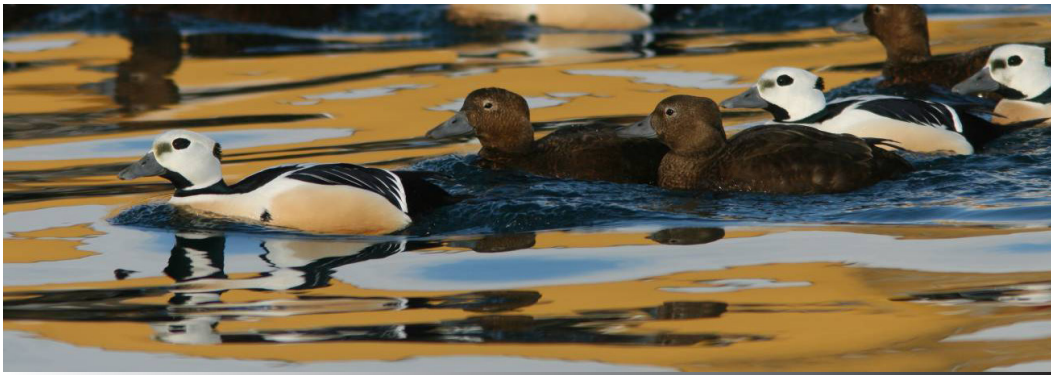
OSPAR COMMISSION

Background Document for *Polysticta stelleri*

Steller's eider



Biodiversity Series

2009

OSPAR Convention

The Convention for the Protection of the Marine Environment of the North-East Atlantic (the “OSPAR Convention”) was opened for signature at the Ministerial Meeting of the former Oslo and Paris Commissions in Paris on 22 September 1992. The Convention entered into force on 25 March 1998. It has been ratified by Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, Netherlands, Norway, Portugal, Sweden, Switzerland and the United Kingdom and approved by the European Community and Spain.

Convention OSPAR

La Convention pour la protection du milieu marin de l'Atlantique du Nord-Est, dite Convention OSPAR, a été ouverte à la signature à la réunion ministérielle des anciennes Commissions d'Oslo et de Paris, à Paris le 22 septembre 1992. La Convention est entrée en vigueur le 25 mars 1998. La Convention a été ratifiée par l'Allemagne, la Belgique, le Danemark, la Finlande, la France, l’Irlande, l’Islande, le Luxembourg, la Norvège, les Pays-Bas, le Portugal, le Royaume-Uni de Grande Bretagne et d’Irlande du Nord, la Suède et la Suisse et approuvée par la Communauté européenne et l’Espagne.

Acknowledgement

This report has been prepared by Birdlife Norway for Norway as lead country for *Polysticta stelleri*

Photo cover page: ©Tomas Aarvak, Birdlife

Contents

Background document on *Polysticta stelleri*, Steller's eider

Executive Summary

This background document on Steller's eider – *Polysticta stelleri* - has been developed by OSPAR following the inclusion of this species on the OSPAR List of threatened and/or declining species and habitats (OSPAR agreement 2008-6). The document provides a compilation of the reviews and assessments that have been prepared concerning this species since the agreement to include it in the OSPAR List in 2003. The original evaluation used to justify the inclusion of *Polysticta stelleri* in the OSPAR List is followed by an assessment of the most recent information on its status (distribution, population, condition) and key threats prepared during 2008-2009. Chapter 7 provides recommendations for the actions and measures that could be taken to improve the conservation status of the species. On the basis of these recommendations, OSPAR will continue its work to ensure the protection of *Polysticta stelleri*, where necessary in cooperation with other organisations. This document may be updated to reflect further developments.

Récapitulatif

Le présent document de fond sur l'*eider de Steller* a été élaboré par OSPAR à la suite de l'inclusion de cette espèce dans la liste OSPAR des espèces et habitats menacés et/ou en déclin (Accord OSPAR 2008-6). Ce document comporte une compilation des revues et des évaluations concernant cette espèce qui ont été préparées depuis qu'il a été convenu de l'inclure dans la Liste OSPAR en 2003. L'évaluation d'origine permettant de justifier l'inclusion de l'*eider de Steller* dans la Liste OSPAR est suivie d'une évaluation des informations les plus récentes sur son statut (distribution, population, condition) et des menaces clés, préparée en 2008-2009. Le chapitre 7 recommande des actions et mesures à prendre éventuellement afin d'améliorer l'état de conservation de l'espèce. OSPAR poursuivra ses travaux, en se fondant sur ces recommandations, afin de s'assurer de la protection de l'*eider de Steller*, le cas échéant en coopération avec d'autres organisations. Le présent document pourra être actualisé pour tenir compte de nouvelles avancées.

