Implementation Review
- Germany -

Identify the priority bycatch issues and relevant stakeholders (RES-01)

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CIBRINA Life Project (different German institutes involved)

Improve estimates of bycatch rates to support development of conservation strategy (RES-02)

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CIBRINA Life Project (different German institutes involved)

Project: Bycatch and health assessment on harbor porpoises from 2023 to 2026.
https://www.tiho-hannover.de/en/clinics-institutes/institutes/institute-of-terrestrial-and-aquatic-wildlife-research-itaw/research/projects-aquatic/ongoing-projects-aquatic/bycatch-and-health-assessment-on-harbor-porpoises-from-2023-to-2026

Implement and assess pinger and other mitigation measures to reduce bycatch (MIT-01)

Management Measures in N2K Areas

seasonal and spatial gill net ban in the N2K Areas of EEZ

Project: "Stella 2" (completed 2025)

Berzosa SÁ et al. (2025) From semi-controlled environment to field trials: Testing pot entrance designs for Atlantic cod (*Gadus morhua*). Fish Res 288:107470, DOI:10.1016/j.fishres.2025.107470

Kindt-Larsen L, et al. (2024) Pearls are not just for girls: Plastic spheres do not interfere with target catches in a set net fishery. Fish Res 276:107032, DOI:10.1016/j.fishres.2024.107032

Milanelli et al. 2026: PearlNet performance: Catch efficiency and practicality of a potential odontocete bycatch reduction tool in set net fisheries. Fish Res 296:107702 DOI:10.1016/j.fishres.2026.107702

Implement and assess pinger and other mitigation measures to reduce bycatch (MIT-01)

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Project: „PAL-CE“

- Final report in preparation
- Publications in preparation
- Dissertation Thaya Dinkel
  - https://ediss.sub.uni-hamburg.de/handle/ediss/11713

PAL evaluation - compromised passive-acoustic monitoring ?

- Schnitzler JG et al. (2025) Artificial clicks (Porpoise ALert) affect acoustic monitoring of harbour porpoises and their echolocation behaviour. Front. Mar. Sci. 12:1591839. https://doi.org/10.3389/fmars.2025.1591839

Implement a wide-scale surveillance programme to monitor trends in distribution and abundance in the Greater North Sea (MON-01)

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National monitoring programmes:

- Aerial Surveys:
  - ✓National surveys: summer 2025

- Acoustic Monitoring:
  - ✓ Wadden Sea – 5 POD stations all year (2011- cont.)

Presentation & manuscript under review:

Prolonged temperature anomalies alter harbour porpoise acoustic activity and foraging behaviour
by Louise Moysan, Aylin Öztürk, Rémi Pigeault, Juan Felipe Escobar-Calderon, Nadya C. Ramírez-Martínez, Johannes Baltzer, Tobias Schaffeld, Ursula Siebert, Joseph G. Schnitzler

Implement a wide-scale surveillance programme to monitor trends in distribution and abundance in the Greater North Sea (MON-01)

