group of arthropods, the segmentation of the body is fixed in all cases.

The body is divided into three regions: head, thorax and abdomen. On the head are a pair of compound eyes, and sometimes ocelli, in addition to a pair of antennae and mouth appendages. The thorax is always made up of three metameres, each with a pair of appendages or legs. The wings (two pairs) also articulate with the thorax. The abdomen consists of eleven metameres, without walking appendages, although they may have appendages related to reproduction. Their shape, color and size are very variable: from very colorful colors, like butterflies, to totally cryptic species; from 0.25 mm for some parasites to 28 cm for tropical butterflies. In many cases they present sexual dimorphism and have a high reproductive capacity.

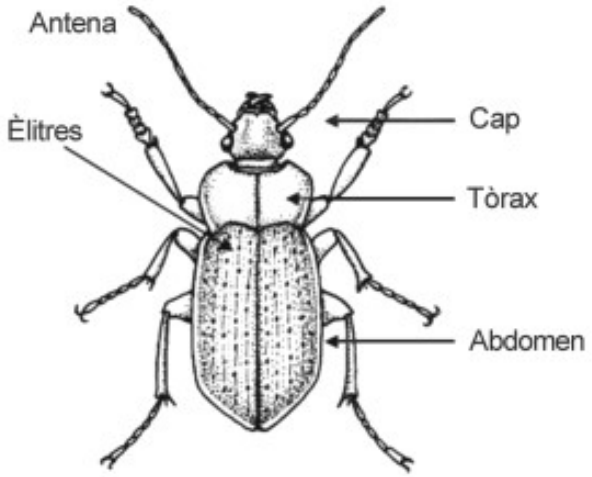

Figure 28.General characteristics of an Insect.

Scantius aegyptius (Linnaeus, 1758)

Common names: Spanish:coralsCatalan:Corn chicken

Description: Heteroptera of the Pyrrocoridae family. Oval and elongated body, 8 to 10 mm, red in color with characteristic black spots.

Distribution: Mediterranean basin to central Asia.

Scarabaeus sacer (Linnaeus, 1758)

Common names: Spanish:Scarabajo peloteroCatalan:pilot beetle
Description: Beetle of the scarab family, with a rounded body and black color. 25-30 mm. He piles up dung balls that he transports to his den and in which he lays his eggs. It lives in sandy terrain, especially in the coastal dunes.

Truxalis nasuta (Linnaeus, 1758)

Common names: Spanish:Nosed grasshopper

Description: Orthopterous insect (locusts and grasshoppers) of the acridid family. Elongated body, conical head and ensiform antennae.

Distribution: It is a species of Ethiopian origin, characteristic of the Mediterranean coast, North Africa and the Asian continent.

Bryozoans

Colonial animals, almost exclusively marine, that live fixed to the substrate. Depending on the species, the colonies can be from 1 mm to more than 1 m, and have very varied shapes, from flat sheets to arborescent forms. In general, its appearance is reminiscent of corals. The individuals that form these colonies, called zooids, are very small in size and their anatomical structure is very different from that of the rest of the animals we know. In some species the zooids are modified to take on various tasks, such as capturing food or reproduction. About 1500 species of this group are known, but in the past they were very abundant, and have left an extensive fossil record.

Myriapora truncata (straws)

Common Names:fake coral

Description: Colonies formed by cylindrical branches, branching dichotomously in all directions. Characteristic truncated tips, which give the species its name. Intense red color.

Dimensions: Up to 12 cm high.

Distribution: Mediterranean.

Ecology and biology: Fixed to rocks in poorly lit places.

