



Popular science summary of the PhD thesis

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Title of the PhD thesis	Gillnet modifications to reduce bycatch of harbor porpoises
PhD school/Department	DTU Aqua

Science summary

Harbor porpoises are small toothed whales inhabiting the coastal waters of the Northern hemisphere. They are the only whale species that is regularly encountered in the Baltic Sea. To orientate themselves underwater, they use their biosonar. They emit short acoustic signals, so-called clicks, and perceive their surroundings through the returning echoes. Harbor porpoises are regularly bycaught in gillnets. Gillnets are fishing nets that stand vertically in the water column like curtains and are made of very thin nylon strings. They have low sea bottom impacts, are very catch efficient, easy to handle and one of the most commonly used fishing gears worldwide providing food and income for thousands of people. Harbor porpoises do not recognize that gillnets are impenetrable, entangle in the netting and drown. To avoid the bycatch of harbor porpoises, one idea is to make the gillnets more “acoustically visible”, so that porpoises perceive the netting as an obstacle they cannot swim through. In this thesis, a reflector was developed that can be attached to the gillnet and make it much more acoustically detectable than standard nylon nets while being invisible for fish. This reflector is a small (8 mm diameter) sphere made from acrylic glass, widely known under the proprietary name Plexiglas®. The spheres create the semblance of a barrier if attached at approximately 30 cm distance from one another. The echo returning from the gillnet with spheres is much stronger compared to a standard net, regardless from which angle the porpoise is approaching. In a first commercial trial, the gillnet modified with acrylic glass spheres caught fewer harbor porpoises than a standard net that was set simultaneously. The results are the first promising step to make gillnets a more sustainable fishing gear and mitigate the conflict between gillnet fisheries and nature conservation goals.