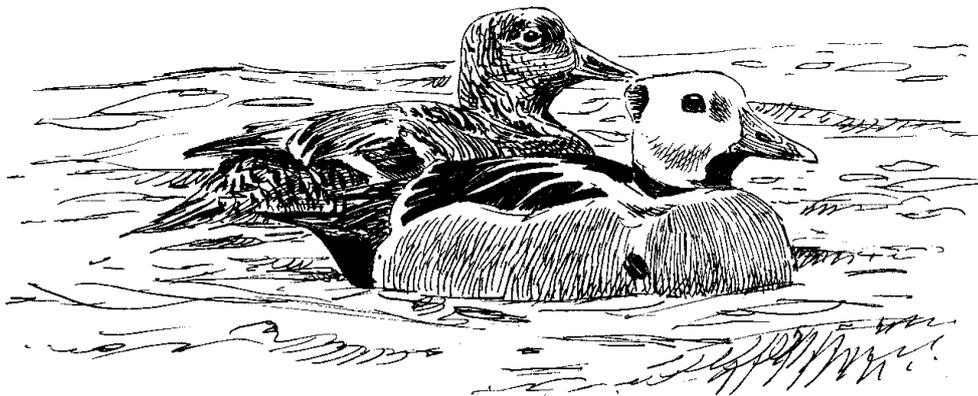


# **Steller's Eider** **(*Polysticta stelleri*)**





## European Species Action Plan for Steller's Eider (*Polysticta stelleri*)

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### Milestones in production of action plan

Workshop	1-4 November 1996 (Kuressaare, Estonia)
First draft	December 1996
Second draft	March 1997
Final draft	November 1997

### Reviews

A review of the current Action Plan should take place every fifth year initiated by the Ornithological Committee or Wetlands International Seaduck Specialist Group. The Ornithological Committee, BirdLife International, RSPB and Wetlands International Seaduck Specialist Group are responsible for initiating an emergency review if sudden major environmental changes occur within the species range, liable to affect the population or incidents which have an impact on a large proportion of the numbers at the known major wintering areas.

### Geographical scope

The Action Plan needs to be implemented in Estonia, Finland, Latvia, Lithuania, Norway, Russia and Sweden.



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## SUMMARY

Steller's Eider *Polysticta stelleri* is listed as vulnerable by IUCN (category A1: declining population) (IUCN 1996). It is protected under the Bonn Convention (Appendix II) and under the Bern Convention it is strictly protected (Appendix II). In all European range states it is protected except in Latvia and Lithuania. The species is listed in the Red Data Book (category 3) in the Yakutsk Republic (Solomonov 1987) but not in the Russian Red Data Book. In North America the breeding population is about to be listed as Threatened under the US Endangered Species Act. Due to a decreasing world population the species is considered globally threatened (Collar et al. 1994, Tucker and Heath 1994).

Over the last 30 years the world's population of Steller's Eider has decreased by about 50% throughout its range. From an estimated 400-500,000 in the 1960s the winter population has probably declined to about 220,000 individuals (Europe: c.40,000; East Asia: c.30,000 and North America: c.150,000). Data from Sakha-Yakutia Republic and Alaskan breeding areas suggest the population has been even higher during the first half of the 20th century. The decline in some North American breeding areas is apparently continuing. The recent trend amongst wintering numbers in East Asia is unknown, in North American numbers are decreasing and in Europe they are stable or increasing. (This increase in numbers might reflect the recolonisation of the Baltic Sea, as anecdotal evidence indicates Steller's Eider was common on the Finnish and Swedish Baltic coast in previous centuries.)

Whilst reasons for the overall decline is unknown, several factors affecting adult survival and reproduction have been identified. These include habitat loss, disturbance, hunting, predation and pollution. Although individual factors may appear to have little effect on their own, in combination they have caused the steady decline in recent decades of a species which is long-lived with a low recruitment level. Despite little change in the ecological conditions in breeding and wintering areas in the 20th century, the Steller's Eider has not been able to maintain its former population levels.

The most effective conservation tool for this species then appears to be the short-term maintenance of the current population whilst drawing up longer-term measures to gain a greater understanding of the species throughout its annual cycle. This coupled with a greater knowledge of breeding, wintering and moulting sites will help support the recovery of the population.

### **Threats and limiting factors**

- Hunting on breeding grounds - high
- Predation - high
- Contamination and pollution - unknown (potentially high-critical)
- Fishing in winter quarters - unknown (probably high locally)
- Habitat loss and physical development on staging/wintering grounds - unknown (probably high-critical locally)
- Hunting in winter quarters - unknown (probably medium/low)
- Habitat loss and physical development on breeding grounds and adjacent coastal areas - unknown (potential serious threat)
- Disturbance on breeding grounds - unknown

### **Conservation priorities**

Locate and assess status of breeding and moulting sites - high

Remove current threats from sites - essential

Conserve and manage major sites - essential

Increase understanding and knowledge of breeding, survival and recruitment - high

Collect data on annual breeding success and mortality - high

Research and monitor population numbers through annual cycle - high

Increase protection under International and National agreements and legislation - high

Improve conservation profile through education - high

Use satellite tracking to locate breeding and moulting sites - high

Constraints imposed by hunting during breeding season - high

Locate and assess key breeding and moulting areas - high

## 1. INTRODUCTION

The world population of the Steller's Eider *Polysticta stelleri* (Pallas 1769) breeds in Russia from the Yamal Peninsula to the Kolyma Delta and in western Alaska (Kertell 1991, Yesou and Lappo 1992, Nygård et al. 1995). The species winters in three areas: north-east Europe, islands close to Kamchatka in Russia and the Aleutian Islands and southwest Alaska (Marakov 1968, Voronov 1972, Kertell 1991, Nygård et al. 1995, Artyukhin in press).

The North American breeding population has undergone a dramatic decrease within the last 75 years (Kertell 1991). The trend in the Siberian breeding population is unknown, but the species, which is now considered rare in the Yakutsk Republic, was common at the beginning of the 20th century (Solomonov 1987, Kertell 1991). The world winter population has apparently fallen to 50 % of that in the 1950s (Nygård et al. 1995, B. Larned unpubl. survey report, A.V. Kondratyev pers. comm.). The reasons for the decline are not known, but factors affecting adult survival and reproduction have been identified on the breeding, staging and wintering areas.

The Steller's Eider is listed by IUCN as vulnerable (category A1a: declining population) (Collar et al. 1994, Mace & Stuart 1994, IUCN 1996). It is protected under the Bonn Convention (Appendix II) and under the Bern Convention it is strictly protected (Appendix II). The species is listed in the Red Data Book (category 3) in the Yakutsk Republic (Solomonov 1987), but not in the Russian Red Data Book. Steller's Eider is protected in all European range states except Latvia and Lithuania. In North America, the breeding population is about to be listed as Threatened under the US Endangered Species Act.

The current size of the Steller's Eider population wintering in north Europe is 30,-50,000 and the numbers seem to be increasing (Nygård et al. 1995). However, the world population is decreasing and the species is considered globally threatened (Collar et al. 1994, Tucker and Heath 1994).