Echinoderms

Echinoderms are probably one of the best-known groups of marine animals, at least some of their representatives, such as starfish. As general characteristics of this group, we can point out the radial symmetry, its protective spiny cover, hardened with calcium carbonate, and its ambulacral system, a particular system of movement and locomotion unique in the entire animal kingdom. The group of echinoderms includes the asteroids (starfish), the ophiuroideus (ophiurids), the echinoideus, (garots), the holothurioideus (holothurians or sea cucumbers) and the crinoideus (comátula or sea lilies). Sea urchins are common inhabitants of the seabed. It is difficult to appreciate its pentameric radial symmetry, unless we look at the shell of a dead hedgehog. We can then appreciate how the shell is made up of a series of plates, with a complicated design of reliefs and pores that are arranged in a radial fashion. The upper opening corresponds to the anus and the lower to the mouth. The orifices are points of exit to the outside of the ambulacral feet, and the protuberances correspond to the point of insertion of the spines, which have some capacity for movement.

Arbacia lixula (Linnaeus)

Common names: Catalan:black girlSpanish:black hedgehog

Description: Spikes abundant, as long as the diameter of the shell. Lower ambulacral plate with three pairs of pores. Black color

Dimensions: Up to 8 cm in diameter.

Distribution: Mediterranean.

Ecology and biology: Very abundant in the western Mediterranean, from the surface to 50 meters deep. Always on rocky substrate. Unlike other close species, it does not dig the stone.

Tunics

Ascidians are marine animals that, despite their appearance, belong to the chordate group, the same group that vertebrates belong to. Specifically, they are part of the group of urochordates or tunicates, characterized by their barrel-shaped body protected by a thick wall (tunic) that gives the group its name. As a curious fact, it can be noted that this tunic mainly contains cellulose, the same substance that forms the supporting tissues of herbaceous plants. There are solitary species and colonial species, and they can live fixedly on the bottom or float freely. Among the tunicates there is the group of ascidians (class Ascidiaceae). A typical ascidian is a sac-shaped animal, which opens to the outside through two orifices located at the ends of two siphons of varying size.

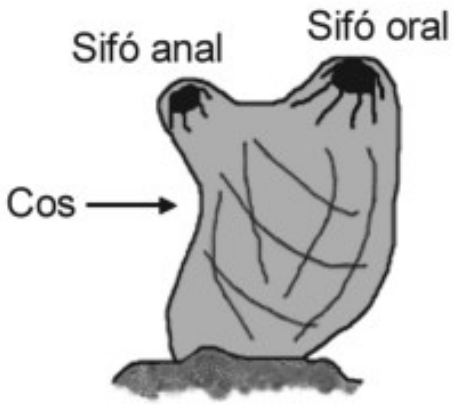

Figure 29.General characteristics of a tunicate.

The water circulates inside the body, and the particles it feeds on are retained in the animal's pharynx. Their inclusion in the group of chordates is due to the morphology of the larval phase of these animals. The larva, whose shape resembles that of a tadpole, has a structure similar to the vertebral column, in addition to other important anatomical similarities.

Microcosmus sulcatus (Coquebert, 1797)

Common names: Catalan:donutSpanish:Provecho, sea potato.

Description: Solitary ascidians, although individuals can live very close to each other, forming masses of irregular appearance. Sac-shaped body, with a rough surface, often covered with algae. Hard mantle with numerous folds. Color from reddish brown to purple. The main taxonomic characters are internal and difficult to observe at first glance. Characteristic collar on the oral siphon. Small lateral siphon with eight pink or purple striae.

Dimensions: Up to 20 cm, although it is generally smaller.

Distribution: Mediterranean.

Ecology and biology: It lives in the coastal zone, near the surface, on rocks or empty shells. Edible, although its consumption is not widespread.

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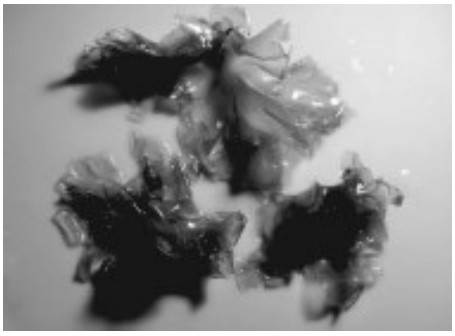
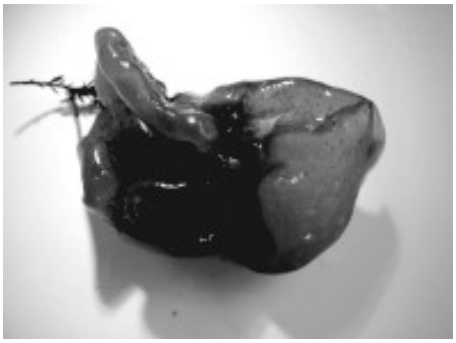


Ulva sp.



