

A swimming support for dolphins undergoing veterinary care

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Introduction

Most stranded dolphins which arrive at rehabilitation centres cannot swim independently. Often they cannot swim at all, and without support sink and drown, or they cannot orient themselves and hit the pool wall. Until 1990 the Harderwijk Marine Mammal Park used a modified transportation hammock with lateral floats and a rope going to a pulley on the ceiling to prevent the dolphins from drowning or colliding with the pool wall (Kastelein *et al.*, 1990; Fig. 1).

Between 1990 and 1991, 6 harbour porpoises (*Phocoena phocoena*) and 3 whitebeaked dolphins (*Lagenorhynchus albirostris*) arrived at the Harderwijk park. The adult whitebeaked dolphins caused problems especially. First; four people were

needed to remove them from the hammock to see if their swimming abilities had improved, and if this was the case, 6 people were needed to prevent them from colliding with the pool wall. When the animals were tired, they had to be replaced in the hammock. Secondly; when they were a little stronger, but still unable to swim free, these dolphins would swim as fast as possible in a straight line in the hammock until the rope leading to the ceiling was tight. The skin on the rostral side of the proximal end of the pectoral fins was damaged, despite the soft materials used for the hammock (Fig. 2). Thirdly; when they arrive whitebeaked dolphins are less tame than, for instance, harbour porpoises, bottlenose dolphins (*Tursiops truncatus*), belugas (*Delphinapterus leucas*), false killer whales (*Pseudorca crassidens*) or killer whales (*Orcinus*



Figure 1. Two adult whitebeaked dolphins supported by floats and a rope leading to a pulley on the ceiling (Photo: Ron Kastelein).

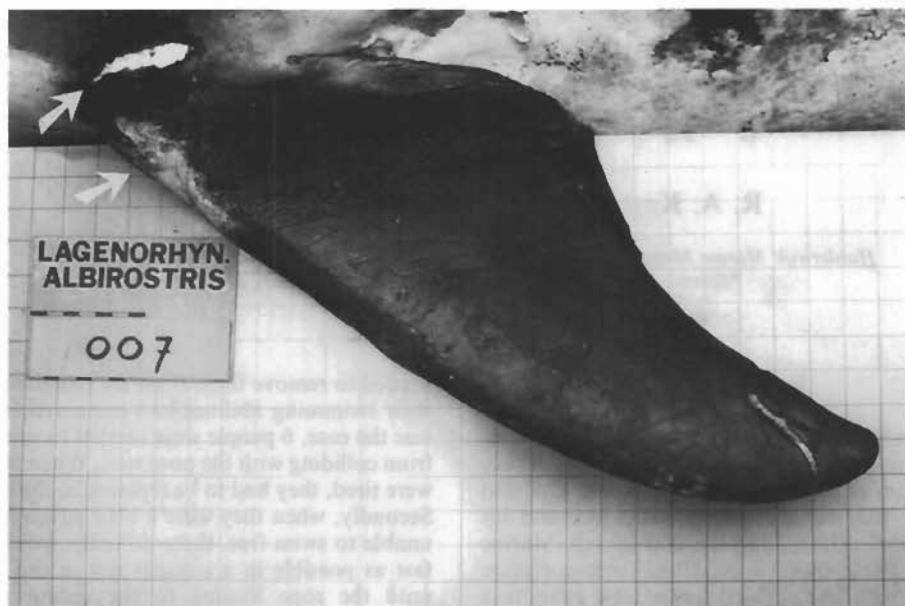


Figure 2. Injury of the skin rostral of the pectoral fin of a whitebeaked dolphin (arrows) caused by the animal trying to swim in a straight line while in a hammock suspended from a rope (Photo: Ron Kastelein).

orca). In general, whitebeaked dolphins apparently do not like to be close to humans or to be touched. Because of this, the handling required to take the animals in and out of the hammock caused stress to the dolphins. Fourthly; if the animals tend to swim in one direction, the rope twists and shortens, and the animals are lifted up (this can be prevented by the use of a turn-shackle, Fig. 3).

To mitigate these problems and improve the care of animals in rehabilitation, the Harderwijk Marine Mammal Park developed a dolphin swimming support in cooperation with the stainless steel company Sercon. This system is used in The Netherlands National Cetacean Research and Rehabilitation Centre at the Harderwijk Park.

