

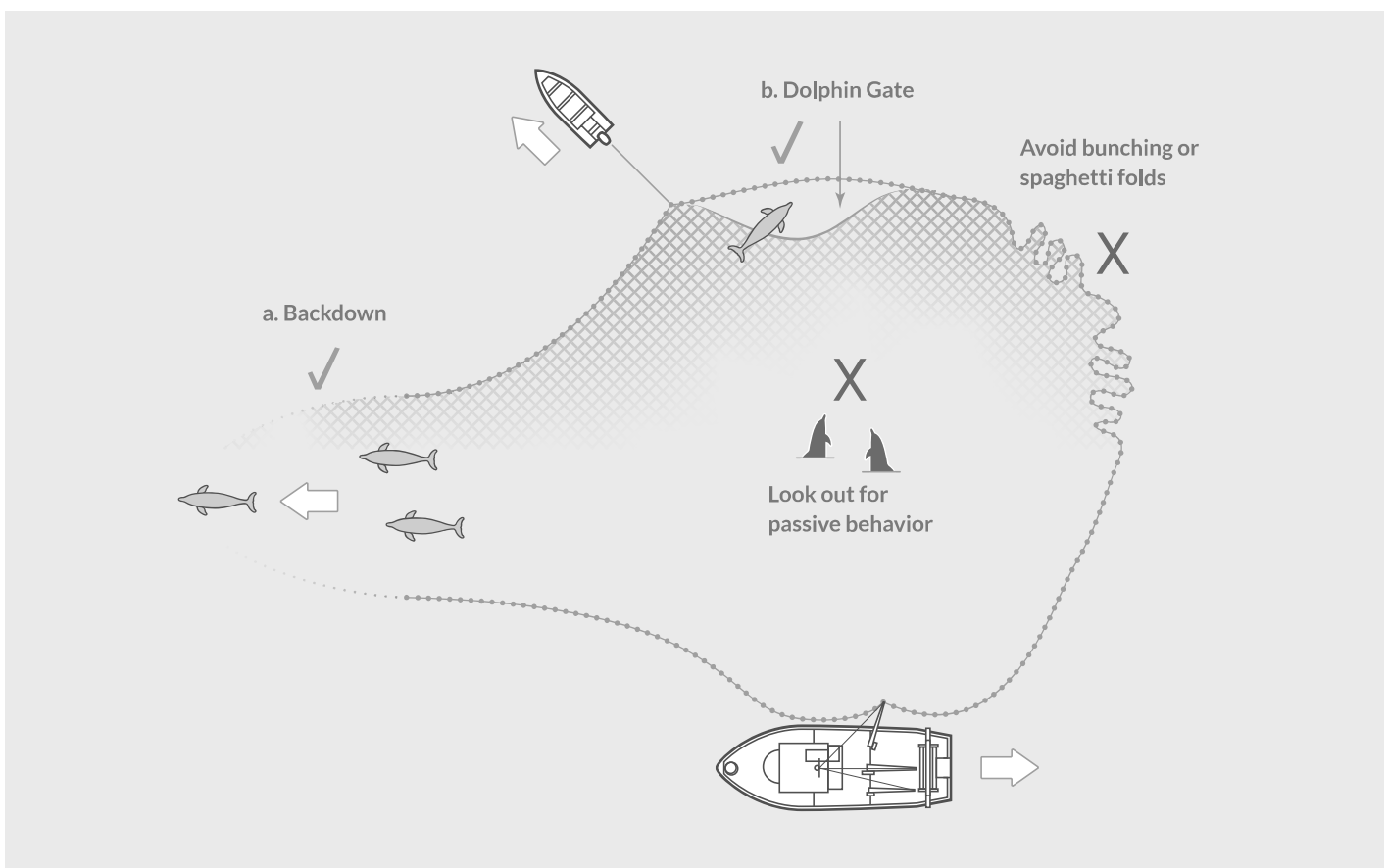
Encircled – purse-seine net

Purse-seiners also operate during the day and night, depending on the fish species they target and the region in which they fish, although their surface operations (and the use of powerful lights at night) mean that encircled small cetaceans are usually detected soon after the net has been pursed, early in the fishing operation (Hamer et al. 2008). Typically, encircled animals initially swim back and forth inside the cork line, at the surface and at the furthest point from the vessel. Oddly, despite the jumping behaviour that small cetaceans are often known for (especially the dolphins), they almost never use this ability to escape (NRC 1992), most likely due to their instinct to group together when under threat. It is at this time that efforts should be prioritised to remove the animals from the net. If delays occur, then the risk of stress

related 'passive behaviour' (Coe and Stuntz 1980) developing will increase, which is known to lead to death soon after (Hamer et al. 2008).