Colpomenia sinuous.

Chrysaora hysoscella.

Coraline sp.

Agropyron junceum.

Ammophila arenaria

Cakile maritime

Calystegia soldanella

Carpobrotus edulis.

Cyperus capitatus.

Echinophora spinosa.

Eryngium maritimum.

Euphorbia paralias

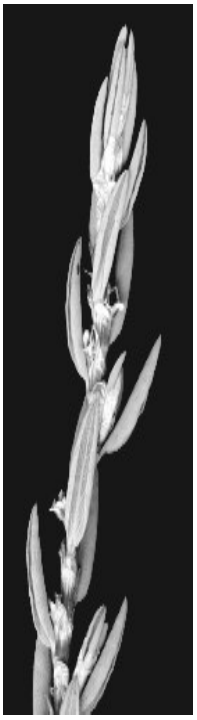
Lagurus ovatus

Lobularia marina copy.

Medicago marine

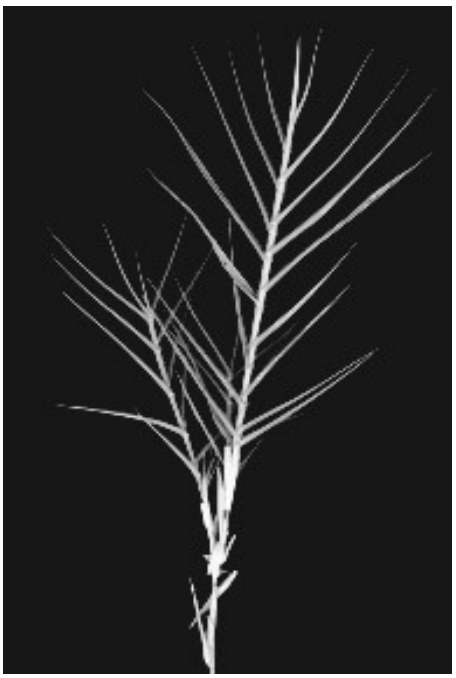
Pancratium maritimum.

Scabiosa atropurpurea.



Polygonum maritime.

Salsola cali

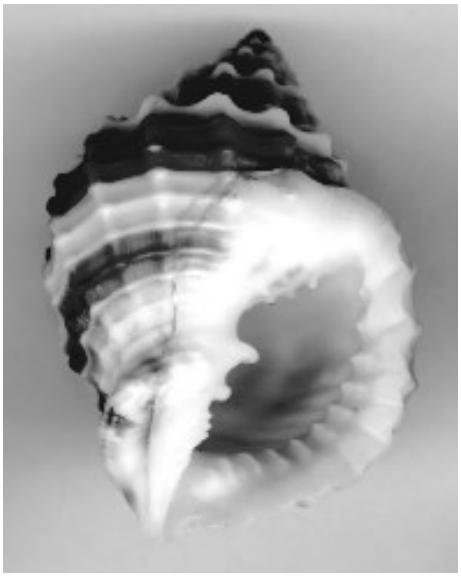


Sporobolus pungens.

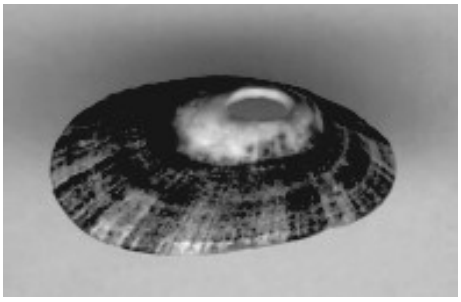
Galician Tamarix

Tribulus terrestris.

