SEASHELLS

Both marine and freshwater **common mussels** are filter feeders; they feed on plankton and other microscopic sea creatures which are free-floating in seawater. A mussel draws water in through its incurrent siphon. The water is then brought into the branchial chamber by the actions of the cilia located on the gills for ciliary-mucus feeding. The wastewater exits through the excurrent siphon. The labial palps finally funnel the food into the mouth, where digestion begins. Marine mussels are usually found clumping together on wave-washed rocks, each attached to the rock by its byssus. The clumping habit helps hold the mussels firm against the force of the waves. At low tide mussels in the middle of a clump will undergo less water loss because of water capture by the other mussels. Both marine and freshwater mussels are gonochoristic, with separate male and female individuals. In marine mussels, fertilization occurs outside the body, with a larval stage that drifts for three weeks to six months, before settling on a hard surface as a young mussel. There, it is capable of moving slowly by means of attaching and detaching byssal threads to attain a better life position.
Octobre à avril

The valves of the **razor shell** are elongated and reach a length of up to twenty-one centimeters (8.3 in). The two sides are straight and parallel. The colour is creamy white, sometimes with brownish stripes, and the periostracum is olive green. It is sculptured with fine lines and growth marks can be seen. The anterior end is truncated while the posterior end is rounded. It has a very large foot and is capable of burrowing in the fine, hard-packed muddy sediments that it favours. where it is associated with the starfish (Astropecten irregularis) and the common otter shell. It is known for its elongated, rectangular shape, whose similarity to the straight razor gives it its name. The razor shell has been known to reach 23 centimetres (9.1 in)[3] in length. The dorsal margin is straight while the ventral margin is curved. It can easily be confused with the slightly shorter 15 centimetres (5.9 in) and more curved E. ensis (in which both front and back are curved in parallel). Razor shells have a fragile shell, with open ends. The shell is smooth on the outside and whitish in color, with vertical and horizontal reddish-brown or purplish-brown markings separated by a diagonal line. The periostracum is olive-green. The inner surface is white with a purple tinge and the foot is creamy white with brown lines. The razor shell lives under the sand, using its powerful foot to dig to a safe depth. Its digging activity comprises six stages, repeated cyclically. A digging cycle involves integration of the muscular foot (which takes up a large part of the body) with the opening and closing of the valve and one end. The foot is inflated hydraulically, extend down into the sand and anchoring the animal. Deflation of the foot then draws the shell down. The razor shell also squirts water down into the sand, removing loose sand from its path. The foot is thought to exert a pressure of 2 kg/cm. Its presence is revealed by a keyhole-shaped hole in the sand, made by its siphons during suspension feeding for plankton. In the razor shell sexual development is highly synchronous. During the summer, they are in the sexual rest stage, and gametogenesis begins at the start of autumn. In winter and spring consecutive spawns take place, interrupted by gonadal restoration periods.

Horse mussel is a large mussel growing to 22 cm (9ins) long though 10 cm (4ins) is a more typical size. The shell is purplish or dark blue and robust, with horny protuberances when young. The two valves are roughly triangular or bluntly oblong with rounded ambones near the anterior end. The annual growth lines are clear and there is a fine sculpturing of concentric grooves and ridges. The interior of the shell is white with a broad pallial line, large anterior adductor muscle scar and smaller posterior adductor muscle scar. The body is deep orange and the mantle is unfrilled. The shell is firmly attached to the substrate by byssus threads.

M. modiolus is found growing on hard substrates including shells and stones and the byssus threads of other mussels. Survival rates of young individuals are low but by the time they reach about 4 cm long, at an age of 4 years, individuals are too large and tough to be predated upon by starfish such as Asterias vulgaris, the whelk Buccinum undatumand crabs. Juveniles growing on byssus threads are more likely to survive than free living individuals and this results in the formation of cold-water reefs of mussels.[6] These mostly occur in locations with fairly strong currents. The species is tolerant of low levels of oxygen and of a diminished quantity of the phytoplankton on which they feed. The boring sponge Cliona celata sometimes damages the shells of older individuals. It can be eating during all the year