1. Background information

Name of species

Polysticta stelleri (Pallas, 1769) Steller's eider.

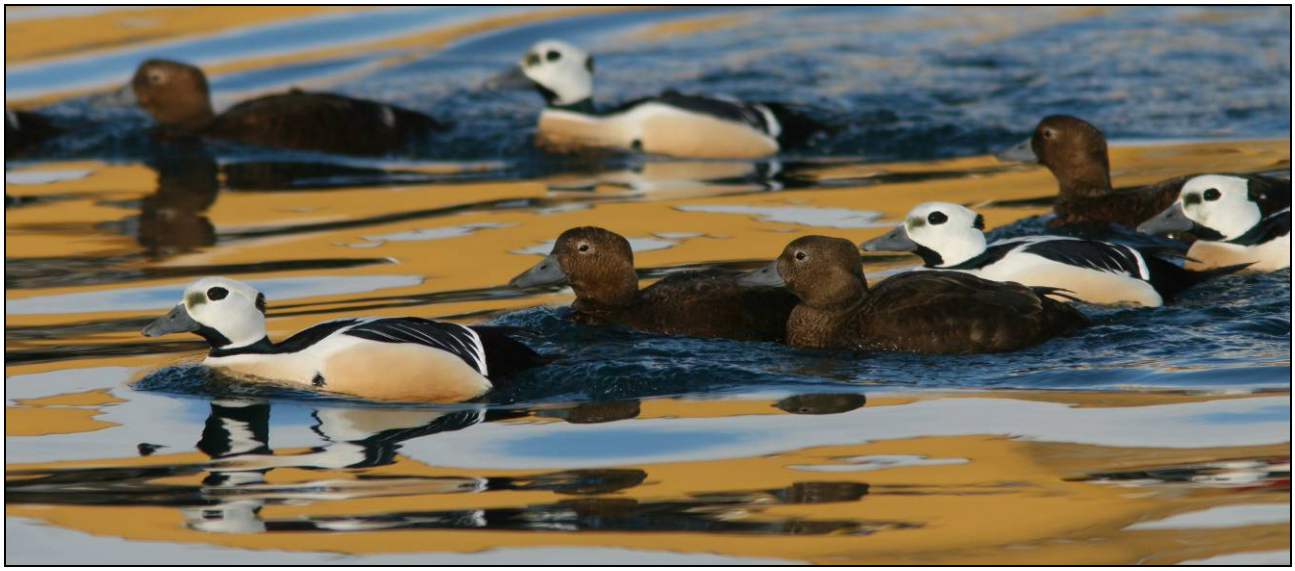


Photo: Tomas Aarvak

2. Original evaluation against the Texel-Faial selection criteria

OSPAR Regions and Dinter biogeographic zones where the species occurs

OSPAR Regions: I

Dinter biogeographic zones: Cold-temperate waters, Norwegian Coast (Finnmark), Norwegian Coast (Westnorwegian)

OSPAR Regions and Dinter biogeographic zones where the species is under threat and/or in decline

All where it occurs

General

P.stelleri breeds along the Arctic coast of Alaska and the eastern half of Siberia. Most birds winter in the northern Pacific, but the main European areas used by non-breeders in summer and wintering birds are the coastal areas of northern Norway, Estonia and Lithuania (Anon 1999). Studies of *P.stelleri* in 2000/01 along the Lithuanian coast in the Baltic (outside the OSPAR Maritime Area) indicated that the ducks congregated in a narrow stretch of coast, feeding on crustaceans, bivalves and gastropods. In spring they gathered at herring spawning grounds and fed mainly on fish eggs (Žydelis 2002).

