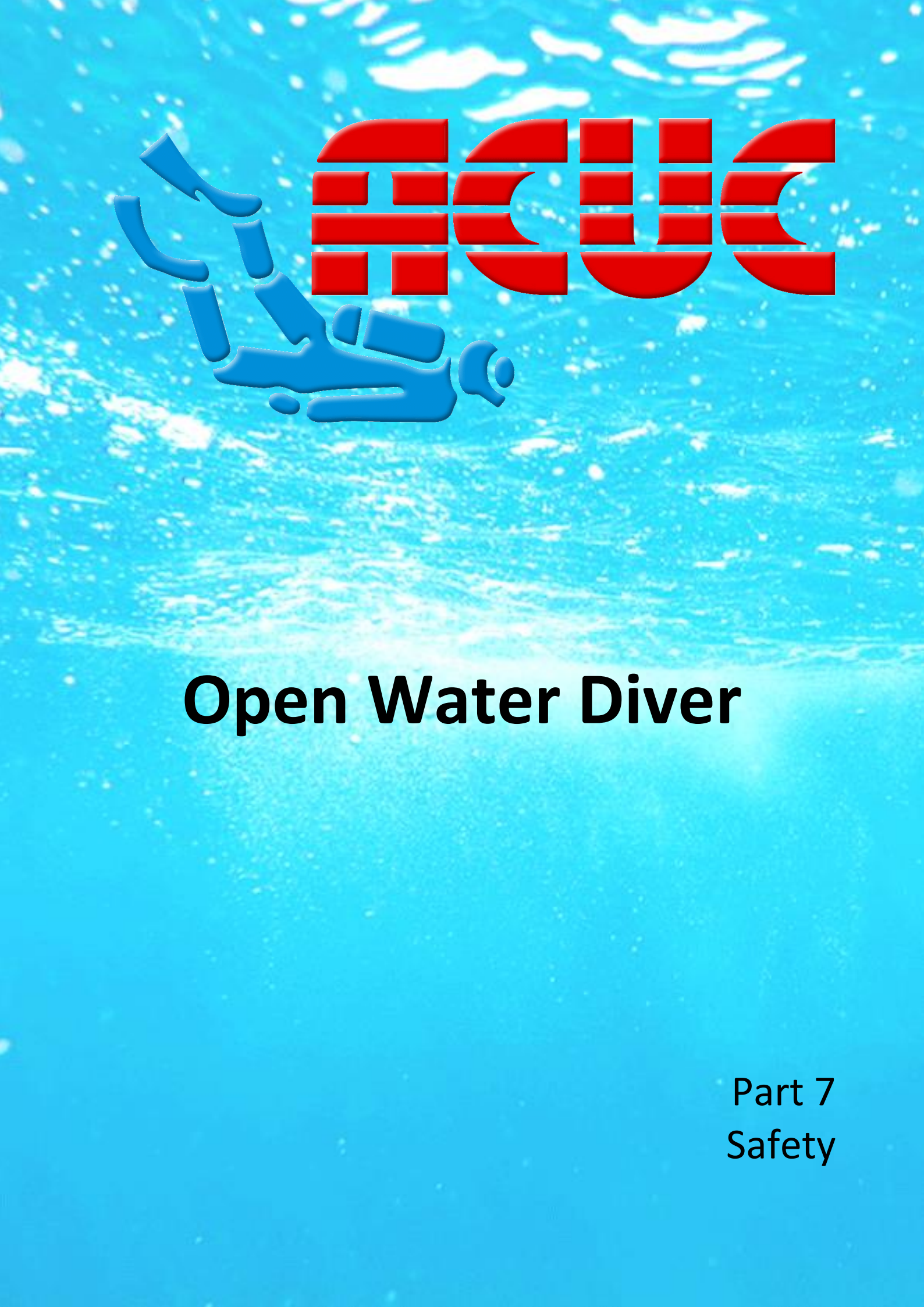


Open Water Diver

Part 7
Safety

7 Safety

Now, once explained the basic theory concepts that we must know to dive safely, we will explain and give advice on more practical aspects, which involve our own safety, that of our dive buddies and even that of third parties. We are going to enjoy a wonderful environment but that it is not our natural environment, so it is necessary to have basic precautions for our safety and, therefore, that of our colleagues.