The common cockle is a suspension feeder, filtering plankton and other organic matter from the water). The sexes are separate, and adults typically begin to spawn in their second summer. Fertilization is external, and a large percentage of a population spawns at the same time. Eggs and sperm are released into the water; the free-swimming larvae (veliger larvae) live for 3-6 weeks in the plankton before undergoing metamorphosis into juvenile cockles, which then settle to the substrate. Growth rates vary with the season; in winter there is very little growth, and this leads to the marked growth-bands on the shell, which have been used to age cockles . The typical life-span of this cockle is 2-4 years, although they may live for 9 years or more. Cockles are predated upon by oystercatchers (Haematopus ostralegus), the shore crab (Carcinus maenas), shrimps and flatfish. in some areas, concerns about over-collecting have led to measures that control the numbers of cockles harvested and the methods used. In Scotland, for example, dredging with vehicles is banned, and hand gathering is the only method allowed in some parts of England and Wales..

Striped venus lives under the surface of clean and muddy sand at a depth of between five and twenty metres. It is a filter feeder, taking in a variety of microalgae, bacteria and small particles of detritus. Common on all British and Irish coasts, however, no records exist on the south east coast of England. This species is found buried in sand and muddy sand from the lower shore to depths of approximately 55 m. Chamelea gallina is a moderately large bivalve that grows up to 4 cm. The shell is thick and broadly triangular in shape with numerous fine concentric ridges. The ambones are conspicuous with the contour of the shell sloping steeply on one side of the ambone and concave on the other. The shell is off-white or cream in colour and often tinted pale yellow. There may be numerous, very fine chestnut or pinkish streaks. There are typically three broad bands of deep chestnut or reddish-brown radiating from the ambones. The coating of the shell (periostracum) is thin. The shell has very fine concentric ridges of equal height and thickness over the whole of the valve. Chamelea gallina can live for up to 10 or 11 years . There was a synchronism between sexes in terms of game to genetic development. The beginning phase occurred during spring (March-May) and maturation occurred during summer (June). Most of the spacemen spawn in July. The gonadal stages were consisted of five phases including primordial, development, mature, spawn and resting.

Common oyster as a keystone species, oysters provide habitat for many marine species Crassostrea and Saccostrea live mainly in the intertidal zone, while Ostrea is subtidal. The hard surfaces of oyster shells and the nooks between the shells provide places where a host of small animals can live. Hundreds of animals, such as sea anemones, barnacles, and hooked mussels, inhabit oyster reefs. Many of these animals are prey to larger animals, including fish, such as striped bass, black drum and croakers. An oyster reef can increase the surface area of a flat bottom 50-fold. An oyster's mature shape often depends on the type of bottom to which it is originally attached, but it always orients itself with its outer, flared shell tilted upward. One valve is cupped and the other is flat. Oysters usually reach maturity in one year. They are protandric; during their first year, they spawn as males by releasing sperm into the water. As they grow over the next two or three years and develop greater energy reserves, they spawn as females by releasing eggs. Bay oysters usually spawn from the end of June until mid-August. An increase in water temperature prompts a few oysters to spawn. This triggers spawning in the rest, clouding the water with millions of eggs and sperm. A single female oyster can produce up to 100 million eggs annually. The eggs become fertilized in the water and develop into larvae, which eventually find suitable sites, such as another oyster's shell, on which to settle. Attached oyster larvae are called spat. Spat are oysters less than 25 mm (0.98 in) long. Many species of bivalves, oysters included, seem to be stimulated to settle near adult conspecifics. Oysters are considered to filter large amounts of water to feed and breath (exchange O2 and CO2 with water) but they are far to be permanently open. On the contrary, they regularly shut their valves to enter a resting state, even when they are permanently submersed. In fact their behavior follows very strict circatidal and circadian rhythms according to the relative moon and sun positions. During neap tides, they exhibit much longer closing periods than during the spring tide .

