BEWARE OF BLUEBOTTLES

DANGEROUS FLOATING BEAUTIES

BY **BERTA PINTÓ**

INTRODUCTION

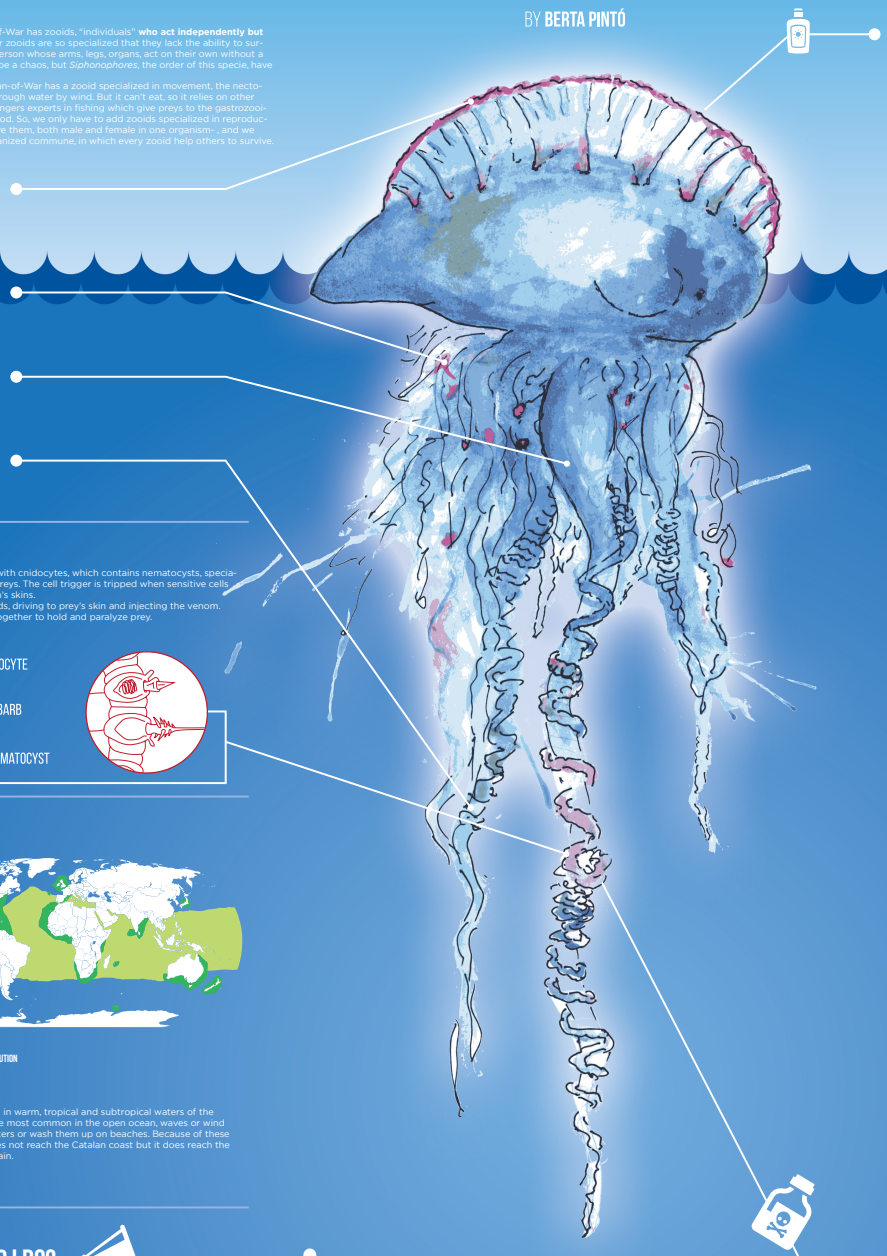
This **beautiful and lethal** creature is called Bluebottle or Portuguese Man-of-War (*Physalia Physalis*) and it is an organism formed by "individuals" called zooids which come all from the same egg. Its most famous part is the float, a blue, green and violet zooid that moves the animal through the oceans due to wind. It is the most recognizable part and below this sail are found meters of tentacles -**they can reach 50m, more than a blue whale**-, some filled with stinging cells that hunt fishes, can harm a person and sometimes could kill bathers. We are going to see dangers of this animal, but its stunning beauty too.