7.1 The buddy system

We should never dive alone as recreational divers. This is a safety maxim and even, the legislations of some countries specify this obligation for recreational diving. Also diving insurance may not cover an eventuality if you dive alone.

In recreational diving, the diving unit is two, so that each of the divers has to be aware of his buddy, without losing sight of him, at a short distance but without getting in the way and checking from time to time that everything is fine. So if there are any problems during the dive, either we help if our buddy has the problem or he helps us if we have it, we can even share air through our regulator or reserve second stage. We are not able to see if there is a leak in our equipment, behind us, but our buddy does, just as we can see our buddy's equipment.

If the number of divers is odd, there would be a group of 3 people, then a system of pairs should be established among the 3, so that the most expert is the buddy of one and the buddy of the other independently, but never all looking after all. It is best to avoid this situation by looking for an even number of divers as much as possible.

Before getting into the water, we should agree with our buddy where the dive will take place, point of descent and point of ascent, unless the dive is guided by a professional, in which case it will be him who informs us before the dive. We ask our buddy for any special characteristic if there is one and we ask him his approximate experience, informing him of ours.

We also agree on the maximum depth to reach and the expected dive time (may vary). We must also check our buddy's equipment (and he ours) to check where is the inflation system of the vest, the purge and the layout of the equipment in general and we do a signal check with our buddy, to verify that we use the same. This is especially important if we do not know our buddy.

Once in the water and before the dive, we review the basic signals and do a quick check to find any leak in his equipment and that his weight belt is not locked by any component or strap of the equipment. When we have checked each other, we give the OK and begin the descent by the agreed place, generally the rope of the boat's anchor.

All this set of checks and agreements is what is called the **briefing** with the buddy. In addition, there is another briefing but it is the divemaster or dive centre instructor who is responsible for offering it. In his briefing, he informs us of the dive place, points of entry and exit, approximate duration, maximum depth to reach and recommendations of the route to be followed, indicating the ideal route and giving information of what we are going to see as well as recommendations to enjoy the dive as much as possible. Of course, he will provide also safety recommendations and specific information if any.

7.2 Marine environment

The transparency characteristics of salt water are close to fresh water, so the problems of visibility are usually conditioned by the particles in immersion, which can occur in both environments, although in fresh water there are usually more visibility problems. Salt water is more aggressive for both our skin and the equipment. In principle, we could think that the equipment is prepared to resist salt water and that's the way it is, but only relatively, hence the insistence on clearing the equipment with fresh water after each dive, since when it dries, the salt crystallizes and those crystals are very aggressive.

Also, the salt water is denser so we need more weights than in fresh water. Even more water moves, we all know that, and sometimes a lot. The movements of water in the sea are fundamentally two: waves and currents.

7.2.1 The surge

It can be more or less annoying (depends on each person) on the surface, as it can hinder the handling of the equipment and can cause dizziness, especially on the boat, but there is no solution, we cannot flatten the waves, so these discomforts are compensated with practice and they eventually disappear.

If the waves are too big, we should not go diving. At the safety stop, which is relatively close to the surface, we must take special care to never hold our breath, since the waves cause us to rise and fall with them, which could trigger lung overexpansion if we hold our breath.

The problem of dizziness is something more serious, because it can disable the person for diving. Dizziness is also reduced or disappears with experience, but in the meantime, so that it does not impede us from diving, we have at our disposal drugs to prevent dizziness that are usually very effective. To avoid dizziness, it is also useful not to fix your eyes on something close to you, but rather look to the horizon, without fixing them on anything.