Banded wedge shell lives close to the surface of sandy beaches, extending its two siphons to the surface. When the tide is in, water is drawn in through one siphon and expelled through the other. Banded wedge shell is a filter feeder and, at the same time that oxygen is being extracted from the water stream by the gills, food particles are captured and passed by cilia to the mouth. If the animal is disturbed or exposed by the scouring action of the waves, it can burrow rapidly. It does this by protruding its foot downwards, enlarging it by pumping blood into it and then using it as an anchor to pull itself deeper into the sand.[2][4] Under water video-recording of Banded wedge shell show that it is most active around the time of low water, when the sediment is most disturbed. Individuals were shown to "leap" and to be dragged around on the surface by wave currents before reburying themselves.[5] At this time they are at risk of being eaten by gulls, and evidence that the birds consume large numbers of the shells is provided by the "gobbets" they sometimes leave on the beach, composed of the regurgitated inedible remnants of their meal and in which many broken shells of Banded wedge shell can sometimes be found. Banded wedge shell is also preyed on by starfish, various gastropod molluscs and fish such as flounders. Banded wedge shell is dioecious, individuals being either male or female. Spawning takes place over the course of the spring and summer. Fertilization is external and the eggs hatch into veliger larvae which become part of the zooplankton. After about 3 weeks these develop into pediveliger larvae which settle and undergo metamorphosis. The juveniles grow fast and mature within a year.

Common otter shell has a pair of large, elongated oval valves up to 15 cm (6 in) long. They are smooth, glossy and fairly thin. They are a creamy colour and the periostracum is olive brown. This layer gets worn away over time and is often completely missing in shells found on the beach. There are concentric sculptured lines showing periods of growth and a few faint radial lines near the hinge. The left valve has two cardinal teeth with a third small one behind. The right valve has two small cardinal teeth and a small lateral one. The flesh of the animal is white. The foot is thick and protrudes through the pedal gape at the posterior end. The mantle edges are fringed with white and are fused together. The massive siphons can be extended to two or three times the length of the shell and are joined together for their entire length. They are streaked with brown and purple and are housed in a transparent, gelatinous sheath composed of protein and chitin. The siphons are outgrowths of the mantle while the sheath is a continuation of the periostracum. There are two rings of tiny tentacles round the orifice of the inhalant siphon and a single ring and a membrane round the exhalant one.[4][5] The mantle has a fourth pallial opening near the base of the siphon. Common otter shell is a filter feeder. It draws in water through one siphon and expels it through the other. Respiration takes place as the water current passes over the gills. Waste is periodically expelled through the fourth pallial opening which can also be used for expulsion of water from the mantle cavity. Trawling may damage or remove the tips of the siphons and bottom feeding fish may nip them off but the animal can regenerate the inner layers over the course of a few days. Hydraulic blade dredge fishing takes place for razor clams, Ensis spp., in Scotland and the process was studied to examine its impact. Bottom trawling of the seabed is often preceded by a sand fluidation process designed to loosen the sediment. Dredging damages a considerable portion of the benthic megafauna including L. lutraria, however this species tends to live at greater depths than is reached by the process. Nevertheless, between 20% and 100% are damaged in a single dredge haul. Some individuals are undamaged but left lying on the surface and it has been found that their ability to rebury themselves is limited. Unlike razor clams, they normally spend their lives in one spot and the foot is relatively small and mainly used for anchorage rather than digging. Any animal unable to rebury itself rapidly is likely to fall prey to the scavengers that move in after a trawl has passed. Such studies are of importance in assessing the ecological consequence and sustainability of fisheries.

Banded carpet shell live on muddy sandy bottoms, sand and gravel or mud in the compact but prefer stony sandy sediments. They live in the first littoral zone of intertidal zone or foreshore or intertidal zone. It can fish in low tidal coefficient, 50, 60. They can be bred in "clear" (park land powered seawater). They burrow February to May cm or 10 cm larger. This is a burrowing and rustic shell that moves a significant way. are filter feeders. The feed is filtered either in the sediment, or outside of the sediment through the inhalant siphon. Plus the size of the clam is growing its filtration increases. The filtration rate growth conditions. The filtration rate increases with temperature between 10 and 20 ° in the ratio of 1 to 4. Clam therefore difficult to spend the winter, with a difference between the European and the Japanese, which is hardier and resistant more severe winters. Food intake and thus metabolic activity, are more abundant in the spring. Clams feed on plankton suspended, deposits of organic material in or on the substrate. In breeding, it reaches market size, 35 mm, between 16 and 20 months. It reaches an optimal size of 45-50 mm within 24 to 28 months. It should not be caught below 40 mm. The gonad is reduced in winter. Sexual maturation takes place from March to June. Spawning takes place according to a minimum temperature either in a single summer period or in two stages, in the spring and fall. Fertilization is external. The larval life lasts ten days. The Veliger larvae settle onto the substrate to the size of about 0.22 mm.

