Nomination

Rissa tridactyla tridactyla, Black-legged Kittiwake

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Geographical extent

OSPAR Regions: all
Biogeographic zones: 1 – 4, 6 – 9, 11 – 20
Region & Biogeographic zones specified for decline and/or threat: Particularly Regions I and II.

The species breeds on coasts as far north as open water occurs, preferring high steep cliffs with narrow ledges (species will nest on glacier or snow bank face when it covers traditional cliff sites). *Rissa tridactyla* eat mainly marine invertebrates and small fish, with breeding birds feeding mainly within 50km of the colony. However they will also feed on discarded offal and/or fish behind fishing boats and in harbours. The species winters south to the Sargasso Sea and West Africa, being highly pelagic in the non-breeding season.

There are two recognised subspecies. Most of the global population is of the nominate subspecies, *R. t. tridactyla,* which can be found in the North Atlantic from Canada and North East USA, east through Greenland to West and North Europe and on to Russia. Another subspecies, *R. t. pollicaris* has been described in the North Pacific (Cramp & Simmons, 1983).

Application of the Texel-Faial criteria

Rissa tridactyla tridactyla was nominated for inclusion on the OSPAR List with particular reference to the global importance, decline and sensitivity criteria, with information also provided on threat.

Global regional/importance

The subspecies *tridactyla* is found throughout the north Atlantic, however, 85% of the breeding numbers of this subspecies are found within the OSPAR area, thus the OSPAR area is of global importance for this subspecies (Heubeck, 2004).

Decline

This species is evaluated as significantly declined. There was a moderate increase in the breeding population of this species in the OSPAR area over the period 1970-1990. From 1990-2000, the species declined in Greenland, Norway and the UK, and suffered a moderate decline [>10%] overall in Europe. Overall, population decreases of 20-29% were seen in Norway and the UK (with very high rates of proportional decline in Shetland [69%] and North East England [40%]), and declines [up to 19%] were seen in the Greenland population.

Rissa tridactyla population size monitored in the UK as part of JNCC's Seabird Monitoring Programme (SMP) has shown continued decline since 2000. In 2004 numbers declined in all regions of the UK to reach or approach their lowest levels since the SMP started in 1986, with the Northern Isles (Shetland and Orkney) being particularly hard hit (Mavor *et al.,* 2005). Results from 2006 surveys show that this downward trend is continuing, with the UK population index of *Rissa tridactyla* reaching its lowest in 21 years of monitoring, 50% lower than its peak in 1992 (JNCC, 2007). Recent declines have also been documented for populations in Iceland: a stronghold for this species. Monitoring of cliff-breeding seabirds at various colonies in Iceland revealed a significant overall decrease in numbers from the mid-eighties to 2005, although there were some localised increases (Garðarsson, 2006a). 2005 in particular was a bad year for breeding *R. tridactyla* in Iceland, with widespread breeding failure, particularly in the north and east of Iceland (Garðarsson, 2006b).

Sensitivity

The species is sensitive. It has a low *resilience* to adverse effects from human activity, with recovery likely to be slow due to its life history characteristics (long-lived and relatively slow to reproduce). First breeding does not usually occur until 4-5 years, usually 2 eggs are laid (can be 1-3) (del Hoyo *et al.,* 1996; Cramp & Simmons, 1983).
The species is sensitive to over-fishing. *R. tridactyla* are small-bodied surface feeders, with a relatively restricted foraging range from the breeding colony (staying mainly within 50km of the colony), and so

are more likely to be affected by local changes in prey abundance or availability (Furness & Tasker, 2000).

Threat

During the breeding season, *Rissa tridactyla* feed mainly on small pelagic shoaling fish, for example capelin *Mallotus villosus*, Ammodytidae (sandeels), herring *Clupea harengus*, and sprat *Sprattus sprattus* (Barrett & Tertitski, 2000; Cramp & Simmons, 1983). Planktonic invertebrates probably form much of the diet for the rest of the year, though there is little information available on this (Cramp & Simmons, 1983). *R. tridactyla* have a relatively restricted foraging range from the breeding colony, and therefore are more severely affected than wider-ranging seabirds by downturns in the supply of sandeels and other small pelagic shoaling fish. There is substantial published indirect evidence for a link between the observed decline in this species in the UK and lack of sandeels. Frederiksen *et al.* (2004) showed that both breeding productivity and adult survival of *R. tridactyla* were negatively affected by high sea surface temperatures and by the localised presence of an industrial sandeel fishery, with both factors presumed to affect sandeel abundance. Frederiksen *et al.* (2005) showed that *R. tridactyla* colonies in the UK could be grouped into regional clusters with similar patterns of temporal variability in breeding productivity, and that these clusters were consistent with sandeel population structure. Frederiksen *et al* (2006) also showed that the abundance of sandeel larvae was strongly related to plankton abundance, and that seabird (including *R. tridactyla*) breeding productivity was positively related to the abundance of sandeel larvae in the previous year. The close correlation in some areas between sandeel abundance and breeding success of this species is expected to continue to cause problems into the future, due to climate change effects, and likely resulting regime changes, for example in the North Sea.

R. tridactyla are also threatened by predation. Great Skuas *Stercorarius skua* are important predators of adults and their chicks in Shetland (Oro & Furness, 2002), and White-tailed Eagles *Haliaeetus albicilla* are known predators of chicks and major causes of disturbance in colonies in Norway (Barrett & Krasnov, 1996).

Relevant additional considerations

Sufficiency of data

There is sufficient data detailing the population trends of this subspecies within the OSPAR area, and the relevant threats. There is a substantial amount of information available on the link between sandeel populations and *Rissa tridactyla* breeding success.

Changes in relation to natural variability

Frederiksen *et al.* (2004) used a population model to predict *R. tridactyla* population growth in the North Sea and showed that if sea temperatures increase further the observed decline is expected to continue even if the sandeel fishery remains closed.

Expert judgement

There is good evidence of both threats to and decline of this species in the OSPAR area.

ICES Evaluation

The ICES evaluation of this nomination (ICES, 2007) agreed that the species is highly sensitive, and facing certain threats. Additional references were provided in support of the description of sensitivity and threat.

Threat and link to human activities

Cross-reference to checklist of human activities in OSPAR MPA guidelines

Relevant human activity: Fishing, hunting, harvesting.

Category of effect of human activity: Physical – Temperature changes; Biological – Removal of target species.

Rissa tridactyla is threatened by reductions in the supply of small pelagic shoaling prey fish. Human activity can directly or indirectly alter the availability of these prey species, therefore affecting *R. tridactyla* survival. The industrial sandeel fishery can contribute to the lack of sandeels locally, but also human-induced climate change leading to increased sea surface temperatures will in turn affect sandeel (and other fish species) abundance.

Management considerations

R. tridactyla is a relatively well-studied and monitored species throughout the OSPAR area, due to the relative ease with which this can be achieved.

As threats to food supply are such an important consideration for *R. tridactyla*, it would be beneficial

to investigate further the causes of poor sandeel recruitment and quality (in terms of nutritional content) in recent years, and how these factors affect population dynamics. The ongoing "real-time" management of the North Sea sandeel fishery should be supported, and fisheries exclusion zones around important *R. tridactyla* colonies should be considered where they are not already in place. Protection from oil pollution would also be beneficial where this is feasible.

Further information

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BirdLife International

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Useful references:

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