

MANAGEMENT BRIEFING: Terns



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SUMMARY OF KEY MANAGEMENT MEASURES

Several species of tern breed around the Baltic Sea using on offshore islands, beaches, dunes and gravel areas. The main pressures are at nesting sites when adults, eggs and chicks are vulnerable to predation by both native and non-native mammalian predators. Disturbance associated with human activity, either directly through egg collecting or indirectly (for example when engaged in recreational activities) can result in nests being abandoned and colonies being deserted. Damage and loss of suitable nesting habitats due to coastal schemes and development, and food shortages, can also lead to breeding failure.

Management objectives need to focus on removing the threats to terns in the Baltic Sea but should also be linked to measures needed for their conservation throughout their range. Such measures include predator control at nesting sites, encouraging recolonization of abandoned nesting areas and improving or restoring suitable habitat for nesting. Disturbance free areas are also key to breeding success. These types of measures can be linked to conservation objectives, monitoring and reporting within the framework of Marine Protected Areas as well as in species specific action plans promoted through local, regional and international agreements.

THE SPECIES

Little Tern (*Sternula albifrons*), Common Tern (*Sternula hirundo*), Arctic Tern (*Sterna paradisaea*), Sandwich Tern (*Thalasseus sandvicensis*) and Caspian Tern (*Hydroprogne caspia*) are all migratory species that breed around the Baltic Sea. The Gull-billed Tern (*Gelochelidon nilotica*) used to nest on the German Baltic coast in the 19th century and was reported from Denmark until 1970 but is now considered to be regionally extinct in the Baltic Sea.

The favored habitats for breeding colonies differ between the species and whilst all use coastal areas, some also establish breeding colonies inland. Sandwich Tern nesting sites are often in areas of grassland and occasionally in dunes or gravel areas in association with Black-headed gulls¹; Caspian Tern use more exposed locations such as outer skerries, always with other gulls or terns; Little Tern make bare scrapes in sandy and gravel banks and spits along the coast or construct their nests of shells or vegetation in inland areas along rivers, breeding in solitary pairs or small groups²; the Arctic Tern nests on sand or shingle beaches, ridges and spits, rocky ground and small islands in lakes and coastal lagoons.

Terns are opportunistic feeders, plunge diving for fish such as sandeels and stickleback, as well as feeding on insects and crustaceans e.g *Idotea baltica*³. During the breeding season they generally forage close to the breeding colonies, although some species can travel significant distances for food. Little Tern have very short foraging ranges, typically within 1 km of the shore whereas Arctic Tern have been tracked feeding up to 50km away from colonies⁴.

1 Herrmann et al., 2008

2 HELCOM Red List Bird Expert Group, 2013.

3 Lemmetyinen, 1973

4 Ratcliffe et al., 2008; del Hoyo et al., 1996

Distribution in the Baltic Sea

Breeding colonies of terns are widely distributed around the Baltic Sea with some differences between species because of their different habitat preferences. The main breeding areas of Little Tern are along the coast of the central and south-western Baltic where they favour sparsely vegetated islands and banks, dunes, and dry pastures along rivers, especially along the Vistula. The Caspian Tern breeds along the southern coasts of Finland and the Åland Islands. The breeding range of the Sandwich Tern expanded from the Atlantic into the Baltic Sea during the 20th century to the south-western, southern and central Baltic Sea. The largest colonies and the highest number of breeding pairs today are in the Danish areas of the Baltic Sea, especially in the Northern Kattegat and the Central Kattegat and Storebaelt¹.

Conservation status

Little Tern (*Sternula albifrons*), common Tern (*Sternula hirundo*), Caspian Tern (*Hydroprogne caspia*), Sandwich Tern (*Sterna sandvicensis*) and Arctic Tern (*Sterna paradisaea*) are on Annex I of the EU Birds Directive requiring the designation of SPAs.

HELCOM have assessed the Gull-billed Tern (*Gelochelidon nilotica*) as Regionally Extinct and the Caspian Tern as Vulnerable².