As part of the preparation for this action plan a questionnaire was sent to experts in the seven European countries hosting a regular winter stock of Steller's Eider (an additional questionnaire was sent to Alaska). The questionnaire concerned population size and trends, hunting, fishing and other threats and measures taken to safeguard

the species. The questionnaires were completed by all countries and the information collated in preparation for a workshop in Kuressaare, Estonia 1-4 November 1996 attended by 17 experts on the species from eight countries.

## 2. BACKGROUND INFORMATION

### 2.1 Distribution and population

#### *Breeding range*

The Steller's Eider breeds in the arctic zone of Siberia from the Yamal Peninsula to the Kolyma Delta (Rogacheva 1992, Yesou and Lappo 1992, Hodges and Eldridge 1994, Nygård et al. 1995) (Fig. 1). The majority of breeding pairs are found east of the Khatanga River (72° N, 102° E) concentrated in the large river deltas, e.g. Lena and Indigirka Deltas (Solovieva in prep.) (Fig. 2a). Khatanga River was suggested as the dividing point between birds migrating east to the wintering quarters in the northern Pacific and west to northern Europe based on the recoveries of birds ringed during moult in Izembek Lagoon (Kertell 1991, Rogacheva 1992) (Fig. 2b). A small breeding population still remains in Barrow, Alaska (Quakenbush et al. 1995, Quakenbush & Suydam in press). Recent scattered observations of Steller's Eider (including breeding records) on the North Slope of Alaska indicate a highly dispersed irregular breeding population (Balogh & Larned 1995). In the Western Palearctic there are a few breeding records from the Kola Peninsula and the White Sea (Nygård et al. 1995).

In north-east Asia, the species has apparently decreased in numbers during the 20th century like other waterfowl species (Kitchinski 1973, Solomonov 1987), although no census data is available to support this. D. Solovieva (pers. comm.) has anecdotal information which suggests that the population numbered 1 million birds around 1900. The Steller's Eider, which was considered common in the Yakutsk Republic, is now included in the Yakutsk Red Data Book as Rare (Solomonov 1987). In Alaska, the species bred commonly in Yukon-Kuskowim Delta up to about 1960. The last confirmed breeding record from the Yukon-Kuskowim Delta was in 1975 (Kertell 1991). An unsuccessful breeding attempt was recorded in 1994 (M. Petersen in litt.).

### **Staging areas and wintering grounds**

Flocks of non-breeding summering birds are known from the entire breeding and wintering range (Fig. 1). In northern Norway the number of summering birds varied between 400 and 1,100 between 1971 and 1990 (Frantzen & Henriksen 1992). The proportion of adult males is very low compared to wintering flocks, thus it seems likely that the summer flocks consist of sub-adult birds (Frantzen 1985). Summering sub-adults have likewise been observed in the White Sea (Nygård et al. 1995).

Nygård et al. (1995) mentions observations of flightless birds as early as the end of May and beginning of June from northern Norway. In western Siberia large flocks of females were registered near Seyakha village on the Yamal coast (Danilov et al. 1984). In Eastern Siberia, moult has been noted in polynias adjacent to the breeding areas (Krechmar et al. 1991) and near to Stolbovoy Island (New-Siberian Archipelago) in the 1960s (Rutilevsky 1963). In an area in the north Chukotka (between Vankarem and Inchoun - 176°-170° W), "flocks of thousands of Steller's Eider gather in summer" (Portenko 1972). Further south up to 5,000 birds (mainly sub-adult males) have been recorded close to Karaginski Island (59° N, 164° E) (Gerasimov 1972).

Moult in Alaska has been studied in Izembek Lagoon and Nelson Lagoon (61° N, 164° W) in August and September since 1961 by trapping and ringing flightless birds (Jones 1965, Petersen 1981). Sub-adults are the first to moult then followed by the males, followed by what is believed to be failed and/or non-breeding females. The breeding females are thought to moult later in the autumn.

The autumn staging areas and wintering grounds in Europe are well documented. The birds are almost exclusively confined to Varangerfjord in Norway (70°N, 30° E), Kola Peninsula in Russia, Saaremaa Island (58°20' N, 22°30' E) in Estonia and Palanga Coast (55°55' N, 21°05' E) in Lithuania (Kuresoo et al. 1994, Svazas et al. 1994, Nygård et al. 1995). The White Sea apparently does not constitute a wintering area for the species (Nygård et al. 1995). The occurrence and increasing numbers in the Baltic Sea look like a recent phenomenon. However, the fact that the species has a common name in Sweden and that anecdotal information suggests that the birds were sold at the market in Stockholm and in Åbo, Finland in the first half of the 19th century indicate a re-immigration to a former

haunt rather than a colonisation of a new area (L. Nilsson and M. Hario pers. comm.).

Recently, a bird ringed in Izembek Lagoon was recovered at Murmansk (M. Petersen pers. comm.) giving evidence for the possibility of a connection between the east and west populations.

### **Numbers and trends on breeding grounds**

The principal breeding areas for the European winter population of Steller's Eider are thought to be Siberia west of Khatanga River (Rogacheva 1992, Nygård et al. 1995). Breeding on Taymyr was originally demonstrated in 1843 (Middendorf 1851 in Yesou and Lappo 1992). For unknown reasons breeding was not recorded here again until 1990, when two different expeditions found Steller's Eider nests in Taymyr (Yesou and Lappo 1992, Hötker 1993). Yesou and Lappo (1992) summarizes confirmed and probable breeding records in Yamal, Gydan (c. 75° E) and Taymyr Peninsulas and mention 9, 3 and 11 records respectively. On the basis of studies in the eastern part of the Taymyr they found indications of a dispersed population with a maximum nesting density potential of 1 pair/13.3 km<sup>2</sup>. Nygård et al. (1995) estimated that a mean density of 1 pair/10-20 km<sup>2</sup> was necessary if the total European winter population was to be breeding on Taymyr. West of the Yamal Peninsula, breeding has been recorded on the Kola Peninsula (Y. Krasnow pers. comm. in Nygård et al. 1995) and in Yugorsk Peninsula in 1994 (D. Solovieva in litt.), but breeding on Waigach Island and in Bolschезemelskaya Tundra (55°- 65° E) has not been recorded (Mineev 1987).

The breeding population in eastern Siberia seems to be concentrated in the large deltas of the major rivers from Khatanga River to Kolyma Delta, such as Lena and Indigirka, but also on the New-Siberian Islands (Rutilevskiy 1957, Solovieva in prep.). No attempts have been made to survey the eastern Siberian for breeding Steller's Eider apart from a U.S. Fish and Wildlife Service survey of breeding waterfowl from Kolyuchin Bay (67° N, 174°30' W) on the Chukotski Peninsula to the Kolyma River Delta in June 1993 (Hodges and Eldridge 1994). This survey found Steller's Eider increasing in numbers going west, with a total estimate of almost 12,000 birds. During a similar survey in 1994 from the Kolyma to the Lena Delta about 160,000 Steller's Eider were estimated (Hodges and Eldridge unpubl. data). However, very little is known about the actual number of breeding pairs in the core area from

the Khatanga River to the Kolyma River. Based on anecdotal information about the abundance of Steller's Eider during the 19th century D. Solovieva (pers. comm.) has found indications that up to 1 million birds occurred in Siberia. The estimated decrease in the world population from 500,000 (Uspenski 1972) or 400,000 (Palmer 1976) to the current 220,000 (this plan) is probably reflected by the trend in numbers in eastern Siberia because the majority of the world population breeds there.

