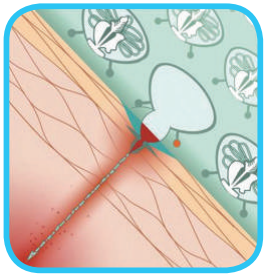
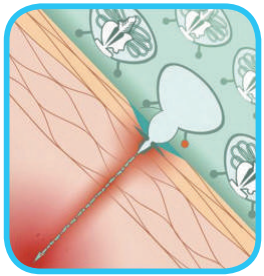
Guidelines for the identification of Mediterranean jellyfish and other gelatinous organisms, with a first aid protocol for possible sting treatment

MEDJELLYRISK

Why do jellyfish sting ?

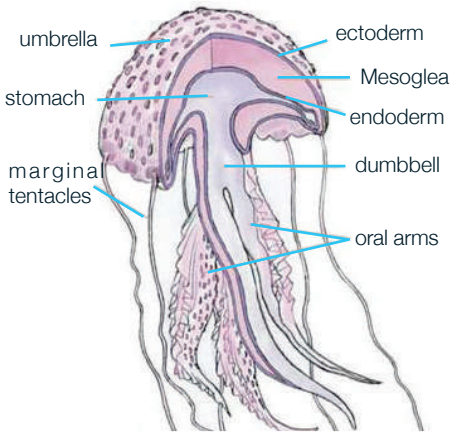
Cnidarians are marine animals which include jellyfish and other stinging organisms. They are equipped with very specialized cells called cnidocytes, mainly concentrated along their tentacles, which are able to inject a protein-based mixture containing venom through a barbed filament for defense purposes and for capturing prey. The mechanism regulating filament eversion is among the quickest and most effective biological processes in nature: it takes less than a millionth of second and inflicts a force of 70 tons per square centimetre at the point of impact.





The degree of toxicity of this venom, for human beings, varies between different jellyfish species. Most of accidental human contacts with jellyfish occur during swimming or when jellyfish individuals (or parts of individuals, such as broken-off tentacles) are beached.

General anatomy of jellyfish



- Highly irritating
- Irritating
- Low irritation
- Not irritating

Jellyfish life cycle

1) Adults perform sexual reproduction through external fertilisation (eggs and sperm cells are released in the water column).

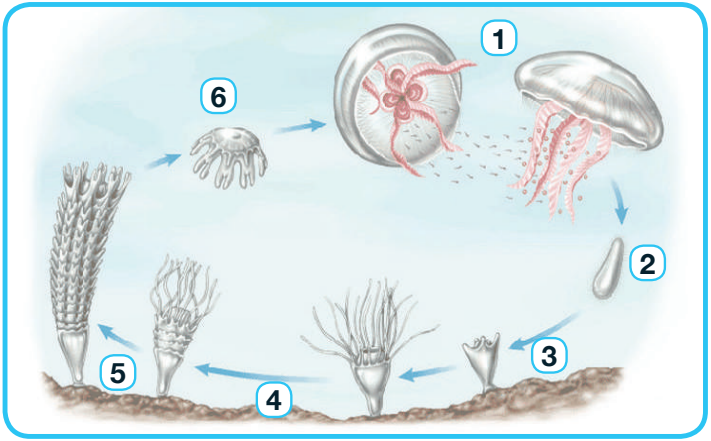
2) The young larval stage of the inseminated egg is called the planula (larva with cilia), which can only survive in an unattached form in the water column for short periods of time.

3) The planulae metamorphose into a polyp on the sea bed.

4) Once established on a substratum, the polyp performs asexual reproduction to produce new polyps, i.e. by producing one or more medusae through a process known as strobilation.

5) This process initially produces ephyrae, i.e. immature medusae.

6) Each ephyra or juvenile medusa disperses to metamorphose eventually into a jellyfish having all the characteristics of an adult individual, able to initiate once again the reproductive cycle.



The life cycle may be shorter when the larvae metamorphose directly into juvenile medusae, as happens for *Pelagia noctiluca* (see below), the most common jellyfish in the Mediterranean.

Jellyfish species have different lifecycles. This image illustrates a generalised jellyfish lifecycle, including the polyp phase, which is typical for a number of Mediterranean jellyfish species.

SCYPHOZOA

Pelagia noctiluca (SCYPHOZOA)

Common Name: Mauve stinger

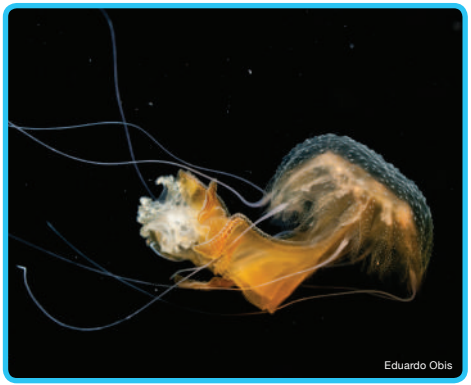
Umbrella diameter: usually 6-12 cm, exceptionally up to 15-20 cm.

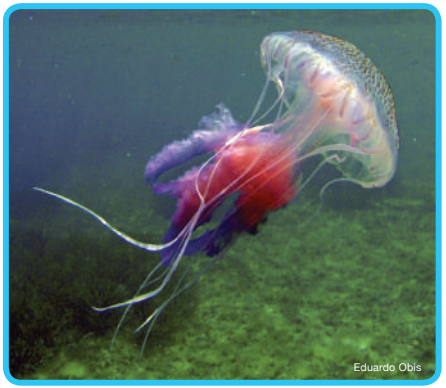
Highly irritating

Very frequent

all year round)

Pink-violet colour. Hemispheric umbrella with 8 thick marginal tentacles (up to 2 m long) and 4 thick oral tentacles in the middle. The upper surface of the umbrella is covered with warts.


Eduardo Obis


Eduardo Obis


Giacomo Millisenda

Considered as one of the most frequent and important species in the western Mediterranean Sea. It is an oceanic/open-water species with a fully pelagic lifecycle (in the water column, without the benthic/polyp phase). Spring represents the main reproductive season, along with summer, although the species can be present throughout the year. A second reproductive period starts at the end of summer. They can survive up to two years, even in deep waters (more than 500 m). The species undertakes daily vertical migrations, and prefers to swim towards the surface at night, to feed on smaller planktonic species.

Pelagia benovici *(SCYPHOZOA)*

Common name: golden jellyfish

Umbrella diameter: 5-6 cm

Highly irritating

locally abundant

Autumn-Winter

SCYPHOZOA


Fabrizio Marcuzzo


Fabrizio Marcuzzo

This is a new species for science, described for the first time in 2014 in North Adriatic when numerous individuals of the species were recorded in the Gulf of Venice, undoubtedly introduced through the ballast water of ships hailing from other seas. It is a sort of sister species to *P. noctiluca* (see picture), although its lifecycle is largely unknown. Recorded so far only during winter months, it has been spotted northwards of the Po Delta, up to Trieste, along the Italian Adriatic coastline. The long tentacles of the species and its affiliation to other venomous members of the Pelagiidae family (e.g. *P. noctiluca* and *C.hysoscella*), suggest that it can inflict painful stings to human beings.

SCYPHOZOA

Chrysaora hysoscella *(SCYPHOZOA)*

Common name: compass jellyfish

Umbrella diameter: up to 30 cm

Highly irritating

Not very frequent

Spring

White-yellowish umbrella, with 16 brown bands on the surface. 24 long, thin marginal tentacles. 4 long oral tentacles. Common during spring time, but rarely present in large, bloom-scale densities.