Little Tern, Common Tern, Arctic Tern, Caspian Tern and Sandwich Tern are species of surface feeding birds used by HELCOM as core indicators of the abundance of waterbirds in the Baltic Sea in the breeding season.

Both the Sandwich Tern and Little Tern are Vulnerable in Sweden and Lithuania; Near Threatened in Denmark, Estonia, and Poland, Endangered in Finland, and Critically Endangered in Germany. The populations of both species are reported as declining in Russia³.

1 HELCOM Red List Bird Expert Group, 2013

2 <http://www.helcom.fi/baltic-sea-trends/biodiversity/red-list-of-species/red-list-of-birds>

3 <http://www.helcom.fi/Red%20List%20Species%20Information%20Sheet/HELCOM%20Red%20List%20Sternula%20albifrons.pdf>; <http://www.helcom.fi/Red%20List%20Species%20Information%20Sheet/HELCOM%20Red%20List%20Sternula%20albifrons.pdf>

PRESSURES AND THREATS

Predation is a major threat to tern colonies as they nest on the ground in areas that can be easily accessible to mammalian predators such as foxes and wild boar. The feral American mink (*Neovison vison*) which escaped from fur farms in the 1920s is particularly problematic as it is now widespread and feeds on tern eggs, nestlings and adult birds. Predation on eggs and chicks by native species such as herring gulls and white-tailed eagles can also lead to significant losses and are reported to have devastated Caspian tern colonies in Sweden. Disturbance by predators can also lead to abandonment of breeding sites, one example being shifts in colonies of Caspian Tern colonies linked to disturbance by red foxes¹.

Human disturbance at nesting sites, during early courtship and incubation as well as during the weaning of chicks, can lead to nests being abandoned and whole colonies being deserted. This may be associated with recreational activities and research studies, for example, and may be the direct consequence of flushing birds as well as enabling gull predation while eggs and chicks are left exposed². Egg collecting by local people, reported in Estonia and Russia, has also been a pressure³.

Damage and loss of suitable nesting habitats associated with human activity is another pressure on breeding terns in the Baltic Sea. This is particularly the case for species that nest close to the water line, such as the Little Tern, as river regulation, coast protection and flood defense schemes can alter water levels making nesting sites more vulnerable to flooding.

Food shortages have led to breeding failure for the Arctic Tern in the North Sea and North East Atlantic and have been linked to overfishing of sandeels in areas where these fish form a major part of their diet⁴. Increasing sea temperatures in the North Sea may also have been a factor, by reducing sandeel recruitment⁵. Sandeels are marine species they have a limited range in the Baltic Sea, being concentrated in the Kattegat. The extent to which food shortages are an issue for terns in the Baltic Sea is unclear because although there is a commercial fishery for sandeels, the state of the stocks and reliance of terns on sandeels as a food source in the Baltic Sea is unknown⁶.



Common Tern (*Sterna hirundo*) © OCEANA Enrique Talledo
<https://www.flickr.com/photos/oceanaeurope/32270497830/in/photolist-84cPKN-WCGAPr-RaCJHC-oweGvj>

- 1 HELCOM, 2011 Red List of Baltic Breeding Birds
- 2 E.g. Fasola & Canova, 1996
- 3 <http://datazone.birdlife.org/species/factsheet/caspian-tern-hydroprogne-caspia/text>
- 4 Schreiber & Kissling, 2005; Mavor et al., 2004
- 5 Vigfusdottir et al., 2013
- 6 HELCOM 2013

MANAGEMENT MEASURES

Management measures need to be linked to conservation objectives and to address the main pressures and threats to the species. This will include actions across the range of the species concerned, not just in the Baltic Sea. Although not considered below, monitoring the effects of management measures is also essential to review progress, and to modify actions in light of the findings.

Conservation objectives

The EU Birds Directive requires the protection, management and control of all species of naturally occurring birds in the wild state in the European territory of Member States. Measures under the EU Habitats Directive are intended to maintain or restore habitats and species at favourable conservation status. The Conservation objectives for terns within MPAs need to facilitate these objectives by providing protection, as well as conditions to improve the conservation status of the relevant species. They may for example, include habitat protection, protecting or increasing the breeding population and/or improving breeding success at tern nesting colonies.