Sand gaper, this mollusc lives in sediment by filtering water by means of a siphon. Like many other bivalves, including oysters and mussels, may be "detoxify" by storing a majority of heavy metals it has filtered in its shell (particularly lead) . Its shell is fragile. It disintegrates quickly enough, then salting-toxic it contained. It is found buried in the muddy sand or mud up to 90 cm deep. It is housed in a shell of calcium carbonate, relatively brittle (more fragile than those of other species resembling it), hence the English name "soft-shells." This animal can accumulate many toxic, making it an interesting integrative biological for monitoring chronic pollution sediment and assess the contamination of the food chain (the shell may, even after his death, keep track of some past pollution).It was proposed to use his "time landfill" as an indicator of the degree of intoxication, but other factors may intervene. This shell is frequently collected by fishermen on foot or professionals in North America; it is then fried, boiled, butter or steamed or baked after disgorging in the clean sea water. Like all shellfish filter, it may be a victim of bottom trawling, biocides used in anti foolings or pollutants accumulated in the vase, including heavy metals, fertilizer and fed by rivers or rain pesticides. Oil spills and oil pollution may also affect. Male and female reach sexual maturity 2 or 3 years. Clam breeds in June. Fertilization is external: the eggs are fertilized in the water. The larvae swim for 2 weeks, then metamorphose into clams and temporarily attach to the bottom with filaments.

Common topshell, The shell of this species can be up to 137 mm in maximum dimension. It is very thick and heavy, having an outline that is between trochiform and turbiniform in shape, with rounded shoulders and a somewhat low conical form. The spire is conoidal. It contains about six convex whorls. The large body whorl is depressed-globose. The outer lip is simple. The lip is edged inside by black, or black and white. The columella is arcuate, produced above in a heavy porcellanous callous deposit, half-surrounding the umbilicus and deeply notched in the middle. The shell of Cittarium pica presents a rather wide umbilicus, which is deep and devoid of sculpture, but spirally bicostate inside. The semicircular, oblique aperture is distinguishably nacreous inside as is the case in other Trochoidea, and is circular. The parietal callus is glossy and delicate, and has a node that projects towards theumbilicus. Juvenile individuals possess shells ornamented by spiral lines and strong cords, in contrast to the nearly smooth, homogeneous surface of mature specimens. The lusterless color pattern is rather distinct, overall white with black zigzag flammules on each whorl. Those spots have a tendency to become axial lines in older, larger individuals. The upper surface is often entirely black. The aperture is commonly white, with an inner iridescence because of the nacre. Young shells, or well-preserved adults, have the spire whorls sculptured by oblique folds, cut by a few spiral sulci. The periphery and the base in the half-grown shells are spirally lirate. On some old, empty shells of large individuals, the black colored parts become slightly higher in relief, compared to the white areas surrounding it. This unusual morphology may be due to the action of blue-green algae, such as Plectonema terebrans, which continuously erode the surface of the white parts of the shell. This large snail is found on or under rocks, in exposed and moderately sheltered shores, both in intertidal and shallow subtidal zones. Common topshell generally does not live at great depths, though this has occasionally been reported. Most individuals are found at the water's edge, and have little tendency to disperse. Minimum recorded depth is 0 m. Maximum recorded depth is 7 m. Common top shell is dioecious, which means each individual organism belonging to this species is distinctly male or female. The fertilization in this species occurs externally. During the reproductive season, which normally occurs from June to November in the field, male individuals release their sperm into the water, as females simultaneously release their green colored unfertilized eggs. The encounter of those gametes produce yolky fertilized eggs, which will further develop into lecitotrophic (yolk feeding) larvae. They emerge from the egg capsules as shell-cap-bearing trocophores. These trocophore larvae do not spend much time in the plankton, because settlement occurs relatively soon, after 3.5 to 4.5 days. Individuals usually reach sexual maturity at shell lengths of 32–34 mm. The life span of this species is still unknown, but estimates for other top shells reach 30 years.