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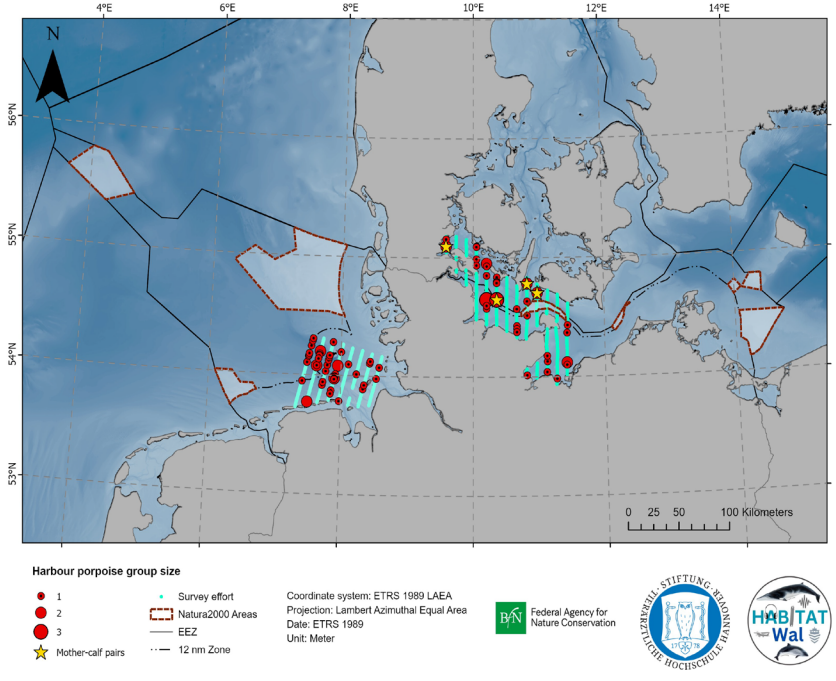
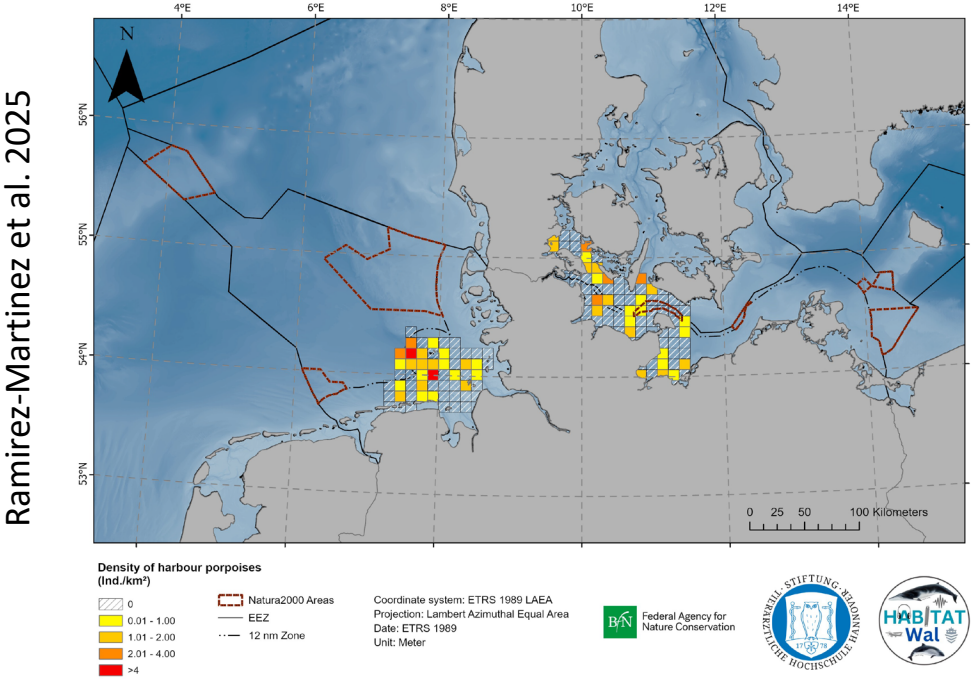


Ramirez-Martinez et al. 2025



Summer 2025: abundance in one block (E) in the North Sea:
3,373 harbour porpoises (95% CI: 1,781 – 5,451)

Implement a wide-scale surveillance programme to monitor trends in distribution and abundance in the Greater North Sea (MON-01)

- **Presentation**: "Update on species distribution modelling for harbour porpoises in the North Sea and Belt Seas" (Anita Gilles)

Improve understanding of causes of seasonal and annual variation in abundance and distribution, in relation to human activities & environmental change

HABITATWal – Habitat choice and population dynamics of harbour porpoises in the ecosystem in the German North and Baltic Sea (2022 - 2026; ITAW, funding BfN)

- Habitat selection of harbour porpoises in the North Sea and Baltic Sea
- Influence of anthropogenic disturbance factors on the population dynamics of harbour porpoises
- Habitat-based models

"Anthrotop" Anthropogenic Use of the North Sea: Impacts on marine Top Predators (Mai 2022 – April 2025 - CAU-Kiel und AWI Sylt; funding BfN)

- Analyses on the distribution and abundance of target species and on effects of anthropogenic activities
- Modelling of the distribution and abundance of marine mammal species (+fishes) in relation to current and future anthropogenic activities.
- Potential effects on food web structures (Doggerbank)

Improve understanding of causes of seasonal and annual variation in abundance and distribution, in relation to human activities & environmental change

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- **CoastalFutures:**

Scenarios to promote sustainable futures of contested marine areas / Marine Mammals (ITAW + Consortium) 2nd phase Dec 2024 - Nov 2027

Objectives:

- integrate the density and distribution of marine mammals in the novel cross-scale end-to-end (E2E) ecosystem model:
- creating a virtual environment to study the effects of climate change and anthropogenic uses on ecosystems and key species
- test different management measures that have not yet been evaluated in the context of the protection and conservation of marine mammal populations.
- Scenarios will include the expansion of offshore wind farms in particular.

