

Propeller guards mandatory by law? The debate continues

Some of the worst consequences of an encounter between a person in the water – whether a bather, swimmer, snorkeler, free-diver or scuba diver – are produced by the dangerous propeller, whose wildly rotating blades can inflict deep injuries and in some cases be fatal. Would making special protections (propeller guards) mandatory by law, help the sea become a much safer place for people, or would it have a minimal effect?

Roby quickly swims towards the sea bed. He's a free-diving enthusiast, and enjoys that amazing feeling of freedom in the water. Just like a detective, he is trying to chase a small colorful fish, however his breath has reached its limit: he's forced to abandon the "case" and swim back to the surface.

Elsewhere on the surface, Manuel is starting the engine at full throttle, following the insistent requests of his children who want to go out on the boat and see what that red 'ball' floating in the sea is. The children are hoping it's an abandoned ball, so maybe they can take it on board and play with it later when they go swimming.

Whilst ascending, Roby hears a loud rumbling noise approaching. He stops swimming to slower his ascent to the surface, as he tries to figure out which direction the noise is coming from. The noise becomes louder and louder... Roby knows that there are only a few meters left before his natural buoyancy and that of his wetsuit will inexorably push him to the surface.

Manuel's children are insisting dad to go faster, by now they are really close and so he begins to reduce speed.

Roby can't hold out any longer. The abdominal contractions are getting stronger. He needs to surface to breathe, despite the fact that the rumbling, which he now recognises as the typical noise of an outboard engine, has become very loud. He swims up along the line of the surface marker buoy, now vertically above his head, and starts to ascend, desperately trying to locate and avoid the whitish trail of water and bubbles left by the propeller.

Manuel notices that the "ball" has moved slightly, he can see it right in front of him, not far from the the prow. Suddenly a head emerges near the ball ... it's a diver! Manuel is forced to change direction in a desperate attempt to distance himself from the diver and the buoy, his children are thrown on the deck of the boat. Manuel is relieved to have missed the diver and proceeds in the opposite direction.

Roby emerges at the surface just in time to see the prow of a boat heading towards him at full speed. He dodges out of the way at the last moment. With an overwhelming feeling he exhales with a sigh of relief, thinking "...that was lucky!" He would like to address a number of profanities at the boat driver but that guy is already too far away to hear him. Roby says to himself, "that's enough for today, I better not defy fate any further" he embraces the signal buoy and swims to the shore.

Swimmers, snorkelers, free-divers and scuba divers can all have close encounters with boats even though several campaigns have been promoted by organisations and institutions trying to educate both divers (always use a sign of recognition on the surface) and sailors (recognise the signs and keep a safe distance). If everyone respected the rules, such incidents would be few and far between. The same could be said for car accidents: if only everybody respected the rules of the road! Reality, unfortunately, is different.

Propeller guards

In general, emergency vehicles that operate in difficult conditions, have water-jet systems, meaning the propeller is not placed on the outside but is enclosed in a tube inside the boat. This "ducted propeller" has a different function: the propulsion of the vehicle does not occur because the propeller spins in the water, but by a jet of water ejected from the back of the craft, generating a forwards motion.. This system avoids the danger of "slicing" someone who is in the sea. However, it is a costly system that, for one, is not applicable to propulsion systems of traditional propellers, as it must already be conceived in the design phase of the vehicle.

These considerations led to the proposal-provocation of DAN Europe: Why not equip all boats with an external propeller with a propeller guard? Basically it would be a plastic or metal frame covering the propeller that would prevent ropes, algae and, in our case, human bodies coming into contact with the propeller blades. Some propeller guards are printed in plastic and are, therefore, low cost (a few hundred Euros/Pounds). For sailors, it could also be useful to avoid becoming entangled in ropes in ports, however the downside could be that the performance of the vehicle is inhibited, even though many manufacturers of propeller guards promise an increase in performance because of a better channeling of the hydrodynamic flow. These benefits seem to be most advantageous when the vehicle is moving at low speed, manifested by a decrease in consumption.

Would they be helpful to those passionate about diving activities? Perhaps they would reduce damage in the unlucky event of contact with a propeller in motion. The protection would be very effective when the vehicle is stationary or is moving at low speed, but when it is moving at a high speed, we don't know if the collision with the propeller guard would cause less damage compared to a collision with a propeller without protection. To answer this, thorough research would have to be performed. Anybody offering to be a guinea pig? What is certain is that, at least in vehicles used to transport snorkelers, free-divers and divers, it would not hurt to have a form of protection that allows to reduce the consequences of dropping or falling into the water before the guide or the captain stops the engines and has given the OK to enter the water.

What the experts say

On the use and on the possibility of making propeller guards compulsory, we heard the opinions of prominent personalities in the diving world (cf. [The use of propeller guards for dive safety: A cure-all or a palliate?](#)). Let's add the influential contribution of Lucio Petrone, nautical journalist and notable personality in the world of nautical associations.

The proposal-provocation is far from being senseless, especially considering that accidents, some even fatal, are often caused simply by the distraction of skippers, maneuvering in the dock or during launching and beaching on the shore. The producers of motors have spent and are spending fortunes to make the foot of outboard motors more aerodynamic to achieve lower fuel consumption and higher speeds, demands required not only for high-speed planing watercrafts but also for small displacement boats used when you quickly want to reach a bathing or fishing area or return to the base. However, the provocation - to sacrifice a little speed on behalf of safety - is more than just, especially for those boats that most often go near bathing areas. Making boat propellers a little less harmful in some way must be a goal of civility, with possible incentives in terms of insurance. Already, ducted propellers are used as a resort but only when specific technical results in performance want to be obtained, while transforming the provocation into reality, even only voluntary, would be essential for safety enhancement at sea. It is evident that the problem should be addressed first as a project and then legally. It could be established, for example, that all engines of rental boats (potentially the most dangerous when in the hands of inexperienced users) would have propeller guards or that these propellers would be rendered harmless in another way, it would surely stimulate the interest of manufacturers in this market. This is a provocation as well, dictated by my fixation on safety, on which at least prospectively, when we come out of the tunnel of economic crisis, it

would be good to mediate. I can not speak on behalf of all members of the Council of Nautical Users (the Italian nautical association, ed), but those who look to the cultural development of the sector and, therefore, to a more effective protection of human life at sea, share my idea.

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