Xanthium echinatum (fruit detail).



Canceled Chancellery.



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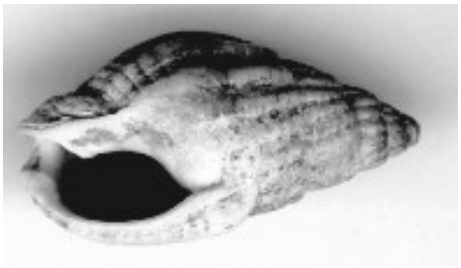
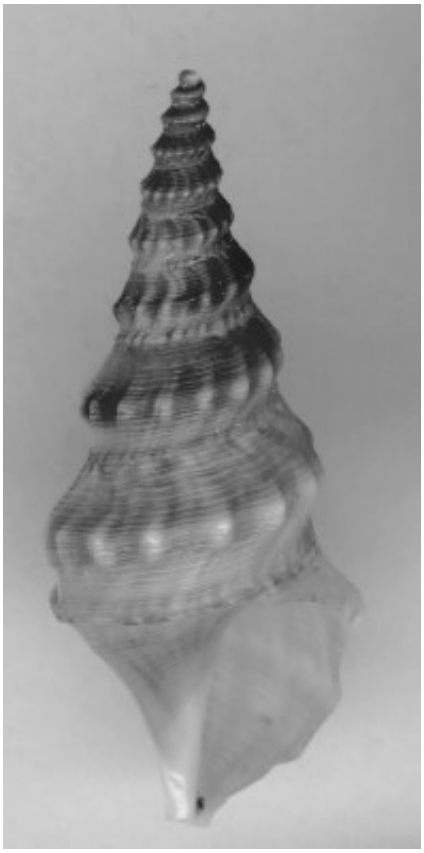
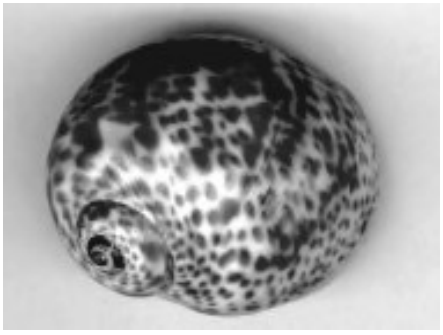


Hinia reticulata mamillata.

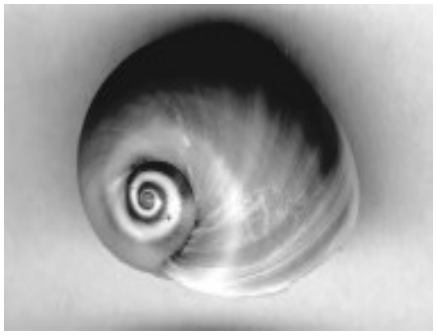


Fasciolaria lignaria.

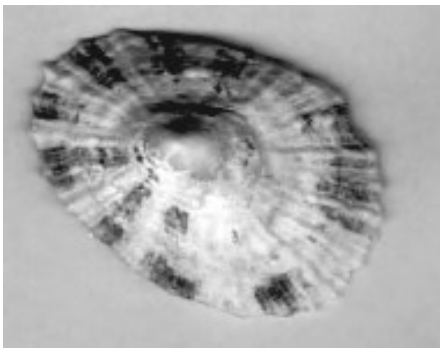
Littorina neritoides.



Hebraeus Naticarius.

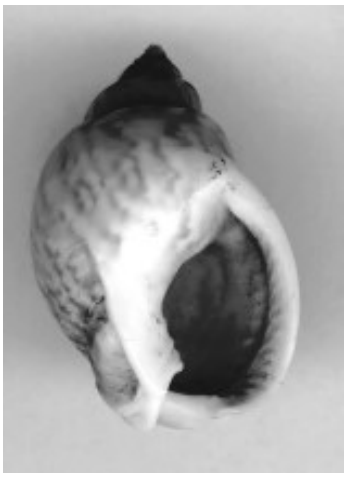


Neverita josephinae.