Rhizostoma pulmo *(SCYPHOZOA)*

Common name: Barrel jellyfish

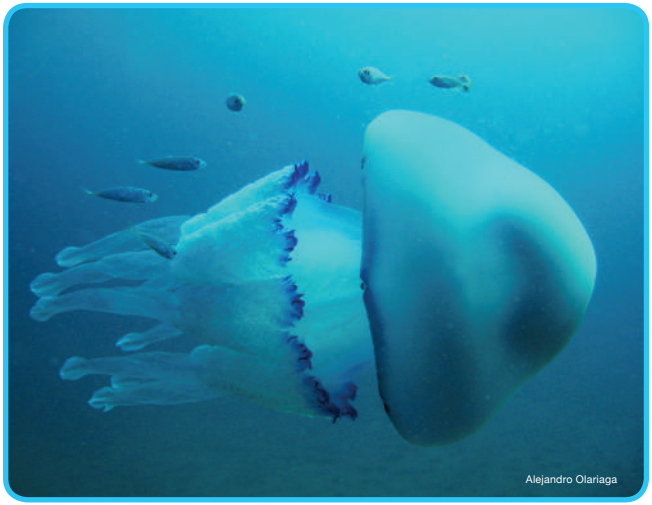
Umbrella diameter: up to 40 cm

Irritating

Very frequent

Autumn-Winter

Eduardo Obis



Alejandro Olariaga

Among the largest jellyfish species in the Mediterranean Sea. The juveniles are produced in spring, while the largest adults can be seen towards the end of summer and early autumn. It is considered a coastal species, living on the sea surface. It is usually accompanied by small symbiotic crabs and fish juveniles from the Carangidae family (e.g. Atlantic and Mediterranean horse mackerel) who swim between the jellyfish tentacles as a refuge from predators. According to recent scientific evidence, the small fish also feed on the jellyfish while traveling along with the jellies.

SCYPHOZOA

SCYPHOZOA

Rhizostoma luteum *(SCYPHOZOA)*

Common name: none

Umbrella diameter: up to 70 cm

Irritating

Very Rare

Spring-Summer-Autumn

David Ballesteros Gonzalez

Hemispheric umbrella without the characteristic violet border present in the species *R. pulmo*. It does not have marginal tentacles. The oral arms (partially retractable) have a dark grey colouring in the parts furthest away from the umbrella. It may occur as single individuals or in aggregations of variable dimensions. Common along in the Atlantic coasts of Spain, penultimate sighting in the Mediterranean Sea dates back to 1827, but it was spotted again since 2012 on a number of occasions along the Southern Mediterranean Spanish coast.

Cotylorhiza tuberculata *(SCYPHOZOA)*

Common name: “fried egg” jellyfish

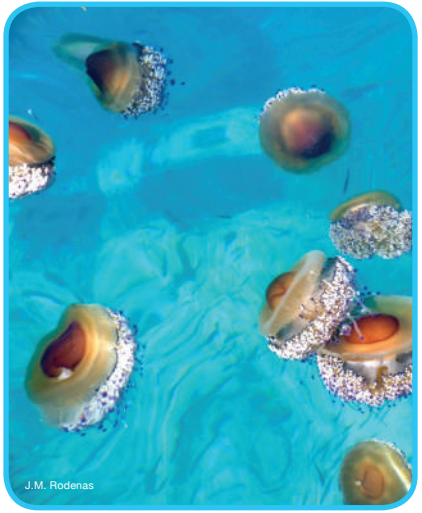
Umbrella diameter: up to 35 cm

Low irritation

Very frequent

Very common from July to late October.

SCYPHOZOA



Brown-yellowish, flattened umbrella with a large central dark orange coloured protuberance. 8 oral tentacles equipped with appendages at their end, button-shaped and white or blue in colour. Common throughout the western and central Mediterranean; lives at the sea surface and it is often accompanied by juvenile fish (horse mackerel fish species). Microscopic single-cell algae live in symbiosis with its tissue, and this is the reason for it preferring warm and moderate waters and for being restricted to surface waters.

SCYPHOZOA

Phyllorhiza punctata (SCYPHOZOA)

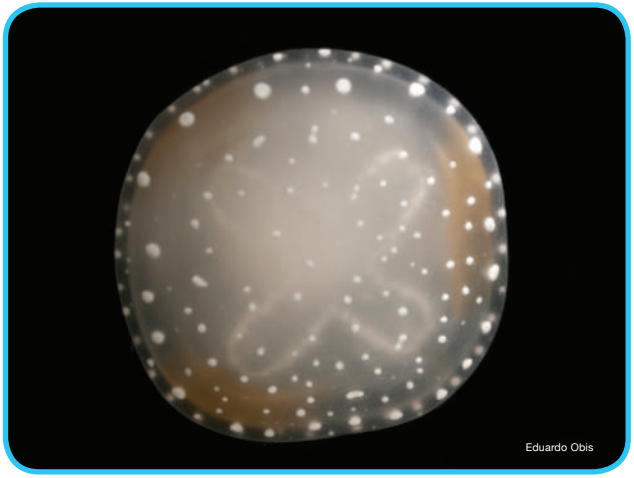
Common name: Australian spotted jelly

Umbrella diameter up to 70 cm

Low irritation

Not very frequent

Spring – Summer - Autumn



Invasive exotic jellyfish species, native of the Indo-Pacific region. Hemispheric umbrella with white crystalline evenly-distributed spots. Does not have marginal tentacles. 8 thick oral arms with 14 transparent appendages at its extremities. It reached the Mediterranean through the Suez Canal (Lessepsian migrant) and expanded rapidly in the entire basin. It was spotted for the first time in Italy in 2009. It has a low stinging potential and is a popular aquarium species.

Drymonema dalmatinum *(SCYPHOZOA)*

Common name: none

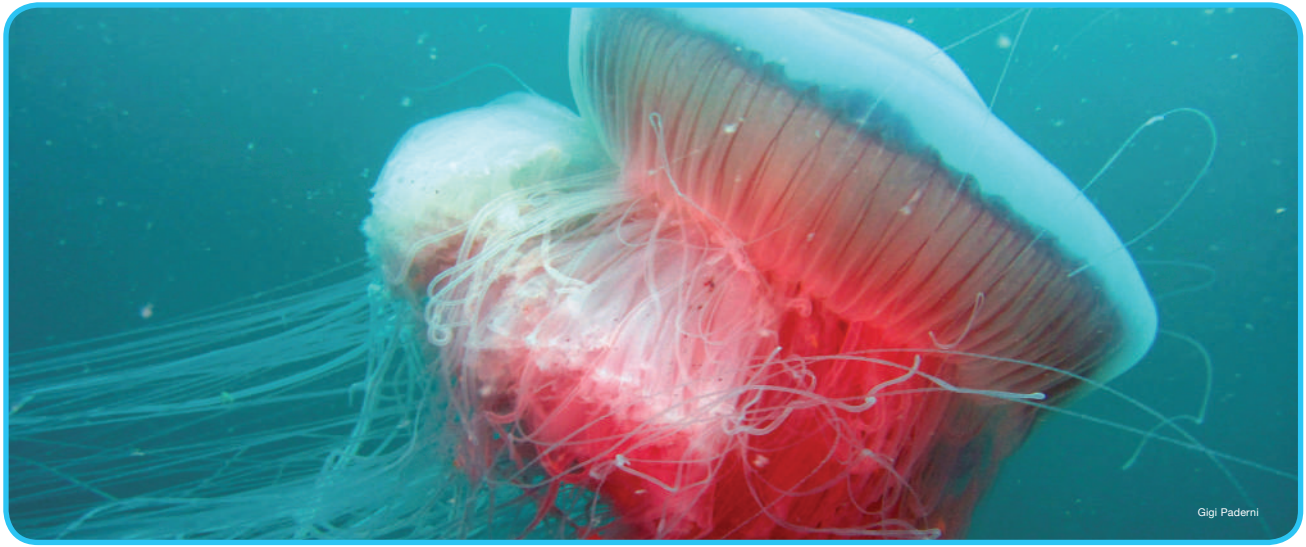
Umbrella diameter up to 1m

Highly irritating

Rare

Spring – Summer - Autumn

SCYPHOZOA



It is the largest jellyfish species in the Mediterranean and the least known due to its rare sightings.
It has recently been spotted in the Adriatic Sea (where it was sighted for the first time in 1880, along the Dalmatian coast – hence, its specific name); however, records of the species within the Mediterranean are very sporadic, with intervals exceeding even 30 years between successive records.