In North America, no estimates of population size exists from the period prior to the decrease. Based on the abundance in a survey area for Brent Goose *Branta bernicla*, the total number of breeding Steller's Eider in Yukon-Koskokvim Delta has been estimated to be a maximum of 3,500 pairs during 1950-1963 (Kertell 1991). The trend in Steller's Eider in North America in the 20th century has been decreasing and currently the breeding population consists of up to a few hundred pairs at Barrow and a very small, dispersed irregular population on the Alaskan North Slope. In total, hundreds possibly as many as a few thousand individuals breed in North America (W. Larned and R. King pers. comm.).

### **Numbers and trends in staging and wintering areas**

#### **Europe**

The Steller's Eider winter quarters in Europe are separated into two groups. The Barents Sea and the Baltic Sea. The recent, combined trend for these birds seems to indicate an increase (Nygård et al. 1995).

#### **Barents Sea**

The numbers in Varangerfjord, northern Norway have been very variable since the Steller's Eider monitoring started in 1980. In most years the numbers recorded have been 5,000 to 8,500 birds with a maximum of 12,500 in winter 1985 (Nygård et al. 1995) and 13,200 in spring 1995 (Fox & Mitchell in press).

Adjacent wintering areas on the Kola Peninsula in Russia have only been completely surveyed in 1994. The total count for this area to Gremikha covering approximately two-thirds of the whole Kola coast reached 16,000 birds. Occasional observations of Steller's Eider indicate that they might be wintering along the Russian coast to the area of solid ice (Nygård et al. 1995, G. Henriksen pers. comm. ). In addition, Steller's Eider may occasionally winter

in the White Sea (Koryakin and Kondratyev 1983).

#### **Baltic Sea**

In Finland, Steller's Eiders winter solely at Lågskär in the Åland Archipelago (59°50 N, 20°00 E). An increase in numbers from about 20 to more than one hundred birds was observed from the time when the monitoring started in 1968 up to about 1985 (Palmgren 1988), after which the numbers increased to about 200 birds in the 1990s (M. Hario in litt.).

In Estonia, Steller's Eider is almost exclusively concentrated in Vilsandi National Park on the west coast of Saaremaa Island. The numbers wintering in Estonia have rapidly increased from 74 birds in 1978 to a maximum of 5,760 birds in 1992 (Nygård et al. 1995). It is beyond doubt that the increase in numbers 1978-95 is real. However, it is not known whether the species was wintering here in earlier times due to lack of survey data.

In Lithuania, the birds winter close to the town of Palanga. Since 11 birds were recorded here in 1969 (Petraitis 1991) the wintering numbers have steadily increased to a maximum of 1,920 in 1996 (S. Svazas to Wetlands International Seaduck Database).

In Sweden, the species is scarce and only recorded in small numbers during the International Waterfowl Census in the middle of January with a maximum of less than 50 birds (L. Nilsson pers. comm.).

In a few other Baltic countries Steller's Eider appear irregularly, such as in Latvia (max. 7 birds), Poland (max. 65 birds), Germany (max. 7 birds) and Denmark (max. 13 birds). Outside the Baltic Sea, the Steller's Eider is only occasionally recorded (Nygård et al. 1995).

In summary, the wintering population of Steller's Eider in Europe has been increasing since the initial waterfowl surveys of 1968, particularly in the Baltic Sea. However, it is still not clear whether this long-term trend reflects that the species is in a recovery phase from previous declines or occupying new territory.

#### **East Asia**

The wintering birds in the western Pacific region are concentrated at Commander Islands where about 8,500 were recorded in the winter 1992-1993 (Artyukhin in press.) and the Kurile Islands where no recent surveys have been carried out. Previous reports estimated "dozens of

thousands" or even 200,000-300,000 birds (Marakov 1968, Voronov 1972). For the purpose of this plan the numbers for the Kurile Islands are preliminarily estimated at 20,000-25,000 birds. The species also winters in small numbers in northern Japan (Brazil 1991).

## **North America**

The eastern Pacific wintering quarters are in the Aleutian Islands, along the Alaska Peninsula, and in near-shore waters along the northern Gulf of Alaska. The winter population is estimated in spring when the migration takes place. In the beginning of May 1993, 138,000 birds were recorded (Larned et al. 1994) leading to a preliminary winter estimate of 150,000 birds.

## **2.2 LIFE history**

### ***Spring migration***

In Lithuania, the departure takes place in April although a few birds remain until the middle of May (Petraitis 1991). The wintering quarters in Estonia are left in May (K. Kullapere pers. comm.) and in the Gulf of Finland (c. 60° N, 25-30° E), up to 3,000 Steller's Eider migrate east or north-east in the first half of May (M. Hario pers. comm.). Concurrently with the population increase the timing of the passage has become earlier. Median date of the migration is now 7 May in the central Gulf of Finland compared to a 16 May in the 1980s (M. Hario in litt.). In Varangerfjord, the majority of birds depart in May though small flocks may stay throughout the summer (Henriksen and Lund 1994). In east Asia the spring migration starts in March peaking in Kamchatka in the middle of May (Gerasimov & Gerasimov 1996, A. V. Kondratyev in lit.), and in Alaska it starts in April peaking in the beginning of May (Larned et al. 1994).

### ***Breeding***

It is not known when the Steller's Eider that winter in Europe arrive on the breeding grounds. The birds from the east Asia and Alaskan wintering grounds disperse to the breeding grounds west to the Lena Delta which is reached by the first birds in the beginning of June. Mass influxes have been noted from the middle of June (Solovieva in prep.).

### ***Moult***

In Europe flocks of moulting birds have been recorded from late May in the Varangerfjord in Norway (Frantzen and Henriksen 1992). Summering birds have been recorded almost annually from Estonia since 1986 when 84 birds were seen (A. Kullapere and A. Kuresoo pers. comm.). Around the Solovetski Islands in the White Sea (65° N, 36° E) about 1,000 birds were recorded in 1992 during a summer expedition (Semashko in litt. in Nygård et al. 1995). It seems likely that the main aggregations of moulting birds of the population that winters in Europe are still to be found. In eastern Siberia, moult of mainly females take place in polynias in the ice adjacent to breeding areas from early July (Krechmar et al. 1991). Important moult areas are also found on the Chukotski Peninsula and Karaginski Island (Portenko 1972, Gerasimov 1972) and in Izembek Bay, Nelson Lagoon, and other lagoons on the north side of the Alaska Peninsula (Jones 1965, Petersen 1981).

### ***Autumn migration***

In Norway the first birds arrive to the winter areas in October with numbers building up throughout the winter (Henriksen and Lund 1994). The arrival of the first birds in Estonia most often takes place in November (K. Kullapere pers. comm.), while the birds which reach Lithuania in December build up to a maximum in January/February (S. Svazas in litt.). Northerly wintering seabirds like Steller's Eider are dependent on open water for feeding, hence their distribution in late autumn and winter is influenced by the extent of the sea ice in staging and winter areas.