Keep a special caution in the vicinity of the boat, as the waves cause oscillatory movements of the boat that can hit us if we are too close. We must be vigilant at the time of boarding the boat to be well entrenched and not to fall or being hit by the movement. And Of course, ensure not to be in the drop zone of another person who is climbing to the boat.

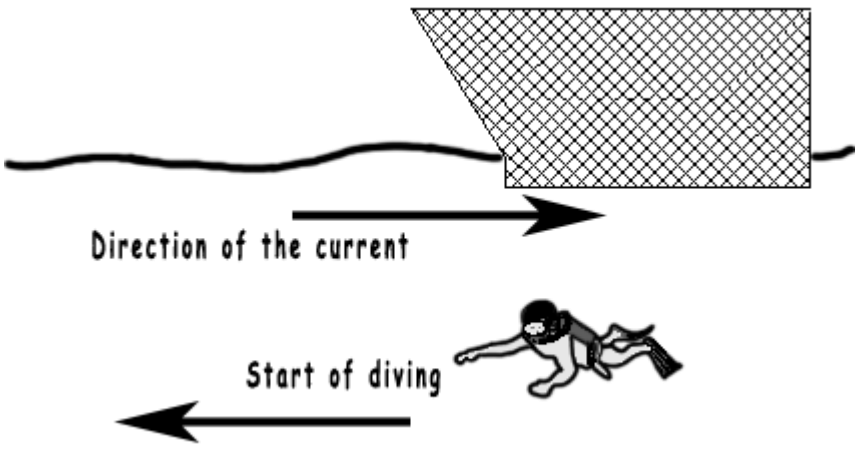
If the dive is from shore, we will always have the precaution of walking backwards both when entering and when exiting if we have the fins on, while we are at a depth that does not allow us yet a swimming position; This way the waves will not lift our fins causing our fall. Of course, we should not try to enter if the surf is strong, because it can cause us to roll with all the equipment which increases the possibility of injury. If we carry the fins in our hands, we will enter walking forward.

7.2.2 The currents

They are horizontal displacements of water masses, which behave similarly to a river. The causes of these displacements are multiple, so they occur in different places, at different intensities, sometimes there are currents in one place and others, in the same place, there are not. The professionals of the area know perfectly the currents, where they are produced and more or less their intensity (it is variable), so we must follow their advice regarding the dive place and precautions, as there are currents so intense that we could not fight them.

We can appreciate the current by throwing a rope with a small weight. We see if the rope buckles, if the weight is tilted and how much, this will tell us the intensity of the current. In the presence of currents, we must go down the anchor line without releasing it, until we reach the bottom. The currents usually disappear or attenuate at depth, so that close to the bottom it will hardly bother us in most cases. The dive must also end at the anchor line, holding it while ascending so that the current does not drag us. On the boat, the so-called "current ropes" are usually released, which are ropes unfurled from the anchor line by both boards, so that the diver can access the back of the ship (stern) holding to it so as not to be dragged, since the boarding is usually done by the stern.

For safety, the fundamental precaution is to start the dive by swimming against the current, so, when we are about to end the dive, the return will be in favour of the current, which will help us to reach our boarding point.



There are places in which the so-called drift diving is done, in which the divers jump in the water without holding to anything and submerge letting themselves be carried by the current. Usually, one carries a buoy with a string, so that from the surface it can be seen where they are at each moment. The boat follows the group and when the dive ends it is there to pick them up. In the image “other equipment.jpg of Part 2 you can see a string reel used for the buoys.

7.2.3 Bottom types

Underwater there are many types of bottoms, in the boat or dive centre they will inform us of what we are going to find so we will know previously. The most common bottoms are the rocky ones, since it is where a lot of life is found and therefore where we preferably go with the diving centres. One precaution is not to touch anything, since our skin is softened by the water and it is easy to suffer cuts and scratches. The rocks are usually covered by different forms of life, some sharp and stinging, which reinforces the recommendation of not to touch, a recommendation that we will repeat here and in the section in which we talk about marine life.