SCYPHOZOA

Aurelia *(SCYPHOZOA)*

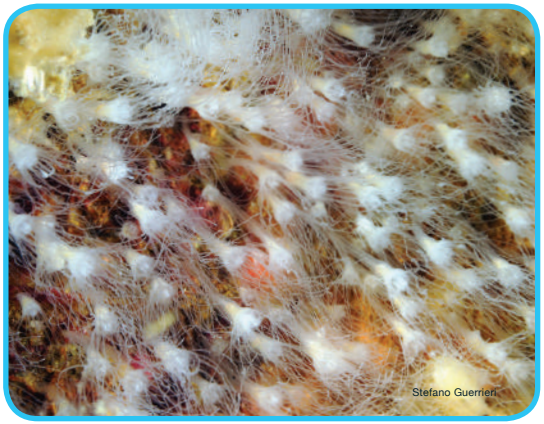
Common name: Moon jellyfish

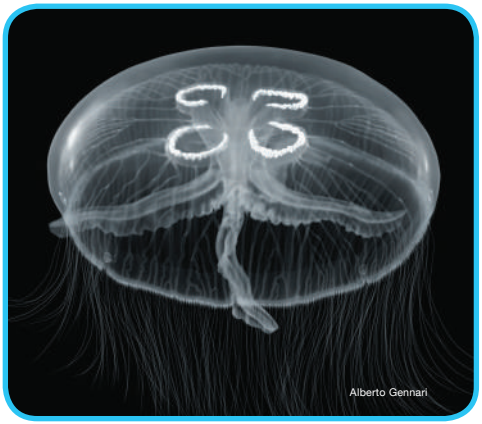
Umbrella diameter up to 25 cm

Low irritation

Frequent

Spring - Summer





Flattened, transparent umbrella. 4 large oral tentacles and many short marginal tentacles. It typically has 4 horseshoe-shaped reproductive organs, which are white or white, with violet glares.

The name *Aurelia* is used globally to identify a group of 13-15 species sharing very similar morphological features, although they are genetically distinct. To date, many of these species are labelled only through numbers. The Mediterranean Sea hosts three of these species (Aurelia sp.1, Aurelia sp.5, Aurelia sp.8), with only one (species 8) commonly living in the open sea. It is more frequently spotted in spring, when it might be found in large numbers. Species 1, which is very similar to species 8, can be spotted in estuaries, harbours and coastal lagoons in the Mediterranean. It was inadvertently introduced in the Mediterranean Sea through mollusc mariculture, since the polyp phase (which gives rise to the medusae) colonised the shells of oysters and mussels.

Discomedusa lobata *(SCYPHOZOA)*

Common name: Disc jellyfish

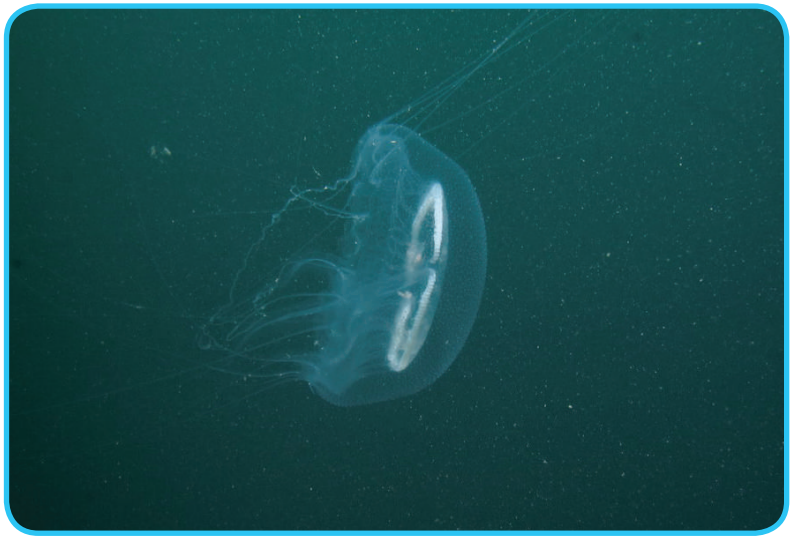
Umbrella diameter up to 15 cm

Low irritation

Occasional

Spring - Summer

SCYPHOZOA



Flattened, transparent umbrella with whitish gonads situated in the peripheral area. 4 oral arms and 24 thin marginal tentacles. Not a very common species in the Mediterranean, although it has been frequently spotted since 2013 (along Spanish, Maltese and eastern Adriatic coasts).

SCYPHOZOA

Cassiopea andromeda *(SCYPHOZOA)*

Common name: upside-down jellyfish

Umbrella diameter up to 15 cm

Low irritation

locally abundant

Spring - Summer

This species is native of the Indo-Pacific region and reached the Mediterranean a few years ago, probably through the Suez Canal. It is currently present in some areas of the eastern Mediterranean, but it has been occasionally also spotted in the Gulf of Palermo in Sicily and within Maltese harbours.

Catostylus tagi *(SCYPHOZOA)*

Common name: none

Umbrella diameter up to 65 cm

Low irritation

Rare

Spring - Summer

SCYPHOZOA

Alexandre Ribeiro Dos Santos

An Atlantic species which has recently reached the Mediterranean through the Strait of Gibraltar after expanding its range. It is not found in large numbers and is usually spotted as single individuals. It was first spotted in the Mediterranean in 2010 in coastal waters off Pantelleria in the Sicily Channel, by a SCUBA diving club.

SCYPHOZOA

Marivagia stellata (SCYPHOZOA)

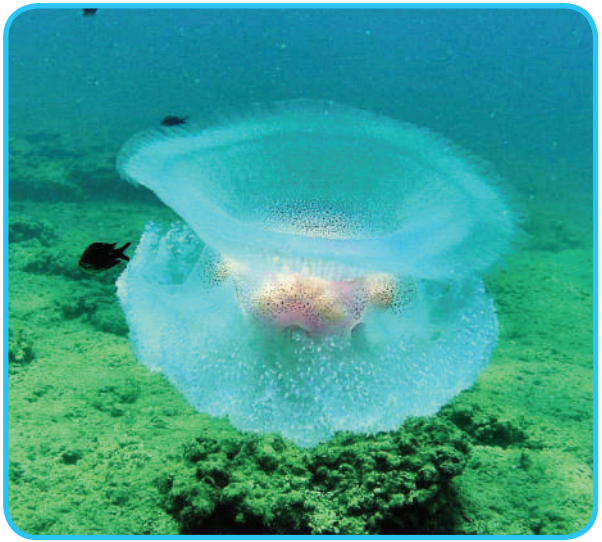
Common name: none

Umbrella diameter up to 15 cm

Low irritation

Rare

Winter – Spring - Summer



Species discovered for the first time along the Israeli coasts of Haifa, in 2006. This jellyfish has reached the Mediterranean either through the Suez Canal or it hitched a hike within the ballast water of ships. Supporting the Indo-Pacific origin of the species is the fact that it was recorded along the south-western coasts of India in 2013. It does not tend to occur in large numbers and is usually spotted as individuals.

Carybdea marsupialis *(CUBOZOA)*

Common name: Mediterranean box jellyfish

Umbrella diameter up to 5 cm

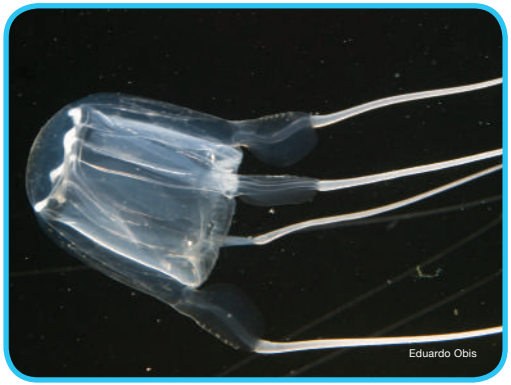
Highly irritating

Frequent

Summer - Autumn

CUBOZOA

Mediterranean box jellyfish are represented by one single species, much less dangerous than its Australian counterpart whose sting can be lethal to humans. However, the Mediterranean box jellyfish is still a stinging jellyfish which can inflict a painful, albeit non-lethal, sting.