### ***Breeding and moult***

Steller's Eiders breed in open tundra. The favoured nesting habitat in the Lena Delta is moss-lichen polygonal tundra (Solovieva in prep.) which apparently also applies to the Barrow area (Quakenbush et al. 1995). In both the Lena Delta and the Barrow area breeding females often place their nests in the territories of breeding Pomarine Skuas *Stercorarius pomarinus* for protection (D. Solovieva pers. comm., Quakenbush & Suydam in press).

In the period 1992-1996 successful breeding was recorded in the Lena Delta only in 1993 and 1996 which were both years with high densities of lemming *Lemmus sibiricus* and *Dicrostonyx torquatus* and breeding Pomarine

Skuas. In 1992 no breeding attempts were recorded whereas in 1994 and 1995 all nests were predated before hatching (Solovieva in prep.). Near Barrow breeding was studied during 1991-1996 and recorded in 1991, 1993, 1995 and 1996, which were all years of high lemming densities. Breeding attempts were not recorded in 1992 and 1994 (Quakenbush et al. 1995, Quakenbush & Suydam in press, L. Quakenbush in litt.)

In Siberia, extensive feeding on *Chironomid* and *Tipulid* larvae has been reported in June (Dorogoi 1988). The same food items were reported for a breeding female from Barrow, June 1991, (Quakenbush et al. 1995). From the summer diet, Amphipods, Bivalves and Barnacles (*Balanus spp.*) have been recorded (Portenko 1972, Gerasimov 1979). Petersen (1980) studied the feeding ecology during moult at Nelson Lagoon in Alaska from May to October. She found that the birds fed at low tide irrespective of the time of day. Diving took up 80% of the feeding time and up-ending 20%. The diet consisted mainly of molluscs and crustaceans with no difference between age or sex classes.

### **Staging/wintering**

In winter, the birds concentrate in a few coastal areas in Europe usually feeding in water depths of a few metres though occasionally up to 10 m (Petersen 1980, Petraitis 1991, Nygård et al. 1995). In Norway, birds selected gently sloping coastal profiles and the majority fed within 200 m of the coast (Fox & Mitchell in press). The food items include molluscs (especially bivalves such as *Mytilus edulis* and *Modiolula phaseolina*), crustaceans and polychaetes (Petraitis 1991, Bianki 1993, Mitchell et al. in press). In Norway, diurnal cyclical feeding was observed throughout most of the tidal cycle, roosting only occurring at high tide. Steller's Eider at Vadsø Harbour (70°04 N, 29°45 E), Norway, fed by diving offshore on ebb and flow tides. They resorted to algal beds (where they appeared to be gleaning gastropods) as they were exposed on the falling tide and fed by dabbling in sandy-mud beach substrate at low tide (Fox & Mitchell in press). Diurnal feeding has also been reported from Sweden (Högström 1977).

### **2.3 Threats and limiting factors**

The reasons behind the apparent steady decline of the world population of Steller's Eider are not known. If, in the long term, recruitment is not able to compensate mortality, the population will

inevitably decrease in numbers. Survival has been analysed on the basis of capture-recapture histories from Steller's Eiders moulting in Alaska under a series of assumptions. An annual survival rate of 74-76 % for non-breeding females was calculated using Cormack-Jolly-Seber approach (Flint et al. in prep.). This survival rate is not substantially lower than those found in stable/declining populations of Common Eider in North America (Reed 1975, Wakely and Mendall 1976) but much lower than the increasing/stable Common Eider populations in temperate Europe with annual survival rates of 86-90% (Coulson 1984, Swennen 1991, Noer and Hansen in press, Hario and Selin in press).

So far, very few studies on breeding Steller's Eider have been carried out and consequently nothing is known about recruitment. However, Solovieva (in prep.) has found indications from her study area in the Lena Delta that the birds in this area are either not attempting to breed or are predated in all years with low lemming densities, i.e. breeding occurs successfully only every third year or so (23,3% nests successful in 1993, 0% in 1994 and 0% in 1995). She also found an average of 6.1 eggs per nest and 4.9 hatched ducklings per successful nest. At Barrow, Steller's Eider do not attempt to breed in years with low lemming densities. The average clutch size during 1991-1995 was 5.5. The nest success (Mayfield estimation) was highly variable from 14.6% in 1993 (n=13) to 71.3% in 1991 (n=6) (Quakenbush et al. 1995, Quakenbush & Suydam in press).

On Ertholmene in the Baltic Sea (55°20 N, 15°12 E) a colony of Common Eider is, and has been, expanding since the 1970s. The birds breed every year, the average number of eggs per nest is 4.2 (Franzmann 1980) leading to an annual recruitment of about 20% (Noer and Hansen in press). Given an annual survival rate of 75% in Steller's Eider it seems unlikely that recruitment is able to reach the necessary 25% to keep the population stable, particularly if breeding is only successful every third year.

Among migrating Steller's Eider in the Gulf of Finland a three year cycle in the abundance of female-coloured birds has been noted in 1976-1995, reflecting a cyclically varying amount of young birds in the stock. This cycle parallels with the occurrence of Lemming years in Siberia (M. Hario in litt.).

### **Hunting on the breeding grounds**

Spring hunting on or adjacent to the breeding grounds takes place in Siberia. Although all eider species (including Steller's Eider) are protected from hunting in Russia, illegal hunting has been recorded within the open season for ducks in the Lena Delta (1-10 June) by Solovieva (in prep.). From the number of hunters in the area and from what is assumed to be the average bag, she estimates that as many as 1,500 birds are shot annually. Recent results conclude that about as many Common Eiders are wounded as are bagged in Denmark (Noer et al. 1996). Hence in addition to the loss of adult birds caused by the spring hunt, wounding probably causes non-breeding amongst more than one thousand potential pairs. Trophy hunting has not been reported yet, but could be a potential future risk in eastern Siberia. In North America, subsistence hunting is not allowed on Steller's Eider due to its special protection (U.S. Fish and Wildlife Service). The effect of illegal hunting in North America is assumed to be insignificant, however, the significance of hunting could be increasing as the number of Steller's Eider decrease.

Importance: high; hunting in summer affects both adult survival and fecundity

### **Disturbance on the breeding grounds**

The arctic breeding grounds of Steller's Eider are most often pristine areas far from human habitations. However, the U.S. Fish and Wildlife Service aerial surveys in 1994 for breeding waterbirds between Kolyma River and Kolyuchin Bay noted that much of the area had been subject to "various types of development and disturbance" (Hodges & Eldridge 1994). The effect of this development, which has taken place in a period of decrease of the species, on the breeding Steller's Eider, is unknown. However, the general level of human disturbance must have increased. At Barrow in Alaska, a town of more than 3,000 residents, Steller's Eiders nest very close to the roads and houses sometimes using man-made features to nest in. Broods have been observed using ponds in the airport, between runways and taxiways. All of which suggests that at least some individuals are tolerant of human disturbance if other conditions for nesting are present (L. Quakenbush in litt.)

Importance: unknown

### **Habitat loss and physical development on the breeding grounds and adjacent coastal areas**

Habitat loss has occurred through the increased prospecting for, and exploitation of, natural resources, particularly oil and gas. These factors seem to pose a real future threat although their current impact is hard to assess. In Siberia, there is an increasing pressure to explore natural resources due to decreasing incomes in arctic Russia.