Patella caerulea.

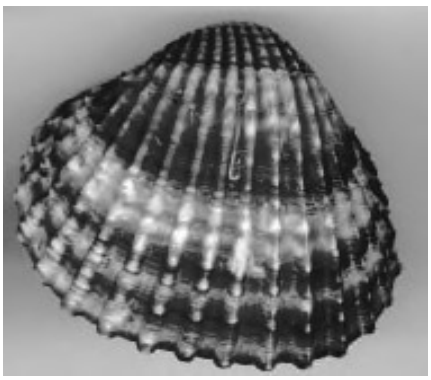
Patella caerulea var subplanata.



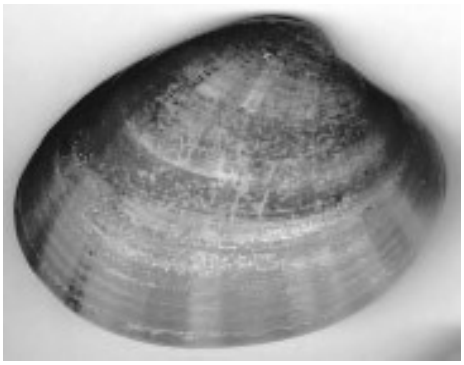
Sphaerosoma mutabilis.

Mediterranean Turritella.

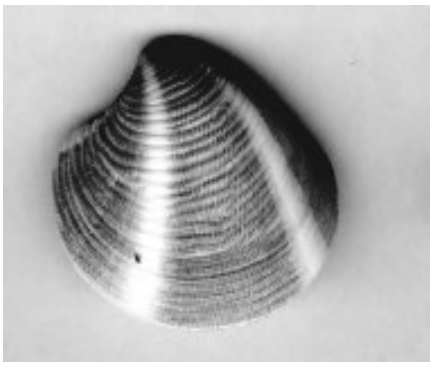
Pisan Thebes



Acanthocardia tuberculata.



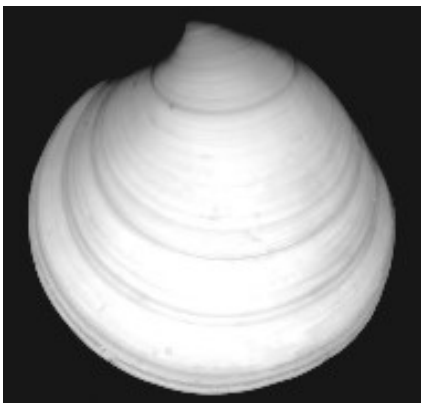
Callista chione



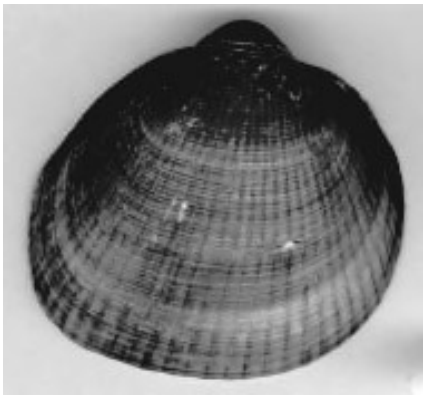
Chamelea gallina gallina.

chlamys varia

Donax trunculus

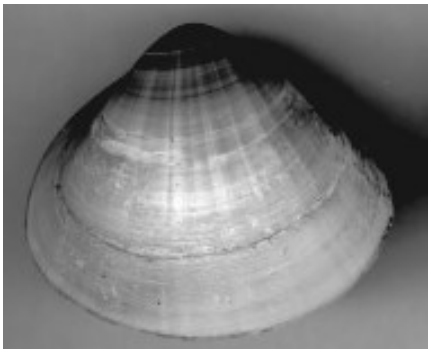


Dosinia lupinus.