Cube-shaped umbrella with 4 wide tentacles. Transparent bluish or whitish colour. It is encountered in shallow waters. Even though *Carybdea marsupialis* is a box jellyfish, its venom is not lethal. It seems to prefer harbour and yacht marina environments, and sandy seabeds, over which the jellyfish swims during the day, rising to the sea surface during the night to feed on other zooplankton. The species is attracted to artificial light.

HYDROZOA

Physalia physalis *(HYDROZOA)*

Common name: Portuguese man-o-war

Floating part: 30 cm long – 10 cm wide

Highly irritating

Not very frequent

Spring


Smschelb


Master george


Eduardo Obis

It is a floating colony of polyps, equipped with an air-filled floating chamber, having a transparent purple colour, which is used to form a sail at the top. The submerged part is composed of thin blue tentacles up to 20m long. The jellyfish phase is completely absent in this species. Native of the Atlantic Ocean, it is potentially the most dangerous species in the Mediterranean. Bathers should get out of the water immediately once it is spotted. Its venom is thermo-labile and its stings should be treated locally with hot packs (see successive manual sections).

Aequorea forskalea *(HYDROZOA)*

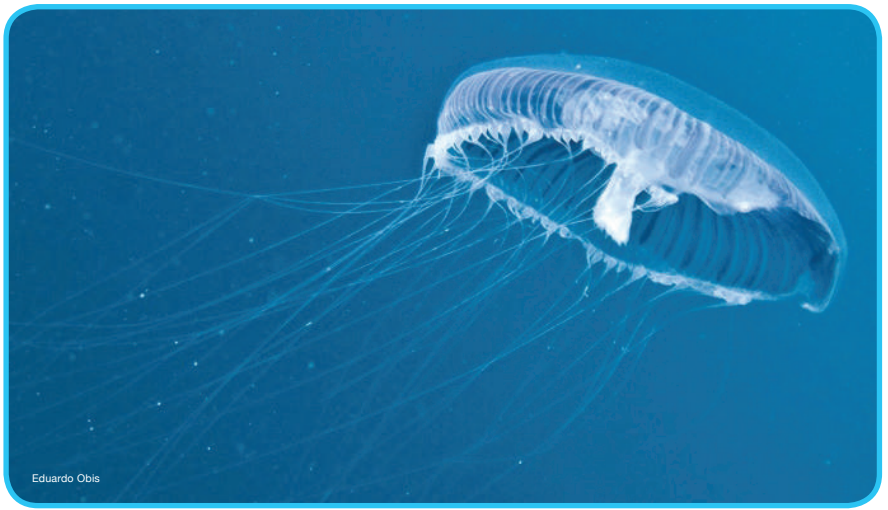
Common name: Crystal jellyfish

Umbrella diameter up to 17 cm

Low irritation

Frequent

Spring



Flattened umbrella with a thicker central part. The umbrella is transparent with blue radial canals running towards the umbrella rim. Numerous thin marginal tentacles, no oral tentacles. This species inhabits temperate to tropical waters and coastal areas, although it may be spotted in the open sea. Common in spring, when it can be found in large numbers. It is capable of generating bioluminescence.

HYDROZOA

Velella velella *(HYDROZOA)*

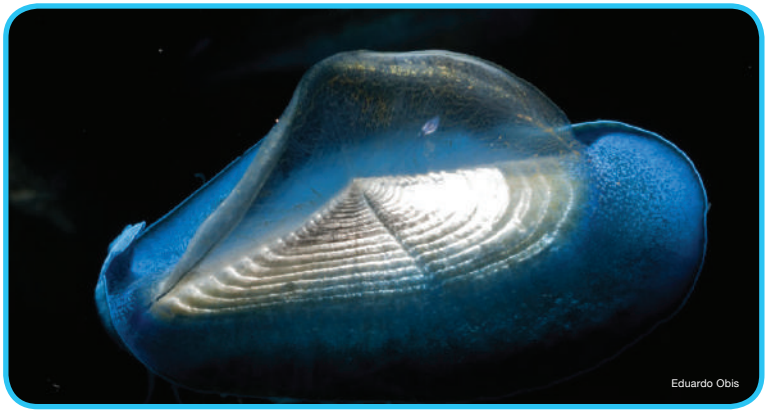
Common name: By-the-wind sailor

Disc diameter up to 8 cm

Low irritation

Very frequent

Late winter - Spring



Blue, oval disc with a small sail. It consists of a floating polyp colony living on the sea surface instead of the seabed. The sexually-reproducing adult phase of this species is actually microscopic. Each polyp colony can produce thousands of small medusae. The larvae originating from spawned eggs metamorphose directly into polyps. The polyps reproduce by an asexual process during which they are gathered into one group and create new floating colonies attached to a chitinous disc produced by the same polyps. The small tentacular polyps extend downwards to capture prey (including fish eggs and larvae) living close to the sea surface. This species is frequently found in the Mediterranean, especially during spring. It can form dense aggregations extending for kilometres on the sea surface. It is also known from other sub-tropical and tropical seas around the world and specialised floating sea slugs (e.g. *Glaucus*) and sea snails (e.g. *Janthina*) feed upon it.

Porpita porpita *(HYDROZOA)*

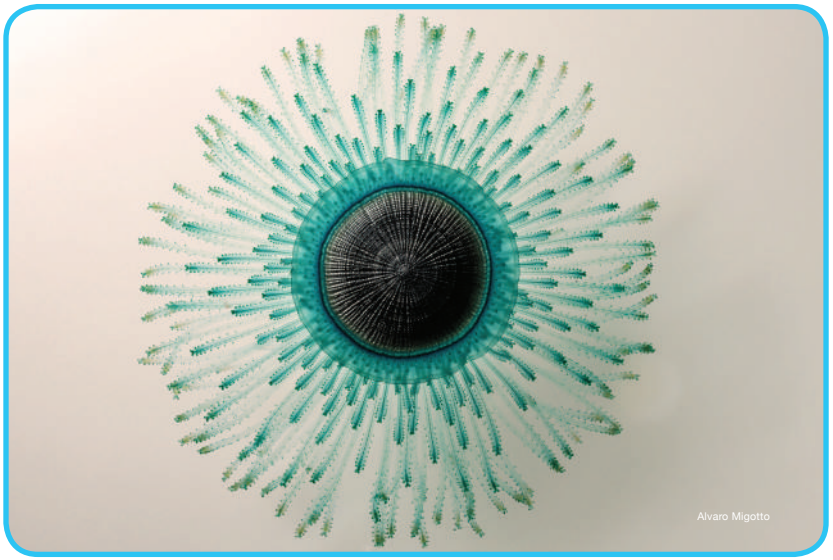
Common name: blue button jellyfish

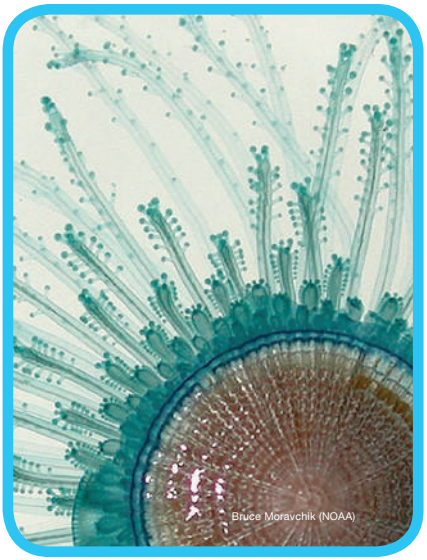
Disc diameter up to 5 cm

Low irritation

Not very frequent

Spring





Small hydromedusa species having an intense blue colour. It is similar to *V. velella*, and it is composed of a polyp colony living at the open sea surface. However, it can be spotted in large numbers even in coastal areas. It is not as common as *Velella*, but it is spotted in many parts of the Western Mediterranean.