Management objectives

Management objectives need to focus on removing the threats to terns in the Baltic Sea. Specific tasks may be identified within MPAs, but the actions and objectives should be linked to conservation and management plans for the species throughout their range and developed with knowledge of the risks elsewhere.

Practical measures

Predator control

Hunting, trapping and electric fences have been used to keep mammal predators away from tern nesting sites with positive results. Removal of American mink (*N. vison*) over a period of nine years from four groups of small, mainly rocky islands in the Archipelago National Park (Finland), led to a marked increase in the breeding density of Arctic Tern as well as other nesting birds. This study not only demonstrated that it is possible to remove mink from large archipelagos with many small islands but also that it can also increase the breeding density of many bird species¹. A similar predator control programme to reduce the impact of predatory mammals in Mecklenburg-Western Pomerania in 2006 to keep bird islands and islets as well as breeding sites free of predatory mammals also had positive results. In the UK, a study on a sand spit in eastern Scotland led to a significant increase in nesting Sandwich Tern following the erection of an electric fence to separate the colony from the mainland and deter predation by the red fox *Vulpes vulpes*².

These and other studies have shown the benefits to tern colonies of controlling mammalian predators. However, since total eradication is unlikely, except perhaps from highly isolated islands, and because it is difficult to prevent immigration from surrounding areas especially along sections of mainland coast, control programmes will need to be carried out repeatedly and over the long term.

1 Nordström et al., 2003

2 Forster, 1975

Various methods have also been used to reduce gull predation at nesting sites. In Minnesota (USA) for example, brightly colored nylon string, in conjunction with shelters for chicks were successful deterrents to predation by ring-bill gulls¹. Some gulls may nevertheless have a protective function such as the black-headed gulls around Sandwich Tern colonies².

Encouraging recolonization

Sound recordings and decoys, when combined with other necessary measures such as habitat restoration and predator control (described above), have been used successfully to encourage terns to recolonize locations that formerly supported breeding colonies. Success also depends on understanding species behaviour. For example, colonisation programmes are more likely to be effective if they are near existing colonies and are probably colonized more quickly if they were occupied recently . Successful initiatives using decoys and acoustic playbacks include the return of Arctic and Common Tern to the Isle of May (UK) ; attracting Caspian Tern, Arctic Tern and Common Tern to nesting sites around inland lakes in the USA ; and attracting Common Tern to nest around Lake Ontario (Canada) .

Habitat restoration and creation

A variety of management measures can be used to maintain and restore suitable habitat for nesting terns depending on the condition of active or formerly important nesting colonies and the requirements of the different species.

They include managing vegetation to prevent overgrowth and maintain a desirable mix of open substrate with scattered cover by mechanical clearance, hand thinning, burning, tilling and periodic deposition of gravel or dredge spoil³. Keeping areas of bare ground, low vegetation cover and preventing erosion of islets using dredge spoil were recommended guidelines to benefit nesting Sandwich, Common and Little Tern in the Po Delta (Italy)⁴. In the Azores, artificial nest boxes were used by Common Tern chicks as shelters⁵ whilst artificial islands created using dredge spoil or other materials such as shingle, have been successful in attracting breeding Common Tern and Sandwich Tern in the UK⁶. Sediment recharge of eroded narrow beaches has can also be used to mitigate loss of habitat or colony flood risks⁷. Around Lake Ontario (Canada), artificial rafts were used successfully to encourage nesting Caspian Tern and Common Tern⁸. Whilst measures such as these can improve conditions for nesting terns, they may need to be supplemented by other actions such as predator control and reducing disturbance to nesting birds (described above) to support a successful breeding colony.

