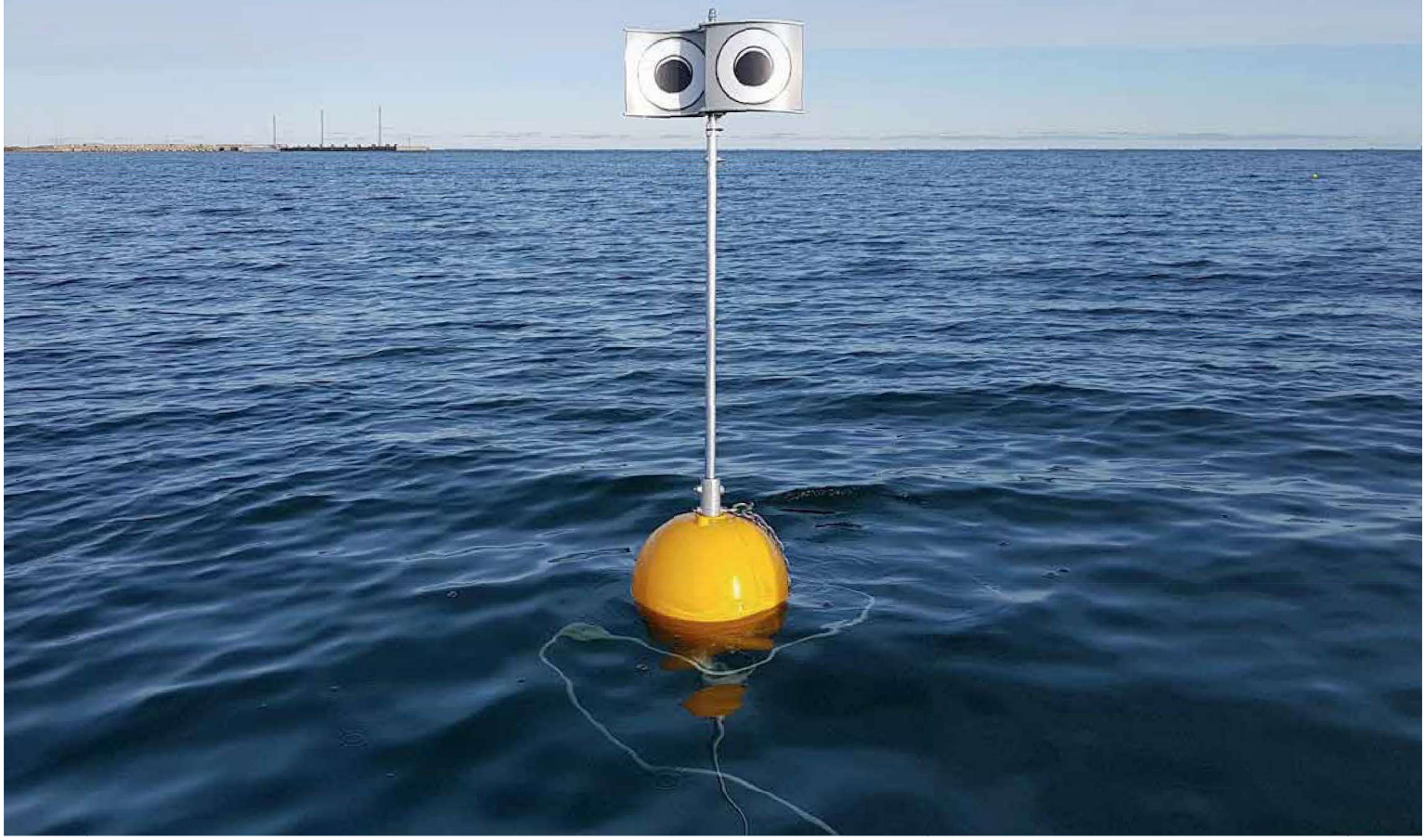
LIFEBUOYS FOR BIRDS

Many seabirds meet their end accidentally tangled in fishing nets. In a brand new approach to this problem, our Partners are studying the way seabirds detect predators, trialling unique floating gadgets that could keep them away from netting



Imagine you're a Long-tailed Duck, and you see a fish in the water right underneath you. You dive towards it – but as you catch it in your beak, you hit a wall of near-invisible netting, meeting the same fate as the fish you're trying to eat.