HYDROZOA

HYDROZOA

Olindias phosphorica *(HYDROZOA)*

Common name: Cigar jellyfish

Umbrella diameter up to 8 cm

Highly irritating

Not very frequent

Summer - Autumn

Transparent hydromedusa species with 4 radial opaque white stripes. The umbrella is surrounded by blue or dark red small tentacles. It can form large colonies.

Geryonia proboscidalis *(HYDROZOA)*

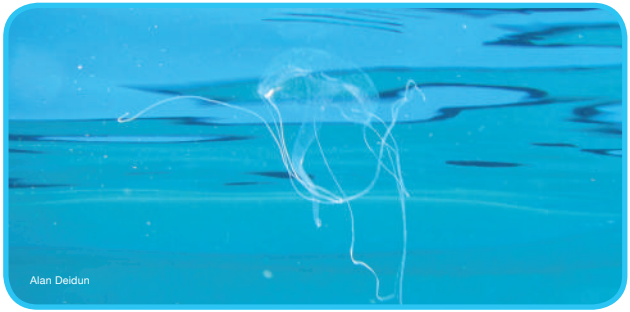
Common name: None

Size: up to 150cm (length)

Highly irritating

Rare

Late spring-summer



The umbrella may reach a maximum diameter of 8cm, although it is generally smaller. Among the more notable features is the very long conical peduncle, to which is attached the small stomach. The 6 radial canals continue all the way down the peduncle to the stomach. Six flat gonads, seen in the photo as the translucent white areas, lie on the radial canals. There are a total of 12 tentacles, with 6 long alternating with 6 shorter ones. The peduncle is quite active and swings around to bring the mouth in contact with the bell margin when prey has been captured. It prefers warmer seas, being well known from the Pacific Ocean, with most Mediterranean records of the species being made in recent years, from the southern Adriatic and the central Mediterranean (e.g. Malta). The species has been rarely spotted within the Mediterranean and almost always as single individuals. A similar but smaller (1-3 cm) jellyfish with long peduncle is *Liriope tetraphylla*, which can be much more abundant especially in the Eastern Mediterranean (recognized through a total of 8 tentacles instead of 12).

HYDROZOA

Gonionemus vertens *(HYDROZOA)*

Common name: Orange-striped jellyfish

Umbrella diameter up to 2-4 cm

Highly irritating

Frequent

Spring - Summer

Transparent umbrella with orange gonads. It has numerous tentacles (up to 90) with suckers at their extremities, commonly found attached to algae or seagrass species.

Forskalia *(HYDROZOA)*

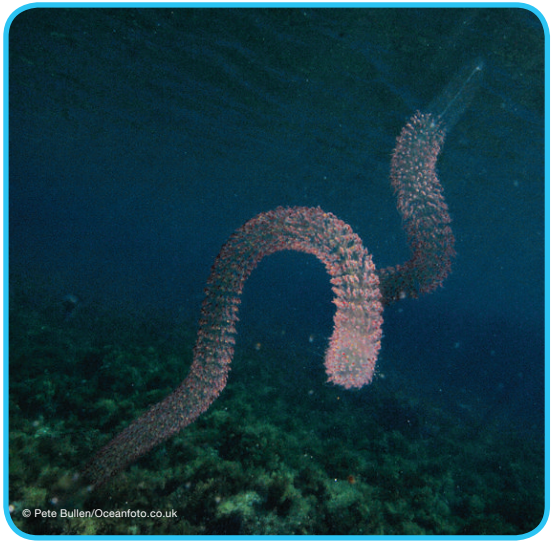
Common name: none

Size: longer than 1 m (colony)

Highly irritating

Frequent

Spring



The genus *Forskalia* refers to different species of siphonophore hydrozoans, forming large colonies, generally during spring. Each colony include individuals which are responsible to keep the colony afloat and for its respective movement, whilst others are responsible for the nutrition of the entire colony or for reproduction. As the vast majority of cnidarian species, *Forskalia* colonies are equipped with whole batteries of stinging cells.

Physophora hydrostatica *(HYDROZOA)*

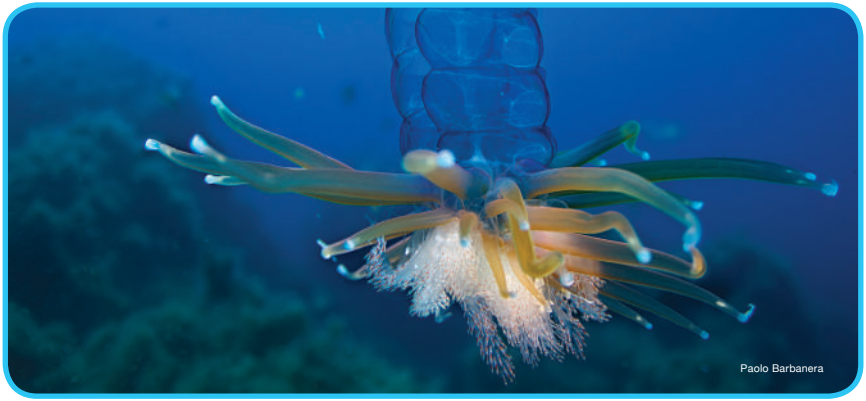
Common name: Hula skirt siphonophore

Size (excluding the tentacles): 8-12cm (length)

Highly irritating

Rare

Summer



This is a stunning species which is in fact a colony of polyps, rather than a single individual and which owes its esoteric name to its uncanny resemblance to the Hawaiian hula skirt. A conspicuous silvery apical gas-filled float is followed by a set of swimming bells that occupy about half the length. Finger-like orange and violet polyps attach at the base of the swimming bells and can house relatively potent nematocysts that can impart a strong sting. In turn, a mass of feeding polyps and reproductive polyps lie inside the ring of these stinging polyps in a perfect example of division of lavour and specialisation. Trailing behind the swimming bell are the highly extensible tentacles that usually exceed the length of the rest of the siphonophore. The species has been rarely spotted within the Mediterranean and always as single colonies.

Salpa maxima *(THALIACEA)*

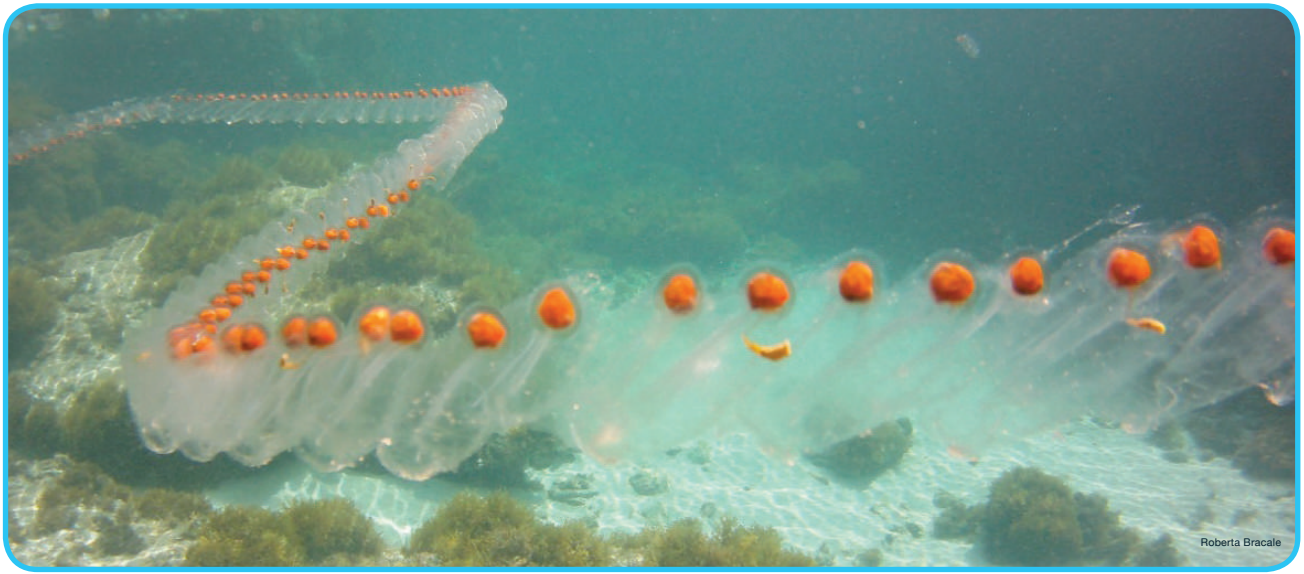
Common name: Salps

Size: up to 60cm (length)