1 Maxson et al., 1996.

2 Herrmann et al., 2008

3 Nisbet,2002; Lamb, 2015

4 Fasola & Canova, 1996

5 Bried & Neves, 2015

6 Burgess & Hirons, 1992

7 Ratcliffe et al., 2008

8 Lampman et al., 1996; Dunlop et al., 1991

Disturbance free areas

Disturbance can affect birds in a number of ways including changing their behaviour, reproductive success and fitness¹. These risks can be reduced by establishing disturbance free areas, either seasonally, for example during the breeding season, or on a more permanent basis to prevent disturbance on significant feeding and resting grounds. Restricting human access to tern nesting sites during the breeding season reduces the risk of disturbance and colony abandonment. In the case of Little Tern, which use small scrapes as nesting sites, restricting access also reduces the risk of trampling on eggs. Management measures include having on-site wardens, erecting warning signs and fences, and roping off breeding areas during the nesting season. A three year comparative study of Little Tern nesting sites close to human activity compared to more remote locations in the Ria Formosa Natural Park (Portugal) both with and without protective measures (signage and wardening at times when human disturbance was higher) revealed that protective measures were the most important predictor of nesting success². Disturbance free zones as conditions for development schemes, should also be considered, taking account of the sensitivities/different flush distances of different species.

Regulatory measures

Protected areas

Protected areas have been established for birds through national conservation programmes and these locations may also be recognized as Baltic Sea MPAs, Ramsar sites and Ecologically or Biologically Significant Marine Areas (EBSAs). EU Directives require the designation of Special Protection Areas and Special Areas of Conservation to protect both the species and their habitat. Designation provides a regulatory framework for action. In the case of the Habitat Directive this include a requirement to achieve favourable conservation status and to prevent damage and deterioration of the habitat and its typical species. The Birds Directive provides for strict protection of birds including protection for disturbance and displacement by human activities.

Supporting measures

Action plans

International and regional Action Plans to reduce the risk to bird populations are essential for the many migratory birds that overwinter in the Baltic Sea. Management of species that spend their entire life cycle in the Baltic Sea is also likely to need the support and agreement of other Baltic States not only because of their widespread distribution but also because some of the significant threats can best be tackled by joint action at regional or international level. The Finnish Action Plan for the Caspian Tern³ is an example of this approach. Supporting the development and implementation of targeted Action Plans, especially where they identify lead bodies, set timetables, and provide administrative and/or financial support can help MPA managers achieve the site specific MPA conservation objectives for terns.

1 Schwemmer et al., 2011

2 Medeiros et al., 2007

3 <http://www.nationalredlist.org/files/2012/09/Action-plan-for-the-conservation-of-Caspian-Tern-in-Swedish-with-English-summary.pdf>

MPA Management plans

MPA management plans set out site specific objectives, actions, and supporting measures such as enforcement and opportunities for public participation in the process. They provide a framework for action, direction, and explanations for the introduction of measures such as zoning schemes with time/area closures. MPA management plans are also important in giving a focus to activities with more wide-ranging benefits such as raising awareness about the marine environment and about the threats to marine wildlife such as terns.

Planning frameworks

Planning frameworks can set direction, bring together key players and involve the public in decision making for particular geographical areas. There is a long history of land use planning in Baltic Sea countries with responsibility typically falling to local and regional authorities. Maritime Spatial Planning is a more recent idea and is the marine equivalent¹. The management of bird populations cannot be undertaken in isolation of activities, demands and influences taking place around them hence the need to incorporate the biodiversity objectives and associated management measures for terns into Maritime Spatial Plans.

The priorities and detailed provisions in management plans can have a direct impact on habitats used by terns, for example by identifying areas for development, methods of construction, and environmental impact assessment requirements.

Sector specific measures

Where particular activities are a threat to terns, particularly at nesting colonies, either because of their mode of operation, scale of operation or where they take place, regulation can support bird conservation. This may, for example include restrictions on access, and on the siting of coastal developments.

International agreements

International agreements support the introduction and enforcement of measures to protect the marine environment of the Baltic Sea. Through HELCOM, the Baltic Sea Action Plan. BSAP provides a framework for joint actions and objectives across Baltic states as well as added incentive for national initiatives aimed at reaching good environmental status for the Baltic Sea.

¹ Ehler & Douvère, 2009.

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