Three methods are known to be in use that create an escape route for encircled small cetaceans. The first was developed in the eastern tropical Pacific where large purse-seine nets are used and is known as the 'backdown' procedure. It involves the main vessel going astern and pulling the otherwise circular shape of the cork line into an ellipse, with the movement through the water causing the most forward end to be pulled below the surface, thus allowing the encircled animals to escape over the top (Gosliner 1999). A skiff is used to keep the main area of the net open and to prevent net folds from occurring, which are often evident in

Figure 5



(a) Backdown. The vessel goes astern, so the corkline becomes elliptical and the most forward end is pulled below the surface, thus facilitating escape.

(b) Dolphin gate. A prefabricated quick release rope detaches the corkline from the seine net, which sinks and creates an opening for escape. In both cases, a skiff will be needed to keep the net open (i.e. generally round in shape) and to prevent the formation of 'spaghetti' like net folds that typically form when hauling is stopped, which are an entanglement risk for encircled animals. If release attempts are delayed for too long, bycaught animals will become stressed and develop passive behaviour, indicating that death is imminent.

the 'spaghetti' folds in the cork line (Figure 5a). This phenomenon is more likely to occur when hauling stops, which is often necessary to initiate release procedures.

The second method was developed in Australia where medium to large vessels are used, which involves temporarily separating the cork line from the seine net using a quick release rope, known as the 'dolphin gate'. The heavier seine net material tends to sink, creating a hole that the encircled animals can swim through (Hamer et al. 2008). It is best to place the gate in the cork line at a point where it will be furthest from the vessel soon after net hauling commences (Figure 5b). Again, a skiff will be needed to open the gate and may also be useful for pulling on the net to maintain its shape and prevent folds from forming. A third method developed in the Mediterranean is similar, involving a skiff pulling

on a rope to cause a slack area in the cork line, which is then held down using a removable weight (ACCOBAMS 2018).

For all three methods, the placement of the skiff needs to be carefully considered, so its presence (i.e. the noise caused by the motor and the bubbles caused by propeller wash) does not deter the encircled dolphins from approaching the escape route. It may also be useful to use the skiff to shepherd the animals towards the opening, although it should be moved slowly and carefully to avoid further stress and strike injuries. On vessels with high lookout points (e.g. the wheelhouse roof, or a crow's nest) one or more crewmembers should keep watch to ensure (i) the seine net remains open and net folds do not form, (ii) all animals observed encircled are accounted for during the release operation and (iii) skiff operations remain safe for the operator and for the encircled animals.

Key actions

- Crew members, using high points such as the wheelhouse roof or a crow's nest, should be on the lookout for encircled small cetaceans during pursuing operations (early in the fishing event).
- Removal operations should commence as soon as encircled animals are detected, to avoid 'passive' behaviour form developing, which is an indicator of imminent stress-related death.
- One of three release methods should be used (depending on its suitability to the vessel), utilising a combination of changed fishing practice and modified net (see above).
- The skiff should be used to maintain the shape of the net (and prevent net folds from forming) and to shepherd encircled animals towards the exit point, although slow and careful manoeuvring is required to avoid further stress and injury to the animals and to ensure the safety of the operator.

Tangled – gill-net

Like longlines, a small cetacean tangled in a gill-net is unlikely to be detected until hauling and until it is close to the vessel. If the animal is alive, it likely only became bycaught in a demersal net during the haul, or may have been tangled for some time in a pelagic net and able to continue breathing at the surface. Hauling should cease when an animal is detected and procedures should commence as soon as possible to facilitate its release. The vessel should be manoeuvred to bring the net and the tangled animal alongside. Once this has occurred, two ropes should be secured around the net; one in front and one behind the animal. The animal should then be gently lifted, partially out of the water, making sure not to injure any appendages (Figure 6). Winches or cranes should

be used if available, especially if the animal is large. For small animals, two crewmembers may be able to lift on the two ropes and secure to rails, or hooks, on the gunwale. Using a sharp knife, or a goose-beak cutter, the meshes should be cut through on a line parallel to the length of the animal, so it can be rolled over and out of the net, gently landing back in the water. If a skiff is not available, or it is not possible to secure lifting ropes, then the curved blade with extension pole may allow the crewmember to reach the animal, to cut through enough net meshes to facilitate the release of the tangled animal. Great care needs to be taken under these circumstances, due the constant movement caused by the surge of the swell and roll of the vessel.