Another type of bottom in which we dive a lot is the coral bottom. They are located in specific points of the planet (we show one in the image), but they are so spectacular and generally so profuse of life that divers travel around the world to enjoy these bottoms. The coral should not be touched, since the contact damages its protective mucosa, which contributes to its destruction. Most corals look like rocks or inanimate formations, but they are forms of life, animals, in a symbiotic association. The corals surface are living organisms, fixed in the coral substrate composed of the skeletons of their ancestors, this statement being valid for most corals. Another reason not to touch them is that some have toxic substances on their surface (like defences) so that if they touch, they produce a strong reaction on our skin (in the so-called fire coral it can even be dangerous).

We can also find algae bottoms. The algae represent a refuge for animals, especially in their early stages of life, as well as having a fundamental role both in the life of the seas and even in our atmosphere. They are less frequent dives, since the seaweed bottoms are usually found on our way to the rocks, but there are dives of spectacular algae bottoms, like the forest of algae that we show in the following image, known as Kelp.

The precaution is the same, scrupulously respect the environment, without touching or deteriorating anything. There are algae that can trap us (long and / or leafy); also, we can destroy algae if we do not take care in our displacement

Sandy and muddy bottoms are very rare as dive places, since they do not usually offer an attractive dive, but there are some exceptions, such as some forms of life found in these bottoms, some sunken object that represents interest, for example a boat, or the mangroves.

Of course, we should never get close to the bottom, as we will raise turbidity with our fins, which is the end of visibility for us and our dive buddies. In the case of sunken ships, they are usually an explosion of life, since they serve as a refuge for animals. The same happens with mangroves but dives are more rare, as mangroves are often difficult to access, they are usually protected and they also tend to present other dangers, usually due to the type of fauna, so recreational diving is practiced in very few places with mangroves.

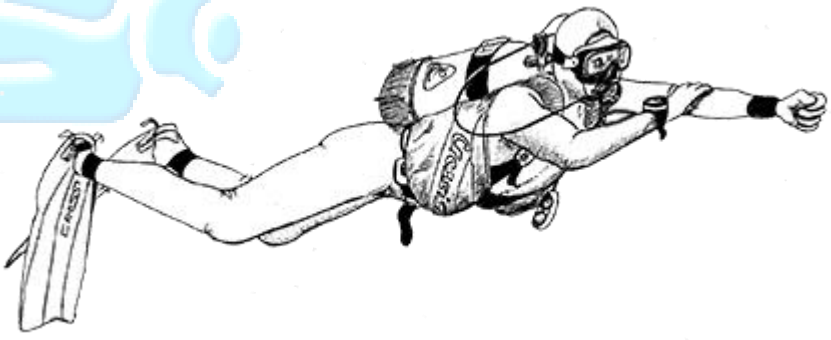
7.2.4 Orientation

When we start diving, we can see how easily we can become disoriented, so that we no longer know where we came from. It is natural; our daily life develops in an environment that we will call 2-dimensional. Our environment is circular; we look around us, but below is the ground and above is the sky, so we do not worry. Underwater, however, we are weightless, we float, then there is an up and a down, so our environment is spherical, which causes our sense of orientation to fail miserably.

We have resources at our disposal for guidance. If we are going to dive in a wall or cliff, we will look at distinguishable details when we reach the border and we turn around to see from which direction we have arrived, considering it as a clock, that is, if our arrival has not been perpendicular, we can imagine that our path comes from, for example, 11 o'clock on the hands of a clock, then to return to the ship, we will have to locate the references that we have memorized on our arrival and leave them somewhat to the left, towards 11 o'clock in a hypothetical clock. If in our dive we follow the wall to the left (our right arm closer to the wall), when we return our left arm will be the one closest to the wall until we identify our arrival reference. In short, it is the details, shapes and depths that will allow us to orient ourselves to return to the boat or to the coast.