Materials and methods

The swimming support consists of a bridge which spans the width of a 8.6×6.3 m pool (Figs. 4 and 5). This bridge supports a pair of wings of which the elevation can be adjusted by a winch. The wings can turn smoothly due to a nylon bushing, and even a small harbour porpoise is able to push the wings round. The ends of the wings each have 2 parallel bars, the distal one is welded to the wing. The other bar can slide along the wing to adjust the width depending on the size of the dolphin. The top of each bar contains about 20 pins. From any 4 of these pins (depending on the length of the dolphin)



Figure 3. A juvenile harbour porpoise in a hammock with lateral floats. The arrow indicates the turn-shackle which prevents the rope from twisting, and lifting the animal (Photo: Henk Merjenburgh).

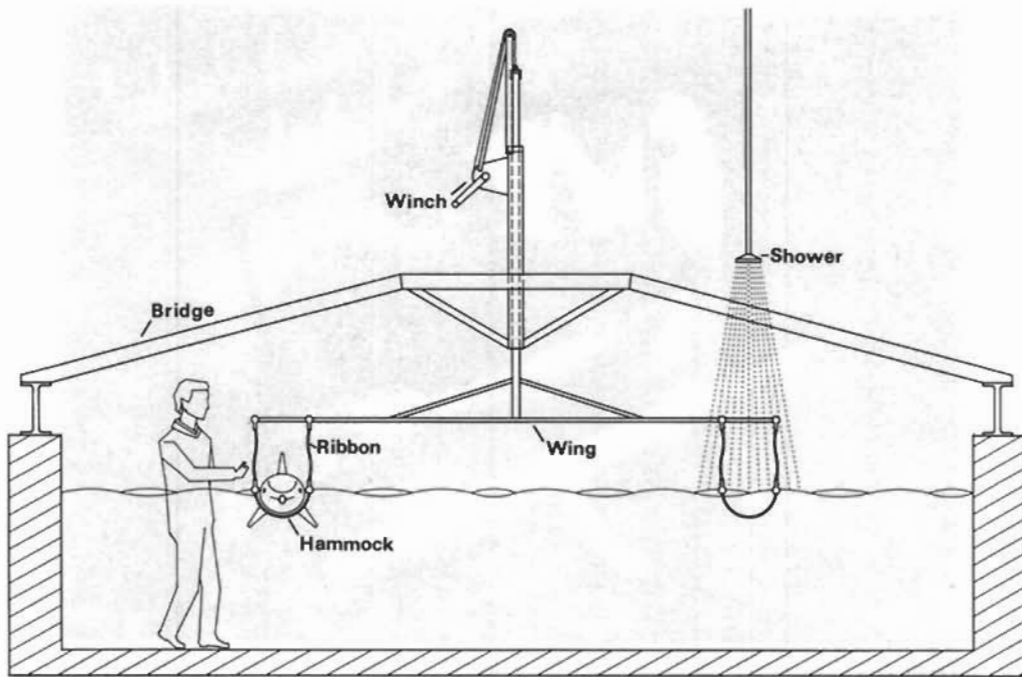


Figure 4. A lateral view of the dolphin swimming support. The elevation of the wings is controlled by the winch (Drawing: Alex Datema, courtesy of Sercon).