The increased traffic of large tankers carrying oil from arctic areas imposes a risk for encounters and thus for major oil spills in areas adjacent to the breeding areas, e.g. Exxon Valdez in Alaska.

Importance: unknown, but a potential, serious threat to breeding, moulting and staging areas

### **Predation**

The arctic fox *Alopex lagopus*, Snowy Owl *Nyctea scandiaca* and Pomarine Skua are known predators of Steller's Eider. Although, the predation rate from these three species is considered significant, the predation has presumably not changed in recent years (Solovieva pers. comm.). However, the impact of predation might increase with a decreasing breeding population of Steller's Eider. During the studies at Barrow, Quakenbush et al. (1995) found 15 carcasses of adult Steller's Eiders (10 males and 5 females) between 1991 and 1994. Of these, 5 were shot and 8 taken by avian predators.

Increased human habitation in the remote arctic areas of Siberia and Alaska seems to have caused an increase in the range and numbers of some of the large gull species *Larus sp.* and Raven *Corvus corax* leading to increased risk for predation of eggs, hatchlings and ducklings of Steller's Eider. Although there is only one pair of breeding Raven at Barrow, five Steller's Eider nests were observed at least partially depredated by Raven (L. Quakenbush in litt.). Large gull species (Fox & Mitchell 1997), grey seal *Halichoerus gryphus* and harp seal *Phoca groenlandica* (G. Henriksen pers. comm.) also attempt predation of Steller's Eiders on wintering areas.

Importance: high; impact might have increased during the 20th century

### **Habitat loss and physical development on the staging/wintering grounds**

The few well-known staging and wintering areas seem to have maintained their value for the birds. However, a large oil terminal at Butinge in Lithuania only five km north of the principle wintering waters of Steller's Eider is planned for 1998. This will pose a considerable risk of habitat deterioration in this area (Svazas and Vaitkus 1995). In addition, a redevelopment of the existing oil terminal in Klaipeda, Lithuania about 10 km south of the Steller's Eider area is also planned for 1998 (S. Svazas in litt.).

Importance: unknown, but might locally be high-critical

### **Hunting in the winter quarters**

Steller's Eider is not a legal quarry species in Europe outside of Latvia and the bag in this country is probably zero (A. Stipniece pers. comm.). From 1997 Steller's Eider has been removed from the official list of game species in Lithuania (S. Svazas pers. comm.).

Illegal hunting of Steller's Eider probably takes place on a very small scale in winter in Norway (G. Henriksen pers. comm.), and probably to a larger scale during migration in western Russia (Y. Krasnow pers. comm.). The size of the problem is unknown but is, so far, considered less important. Occasional misidentification, particularly of females and juveniles, with Mallard *Anas platyrhynchos* probably results in some limited shooting of Steller's Eider.

Importance: unknown, but probably medium-low

### **Fishing in the winter quarters**

Fishing with nets takes place in the three major wintering areas for Steller's Eider in Europe. In Varangerfjord the Lump sucker *Cyclopterus lumpus* fishery has been reported to catch and drown Steller's Eider (Henriksen 1988, Frantzen og Henriksen 1992). Currently 40 boats are fishing on a license and a quota (based upon litres of spawn), but the magnitude of the problem is difficult to assess due to the fishermens reluctance to report the bycatch of birds (G. Henriksen in litt.). In Estonia 10 boats are fishing for perch *Perca fluviatilis*, salmon *Salmo salar* and trout *Salmo trutta trutta* in the coastal areas. Although drowning has not been reported it is assumed to take place occasionally (A. Kullapere pers. comm.). In Lithuania, fishing is potentially hazardous during

winter when it takes place in the same ice-free areas where the Steller's Eider are feeding (S. Svazas and G. Vaitkus pers. comm.).

Importance: unknown, but probably high locally in particular years

### **Contamination, pollution and encounters with potential contaminants**

Practically nothing is known of contamination of Steller's Eider. Two birds from Barrow showed no elevated levels of any contaminant but a third bird from Bristol Bay in Alaska had an elevated level of Cadmium (Quakenbush & Snyder-Conn 1993).

A few incidents of beached or caught Steller's Eiders, dead or weakened by oil pollution, have been reported from Norway and Lithuania (J.O. Bustnes and S. Svazas pers. comm.). In Varangerfjord, the birds are often distributed in immediate proximity of harbours, thus are potential victims of larger spills of contaminants (Fox et al. in press). During two oiling incidents in 1973 and 1979 in Varangerfjord, many Steller's Eider were killed in 1973 (Aronsen 1973), and five birds were found dead, but many more were at risk, in 1979 (Barrett 1979). The impact on the habitat by the daily minor spills is unknown (J.O. Bustnes pers. comm.). In Lithuania a single oil spill resulted in the finding of five heavily oiled corpses of Steller's Eider and probably as many as 50 birds could have been involved. In January 1997, 16 oiled corpses have been found after a major oil spill (S. Svazas in litt.).

Transportation of many potential contaminants, particularly crude oil, is currently increasing following the transformation of the Soviet Union into Russia and the attempts to develop the country. In connection with the planned oil terminals in Lithuania, Latvia, Estonia and Baltic Russia a massive increase in oil transport in the Baltic Sea is expected. This will unavoidably lead to increased risks of pollution incidents and hence threats to the wintering Steller's Eider. A similar oil terminal is planned for the Kola Peninsula (J.O. Bustnes in litt.).

A new northern sea route for ships from the Atlantic to the Pacific Ocean north of Russia is under consideration. On this route a major encounter leading to serious pollution with oil or other contaminants could have serious consequences for the staging and wintering areas for Steller's Eider.

Importance: unknown, but potentially high-critical

To summarize, the combination of negative factors acting on the breeding grounds and on the wintering grounds has probably caused the steady decline that is considered to have taken place during the 20th century. Steller's Eider seems to be a relatively long-lived species which is thus sensitive to small changes in adult survival rate. It appears unable to maintain a healthy population in the long term unless actions are taken to decrease factors causing adult mortality and the level of predation on eggs and hatchlings. Given the cyclicity of successful breeding, the species' potential for a quick recovery after a mass kill is considered to be small.

## **2.4 Conservation status and recent conservation measures**

### **Estonia**

Protected. The most important wintering area, Vilsandi is a national park and has been proposed for designation as a Ramsar site based partly on the large number of wintering Steller's Eider.

Important concentrations: Vilsandi National Park, waters of Harilaid Peninsula (Saaremaa Island).

### **Finland**

Protected under the Nature Conservation Act. The only staging area near Lågskär is a bird sanctuary which has been designated a Ramsar site.

Important concentrations: Lågskär (Åland Archipelago).

### **Latvia**

Not protected. Very few Steller's Eider have ever been recorded and, so far, no tagged or shot birds have been recorded. Recent radar study in Lithuania indicate that Steller's Eider migrate along the Latvian coast on their way from staging sites in Estonia to Lithuania (S. Svazas pers. comm.)

### **Lithuania**

Not protected, but from 1997 no longer included in the official game list. According to Lithuanian practice only breeding species included in the Red Data Book are protected. The most important wintering site in Lithuania, Palanga Coast, is part of the Pajuris Regional Park

which only protects the land and coast but not the coastal waters.