The compass is the ideal device for orientation, but you have to learn to handle it and practice to use it properly. It is a normal compass, with the same principle as the others, but encapsulated in a watertight casing. The needle ones are not recommended because of the greater difficulty of use. The most used ones consist of a floating and graduated limbo, with an arrow indicating the magnetic north. They have on their side a window where we can read the heading, very useful because we can move it away from the equipment, which causes magnetic alterations because it contains a lot of steel.

The reverse course is adding 180 to our course in the case that it is less than 180º, or subtracting 180 from our course in the case that it is greater than 180º. As an example, if our course is 30º, we will have to return the course following the 210º course (30 + 180 = 210); If our course is 265º, we will have to return the course following the 85º course (265-180 = 85).



There are many "tricks" for orientation, which we will learn as we get experience, but of course, the most useful and universal is to look at the rocks, obstacles we find and depth at which they are.

7.2.5 Other aspects of the environment

There are so many different aspects in our dive environment that it is impossible to stop even minimally to describe them all. For this reason, the inexperienced diver must always follow the instructions received from the professionals of the diving centre, whom he must inform of his diving experience, so that they take him to the best possible, but safe, dive. Then, other so-called specialty courses can be done, in which a specific topic is taught. For example, the specialties of:

- Night diving: to learn the precautions necessary to dive at night.
- Wreck diving: which teaches the skills and precautions necessary to dive in sunken ships.
- Cave diving: caves have a roof that prevents direct access to the surface, the darkness becomes total, so there is a lack of light and they can also have visibility problems. It is clear that we need a specific specialty course to get into caves, in which we learn specific techniques. As the experience is not enough, no diver should go into any cave without learning those special techniques.

We could continue, there are many specialties, since the characteristics and possibilities of diving are very broad. In a first diving course, the basis for safe diving is taught, but our limitations are also taught and we must always follow the instructions of the experts, but much more at the beginning, when we are inexperienced. In any case, on our website ACUC specialties you can see and consult all the specialties.

This point has the name of marine environment, because it is the environment where the vast majority of recreational dives take place, but there is also diving in fresh waters.

Theoretically, there are hardly any differences, except that in fresh waters we will need less weight, as the water is less dense. However, in reality, there are important differences, since we will generally be talking about rivers, lakes or swamps.

Rivers usually present problems of currents and of visibility; Lakes and marshes present less problems of currents but more problems of visibility, especially the marshes, which causes that to dive in these places it is necessary previous experience or a specific formation. However, in some places diving courses are done in these types of environments, as they are the only ones available locally, but places are chosen with sufficient conditions that allow the correct development of the course with complete safety. What is learned in these environments is perfectly applicable if we then change to the marine environment and the instructor indicates to the students the differences they can find.

7.3 Marine life

Marine life is so incredibly varied that it is impossible to mention everything here, so we will deal with generalities and basic precautions to be observed. There are obvious life forms, because we see how they move and swim, but there are others less evident, since they are fixed to the substrate. It is what is called sessile life, referring to animals that live fixed to a substrate from which they cannot move, which we can confuse with plant forms. Examples are corals, sponges, anemones, etc.

7.3.1 Algae

We have already talked about algae in the marine environment section. They are fundamental in the ecosystem and there are some, such as the Mediterranean Posidonia, which need protection for their possible disappearance, which would be an ecological disaster, but there are many types of algae in danger of disappearing. We should not touch them to avoid damaging them. With other types of algae, we must also be careful not to get entangled with them, as we might need to break them to get ourselves lose. There are some spectacular dives diving in kelp forests.

