

# Science for Environment Policy

## Underwater survey noise affects feeding and social behaviour of harbour porpoises

**Noise from underwater** geological surveys may be affecting the feeding and social interactions of harbour porpoises, new research has found. The study, conducted off the north-east coast of Scotland, found that the buzz clicks used by porpoises to hunt and socialise were reduced by 15% during the surveys.

**Underwater geological surveys** are often conducted using seismic airguns. These repeatedly shoot compressed air into the water, producing loud pulses of sound which then reflect back and can be used to identify oil or gas deposits.

Many marine mammals, including harbour porpoises (*Phocoena phocoena*), use sound, not only to communicate socially with one another but also to locate prey. Loud underwater noises, such as those from seismic airguns, may therefore have a damaging effect on these animals. For this study, researchers investigated the impacts of seismic airguns on porpoise behaviour using underwater recording devices, Continuous Porpoise Detectors (C-PODS). These devices remotely detect the ultrasound clicks porpoises use to form an image of their surroundings, locate their prey and communicate.

The researchers used C-PODS to pick up click patterns made by harbour porpoises at 22 sites in the vicinity of an airgun survey, conducted from 1<sup>st</sup> to 11<sup>th</sup> September, 2011, in north-east Scotland. They then analysed the clicks to identify the buzzes that harbour porpoises use for hunting and communicating. Finally, they ensured that the C-POD data was not affected by any background noise from the survey vessel.

The results show that the porpoises changed their behaviour during exposure to the noise by reducing their buzzing activity by 15%, compared with that detected before the start of the survey.

Furthermore, the buzzing activity increased with the distance from the survey vessel. The researchers found there was a 35% chance of detecting buzzing activity 40 km away from the vessel, compared with only a 15% chance of picking up buzzing activity nearby.

They also measured the airgun noise at 15 underwater sites, at distances ranging from 1.6 to 61.8 km from the survey vessel, to identify the relationship between noise levels and the occurrence of buzzes. They found that there was a 7% chance of picking up buzzing activity at the highest recorded noise level, 165 dB re 1 mPa<sup>2</sup>s (a measure of sound exposure) compared with a 31% chance of detecting buzzing activity with the lowest recorded level of 130 dB re 1 mPa<sup>2</sup>s.

They suggest that noise impact assessments should investigate subtle behavioural changes affecting porpoise prey capture and socialisation behaviours. Porpoises use energy rapidly and need to feed regularly. Any reduction in feeding rates could potentially lower their survival or reproductive rates, with long-term consequences for porpoise populations.



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