In the OSPAR Maritime Area there are both wintering and summering birds in the Varangerfjord in northern Norway. These are found in flocks of varying size, in sheltered and shallow bays on the outer coast. While most flocks are of 10 - 100 birds, dense flocks of up to 3000 individuals have been reported from Vadsø in the Varangerfjord (Frantzen 1985). Moulting birds have been recorded from late May in the Varangerfjord (Frantzen & Henriksen 1992).

In 1995 the size of the population wintering in northern Europe was believed to be between 30 000 and 50 000, compared to an estimated 400 000 – 500 000 in the 1960s (Nygård *et al.* 1995a; Tucker

& Heath 1994). With the world population decreasing, the species was considered to be globally threatened. In Europe there is particular concern about recent decreases of *P.stelleri* and common eider (*Somateria mollisima*) in the Baltic (S. Pihl, Seaduck Specialist Group).

Original evaluation against the Texel-Faial criteria for which the species was included on the OSPAR List

P.stelleri was included in the OSPAR List in 2003 on the basis of one nomination for citing the regional importance of the OSPAR Area for this species and sensitivity, with information also provided on threat.

Regional importance: Nygård *et al*. (1995) estimated that there were between 25 000 and 40 000 *P.stelleri* wintering in the Barents Sea representing between 15 – 20% of the world population at that time. The wintering population in the OSPAR Maritime Area is found predominantly within the Varangerfjord, northern Norway which has typically supported between 5000 – 8500 birds from the early 1980s to early 1990s.

Sensitivity: *P.stelleri* is particularly sensitive to oil pollution and is known to have suffered mortality following contact with oil from spills. This species also appears to be especially sensitive to disturbance as the ducks spend a large part of the day feeding. Loss of foraging time through disturbance might therefore adversely affect the ability of the birds to satisfy their daily energetic requirements (Žydelis 2002).

Decline: Since the original estimate of 25 000 – 40 000 *P.stelleri* in the Barents Sea region, the number of wintering birds has decreased to 5000 - 8500 birds in the 1980s. The global population of *P.stelleri* is believed to have decreased over the past 30 years although populations in the OSPAR area are thought to have become more stable during the 1990s.

Threat: Within the OSPAR Maritime Area, *P.stelleri* is most threatened when the non-breeding birds congregate in large numbers in restricted areas.

Incidental capture in fishing gear is a major threat to this species. In Norway, birds have been known to drown in the set nets placed in shallow water where *P.stelleri* feeds (Frantzen & Henriksen 1992). Capture in the Baltic gill nets is a serious threat to the small numbers of ducks that winter on the Lithuanian coast and one study has estimated that up to 10% of birds wintering along this coast might drown in fishing nets annually (Žydelis 2002).

Oil spills have been a cause of mortality in the past with 2500 ducks (many of which were *P.stelleri*) being killed by a minor spill in Vadsø harbour in 1973 (Grastveit 1975) and a spill in Varangerfjord in 1979 killed 20 000 seabirds, including *P.stelleri* (Barrett 1979). This is because the birds are often close to harbours in the Varangerfjord.

A relatively new threat is the development of offshore windfarms. The likely effects on seaducks are unknown at the present time but the displacement of seaducks from their feeding grounds has been cited as an objection to several offshore windfarm developments in the UK in recent years.

Relevant additional considerations

Sufficiency of data: Population data are available for main non-breeding sites in the OSPAR Maritime Area at Varangerfjord in Norway, where numbers have been recorded since 1980. Very few studies have been carried out on breeding *P.stelleri*.

Changes in relation to natural variability: It is not possible to gauge the effect of natural variability on population trends of this species at the present time.

Expert judgement: The global population of *P.stelleri* is believed to have decreased by about 50% throughout its range over the last 30 years (Anon 1999). In Europe it was believed to be stable/ fluctuating or increasing in the early 1990s (Tucker & Heath 1994). More recent views are that, within Europe, the Baltic populations may also be declining but as this does not appear to be the case in the OSPAR Maritime Area it has been nominated for the OSPAR List on the basis of threat to the population.

ICES evaluation: ICES (2002) made no recommendation with respect to *P.stelleri* as they consider this species has a stable, or possibly increasing, population within the OSPAR area, and because it was not clear how much the status and trends outside the OSPAR area should affect a decision to list this species. They note that *P.stelleri* s severely threatened elsewhere in the world. ICES support the view that the main threats to this species in the OSPAR area are oil pollution and incidental capture.