7.3.2 Coral

Corals are structures of calcium carbonate secreted by coral polyps, that is, a kind of exoskeleton, which accumulates by generations of polyps. Polyps are living animals on the surface of the coral. They have a role of enormous importance in the ecology of the planet and are also structures to protect, since they are suffering a great aggression due to climate change. We should not touch them, since they are covered with a very thin protective mucosa that can be deteriorated by simple contact, provoking a way for their infection.

In addition, there are some corals that are covered by a strong protective toxin that, on contact, causes a more or less strong skin reaction. The so-called Fire Coral is an example that can even put us in danger due to its great toxicity.

7.3.3 Stinging animals

The first thing that comes to mind is the sea urchin, that if we lean on one, we will be painfully nailed by their spines, requiring special care for their removal, as they can cause infections. There are more stinging animals and for all of them, the precaution is very simple: do not touch them. In case of getting stung by a spike, we must remove it disinfecting the area and if we cannot extract all, we will go to a clinic to extract them.

7.3.4 Poisonous animals

The best known example are jellyfish, whose toxins are in their filaments and body, so we should not approach them as some have filaments difficult to see. The jellyfish do not attack; you just have to avoid hitting them. There are other animals that if you touch them, their defences bristle, usually in the fins and they inject you with toxins that in some cases can be very aggressive. They are not attacks either, but rather they are automatic defensive movements, which will not occur if you do not touch, no matter how close you are. Since some mimic the rocks of the environment very well, for example the scorpionfish, the recommendation of not touching anything is valid, to avoid damaging or being damaged. Other animals, for example some rays, have poisons that they use to attack their prey. The advantage is that they will never confuse us with a prey, so if we do not bother them, absolutely nothing will happen. If we suffer a mishap with this type of animal, we must go to the doctor to avoid any complications. If the mishap is with jellyfish, you must go to the doctor before showering because fresh water can make the situation worse.

7.3.5 Biting animals

It would be false to say that marine animals do not bite. Teeth are for biting then those that have teeth (or beak) can bite. Now, for our peace of mind, there is no underwater animal that attacks or bites if it is not for reasons of survival. Animals that could harm us with their bite attack exclusively their prey, being that the human being is not the prey of any underwater animal (no, neither of the shark), no animal will bite us unless it sees itself threatened by us. Within bites, although all are painful, some are more so because of the toxins that they inoculate through their teeth, for example the moray eel or conger eel and others of smaller size, for example octopus or cuttlefish and others, which due to the size of the animal, can be mortal, being the best-known example that of sharks, although so would marine mammals. We repeat, no animal is going to bite or hit us if it does not feel threatened. What we cannot do is to chase or corner them or try to touch them, much less their offspring.

Even in the case of sharks, which are the ones that have the worst reputation, there are hardly any attacks to divers. There have been cases of bites to divers who offered them food in their hand. The animal is very large and in the capture of the food can also bite the diver. Food should not be given to underwater fauna, because we also alter both the ecosystem and behaviour.

The majority of attacks on people have been to surfers, but the shark does not attack the person (it is not their food), but the surf table because it produces similar signals to some of their prey, such as seals for example. The problem is that on many occasions the leg or some part of the body of the surfer is at the point of attack on the board. There have also been cases of attacks of sharks, barracudas and other species to the hunted fish that are hung in the waist of the spear fishermen but, due to the size of the animal, the spearfisher has also been bitten. Thousands of dives are made every year with sharks of all types and sizes, enjoying the dive and without attacks. If beaten we have to go to the doctor to evaluate the appropriate treatment.

As we can see, precautions regarding marine life can be very complex because of the enormous variety, but they can be summarized very quickly: do not touch anything unless you know that it can be touched, since we can damage or be damaged, do not harass different ways of life or try to approach the young (for example in the case of dolphins), or feed the animals. You will understand that they are common sense precautions, marine life are not our toys.

A very important recommendation is that we always inform ourselves of the local fauna when we go diving, especially when we visit a diving place that we do not know.