Important concentrations: Palanga coast

### **Norway**

Protected. The species is on the Norwegian red list as "a species of special national responsibility". Illegal hunting and hunting due to mis-identification has been reported but the problem is probably very small. The extremely important Varangerfjord is unprotected.

Important concentrations: Varangerfjord (Finnmark)

### **Russia**

Protected, although subsistence hunting is allowed in Chukotka for indigenous people. Illegal spring hunting for this species takes place in Yakutia and Chukotka during 1-10 June which is the open season for quarry species. Steller's Eider are, also illegally, shot in western Russia during migration and in the wintering areas.

Two Ramsar sites in eastern Siberia are of importance for Steller's Eider: Karaginsky Island (Bering Sea) and Moroshechnaya River (56°42 N, 156°12 E) (Kamchatka).

Important concentrations (Barents Sea region): Kola Peninsula, in summer Onega Bay (64° N, 37° E) (White Sea).

### **Sweden**

Protected.

### **Extinction risk**

The population decline, probably caused by the species inability to replace mortality by recruitment even in a period when the mortality induced by man seems small and the breeding areas are still rather undisturbed, is likely to continue. However, the risk that Steller's Eider become extinct within the five-year scope of the present action plan is very small, but in the longer term the extinction risk is real unless actions are taken to reverse the negative trend in numbers.

During the annual meeting in the Baltic Sub-group of the Seaduck Specialist Group under Wetlands International (previously the Nordic/Baltic Duck Survey Group) in Lithuania in 1990 it was decided to nominate Steller's Eider a target species for the region and T. Nygård,

Norway, accepted the task of reviewing the Steller's Eider occurrence in Europe (Nygård et al. 1995).

An international workshop on the conservation of the Steller's Eider was held in Kuresaare, Estonia, on 1-4 November 1996 in cooperation with Wetlands International, RSPB and BirdLife International chaired by the coordinator of the Wetlands International Seaduck Specialist Group. The aim of the workshop was to develop and discuss the present European Action Plan for Steller's Eider.

Monitoring of the mid-winter population of Steller's Eider in Europe is currently carried out in all range states except Russia coordinated by Wetlands International comprising the Wetland International Seaduck Specialist Group. Data is stored in the Wetlands International Seaduck Database at NERI, Denmark. Additional, regular survey programmes are conducted in Estonia: monthly counts in Vilsandi Nature Reserve, Finland: counts at Lågskär, counts of spring migration, Lithuania (until 1996 when funding was no longer available): monthly counts in the area adjacent to the planned Butinge oil terminal and beached birds surveys.

Research projects have been launched in Varanger Fjord, Norway. The aim is to obtain data to estimate survival rate and annual reproduction, habitat use and feeding ecology in winter and spring, and through DNA-analyses to compare with the Pacific population of Steller's Eider.

### **3. Aims and Objectives**

#### **Aims**

The short-term aims are (i) to maintain the current population of Steller's Eider in known areas throughout its range, (ii) to locate and assess the existing unknown breeding and moulting areas for the species and (iii) to remove the current threats. In the medium to long term, the aim is to conserve and manage all major sites and ultimately sustain a population recovery.

#### **Objectives**

##### **3.1. Policy and legislation**

3.1.1. *To ensure policies at an international level benefits Steller's Eider*

3.1.1.1. Ensure that the present European Action Plan for Steller's Eider is endorsed as an action plan under a major international agreement

Ensure that the present action plan is linked to a major international agreement preferably the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) under the Bonn Convention to make it the working document in Europe for the conservation of Steller's Eider.

Priority: high  
Time scale: medium-long term

3.1.1.2. Finalize a detailed Global Action Plan for Steller's Eider with all involved countries

All breeding areas for the European winter population of Steller's Eider almost certainly exist outside of Europe. To ensure particularly the adequate protection of breeding areas and cooperation in conserving this circumpolar arctic species, a global action plan under the auspices of a major international agreement, e.g. the Bonn Convention, should be developed. Countries, which have not signed the chosen international agreement, should formally accept the Global Action Plan as the working document for the conservation of Steller's Eider.

Priority: high  
Time scale: short term

3.1.1.3. Protection of the Steller's Eider and its habitat through national and international legislation

The signing, ratification and implementation of the relevant international wildlife conventions (especially Ramsar, Bonn, AEWA, Bern, Biodiversity Convention and CITES) by range states should be encouraged and pursued.

Steller's Eider should be included in the Appendices concerning strictly protected species in the EU Wild Birds Directive (Annex 1) and the CITES Convention. The species should be included in the HELCOM (Baltic Marine Environmental Commission) red list of species as a high priority species in the Baltic Sea and a HELCOM recommendation should be agreed for the protection of the species in the Baltic Sea. The Steller's Eider should also be included as a high priority in the CAFF (Conservation of Arctic Fauna and Flora) list of threatened species in the Arctic.

Action should be taken to ensure that the species receives the fullest possible legislative protection in all range states. Where the current protection is inadequate, sites of international importance should be designated or given more protection, including the creation of refuge areas with feeding opportunities. All the EU member states should effectively implement the Birds and Habitat Directives. The European Commission should make an effort to make sure that happens.

Priority: high  
Time scale: short term, ongoing

#### 3.1.1.4. Include conservation measures in national and international legislation

The national and international legislation, particularly the Helsinki, MARPOL and Oslo Conventions, and practice for shipping and transport of potential pollutants including the construction of major shipping terminals should to the greatest possible extent include conservation measures that minimize the risk of deterioration of staging and wintering habitats for Steller's Eider, or contamination of the birds.

National and international legislation, particularly the Helsinki Convention, and practice concerning prospecting and extraction of oil and other natural resources should to the greatest possible extent include conservation measures to minimize the risk of deterioration of breeding, staging and wintering habitats for Steller's Eider or contamination of the birds.

National and international legislation, particularly the Helsinki, MARPOL, Espoo and Oslo Conventions, and the practice concerning dumping of deposition material from harbours, sailing routes etc., or deposition or dumping of contaminated materials should to the greatest possible extent include conservation measures to minimise the risk of deterioration of breeding, staging and wintering habitats for Steller's Eider, or contamination of the birds.

Countries that have embarked on the process of accession to the European Union (Estonia, Latvia, Lithuania) should consider what opportunities exist to use the approximation process and any associated funding support to establish and manage a network of protected areas and to incorporate appropriate policies including Environmental Impact Assessment.

Importance: high  
Timescale: ongoing

#### 3.1.1.5. Protected areas policy

Protected areas policies and regulation should promote the conservation management of all Important Bird Areas where the Steller's Eider breeds, migrate and winter. For wintering Steller's Eider in Europe restricted to only a very small number of sites mainly in Estonia, Finland, Latvia, Lithuania, Norway and Russia, the protection of IBAs is a useful tool towards an effective protection of the species. This is in particular the case for the large concentrations along the northern coast of Norway and the Baltic Sea near the Estonian coast.

Countries that have embarked on the process of accession to the European Union (very important for Steller's Eider: Estonia, Latvia, Lithuania, Russia, Sweden) should consider what opportunities exist to use the approximation process and any associated funding support to establish and manage a network of protected areas.