This is a danger that seabirds face every day. Many modern 'gillnets' – vertical sheets of netting held up by floating buoys, which trap passing fish by the gills – are made of monofilament nylon that is practically invisible underwater. This material is used worldwide, particularly among small-scale fishers owing to its low cost. To the public, ingesting plastic may be one of the most well-known threats to seabirds; yet an estimated 400,000 seabirds are killed each year through accidental 'bycatch' in fishing nets. The problem spans across the avian world: nearly 150 different seabird species thought to be susceptible to this danger.

To tackle this issue, researchers and conservationists including the RSPB (BirdLife in the UK) have for many years been exploring ways to make gillnets more visible to birds

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↑ XThe Looming-eyes Buoy, AKA the 'Bobby' Photo Andres Kalamees

← Long-tailed Duck *Clangula hyemalis* Photo Dave Inman/Flickr

↖ The species is the only duck that uses its wings to dive, allowing it to explore deeper depths Photo Wolfgang Wander

↓ Bobbys waiting to be placed out at sea Photo Andres Kalamees

underwater, through modifications to the nets, or adding devices such as high-contrast panels or LED lights. However, given the challenges of the underwater environment (where even marine birds have reduced vision), as well as the need to avoid warding off the fish themselves, underwater strategies have so far had limited success.

It was high time for a new approach. Researchers went back to the drawing board, asking simple questions: What do diving seabirds see? How do they forage? What do they avoid? With the help of animal behavioural ecologists and informed by tracking data, we realised the answer could lie in preventing birds from coming near the gillnets at all.

When researching solutions, nature – as it often does – offered some hints. The conspicuous 'eyespots', which are found on numerous creatures such as butterflies, can evoke an avoidance response in many bird species. Similarly, looming movements have been found to trigger a collision-risk signal in birds' brains. On land, the combination of these two visual stimuli (i.e. eyes appearing to move towards a bird) has resulted in significant escape responses in several bird species.

To adapt this technique to the marine environment, we developed a floating buoy that displays large, obvious 'looming eyes' that can be seen from a long way off. As the buoy bobs in the water, the tall pole sways conspicuously, and the eyes rotate in the wind. We called it the Looming-eyes buoy (LEB), or more affectionately, 'The Bobby'.

Since February 2020, we have been working with the Estonian Ornithological Society (BirdLife Partner) to test the effect of this new device on birds out at sea. Trials are currently ongoing in Küdema Bay protected area, off the Estonian island of Saaremaa. The bay attracts large concentrations of wintering seabirds, including the Long-tailed Duck *Clangula hyemalis* and Steller's Eider *Polysticta stelleri*, both of which are Vulnerable to extinction, largely due to bycatch. Researchers are monitoring the behaviour of any seabird that enters within 50 metres of the 'Bobbys' compared to an area containing regular fishing buoys. No gillnets are present in either location, making the experiments completely safe for the birds. If these trials prove successful, the 'Bobbys' could be rolled out commercially, saving seabird lives across the world. ■

This project is made possible thanks to the support of the National Geographic Society, as well as the Baltic Sea Conservation Foundation for the development and production of the LEB prototypes.

BIRD FACTFILE

LONG-TAILED DUCK
Clangula hyemalis

RED LIST STATUS: Vulnerable

RANGE: Circumpolar distribution including northern America, Europe and Asia

THREATS: Bycatch in Baltic Sea wintering grounds, oil pollution, hunting

FAST FACT: Can dive to a depth of 60 metres