3. Current status of the species

Distribution in the OSPAR maritime area

In the OSPAR area, *P.stelleri* only occurs in the north-eastern part of Norway (OSPAR Region I).

Population (current/trends/future prospects)

The world population is at present estimated at 110 000 – 125 000 individuals (BirdLife International 2008). This is a significant decrease from the estimate of 400 000 – 500 000 in the 1960s (reviewed in Solovieva *et al.* 1998), and even from the estimate of Žydelis *et al.* (2006) of 200 000 - 220 000 individuals. The main breeding ground is along the Arctic coast of Alaska and the eastern part of Russian Arctic (Yamal Peninsula to the Kolyma Delta). A few records of breeding birds exist from Europe (Russia), and it is also believed to have bred in North Norway in recent times (Petersen *et al.* 2006).

A description of recent trends: The eastern (ice-free) part of the Barents Sea (coasts of Finnmark, Norway (mainly the Varangerfjord) and Murman coast/Kola Peninsula, Russia - OSPAR Region I) is probably the most important wintering area for the species in Europe (estimated to approximately 25 000 – 40 000 individuals in 1994, Nygård *et al*. 1995a,b). The Baltic Sea holds the rest of the population wintering in Europe. However, the wintering population in Norway has declined annually by 8% since 1984, in Estonia by 9% and in Lithuania by 22% between 1996 - 2003 (Žydelis *et al*. 2006). An estimated 30 - 50% of the European sub-population may winter in Russia and this is probably also declining. Monitoring along a section of the Kola Peninsula has shown numbers decreased significantly from 1994 to 2005 (Žydelis *et al.* 2006). In Alaska the population has also declined significantly, leading to the publishing of a Steller's eider recovery plan by the U.S. Fish and Wildlife Service in 2002.

In recent years the Varangerfjord area has supported only 2000 - 3000 individuals, which appears to be consistent with the reported annual decrease of 8% in Norway. Accounting for similar trends in Russia, the current European wintering population could possibly stand at only 10 000 – 15 000 individuals – a decline of over 50% in 10 years that qualifies this population as Endangered under IUCN criteria (Žydelis *et al*. 2006).

Condition (current/trends/future prospects)

Productivity rate/Age structure: Based on counts on adult males both in the Baltic (1975 - 1995) and Norwegian (1996 - 2000) wintering populations, it has been found that the proportion of juveniles

varies greatly between years, but only for the Baltic population there was a correlation with the number of wintering birds. No long-term trend in proportion of juveniles can however be found. Annual fluctuations show a cyclic 3-year pattern which correlates with the cycle of abundance of lemming in the breeding areas. Predayion on steller's eider eggs may increase in years with depleted lemmings (Žydelis *et al.* 2006, Quakenbush *et al.* 2004).

Mortality: Studies undertaken at the Alaskan Peninsula found a lower survival of adult males than females which may results in a female-biased sex ratio. A decrease in adult survival from the period 1975 - 1981 to 1991 - 1997 may have initiated the long-term population decline in the eastern populations of the *P.stelleri* (Flint *et al*. 2000).

Limitations in knowledge

Information from breeding areas is extremely scarce. The possible negative impacts of factors such as habitat loss due to global warming and increased predation from the northward expansion of the range of the red fox *Vulpes vulpes* are at present unknown.

There is a severe lack of recent wintering data from the coasts of the Kola Peninsula. Since this is the same population that winter in Finnmark, within the OSPAR region, data from Kola are necessary for accurate estimates of the population size and development.

4. Evaluation of threats and impacts

Threats

Within the OSPAR Maritime Area, *P.stelleri* is most vulnerable when congregating in large numbers in restricted areas, especially during winter time.

Drowning in fishing nets: Incidental capture in fishing gear is a major threat to this species. In Norway, birds have been known to drown in the set nets of the lumpsucker *Cyclopterus lumpus* fishery placed in shallow water where *P.stelleri* feeds (Frantzen & Henriksen 1992). In the Baltic gillnets are serious threats to the small numbers of ducks that winter on the Lithuanian coast and it was estimated that up to 10% of birds wintering along this coast might drown in fishing nets annually (Žydelis 2002). Dagys & Žydelis (2002) found that *P.stelleri* was particularly vulnerable and that different levels of threat were posed by nets of different mesh sizes. Salmon nets with mesh size larger than 60 mm were found to be particularly dangerous to birds (Dagys & Žydelis 2002). During a survey in Varangerfjord, Norway (April 2007), it was found that many birds had nylon cords around the neck and body (in one flock studied: 7 birds in a flock of 70 - 75 birds had attached nylon cords) (Øien & Aarvak 2007).