Priority: high  
Time-scale: medium

#### 3.1.2. To ensure policies at a national level benefits Steller's Eider

##### 3.1.2.1. To ensure that all range states prepare a national Steller's Eider action plan

Using the present action plan as a model, each range state should prepare a national action plan. The compilers of the action plan should work in close cooperation with representatives of hunting, fishing and other organisations whose activities are likely to influence Steller's Eider habitat or survival. This action plan should include suggestions on how to make exploitation of biotic and a-biotic resources in Steller's Eider breeding, staging or wintering areas sustainable, impact assessments for known threats and mechanisms for implementation of adequate measures aiming at minimizing any kind of negative anthropogenic impact as well as recommendations for public awareness materials and campaigns.

Priority: medium  
Time scale: short

##### 3.1.2.2. Promote environmental impact assessments as compulsory before initiation of major activities or projects that are likely to effect Steller's Eider staging or wintering areas

All range states should develop the necessary legislation to make environmental impact assessment compulsory before all new, extensive industrial developments, including construction of harbours, bridges, oil terminals, oil drilling, and other exploitation of resources etc., which are likely to have an impact on Steller's Eider areas. Environmental impact assessments should also be compulsory before the initiation of other extensive activities, such as dredging, fishery activities etc., likely to have an impact on Steller's Eider areas.

In EU member states, the environmental impact assessments should follow the EU Directive on Environmental Impact Assessment as appropriate.

Priority: medium  
Time scale: short, ongoing

### 3.1.2.3. Include Steller's Eider in national Red Data Books

Steller's Eider should be included in the Russian and Latvian Red Data Books as vulnerable (rare); and in the Estonian and Lithuanian Red Data Books as a species of special responsibility.

Priority: high  
Time scale: short

## 3.2. Species and habitat conservation

### 3.2.1. *Ensure optimal statutory protection for important Steller's Eider sites*

#### 3.2.1.1. Ensure statutory designation, as appropriate, of all internationally and nationally important Steller's Eider sites

Each range state should identify all internationally and nationally important sites according to appropriate criteria in the Ramsar and Helsinki Conventions, the Conservation of Arctic Flora and Fauna (CAFF), and the EU Birds Directive and designate these areas for inclusion in lists of international and national legislation for which they qualify.

Priority: high  
Timescale: urgent

#### 3.2.1.2. Prevent loss of habitat on the breeding grounds

Core breeding areas should be given fullest possible protection from industrial development and tourism.

Priority: high  
Timescale: ongoing

#### 3.2.1.3. Prevent loss of habitat on staging and wintering grounds

Steller's Eider is dependent on four major wintering areas and probably some presently unknown staging areas in Europe. The loss of any of these areas is likely to have a serious impact on the birds' possibilities to winter in Europe and possibly on the population level of the European birds. For known staging and wintering areas, management plans should be prepared, prioritising the conservation needs and habitat requirements of Steller's Eider.

Priority: high  
Timescale: ongoing

### 3.2.2. *Ensure optimal protection for breeding, staging or wintering Steller's Eiders*

#### 3.2.2.1. Remove the constraints imposed by hunting activity in the breeding areas

Despite the fact that the Steller's Eider is fully protected in the breeding areas, birds are still shot. In these areas national legislation should be strictly implemented to prevent avoidable mortality of Steller's Eider.

Priority: highest  
Timescale: urgent

#### 3.2.2.2. Remove the constraints imposed by hunting activity in the staging and wintering areas

The species should be protected in Latvia where it is still a legal game bird. All illegal hunting should be stopped.

Priority: medium-low  
Timescale: short term

#### 3.2.2.3. Remove the constraints imposed by drowning in fishing nets in the staging and wintering areas

The mortality induced by drowning in fishing nets should be minimised in potential staging and wintering areas for Steller's Eider by e.g.

- i) minimising the number of licenses of boats whose activities pose a potential threat to Steller's Eider by not or rarely issuing new licenses
- ii) adjust the fishery season to periods when the birds are not present or when

the daylight has extended to a considerable part of the 24 hours, (e.g. from 1 June), to avoid bycatch of Steller's Eider

- iii) introduce a minimum distance from the shore of 150 metres or more and a minimum water depth of 6 metres or more
- iv) introduce minimum mesh size for fishing nets
- v) introduce quotas for number of nets or amount of fish

Priority: medium  
Timescale: short term, ongoing

### **3.3. Monitoring and research**

#### *3.3.1. Survey and monitoring*

##### *3.3.1.1. Locate and assess key breeding areas*

The breeding areas for the European winter population should be located and carefully monitored. Use of satellite telemetry on individuals from the European winter quarters, when suitable transmitters have been developed, may be the fastest way to identify such areas. The telemetry tracking could then be followed up by ground surveys particularly in areas that combine lichen-polygonal tundra and breeding Pomarine Skuas which might be crucial factors for breeding Steller's Eider.

Priority: high  
Time scale: short

##### *3.3.1.2. Locate and assess key moulting areas*

Moulting grounds for the European winter population of the species should be located. During moult the birds concentrate in large flocks in Alaska. Similar concentrations are likely to exist in western Russia, but, so far, only minor concentrations have been identified. For 3-4 weeks during the moult, the birds are flightless and thus highly vulnerable to oilspills or any other source of contamination. In the same period they must rely on a predictable food stock. Aerial surveys of potential coastal areas in July-September might be the most effective way to locate moult areas.

Priority: high  
Timescale: short

##### *3.3.1.3. Locate and monitor remaining populations*

The locating and monitoring of the wintering population in northern Europe should continue and increase to form the basis of assessments of the trend of the western branch of the population. Counts of the proportion of adult males and juveniles should be carried out as a basis for assessing breeding success in the preceding season.

Monitoring of the winter quarters around the Kurile Islands should be encouraged. Estimates of the numbers of Steller's Eider wintering here are essential to assess the world population of the species.

Priority: high  
Time scale: ongoing

##### *3.3.2. Conduct studies on breeding biology of the species to assess recruitment*

On the breeding grounds, studies of factors affecting the breeding success should be carried out in several areas as a basis for assessing the recruitment. Based on initial studies in the Lena Delta over several years, no eggs seem to hatch due to predation in years with low lemming densities, whereas in Barrow, Alaska, Steller's Eiders do not attempt breeding in years with low lemming densities.

Priority: highest  
Time scale: urgent

##### *3.3.3. Conduct studies on adult survival rates*

Ringling of the birds on their moult and, if possible, in winter quarters should be initiated on a large scale to enable calculation of adult survival rates from ringling-recovery histories similar to the work carried out in Alaska. These survival rates and the recruitment should then be analysed to model population trends using various survival and recruitment parameters.

Priority: highest  
Time scale: urgent, ongoing

##### *3.3.4. Conduct studies on habitat requirement and feeding ecology of the species*

Comprehensive field studies investigating the variability of habitat including the apparent dependence on protection from breeding Pomarine Skua or other highly territorial bird species should be conducted. The feeding ecology of the Steller's Eider throughout the annual cycle should be studied to gain knowledge for understanding more about habitat requirements of the species, in order to

form the information base for site and habitat protection, and management.