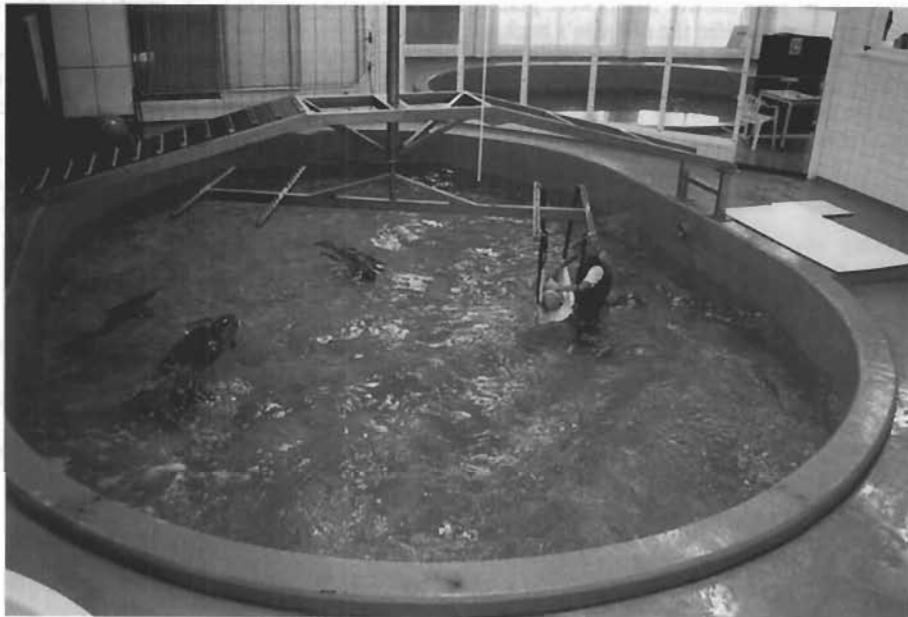


Figure 5. The dolphin swimming support. A towel is being put on the dolphin's back to prevent dehydration and overheating (Photo: Ron Kastelein).



Figure 6. A 55 kg juvenile whitebeaked dolphin being put into a hammock which is connected to the dolphin support system by ribbons (Photo: Henk Merjenburgh).

nylon ribbons descend to the 4 corners of 2 tubes in a hammock (Fig. 6). All components of the swimming support are made of 316 stainless steel.

A wooden gangway on the bridge allows easy access to the winch. Two shower heads were placed above the wings to moisturize the dolphin's back as it passes underneath. When the dolphins are able to swim without support, the wings of the swimming support can be raised, so that the animals will not injure their dorsal fins.

Results

The swimming support has been used for the rehabilitation of 4 harbour porpoises and 3 whitebeaked dolphins. On one occasion it supported two 55 kg juvenile whitebeaked dolphins simultaneously. The support worked well and can be turned easily by 1 or 2 animals, and by small and large dolphins.

The angle of the dolphin's body in the horizontal plane can be adjusted with the nylon ribbons. Stainless steel rings can be added to the ribbons and can slide on the pins of the bars at the ends of the wings. To prevent a dolphin from swimming or sliding out of the hammock, soft bands with Velcro go around its body rostral and caudal of the dorsal fin. When in the hammock, the animal's back and dorsal fin are covered with wet towels. The towels reach the water, so they can absorb pool water. The

rostrum may be covered with cod liver ointment to prevent dehydration. However, this does not prevent overheating, thus this body part has to be moisturized frequently as well.

When a dolphin is too weak to make the support move, the showers cannot be used because the animal may stay underneath them for too long. In such a situation the back of the animal, the towels and rostrum, can be moisturized manually with a small plastic container at the end of a pole so that the person applying the water can stay outside the pool. By tilting the container slowly above the dolphins' back, it can be moisturized without a sudden stressful shock.

Discussion and conclusions

The swimming support has the following advantages:

1. The dolphin's blowhole is always above the water surface, so it cannot drown.
2. The dolphin's body is submerged as much as possible, thus preventing dehydration and overheating.
3. The dolphin cannot collide with the pool wall, thus preventing skin injury and broken bones.
4. The dolphin cannot swim along the pool wall, thus preventing wear of its skin.
5. The dolphin can move its tail, thus preventing stiffness.

6. The animal's back is cooled and moisturized by the water from the showers.
7. As the dolphin moves, fresh water enters between its skin and the hammock.
8. When the dolphin is too weak to move its tail, the current in the pool will make the support go around slowly, creating a dynamic, more natural, situation.
9. The dolphin moves its tail to move around, which may be psychologically advantageous as the animal has some control over its surroundings.
10. Stress to the dolphin is reduced because handling can be minimized.
11. Fewer people are needed to treat the dolphin, which is especially useful at night.

The swimming support has one unforeseen disadvantage: when whitebeaked dolphins become healthy, they start to jump frequently and might have injured themselves on the support. To prevent

injury, floating buoys were connected underneath the wings with a rope. The dolphins avoided these buoys. Later the entire swimming support was removed until the dolphins were released in the North Sea.

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