Not irritating

Frequent

Spring



Gelatinous planktonic tunicates. Being filter-feeders, they lack stinging cells and generally feed on phytoplankton which they manage to strain from the surrounding water as it flows through their bodies. Their complex lifecycle includes solitary phases alternating with colonial phases. They form chains that may reach lengths exceeding 7 m.

THALIACEA

Pyrosoma atlanticum *(THALIACEA)*

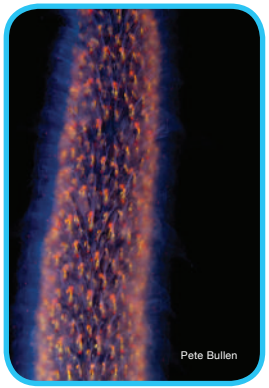
Common name: pyrosomes

Size: up to 60cm (length)

Not irritating

Frequent

Spring-summer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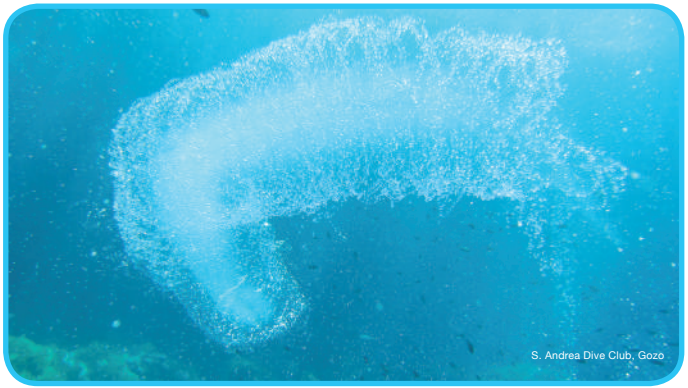
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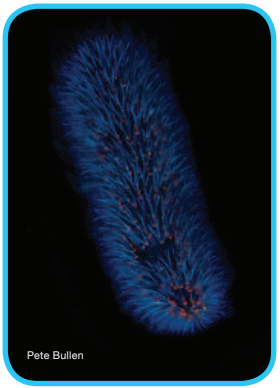

Pete Bullen

Pyrosoma atlanticum is one of the few temperate species of pyrosomes, which are normally encountered within tropical waters, where they can reach lengths of up to 4m. It forms a distinctive rigid tube that may be colorless, pink, grayish or blue-green. One end is closed and tapered, with the opposing open end having a diaphragm. The tube has a rough texture due to papillae on the individuals making up the colony. Each individual has a large branchial sac with many gill slits, along which runs the mucus secreting endostyle. Unlike salps that use pulsing of the body wall to pump water, pyrosomes depend on cilia to move water through the body. This enables planktonic food to be collected by mucus filters within each individual, and also provides the propulsive force for locomotion of the colony.

Leucothea multicornis *(CTENOPHORA)*

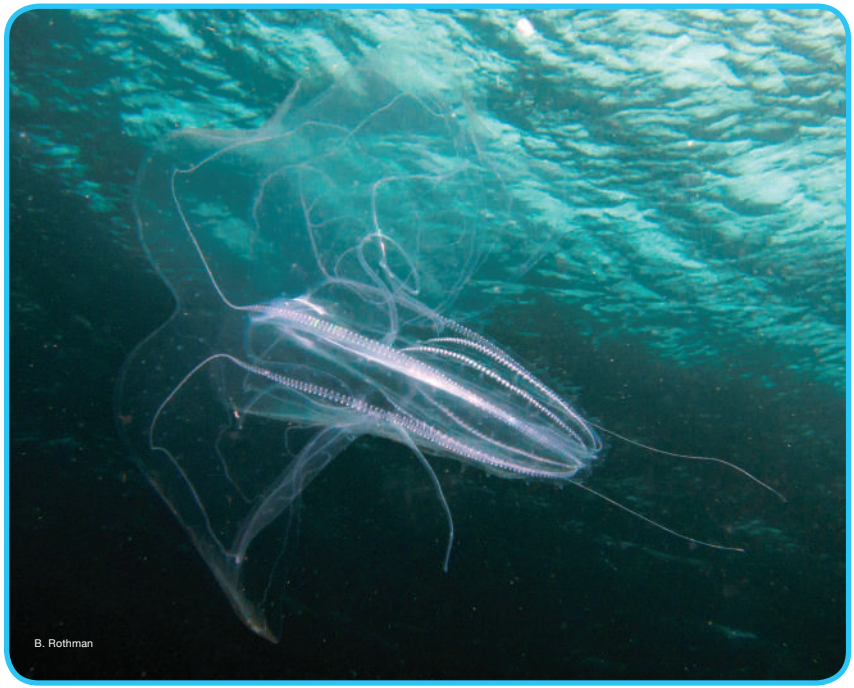
Common name: winged comb jellyfish

Size 20-30cm (length)

Not irritating

Frequent

From December to April



B. Rothman

It is a ctenophore, i.e. a gelatinous organism with no stinging cells which catches prey by sticking to it through sticky microscopic filaments known as colloblasts. They are the largest animals to swim exclusively through the beating of rows of short, filamentous hairs called cilia, known as ‘combs’.

This species is commonly found in many areas of the western and central Mediterranean, including the northern Adriatic. It has been recently also sighted along the Mediterranean coasts of Israel. It generally forms small blooms which however contain high densities of individuals, usually over the December-April period.

CTENOPHORA

CTENOPHORA

Mnemiopsis leidyi *(CTENOPHORA)*

Common name: Sea walnut.

Size: up to 12 cm (length)

Not irritating

Frequent

All year round

Invasive, non-indigenous ctenophore species, capable of blooming on a massive scale. Native of the western Atlantic Ocean, it has a bulb-shaped, transparent body. It reached the Mediterranean after having invaded the Black Sea as a result of shipping transiting through Russian rivers originating in the Baltic Sea. The adult specimens have 8 ciliated lines without tentacles. Organisms capable of bioluminescence.

Beroe ovata *(CTENOPHORA)*

Common name: comb jellyfish.

Size 60-115 cm

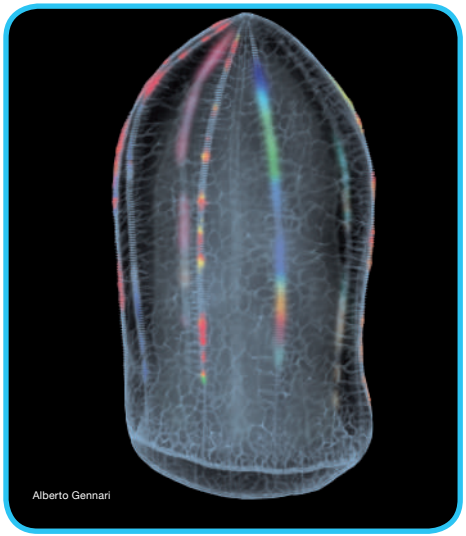
Not irritating

Rare

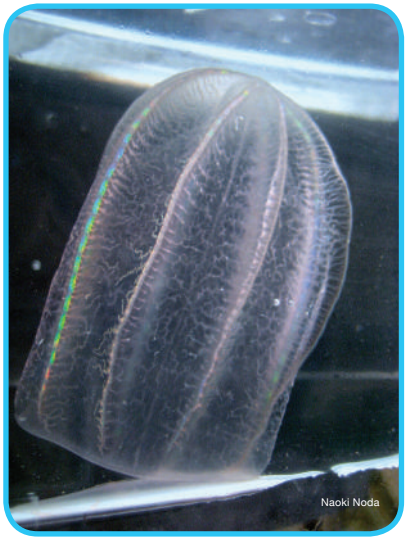
Spring – Summer

CTENOPHORA

This ctenophore species is native of the western Atlantic. It is a natural predator of *M. leidyi*. It has been recorded in different areas of the Mediterranean.