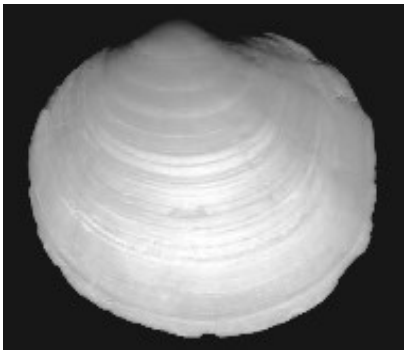


Glycymeris glycymeris.

Ensis siliqua

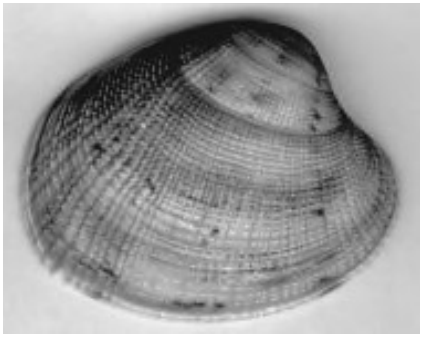


Mactra coralline

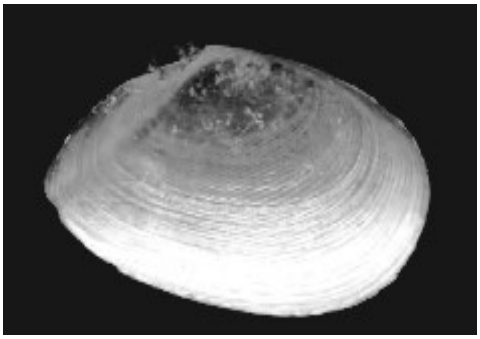


Mysia undata.

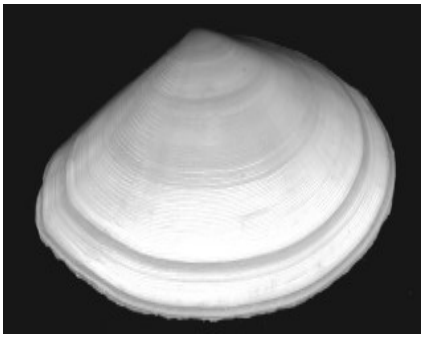
Mytilus galloprovincialis.



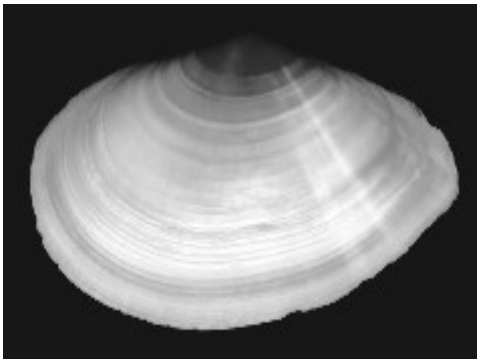
Tapas decussatus



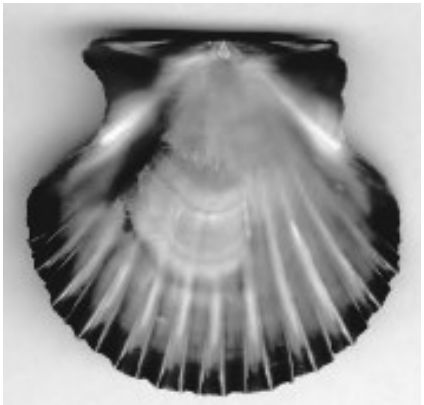
Tellina fabuloides.