- *https://www.sustainmare.de/104232/index.php.en*
- *https://www.coastalfutures.de/index.php.en*
- *https://www.tiho-hannover.de/en/clinics-institutes/institutes/institute-of-terrestrial-and-aquatic-wildlife-research-itaw/research/projects-aquatic/ongoing-projects-aquatic/coastalfutures-scenarios-to-promote-sustainable-futures-of-contested-marine-areas-1*

Further our understanding of population structure (RES-04)

Celemín E, et al. (2025a) Evolution and organization of MHC II genes in harbour porpoises: insights from long-read cetacean genome assemblies, whole genome re-sequencing and locus-specific genotyping. *Molecular Ecology* **34**, e70006.

Celemín E, et al. (2025b) Evolutionary history and seascape genomics of Harbour porpoises (*Phocoena phocoena*) across environmental gradients in the North Atlantic and adjacent waters. *Molecular Ecology Resources* **25**, e13860.

Presentation:

- Latest genetic findings on the Baltic harbour porpoise (Ralph Tiedemann and Maxi Tomowski)

Monitoring of health and nutritional status, diet, life history parameters, and causes of mortality (MON-02)

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Stranding network

- Schleswig-Holstein (SH): ITAW https://www.tiho-hannover.de/en/clinics-institutes/institutes/institute-of-terrestrial-and-aquatic-wildlife-research-itaw
- Investigation of the health, nutritional status and diet of harbour porpoises
- Monitoring reports published annually: https://www.schleswig-holstein.de/DE/fachinhalte/A/artenschutz/ meeressaeuger

Presentations:

- "Advances in the inner ear analysis of cetaceans“ (Maria Morell)
- "Three decades of anisakid nematode infections in harbour porpoises of the North- and Baltic Sea: trends and health effects“ (Kristina Lehnert)

Improve understanding of and develop mitigation for the risks of anthropogenic sound (MIT-02)

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Projects completed but ongoing output

SATURN (Developing Solutions AT Underwater Radiated Noise), coordinator UC Cork/MAREI, ITAW + Consortium funded by EU (2021-2025). The biological WG investigates the influence of underwater noise on the behaviour, health and energy balance of aquatic organisms, including harbour porpoises.

Saturn
Developing Solutions for Underwater Radiated Noise

DIAPHONIA (Diagnostic framework for assessing and prediction of the effects of underwater noise on marine species) (ITAW + Consortium, JPI Oceans funded; 2023-2025). One objective is to develop a possible diagnostic fingerprinting composed of several tissue markers incorporating molecular and microscopic techniques to identify functional and morphological changes in the acoustic pathways of aquatic organisms such as harbour porpoises.

DIAPHONIA

PURE WIND (Impact of sound on marine ecosystems from offshore wind energy generation) (coordinator A. Širović/NTNU + ITAW + Consortium, JPI Oceans funded; 2023-2025). One of the objectives is to identify spatial and qualitative use of operating offshore wind farms by top predators, including harbour porpoises.

PURE WIND

Improve understanding of and develop mitigation for the risks of anthropogenic sound (MIT-02)

Ongoing projects

DEMASK - Development and evaluation of noise management strategies to keep the North Sea healthy. (coordinator Rijkswaterstaat (RWS), ITAW + Consortium, EU Interreg co-funded; 2024-2026).

DEMASK aims to encourage maritime decision-makers, spatial planners and industry stakeholders to address the issue of underwater noise by jointly planning scenarios for the future of the North Sea, improving the tools and knowledge to assess noise mitigation scenarios and setting strategic priorities that lead to a well-managed noise landscape. **Risk assessments for biodiversity (incl. harbour porpoise** and other marine mammal species), based on sensitivity, distribution, habitat and exposure to noise.