Alberto Gennari


Lyubomir Klissurov


Naoki Noda

Since ctenophores do not have any stinging cells, they are harmless for human beings. However, they are such voracious predators that they can disrupt feeding relationships within invaded marine ecosystems.

Cestum veneris *(CTENOPHORA)*

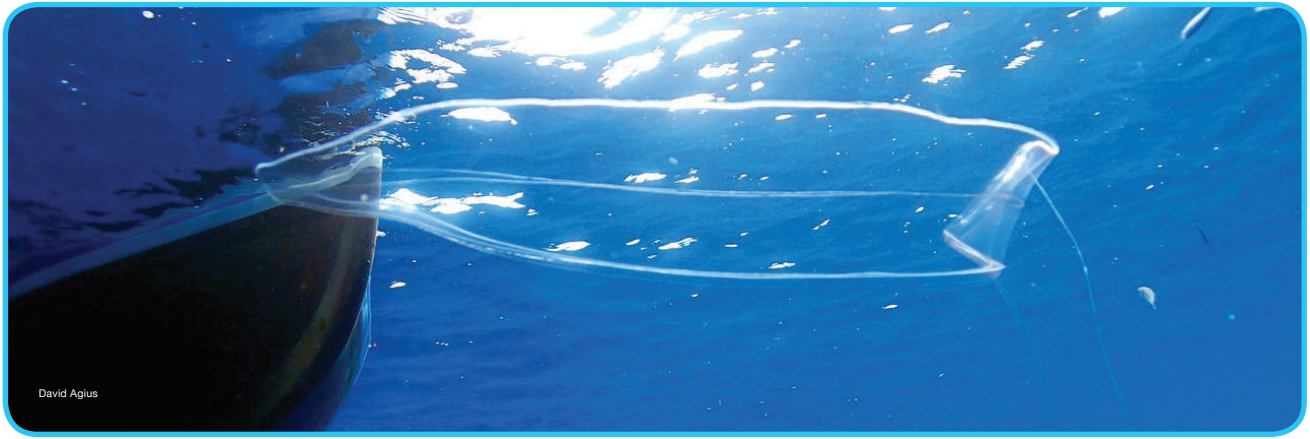
Common name: Venus girdle

Size: up to 150cm (length)

Not irritating

Frequent

All year round



Ribbon-like ctenophore which has a cosmopolitan distribution and is in fact known from most sub-tropical and tropical oceans around the world. Copepods and other small zooplankton prey are captured by the tentacles and transported to the mouth which lies at the center of the leading edge. The comb rows are on the aboral edge of the body, opposite the tentacles and mouth. When disturbed, *Cestum* has an escape response that consists of rapid undulation in a direction perpendicular to the direction of normal swimming. It can appear worm-like when using this response. Generally transparent but may have a yellowish or violet pigment on its tentacles. Capable of bioluminescence.

Jellyfish sting treatment recommendations

Some jellyfish species may be harmful to humans, thereby causing local epidermic reactions and occasional physiological disturbances. Treatment of jellyfish envenomination aims at mitigating the effects of the venom in order to prevent more acute consequences of the poisoning, preventing poisoning to become worse, and monitoring for the onset of further physiological disturbances, including aseptic shock.

Different methods can be used to reduce pain intensity and duration, depending on the jellyfish species involved. These include oral/local painkillers, hot water and ice packs (see below). For a few species only (*Carybdea marsupialis, Olindias phosphorica, and Physalia physalis*) vinegar applied for a short period of time can prevent any remaining stinging cells to release further venom under the skin from the remaining tentacle fragments.

Most of the proposed treatments are based on limited trial evidence; thus further research on such aspects and caution are vital. Disseminating knowledge on the most suitable jellyfish sting treatments is one of the MED-JELLYRISK project goals, which is designed to inform and train all beach users and stakeholders.

In accordance with the current scientific literature on jellyfish sting treatments, these guidelines provide a summary of the first-aid manual to treat stings inflicted by the most common jellyfish in the Mediterranean, while excluding any actions which are not backed by scientific evidence.

FIRST-AID PROTOCOL IN CASE OF JELLYFISH STINGS

Is the jellyfish species responsible for the sting known ??

NO

follow general treatment protocol

YES
identify the species and follow respective treatment protocol

- **general treatment protocol** — *Pelagia*, *Chrysaora*, *Rhizostoma* and other speies
- **protocol case 1** (*Olindias*)
- **protocol case 2** (*Carybdea*)
- **protocol case 3** (*Physalia*)

In case of breathing/circulatory disorders, hypothermia, shocks or allergy-related symptoms, seek immediate medical attention – Call any of the following numbers

Ambulance – 112

Mater Dei Hospital – 25452000

Public Health Department - 21224071

GENERAL PROTOCOL

FIRST-AID GENERAL TREATMENT PROTOCOL FOR JELLYFISH STINGS

(to apply if the jellyfish species is unknown)

NO USE VINEGAR, FRESH WATER, ALCOHOL, AMMONIA

NO USE TIGHT BANDAGES

YES APPLY COLD PACKS

1

Carefully rinse with sea water, no rubbing

2

When available, apply a mixture of **SEA WATER** and **BAKING SODA (1:1 ratio)** for **2 minutes** to stop any further release of venom from any stinging cells left on the skin

3

Remove any residual tentacles and excess baking soda mixture with a plastic card **(e.g. driving license, credit card)**

4

Apply **COLD** packs (plastic ice bag, or even a cold drink wrapped in a cloth or t-shirt) for 5-15 minutes

5

Assess the degree of pain, re-apply the **COLD** pack if required for a further 5-10 minutes.

6

If pain persists, consult a physician or pharmacist, ask for local **painkillers/anti-inflammatory creams or gels (e.g. 3-4% lidocaine + hydrocortisone).**

CASE 1 *Olindias phosphorica*

First-aid protocol to treat jellyfish stings

NO USE FRESH WATER, ALCOHOL, AMMONIA

NO USE TIGHT BANDAGES

YES VINEGAR + COLD PACKS

1

Carefully rinse with sea water, no rubbing

2

Rinse with **VINEGAR** (when available) or apply a mixture of **SEA WATER and BAKING SODA** (1:1 ratio) **for 2 minutes**

3

Remove any residual tentacles and baking soda mixture with a plastic card **(e.g. driving license, credit card)**

4

Apply **COLD** packs (plastic ice bag, or a cold drink wrapped in a cloth or t-shirt) for 5-15 minutes

5

Assess the degree of pain, re-apply the **COLD** pack if required for a further 5-10 minutes.

6

If pain persists, consult a physician or pharmacist, ask for local painkillers/anti-inflammatory creams or gels **(e.g. 3-4% lidocaine + hydrocortisone).**

CASE 2 *Carybdea marsupialis*

First-aid protocol to treat jellyfish stings

NO USE FRESH WATER, ALCOHOL, AMMONIA

NO USE TIGHT BANDAGES

YES VINEGAR + HOT PACKS

1

Carefully rinse with sea water, no rubbing

2

Rinse with **VINEGAR** (when available) or apply a mixture of **SEA WATER and BAKING SODA** (1:1 ratio) **for 2 min**

3

Remove any residual tentacles and excess baking soda mixture with a plastic card **(e.g. driving license, credit card)**

4

Apply **HOT** packs (or immerse the stung part in hot water, around 40-45°C) for 10-20 min

5

Assess the degree of pain, re-apply the **HOT** pack if required for a further 5-10 minutes.