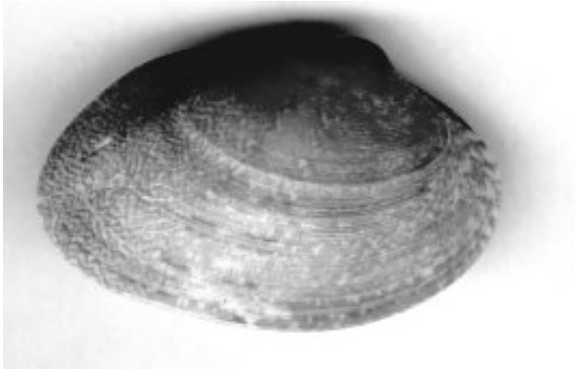
Sharp tail



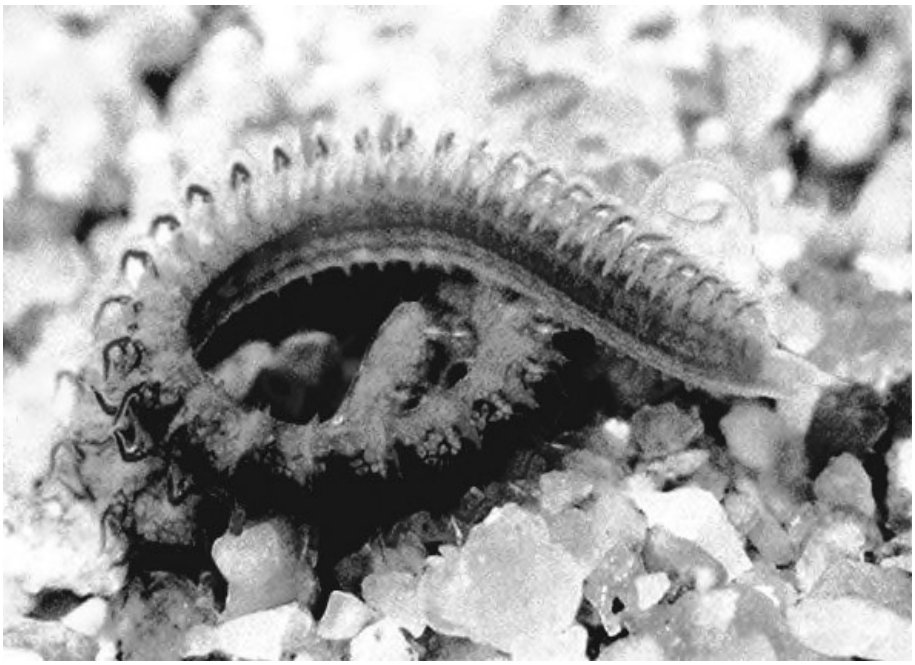
Tellina pulchela



Pecten Jacobeans.



Venerupsis rhomboids.



Nerine cirratulus.

Ophelia cirrhosa (white).

Ophelia cirrhosa (red).

Diogenes pugilator.

Polybius vernalis.

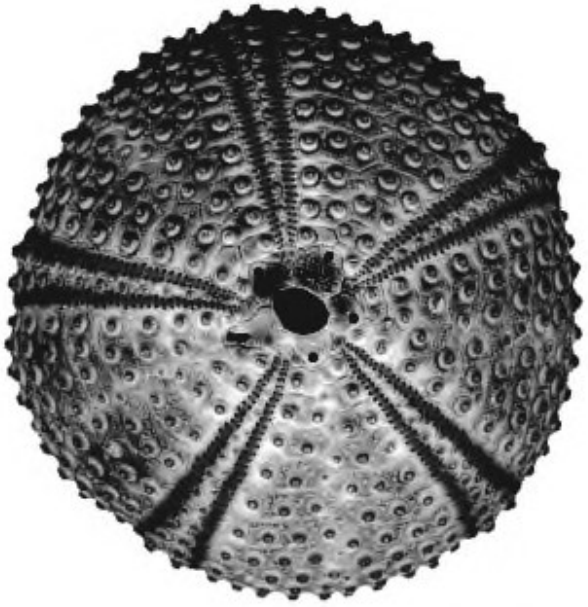
Portumnus latipes

Chthamalus stellatus.

Egyptian Scantius.

Scarabeus sace.

Truxalis nasuta



Arbacia lixula