Subsistence hunting: Subsistence hunting has been ongoing in Alaska since the late 19th century, and may have affected breeding populations there. Studies at Barrow indicate that the species is subject to lead poisoning from the historic (and probably ongoing) use of lead shot. *P.stelleri* breeding in Russia is subject to human subsistence harvest and exposure to lead shot. The importance of subsistence hunting for the decline is not clear.

Oil pollution: Oils spills have been a cause of mortality in the past with 2500 seaducks (many of which were *P.stelleri*) being killed by a minor spill in Vadsø harbour in 1973 (Grastveit 1975) and a spill in Varangerfjord in 1979 killed 10 000 – 20 000 seabirds, including *P.stelleri* (Barrett 1979). The most recently recorded small oil spill in 1996 killed 5 - 10 *P.stelleri* (Bustnes 1997). The vulnerability of *P.stelleri* to oil spills is high because the birds are often residing close to or within harbours in the Varangerfjord, and are thus exposed to small spillages or leakage. It is likely that the risk of *P.stelleri* being affected by small or large oil spills will increase in the future due to an ever increasing production and transport of oil from arctic Russia.

Habitat destruction: Within the OSPAR Maritime Area, more than 90% of the *P.stelleri* population is found near kelp beds (Fox & Mitchell 1997, Bustnes & Systad 2001a), where they feed on small molluscs and crustaceans. Approximately 10 km^2 of this habitat is found within the wintering distribution area of *P.stelleri* in the OSPAR Maritime Area. Preservation of this habitat type seems to be a crucial factor to secure the *P.stelleri* population within this region. A significant threat to the habitat is the overgrazing by the sea urchin *Strongylocentrotus droebachiensis* (Cf. Sivertsen 1997, 2006). More than 50% of the kelp beds along the Finnmark coastline have disappeared during the last 30 - 40 years (E. Rinde NIVA *pers comm.*). Concentrated sea urchin fisheries have proved to facilitate re-establishment of kelp-forests locally (Sjøtun & Sivertsen 2002). Kelp species are considered as keystone species/habitats whose presence affects the survival and abundance of many other species in the ecosystem (Kelly 2005). Preservation of this habitat/species would be of crucial importance for *P.stelleri*.

Collision with power lines: Of local negative impact are collisions with power lines. Several *P.stelleri* have been observed colliding and dying after flying into power lines passing over to the island of Ekkerøy in the Varangerfjord (Øien & Aarvak 2007).

Wind farms: A relatively new potential threat is offshore development of wind farms. The likely effects on seaducks are unknown at the present time, but *P.stelleri* is known to be a habitat specialist preferring shallow, near shore, areas. Generally the foreseeable effects can be grouped into: collision with wind turbines, habitat modification or destruction during construction and maintenance of wind farms, disturbance and barrier effects, and secondary effects (increased boat traffic etc.).

Relevant additional considerations

Sufficiency of data: Data exist on the population at the main non-breeding sites in the OSPAR Maritime Area at Varangerfjord in Norway, where numbers have been recorded since 1980 (Žydelis *et al.* 2006, Anker-Nilssen *et al*. 2008). The quality and availability of the survey data for the public has however been questioned. In addition several short term studies have been undertaken on diet, habitat use, parasite avoidance and migration patterns (Bustnes *et al*. 2000b, Bustnes & Galaktionov 2004, Bustnes & Systad 2001a,b, Petersen *et al*. 2006).

Changes in relation to natural variability: It is not possible to gauge the effect of natural variability on population trends of this species at the present time, though it has been hypothesized that the use of winter habitats is restricted by the extent of sea ice during winter in the Arctic Basin. The latter was however not supported by Žydelis *et al*. (2006).

Threat and link to human activities

Cross-reference to checklist of human activities in OSPAR MPA Guidelines.