Priority: medium-high  
Time scale: short-medium

### 3.3.5. *Conduct studies of the impact on mortality induced by human activities*

The effect on mortality of illegal spring hunting in, and adjacent to, breeding areas, and of fishing and contamination in wintering areas should be studied. Particular emphasis should be placed on finding ways to minimise the effects of human activities on Steller's Eider at the same time maintaining human utilization of natural resources in the breeding and wintering areas based on the concept of sustainable use.

Priority: high  
Time scale: short

## 3.4. **Public awareness and training**

### 3.4.1. *Increased conservation profile*

#### 3.4.1.1. Raise awareness and support for the Steller's Eider in Europe

Relevant governmental departments and non-governmental organizations should be encouraged to raise the conservation profile of the Steller's Eider in their range states.

Priority: medium  
Time scale: ongoing

#### 3.4.1.2. Gain the commitment of fishermen in relevant areas

The importance of each geographical area and the local responsibilities for the species should be introduced to the fishermen in an attempt to gain their understanding and commitment to carry out their activities in a way which does not threaten the Steller's Eider. The fishermen should be encouraged to come up with new ideas for reducing the loss of birds in fishing nets.

The fishermen should be encouraged to deliver all specimens of drowned Steller's Eider to the local conservation authorities for further scientific examination of stomach contents, blood samples for DNA analyses, pollutant analyses, morphological measurements, etc. It is NOT recommended to give rewards in the form of money to the finders as an incentive to obtain such material, nor to keep and/or make

public names of fishermen providing specimens.

Priority: high  
Time scale: ongoing

#### 3.4.1.3. Exploit the occurrences of Steller's Eider as a target for eco-tourism.

The European wintering flocks of Steller's Eider probably have some potential as a focus for eco-tourism since they are rare birds (globally threatened), beautifully coloured and easy to observe close to land. This potential should be investigated in Estonia, Lithuania and Norway where the conditions seem particularly good.

Priority: low  
Timescale: ongoing

## 3.4. *Education materials*

### 3.4.2.1. International programme

An internationally coordinated educational programme aimed at fishermen, hunters and children should be developed to make them aware of the species, so that avoidable mortality and disturbance will be minimized. The developers of such a programme should be aware that similar programmes in the past have had a negative impact on the attempt to conserve rare birds.

Priority: medium  
Timescale: short

### 3.4.2.2. Regional programmes

A regional programme based on the international programme should be developed for increasing public awareness in the breeding areas in Siberia. The programme should include visual elements, e.g. slide shows, should be produced in the local language and presented by local people. However, the compilers of the programme should take into account that a campaign for public awareness might lead to increased trophy hunting on Steller's Eider.

A similar programme should be developed for Lithuania taking into account the different conditions there.

Priority: high  
Timescale: urgent

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## 5. ANNEX

### Recommended conservation actions by country

The recommended actions are cross-referenced to the objectives set out in the aims and objectives section.

#### **Estonia**

- 1.1.3. Signing, ratification and implementation of the Bonn Convention and the African-Eurasian Waterbird Agreement (AEWA). Designation of the Vilsandi National Park as a Ramsar Site.
- 1.1.4. Adjust national legislation to the benefit of Steller's Eider:
  - (i) Shipping and transport of crude oil and other pollutants at sea including the construction of oil terminals etc.
  - (ii) Prospecting for and extraction of oil and other natural resources.
  - (iii) Dredging of material or dumping of contaminated material.
- 1.1.5. Promote the legal protection of key sites (IBAs)
- 1.2.1. Develop a national action plan for the management and conservation of Steller's Eider in Estonia.
- 1.2.2. Inclusion of environmental impact assessment in the legislation for industrial developments or exploitation of natural resources in areas identified as important for Steller's Eider.
- 1.2.3. Inclusion of Steller's Eider in the Estonian Red Data Book as a species of special responsibility.
- 2.1.1. Identify any additional international or national important sites for Steller's Eider and designate according to national and international criteria as appropriate.
- 2.1.3. Prepare a management plan for the Vilsandi Nature Reserve to conserve Steller's Eider there.

- 2.2.3. Develop the necessary national and local legislation to reduce the risk of drowning of Steller's Eider in fishing nets.
- 3.1.3. Continue monitoring of Steller's Eider in Estonia including counts of the proportion of adult males and identified juveniles in the flocks.
- 3.3. Initiate ringing of wintering birds to contribute to the work of assessing adult survival rate.
- 3.4. Conduct field studies of feeding ecology in the Estonian winter quarters.
- 3.5. Conduct studies of the mortality of Steller's Eider induced by fishing in the area and find ways to minimise this loss.
- 4.1.1. Raise the conservation profile of Steller's Eider through efforts from relevant Estonian GO's and NGO's.
- 4.1.2. Gain the commitment of the c. 10 fishing boats in the relevant areas to carry out their activities in a way which does not threaten Steller's Eider and to report all incidents of drowned Steller's Eider and deliver the corpses to the local conservation authorities.

#### **Finland**

- 1.1.3. Signing, ratification and implementation of the African-Eurasian Waterbird Agreement (AEWA).
- 1.1.4. Adjust national legislation to the benefit of Steller's Eider:
  - (i) Shipping and transport of crude oil and other pollutants at sea including the construction of oil terminals etc.
  - (ii) Prospecting for and extraction of oil and other natural resources.
  - (iii) Dredging of material or dumping of contaminated material.

1.1.5. Promote the legal protection of key sites (IBAs)

1.2.1. Develop a national action plan for the management and conservation of Steller's Eider in Finland.

2.1.1. Identify any additional international or national important sites for Steller's Eider and designate according to national and international criteria as appropriate.

3.1.3. Continue monitoring of Steller's Eider in Finland, including counts of the proportion of adult males and identified juveniles in the flocks.

### Latvia

1.1.3. Signing, ratification and implementation of the Bonn, Bern and CITES Conventions and the African-Eurasian Waterbird Agreement (AEWA).

1.1.4. Adjust national legislation to the benefit of Steller's Eider:

- (i) Shipping and transport of crude oil and other pollutants at sea including the construction of oil terminals etc.
- (ii) Prospecting for and extraction of oil and other natural resources.
- (iii) Dredging of material or dumping of contaminated material.

1.1.5. Promote the legal protection of key sites (IBAs)

1.2.2. Inclusion of environmental impact assessment in the legislation for industrial developments or exploitation of natural resources in areas identified as important for Steller's Eider.

1.2.3. Inclusion of Steller's Eider in the Latvian Red Data Book as a vulnerable (rare) species.

2.1.1. Identify any international or national important sites for Steller's Eider and designate according to national and international criteria as appropriate.

2.2.2. Remove Steller's Eider from the list of game species in Latvia, thus the species enjoys full protection at all seasons.

4.1.1. Raise the conservation profile of Steller's Eider through efforts from relevant Latvian GO's and NGO's.

### Lithuania

1.1.3. Signing, ratification and implementation of the Bonn and CITES Conventions and the African-Eurasian Waterbird Agreement (AEWA). Designation of the Palanga Coast as a Ramsar Site.

1.1.4. Adjust national legislation to the benefit of Steller's Eider:

- (i) Shipping and transport of crude oil and other pollutants at sea including the construction of oil terminals etc.
- (ii) Prospecting for and extraction of oil and other natural resources.
- (iii) