### SELECTED FINDINGS

**Breeding birds** (Kolffjørgen et al.)

For most species (55%) signiﬁcant population declines have been recorded since 1991. Decreases were found among all species groups, including species of which the Wadden Sea hosts internationally important numbers, such as: redshank, the oystercatcher, the common tern, the great black-backed gull and the common gull.

**Climate ecosystems** (Philipart et al.)

During recent decades, the Wadden Sea ecosystem has already shown clear signs of recent climate change, including temperature increase, import of southern warm-water species and changes in the timing of life cycle events. Impacts were found to have increased with additional species shifts in geographical distributions (e.g. eel, post, sea bass, Eurasian curlew, common eider) and in the timing of migration (e.g. greylag goose, lapwing) and reproduction (e.g. common seals).

**Marine litter** (Pliet et al.)

Marine litter of different sizes and from diverse sources occurs on dunes and beaches in and on inter-tidal to subtidal sediments and in inter-tidal to subtidal sediments, including protected seabirds and mammals. The amount of litter entering the marine environment is continuously increasing. This increase is, however, not apparent in the results of the monitoring programmes due to the fragmentation of plastic objects into microplastics, which are not sufficiently assessed by current monitoring programmes. Densities of microplastics are expected to increase substantially in the future in all marine habitats.

**Marine mammals** (Jensen et al.)

The harbour seal is the most abundant seal species in the Wadden Sea, with an estimated population size in 2017 of 38,100 animals. This is similar to the numbers estimated around 1900, before hunting drastically decimated the population. The population showed strong recovery from two virus events and has kept growing, although with significantly reduced growth rates in recent years. Grey seals returned to the Wadden Sea in the mid-1990s and the population had grown to 5,445 by 2017. The distribution of grey seals in the Wadden Sea has expanded to Danish waters. The harbour porpoise is the only cetacean in the Wadden Sea. Its total population in the North Sea is estimated at about 230,000 animals.

**Macrozoobenthos** (Dvjet et al.)

Over the last decades the total biomass of macrozoobenthos has been relatively stable with some exceptions in specific monitoring areas where populations of invasive species strongly decreased or increased, in particular the recent invader sandpiper (Myr arenostris) and recent invaders Atlantic razor clams (Ensis directus) and the polychaete worm (Ensis directus). However, not apparent in the results of the monitoring programmes due to the fragmentation of plastic objects into microplastics, which are not sufficiently assessed by current monitoring programmes. Densities of microplastics are expected to increase substantially in the future in all marine habitats.

**Salt marshes** (Esselink et al.)

Salt marshes in the Wadden Sea extend over almost 40,000 ha, representing about 20% of the total of coastal salt marshes in Europe. After a reported 1.600 ha increase of salt marsh in the previous 10 years, based on most recent surveys, salt marshes showed an almost Wadden Sea-wide continued expansion. Despite the recent extension of salt marshes, the extent of pioneer and low-marsh vegetation types remained relatively constant, whereas vegetation of late-succesion stages increased. Sea couch grass (Elytrigia arenaria) has become the most dominant vegetation type in the high-grass zone.

### PROCESS

**Trihalteral Monitoring and Assessment Programmes (TMAP)** & other surveys

Delivers harmonised data for the development and evaluation of trilateral Wadden Sea conservation policies and management.

TMAP is carried out by national and trilateral cooperation in charge of monitoring.

**Common Wadden Sea Secretariat**

Overall coordination of QSR

**Quality Status Report**

3D thematic reports sorted in four sections:
- Geomorphology
- Climate and weather
- Habitats and communities
- Human activities

**Selected findings**

- Marine litter (Pliet et al.)
- Pollution
- Human activities
- Salt marshes (Esselink et al.)
- Macrozoobenthos (Dvjet et al.)
- Climate ecosystems (Philipart et al.)
- Breeding birds (Kolffjørgen et al.)

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The close partnership of science & research, nature protection and policy across Denmark, Germany and the Netherlands is the basis for 40 successful years of Trihalteral Wadden Sea Cooperation. TMAP and the QSRs are cornerstones of this collaboration and prerequisites for the World Heritage status of the Wadden Sea. The QSR findings form an invaluable foundation for the further implementation of the Wadden Sea Plan Targets, helping to conserve the site for future generations.