Relevant human activity: Fishing, hunting, harvesting; shipping & navigation, oil and gas exploration and exploitation. Category of effect of human activity: Biological – removal of non-target species; Chemical – hydrocarbon contamination

The main threats identified for this species in the OSPAR Maritime Area (incidental catch, oil pollution, disturbance and offshore development) all have clear links to human activities.

5. Existing Management Measures

P.stelleri is listed on Annex II of the Bern Convention and Annex II of the Bonn Convention. It is also listed as 'Vulnerable' by IUCN (IUCN 2007) and is a Red Data book species in Russia. In Norway it is strictly protected and listed on the Norwegian Red list (Kålås *et al.* 2006). The Circumpolar Eider Conservation Strategy and Action Plan (CAFF 1997) also include the Steller's Eider.

No specific management measures exist.

6. Conclusions on overall status

P.stelleri can be classified according to the following Texel-Faial selection criteria:

a. Regional importance: a high proportion of the known population winters within the OSPAR area (20% of the European population)

b. Sensitivity: the species is very sensitive due to the adverse effects of human activity – the adults have low survival rate and produce few broods during the life time, leading to low resilience. A recovery would take long time.

c. Decline: The population wintering within the OSPAR region has experienced a significant decline of more than 50% in recent time.

7. What action should be taken at an OSPAR level?

Action/measures that OSPAR could take, subject to OSPAR agreement

Background considerations

A European Species Action Plan for *P.stelleri* was published in 2001 with a recommendation that it should be reviewed every five years unless there is a need for an emergency review. Objectives have been suggested in relation to policy and legislation, species and habitat conservation, monitoring and research and education and training (S. Pihl 2001).

A circumpolar Eider Conservation Strategy and Action Plan was adopted by CAFF for all four eider species (Conservation of Arctic Flora and Fauna) in 1997.The document has an advisory status to the Arctic countries. All relevant countries are reporting on progress annually to CBird (Circumpolar Seabird Grup) and CAFF, and the annual reports are available on CBird's webpage: http://arcticportal.org/en/caff/caff-expert-groups/caff-seabird-expert-group-cbird.

A National Action Plan adopted by Norwegian environmental authorities is a necessary next step in order to safeguard the species within the OSPAR Maritime Area. Due to the species' globally threatened status, a Norwegian National Action Plan for this species should be given high priority. The action plan should also consider monitoring and conservation activities on the Russian side of the border through relevant bilateral environmental cooperation programmes. *P.stelleri* is listed on Annex II of the Bern Convention and Annex II of the Bonn Convention. It is also listed as 'Vulnerable' by IUCN (IUCN 2007).

Management measures relevant to this species in the OSPAR Maritime Area will need to be focused on the few locations where they are concentrated. This could include protected areas, safeguards to reduce the risk of pollution incidents and contingency planning measures. The global conservation

status and decline of *P.stelleri* does however mean that measures will need to be taken throughout its range to safeguard it. The measures required include:

- Establishment of a annual monitoring programme
- Concentrated sea urchin fishery in selected areas in Eastern Finnmark in order to secure re-establishment of kelp-forests
- Oil-pollution emergency preparedness in Eastern Finnmark
- Survey the extent of *P.stelleri* mortality in fishing nets and implementation of relevant mitigating measures
- Secure the isthmus at Store Ekkerøy *e.g.* by ground cabling of power lines.
- Assess the necessity of protection of kelp-forest habitats

No specific actions and measures should be taken at an OSPAR level for the time being. However, Norway will report back to the OSPAR Commission on the implementation of the above measures, including the proposed monitoring system and their results.

Brief summary of the proposed monitoring system

Mapping of the total occurrence and distribution of *P.stelleri* within the OSPAR Maritime Area and the bordering areas used by the same wintering population (the coastal waters of the Barents Sea including Kola Peninsula and Eastern Finnmark) every 3 - 5 years, as well as establishing annual monitoring on the north side of the Varangerfjord, as well as the coastline between Båtsfjord and Berlevåg on the north side of the Varanger Peninsula. Monitoring should be carried out twice a year; in autumn to obtain productivity estimates and in spring for overall population size. Mapping of the occurrence of suitable habitat (kelp-forests) should be carried out by use of satellite images and aerial photos.