OBJECTIVES

The aim of this work was to introduce the *Physalia physalis* in its more important aspects, emphasizing its beautiful and colourful side. It is thought to be a tool for the public and increase awareness toward this animal.
This work has social, educational and informative interest and it is expected to be applying to fields related to the sea, countries where this specie can be found. It could be divulgated through the Internet or in the poster format so that it can be put as public information, for example, on the beaches.

DESCRIPTION

As has been said, Portuguese Man-of-War has zooids, "individuals" **who act independently but that can't survive on their own**. Their zooids are so specialized that they lack the ability to survive on their own. Try to imagine a person whose arms, legs, organs, act on their own without a brain organizing the scene, it would be a chaos, but *Siphonophores*, the order of this specie, have succeeded in it.
See this in the image. Portuguese Man-of-War has a zooid specialized in movement, the nectophore, which moves the organism through water by wind. But it can't eat, so it relies on other zooids, dactilozooids. They are like fingers experts in fishing which give preys to the gastrozooids, which are focused in digesting food. So, we only have to add zooids specialized in reproduction, gonadozooids –indeed they have them, both male and female in one organism- , and we have a enormous, perfectly well-organized commune, in which every zooid help others to survive.

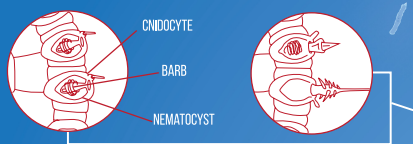


COLOURFUL AND BRIGHTLY SUNSCREEN

The sail of *Physalia* is functional or useful like a scuba-diving buoyancy compensator. Portuguese Man-of-War can **fill or push out the air in favour of choosing the float that it wants**. But, it is not the only function of this zooid. Studies are being conducted to correlate the pigments gases of the *Physalia*'s float, the absorbance of these and the protection that they offer in front of the UV rays, since it is thought that these would act as a screen or a permanent solar protector. It may offer more information about **resistance to UV rays** and could have applications in humans, especially in illnesses like skin cancer.

STING

Physalia's tentacles are covered with cnidocytes, which contains nematocysts, specialized stinging cells for stunning preys. The cell trigger is tripped when sensitive cells detect foreign structures, like fish's skins.
The cell opens and a barb expands, driving to prey's skin and injecting the venom.
Thousands of stinging cells act together to hold and paralyze prey.

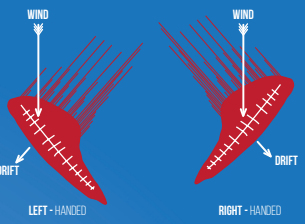


ALL OVER THE WORLD

PHYSALIA'S POTENTIAL **DISTRIBUTION**
SIGHTINGS

Bluebottles are most often found in warm, tropical and subtropical waters of the world's oceans. Although they are most common in the open ocean, waves or wind may direct them into shallow waters or wash them up on beaches. Because of these currents of wind and water it does not reach the Catalan coast but it does reach the Balearic Islands and southern Spain.

LIKE US, LEFT AND RIGHT HANDED



It is believed that handedness in a particular individual must be established on **the first windy day that the larva keeps to the surface**. The only tentacle that *Physalia* has in its larval stage would cause a drag to the side of the wind, and will result, with time, in right- or left-handed.

The left-handed or left-sided individuals drift at an angle of 45 degrees to the right of the direction from which the wind is blowing, and the right-sided or handed individual does the opposite. It is a mechanism similar to a boat with its sail (Nectophore) and its anchor (Tentacles) and it is very important because **if some are being transported to predators or to shore, the other will survive**.

GLAUCUS ATLANTICUS
THE STUNNING **BLUE DRAGON**

Glaucus Atlanticus, commonly known as Blue dragon, Sea swallow or Blue sea slug, seems to be a tiny, inoffensive and lovely animal but it is actually extremely injurious. It is as harmful, or more, as the Portuguese Man-of-War. But **¿How can it do that?**

It **floats upside-down** just below the sea surface, using surface tension and when it wants to eat, disengages from the water surface and goes to the *Physalia physalis*.

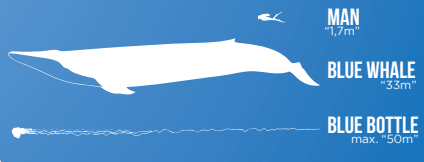
It is able to feed on bluebottle owing to its **immunity to the venomous nematocysts**. The slug eats the entire organism and takes the undischarged nematocysts for its own use. They are collected in sacs at the top of its cerata, a structure –like a finger- which is connected to the stomach. When a predator tries to catch it, the nematocysts are discharged through a pore.

NOMEUS GRONOVII
A RELATIONSHIP **OF MUTUALISM**

Portuguese Man-of-War provides food (gonozooids and fish remains) and protection from predators. Gronovii makes of bait to attract other fish to the *Physalia*'s tentacles. It is commonly known as Man of war fish.

Nomeus gronovii's **skin is around ten times more resistant to poison**, maybe because it had discovered how to make itself identifiable as a tentacle or perhaps for having mucus on the skin. It prevents dactilozooids thanks to its great agility - using pectoral and pelvic fins with large surface- but sometimes it is also eaten by the *Physalia physalis*.

FULL MEASURE



WHAT SHOULD I DO?

YOU SHOULD

- Remove remnants of the organism with an object, avoiding a second stinging.
- Apply salt water to the affected area.
- Immerse the affected part into hot water (45 ° C) during 15-20 minutes to ease the pain.
- Reassess the pain and immerse the zone another 15-20 minutes in hot water.
- If pain remains and for security, seek medical attention as soon as possible.

YOU SHOULD NOT

- Apply fresh water. It tends to make the affected area worst because it could discharge closed nematocysts.
- Apply vinegar. It is thought to cause haemorrhaging but it is still an ambiguous treatment.
- Apply pressure bandages.
- Apply alcohol.
- Rub the zone.

WARNING

Portuguese Man-of-War is the only cnidarian specie considered "very dangerous" in the Catalan coast. Two single organisms are enough, according to the protocol of the CSIC, to have to close the beach. The plan of the Spain's ministry is only to send ships to collect swarms of stinging cnidarians if it comes to the dreaded Portuguese Man-of-War.

BLUE BOTTLE ATTACK - FEEDING HABITS

The Portuguese Man-of-War catches its food in its tentacles. It feeds on small adult fish and the young of some species. **Their tentacles expand and contract**, rising up and down, to catch fish and crustaceans. The immobilized prey is pulled up toward the colony's gastrozooids spread over the victim to digest it. **The gastrozooids digested the prey with enzymes** and when the food has been digested, any waste is pushed out.

BENEFITS AND NEGATIVE CONTRIBUTIONS TO SOCIETY

Portuguese Man-of-War has had positive effects for society since in 1913 was the reason of the **Nobel Prize** in Medicine by the scientific Charles Richet who studied with it the anaphylaxis. Moreover, it is thought that *Physalia physalis* could be an important part of some ecosystems, significant for humans, due to they are eaten by some crustaceans and fish of commercial value.

Bluebottles can damage tourism of economy. Nobody wants to swim with a bloom of blue gelatinous animals that are potentially killer. Apart from this, much money is inverted every year in treatment of swimmers who are stung.
Fish harvests could be influenced by these blooms as *Physalia* feed on fish larvae who will never reach the adult and reproductive stage.

THE BLUE BOTTLES POISON

IS = LIKE

10 THE POSION OF COMMON JELLYFISH

A scientific of the Institut de Ciències del Mar of Barcelona said in an interview of a newspaper that "*The sting of the Portuguese man of war has ten times more virulent than a "normal" jellyfish*".

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ILLUSTRATION BY **BERTA PINTÓ**

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