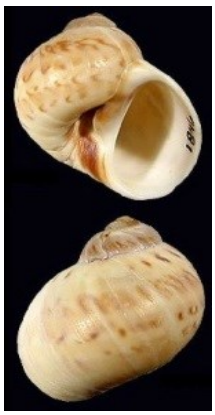
Painted topshell, The solid, regularly conical shell is straight-sided and imperforate. The shell contains up to 12-13 whorls. It is sculptured with regular spiral grooves and ridges, traversed by fine prosocline growth lines. The apex is minute, composed of a single smooth rounded whorl. Several whorls follow, each with 4 granose spiral ridges. These become smooth and either obsolete or narrow on the later whorls. The body whorl has a prominent peripheral keel bearing two broad ridges; ridges above suture in preceding whorls. Base of shell rather flat, inner lips reflected over shallow umbilical groove. The periphery is angular, encircled by a smooth rounded rib that becomes a supra-sutural band or fasciole on the spire. The base of the shell is nearly flat. The aperture is quadrate. The cylindrical columella is nearly straight. The color of the shell is variable. The ground color is yellowish brown, pale pink, or violet with streaks and blotches of brown, red or purple on the periphery. Blotches on the keel are generally darker, more frequent and more regular than on other parts of shell. It is radiantly clouded with brown on the upper surface. The base of the shell is uni-colored or obscurely radiantly streaked. Pure white or violet specimens are occasionally found. The species is gonochoric* (separate sexes). Breeding takes place in spring and summer. The female lays eggs immediately fertilized by the male. The eggs of pale yellow color, are agglomerated in a ribbon gelatinous mucus, which can measure up to 35 mm long and 4 mm in diameter, the female fixed on the substrate (rocks or algae). The entire larval development takes place within the egg, which contains reserves whose larvae feed: there is no planktonic phase. Following this development, which lasts from 7 to 10 days, young emerging calliostomes cord immediately and benthic.

Grey top shell is a small gastropod turbines and the conical shell. Usually reaches its adult size 15 to 17 mm tall and nearly as wide. The coil is regular and has five to seven turns smooth and slightly curved profile. The first towers may appear compressed and eroded while the latter is very broad. The suture is sharp but shallow. The background color is ash gray or yellowish and decorated with many fine regular bands, brown, purple to reddish. These also extend beneath and to the opening. The pearly opening is circular and is closed by a lid horny. The umbilicus is small and oval. The head is individualized and has a muzzle equipped with a radula . Two large cephalic tentacles are located on either side and two eyes are quite distinct in their base. Once the animal moves, the other three pairs of tactile tentacles are visible to the midfoot, and the lid is also clearly visible in its rear part. Grey top shell is herbivorous. Greylag gibbules leave their shelter at dawn to return at dusk. This daily migration allows them to reach the summit of the rocks submerged in search of algae that make up their diet. The gibbules can proliferate in the absence of an abundant vegetation because their talents grazers also practice at the expense of a very discreet flora composed of cyanobacteria, diatoms and bacteria. With their rough tongue (radula *) they scrape tirelessly microscopic living film that develops on all substrates. Grey top shell is a gonochoric species, that is to say, with separate sexes. The emission of gametes and fertilization are in the water when it exceeds 12 ° C. It usually takes place in late spring and summer (June-September). Planktonic larval stage nine days after fertilization and thus ensures a certain dispersion. Young individuals are half crawling and half supernatants and have only one spiral turn.

Flat periwinkle, This small gastropod lives in abundance on the fronds of rockweed and to a lesser extent on ascophylles always on rocky bottoms. He likes preferably sheltered foreshore, and will be appreciated to the lowest low tide. This species, although mainly coastal, has a gill respiration. It enjoys moist atmosphere clumps of algae when the tide is low. She fears dryness. We can also meet in brackish areas (lower salinity) as estuaries or deeper into the land and even grazing in the rain. This snail is a herbivore that delights microscopic algae growing on the surface of brown algae (mostly), and it grazes through its radula * raspy. The flat periwinkle breeds throughout the year with a maximum spring until early autumn. It is hermaphroditic, each individual carrier having two types of gonads. Fertilization is internal (permitted by a penis) and cross. Littorina obtusata eggs are white to cream and are included in a mass of transparent jelly (kidney-shaped or oval) deposited on the fronds of seaweed and sometimes on the rocks. Hatching takes place four weeks later: eggs out tiny periwinkles creepy (so there is no planktonic larval phase). Sexual maturity is reached at two years.