Recent publication:

Calonge, A., Eicher, H., Krång, A.-S., Debusschere, E., de Jong, K., McQueen, K., Ainslie, M. A., den Held, M. E., Rumes, B., & Schnitzler, J. G. (2026). A trait-based framework to identify North Sea fauna vulnerable to underwater noise. Marine Pollution Bulletin, 227(March), 119406. https://doi.org/10.1016/j.marpolbul.2026.119406

Improve understanding of and develop mitigation for the risks of anthropogenic sound (MIT-02)

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New Projects:

1. **NEUSE** (Naturschutzfachliche Einordnung von Unterwasserschalleffekten)
   Assessment of underwater noise effects from a conservation perspective

Aims:

- Analysis of existing data (data logs, AMAR recorders, other acoustic data)
- Acoustic measurements of OWP service vessels at various speeds – development of limit values
- Development of assessment concepts and derivation of limit values for various sound sources (including new ones, e.g. airguns, USBLs, rocket launches, etc.)
- Development of an underwater sound strategy for the German North and Baltic Sea
- Testing of measures within the framework of environmentally compatible blasting – effectiveness of deterrence concepts and blast craters

Improve understanding of and develop mitigation for the risks of anthropogenic sound (MIT-02)

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2. **ICU-Noise (**Effects of marine intermittent and continuous underwater noise and development of an assessment framework)

Aims:

- Assessment of the potential harmfulness of various intermittent noise sources (literature review)
- Collection of reliable data to assess the effects of intermittent sound sources, e.g. USBLs, sonars, sparkers, ultrasonic antifouling...
- Organisation of an international expert workshop to develop assessment frameworks for ship-borne and stationary intermittent sources
- Development of assessment concepts

Improve understanding of and develop mitigation for the risks of anthropogenic sound (MIT-02)

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3. FaunaGuard (Verification of the deterrent effect of the FaunaGuard porpoise module)

Aims:

- Planning and conducting a field trial to assess the deterrent efficiency of the FaunaGuard (independent of construction site activities)
- Evaluating the deterrent efficiency of the FaunaGuard

4. WS-GrüMe (Workshop on Alternative Foundation Technologies and Noise Mitigation Measures – Steps Towards the State of the Art) (internal)

- Overview of the current state of development and identification of steps for implementation.
- Based on the workshop results, the study "Noise mitigation for the construction of increasingly large offshore wind turbines – Technical options for complying with noise limits" (Koschinski, Lüdemann 2020; BfN) will be updated

Ensure screening and assessment of the occurrence and effects of hazardous substances (MON-03)

Project: Development of a monitoring and assessment concept for the pollution load of marine mammals of the North Sea and Baltic Sea for the implementation of the MSFD (Oct 2021 – March 2024) (ITAW, UFZ)

- **Report**: Schick et al. (2025), "Entwicklung eines Monitoring und Bewertungskonzeptes für die Schadstoffbelastung mariner Säuger in der Nord und Ostsee zur Umsetzung der MSRL". Umweltbundesamt, Dessau-Roßlau. https://doi.org/10.60810/openumwelt-7795

- German Environmental database (Pollutants): https://geoportal.bafg.de/MUDABAnwendung/

Monitor for potential increases in anthropogenic activities that lead to incidences of death, injury or adverse health effects (MON-04)

CREATE 2:

Concepts for reducing the impact of anthropogenic pressures and uses on marine ecosystems and biodiversity;

Development of indicators for the health of marine mammals and their further development for the assessment of anthropogenic impacts (Dec. 2024 – Nov. 2027) (ITAW + Consortium)

https://www.sustainmare.de/104230/index.php.en

Monitor habitat quality, including protected sites, to ensure management is effective and that the ecological functions are maintained (MON-05)

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- Usage of the long-established monitoring of habitats and biotopes, marine mammals and seabirds, which primarily serves to fulfill the monitoring and reporting obligations under Art. 11 and 17 Habitats Directive and Art. 12 Birds Directive
- Synergies with other monitoring programs (e.g. as part of the MSFD and the expansion of offshore wind energy)
- Identification and development of monitoring needs and activities for N2K sites as an integrated part of the management plans