Annex 1: Overview of data and information provided by Contracting Parties

Contracting Party	**Feature occurs in CP's Maritime Area**	**Contribution made to the assessment** **(e.g. data/information provided)**	**National reports** **References or weblinks**
Belgium	No		
Denmark	No		
European Commission			
France	No		
Germany	No		
Iceland	No		
Ireland	No		
Netherlands	No		
Norway	Yes	Information provided	Key references – Annex 3
Portugal	No		
Spain	No		
Sweden	No		
UK	No		

P.stelleri was Included in the list in 2003 following nomination by BirdLife International: Contact person: Kate Tanner, BirdLife International, c/o Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire, SG19 2DL. UK.

Annex 2: Description of the proposed monitoring and assessment strategy

Rationale

There is at present a need to develop a large scale monitoring program for *P.stelleri* in order to:

1) Collect quantitative data on population size.
2) Collect quantitative data on population development.
3) Collect quantitative data on mortality and production in order to pinpoint the effects of suggested threats.
4) Collect quantitative data on the extent of kelp-forest habitat.
5) Undertake research in order to evaluate the amount of lead contamination and to identify the eventual source by use of lead isotope patterns.

Use of existing monitoring programmes

P.stelleri populations need to be monitored when conditions are optimal. Existing monitoring programmes for general seabird monitoring in Finnmark probably do not take enough consideration of this aspect. *P.stelleri* occurs in dense flocks, but the visibility of the birds is severely reduced even in slightly windy conditions with small waves. Logistically, counts during spring should be coordinated with existing monitoring projects in Finnmark.

Synergies with monitoring of other species or habitats

Other wintering waterbird species will be counted simultaneously. This may apply specially for long-tailed ducks, arctic and white-billed divers, king- and common eiders. Data on all species will be provided for SEAPOP (The Norwegian national seabird monitoring programme - www.seapop.no).

Assessment criteria

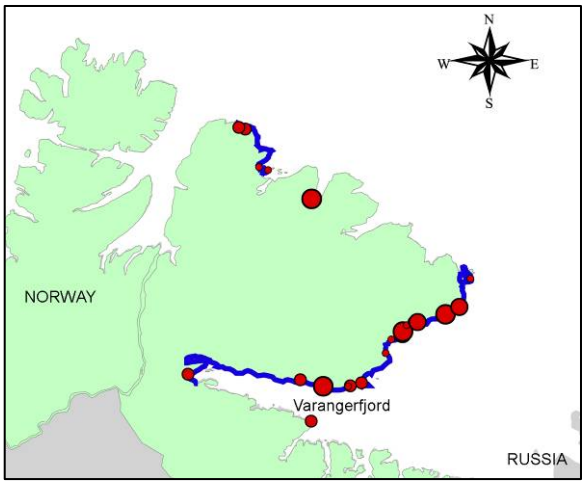
At present no adequate conservation measures have been implemented. Relevant assessment criteria should be developed as part of a Norwegian action plan for the species.

Techniques/approaches:

Total count will be carried out in late March/early April simultaneously on the coasts of Eastern Finnmark (Norway) and the Kola Peninsula (Russia). Annual monitoring counts should be carried out on selected locations in Eastern Finnmark. Total counts will include aerial surveys, while annual monitoring counts can be carried out from land and coastal surveillance boats.

Selection of monitoring locations

The whole northern coast of the Varangerfjord and the coastal areas between Berlevåg and Båtsfjord in Finnmark, Norway, should be surveyed. In addition the area between Vardø and Båtsfjord should be considered surveyed.



The map shows occurrence of Steller's eiders concentrations in April 2008 (red dots) along with suggested monitoring sections (blue lines) in Finnmark County, Norway.

Timing and Frequency of monitoring.

Monitoring will be conducted annually in late March and repeated in mid May. Total count will be carried out in spring 2009 (April) and repeated every 5 years. A survey should also be carried out in late October – early November to gather data on productivity of the population.

Data collection and reporting

The annual monitoring will be carried out by the Norwegian Ornithological Society (BirdLife Norway) in close cooperation with SEAPOP and reported to the Directorate for Nature Management on an annual basis. Total counts will be carried out in cooperation between the Norwegian Polar Institute, BirdLife Norway and Russian partners.

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