Common limpet, the radula in this species is longer than the shell itself. It contains 1920 teeth in 160 rows of 12 teeth each. It is found attached to firm substrates from the high shore to the edge of the sublittoral zone, although it predominates in areas of wave action. Its shell is conical, up to around 6 cm long, and lacks defined chirality. Common limpets are believed to be able to live for up to twenty years. The limpets scrape the surface of the rocks on which they are installed and therefore they consume the film of microscopic algae and small that develop as well as small animal organisms (crustaceans, annelids, molluscs etc.) housed in the "grass". But it also happens to attack their large algae that are ascophylles and fucus) 3 they collect pieces and they are likely to cut and remove. Each limpet operates during the immersion period (especially during the day) and emersion (especially at night) 4, an area of a few feet in diameter (but may deviate up to 1.6 m4 and returns before the sea withdrew to its original location. However, on smooth rocks, or when food is scarce, some limpets have a much vagabond behavior and can travel distances of several meters or more without returning decametres their location. The common limpet is a protandrous hermaphrodite animal that is to say, it starts as a male sexual activity and that at least some individuals then becomes female (males are still the majority in the populations). It is not impossible that some females then revert males. The gonads are ripe in late summer and autumn. Spawning occurs in autumn and winter. Gametes (sperm and eggs) are released directly into seawater where fertilization occurs. Larvae, hair, live about two weeks, plankton and metamorphose on the bottom giving juveniles that are only 0.2 mm in length. Juveniles occur mainly in the lower parts of the foreshore where the rocks are still wet and in puddles.

The appreciate Necklace shell the sandy bottoms of the lower infralittoral to more than 125 m deep, in which the animal burrows. The shell is globose twenty mm height in general, however, it may reach 40 to 45 mm. The last of the seven towers occupies 90% of the shell and ends with a large opening semicircular brown. The shell is smooth, thin streaks of growth and cream gray uniform decorated with a spiral row of small oblique grooves or flame, brown to purple, the first spiers.* The umbilicus is open without callus or internal projection. The foot of this mollusc is very expandable and seems too large, when deployed, to go inside the shell, it is light cream color. A cornea plate, the cap, comes exactly fit into the opening. Voracious carnivore, the natice chainbearer attacks bivalves (mainly clams) or gastropods. After pinning its prey with its powerful foot, it pierces the shell combined with the help of its radula * and acid secretion which facilitates drilling (this last observation seems doubted by some scientists as predation occurring exclusively water, a major factor involved dilution). Once the hole (the latter, a diameter of 1 mm, is perfectly round), it introduces its trunk, and digestive enzymes injected then aspirated predigested the soft parts of the animal. Moonsnails are unisexual (dioecious *). The sexes are separate and fertilization is internal. At spawning, eggs are agglomerated with sand through mucus and form a large spiral conical characteristic ribbon (turban-shaped). The larvae are planktonic.



The dog whelk lives in rocky shores, and estuarine conditions. Climatically it lives between the 0°C and 20°C isotherms. Wave action tends to confine the dog whelk to more sheltered shores, however, this can be counteracted, both by adaptations to tolerate it such as the shell and muscular foot, and by the avoidance of direct exposure to wave action afforded by making use of sheltered microhabitats in rocky crevices. The preferred substrate material of the dog whelk is solid rock and not sand, which adds to its problems at lower levels on the shore where weathering is likely to have reduced the stability of these abed. Water loss by evaporation has to be tolerated (by means of the operculum which holds water in and prevents its escape as vapour), or avoided (by moving into water or a shaded area). The peak in dog whelk population density is approximately coincidental with the mid tidal zone. It lives in the middle shore. In general it can be said that at high vertical heights on the shoreline the dog whelk is most threatened by biotic factors such as predation from birds and interspecific competition for food, but abiotic factors are the primary concern, creating a harsh environment in which it is difficult to survive. At low vertical heights it is biotic factors, such as predation from crabs and intraspecific competition, which cause problems. The upper limit of the range in which the dog whelk is generally found is approximately coincidental with the mean high water neap tide line, and the lower limit of the range is approximately coincidental with the mean low water neap tide line, so that the vast majority of dog whelks are found on the mid tidal zone. Tidal pools and comparable microhabitats extend the vertical range of organisms such as the dog whelk as they provide a more constant environment, but they are prone to increased salinity because evaporation concentrates dissolved substances. This can create toxic conditions for many species. The dog whelk can only survive out of water for a limited period, as it will gradually become desiccated and die if emerged for too long. Metabolic processes within cells take place in solution, and a decrease in water content makes it impossible for the organism to function properly. In experiments it has been shown that 50% of dog whelks die at 40°C, and it can be assumed that at temperatures lower than this a smaller proportion will be killed off. Furthermore, the dog whelk has to excreteammonia directly into water, as it does not have the adaptation possessed by many upper shore species which would allow it to produce uric acid for excretion without loss of water. When kept immersed for seven days at a temperature of 18°C, 100% of dog whelks die, in contrast to many periwinkle species which can lose even more water than the dog whelk (i.e. more than 37% of their total body mass) but survive as a result of their ability to excrete toxic waste products more efficiently. The sexes are separate (gonochoric species *). Mating takes place in spring and fertilization is internal. Follows a clutch of small round encapsulated in bottles of about 7-8 mm in height eggs. Each female lays a dozen different clutches and females are combined. These bottles are cylindrical, yellow or pink, and fixed packet in crevices or under rocks. Each contains hundreds of eggs but only a small number matures.
The young purple born perfectly formed and led a benthic life * immediately. Sexual maturity is reached during the third year. Longevity is purple in the order of 5 to 6 years.