6

If pain persists, consult a physician or pharmacist, ask for local painkillers/anti-inflammatory creams or gels **(e.g., lidocaine 3-4% + hydrocortisone).**

CASE 3 *Physalia physalis*

First-aid protocol to treat jellyfish stings

NO USE FRESH WATER, ALCOHOL, AMMONIA

NO USE TIGHT BANDAGES

YES VINEGAR + HOT PACKS

1

Carefully rinse with sea water, no rubbing

2

Rinse with **VINEGAR** (when available) or apply a mixture of **SEA WATER** and **BAKING SODA** (1:1 ratio) for 2 min

3

Remove any residual tentacles and excess baking soda mixture with a plastic card **(e.g. driving license, credit card)**

4

Apply **HOT** packs (or immerse the stung part in hot water, around 40-45°C) for 10-20 min

5

Assess the degree of pain, re-apply the **HOT** packs if required

6

If pain persists, consult a physician or pharmacist, ask for local painkillers/anti-inflammatory creams or gels **(e.g. 3-4% lidocaine + hydrocortisone).**

CHARACTERISTICS OF THE STINGS PRODUCED BY THE DIFFERENT JELLYFISH SPECIES

Pelagia noctiluca

Its stinging cells have a very active toxin that produces a burning sensation, intense pain, inflammation and red skin rashes. The sting results in hives and oedema, as well as vesicles, blisters and scabs that may persist. Other symptoms, however rare, include nausea, vomiting, muscle cramps and breathing disorders.

Rhizostoma pulmo

The sting of this jellyfish can be painful. Generally speaking, it produces a burning sensation and extended irritation that may persist for several days. Check for any residual mucus released in the surrounding water by the jellyfish, as it contains a huge number of stinging cells.

Chrysaora hysoscella

The effect of its toxin is similar to that of *P. noctiluca*, thereby generating similar reactions on the skin following contact.

CARATTERISTICHE DELLE URTICAZIONI DELLE DIFFERENTI SPECIE DI MEDUSE

Olindias phosphorica

The sting of this species causes typical red zigzag lines that appear on the skin. The paid is intense and immediate.

Carybdea marsupialis

Its sting is extremely painful but persists for a limited period of time only. It is usually followed by red vesicles on the skin, and in some cases muscle cramps, vomiting, fatigue and anxiety may be observed.

Physalia physalis

Its sting is very painful. It can usually cause gastrointestinal symptoms (e.g. vomiting), muscle cramps, heart problems, neurological disorders and allergic reactions.

Cotylorhiza tuberculata

The irritating capacity of this jellyfish is partially limited due to the small size of its tentacles. As it comes into contact with human skin, its effects are barely detectable and are generally minor, being restricted to a mild skin irritation and moderate itching.

Response protocol
in the event of jellyfish occurrence

SPECIES	NUMBER	TIMEFRAME	Recommended protocol
Physalia physalis	More than 2 individuals/m^2		Prohibition of bathing and removal from the water of the respective jellyfish individuals
Pelagia noctiluca *Rhizostoma pulmo* *Chrysaora hysoscella* *Carybdea marsupialis* *Olindias phosphorica*	More than 1 individual/m^2	More than 3 hours	Prohibition of bathing
Cotylorhiza tuberculata *Aurelia* sp. *Aequorea forskalea* *Velella velella* *Porpita porpita* *Discomedusa lobata* *Phyllorhiza punctata* *Mnemiopsis leidyi*	Irrelevant		Inform bathers about the absence of any risk to their safety

REPORT YOUR SIGHTING

www.jellyrisk.eu

The following information should be provided when submitting a jellyfish sighting report:

concentration, sighting spot, sighting time, weather conditions (wind, current, sea conditions), jellyfish species and if possible attach a picture.

Jellyfish concentration: Low (<1 indiv/m^3), Medium (2-5 indiv/m^3), High (>5 indiv/m^3)

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Consorzio Nazionale Interuniversitario per le Scienze del Mare

Project funded by the
EUROPEAN UNION

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IN THE MEDITERRANEAN

This manual was printed with the financial support of the European Union within the framework of the ENPI CBC Mediterranean Sea Programme through the MED-JELLYRISK project. The contents in this document are the sole responsibility of CoNISMa and shall not, in any case, be regarded as reflecting the position of the European Union or any other Programme Management Entity. The total budget of the MED-JELLYRISK project was 2.6million euros, of which 90% was funded directly by the European Union.

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WATCH FOR JELLIES

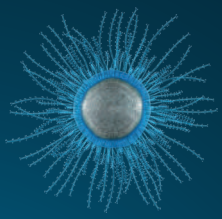
CITIZEN SCIENCE

- STINGER
- MILD STINGER
- HARMLESS

Physalia 10-15 cm

Velella 5-7 cm

Porpita 1-5 cm



?

IF YOUR JELLYFISH IS NOT SHOWN HERE, TAKE A PICTURE OF IT ! IT MIGHT BE A NEW RECORD FOR SCIENCE !

Phyllorhiza 30-60 cm

Rhizostoma pulmo 20-60 cm

Catostylus 20-60 cm

Rhopilema 20-80 cm

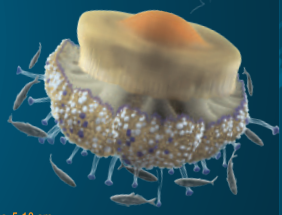
Rhizostoma luteum 40-60 cm

Drymonema 10-100 cm

Cassiopea 30 cm

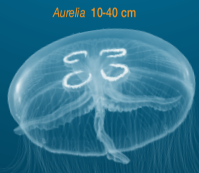
Marivagia 15 cm

Cotylorhiza 10-30 cm

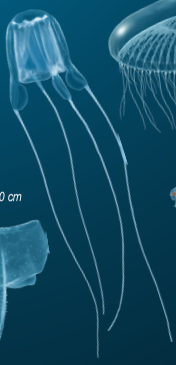


Aequorea 5-10 cm

Aurelia 10-40 cm



Carybdea 4-6 cm

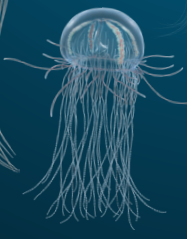


Beroe ovata 6 - 25 cm

Pelagia 5-10 cm

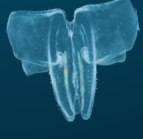
Chrysaora 10-30 cm

Olindias 4-6 cm

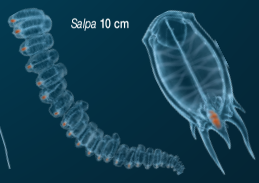


Mnemiopsis 5-10 cm

Leucothea 20 cm



Salpa 10 cm



YOUR HELP IS NEEDED !

If you see these jellies, take a picture and post your record on **http://meteomeduse.focus.it/** or send an e-mail to **boero@unisalento.it** including this information:

NAME: check the poster, possibly add a picture (esp. if your jelly is not in the poster)
ABUNDANCE: less than 10, 10-100, 100-500, 500-1000, more than 1000
LOCALITY: (name and/or geographical coordinates) coastal waters, offshore, stranded
SPACE BETWEEN INDIVIDUALS: 10 cm, less than 1m, 1-5m, 5-10m, 10-20m,more than 20m
N° OF JELLYFISH PER SQUARE METER: less than 10, 10-100, 100-500, more than 500
SIGHTING DURING: navigation - diving or snorkeling - swimming - shoreline walking

Concetti: Ferdinando Boero Illustrazioni: Alberto Gennari Grafica: Fabio Tresca