Common whelk, This species prefers cold waters. Whelk likes sandy bottoms, rocky or muddy. Youth attending bowls shallow tides (intertidal *), adults can meet up to 200 meters deep. Individuals attending the St. Lawrence maritime are less than 20 meters deep. In France, this species is observed and harvested between low tide and a hundred meters deep. This gastropod is usually gray or white color. Its shell is sturdy and can reach 15 cm high. It is covered with a thin layer of yellow color cornea called Periostracum *.The shell has an average of 6 rounds convex, a prominent spire and apex * sharp. Its surface is made from May to August in the form of separate strands and a dozen spirals axial ribs per turn (9 to 18). The opening is oval and yellowish-white on the inner face. It is provided with an outer lip, thin, smooth and sharp. The opening ends with a short siphonal canal * and sculpted. There are no teeth on the outer lip. The shape, color, ornamentation of the shell are highly variable which is at the origin of many synonyms. The body of the whelk is white with black spots. The opening of the shell is closed by a cap * horny at the rear of the foot. Disappearing or diminishing populations of whelks have been observed since the early 1970s, especially in the North Sea and the Wadden

Sea. Additionally, vast beds of empty shells have been discovered where no living whelks are present. Imposex, the occurrence of male gonads on female whelks, has been detected since the early 1990s, and is thought to be a product of the shipping industry.[1] Specifically, TBT has been shown to reduce viability of whelk populations. It is primarily a predator of molluscs. He particularly bivalves such as cockles or soft-shell. With a highly developed sense of smell detects the decaying body. He sometimes feed on the corpses of other animals. Its presence in the fishing traps is shown proof. His diet is seasonally variable, with falls during the breeding season and during the warming water. It does not pierce the shells for food, it surrounds its prey with his foot, and then he inserts his outer lip between the valves to force them to open. This enables to introduce the front part of the digestive tract in an organized protrusible proboscis * called proboscis * inside the bivalve. This tube is as long as the shell. is a gonochoric species *, morphological differences between the sexes are well marked. The male has a penis of a few cm located in the mantle cavity *, the first size of sexual maturity in females is situated around a shell size of 5 cm or about 4 to 5 years. The breeding season gives rise to genuine gatherings. Fertilization is internal. A few weeks after the fertilized female lays her eggs, which are enclosed in yellowish-white chitinous capsules.

The female produces an average of 140 capsules. Each of the capsules one by one be replied contains thousands of eggs. They are found attached to rocks or foot algae. Capsules often form clumps. These clusters can come from several spawning females. Egg masses are particularly vulnerable to predators such as sea urchins Strongyiocentrotus droebachjensis (OF Müller 1776).Aborted embryos are food for surviving embryos (adelphophagie *). After 5 to 8 months of development, each capsule will give birth to a dozen juveniles with adult characters: no * planktonic larval phase *. The hatching period is set to fall to late winter.

In the northern Gulf of St Lawrence the mating period of whelk begins in spring. It continues until July.

In the Channel mating takes place in the month of November. Females can gather to shore.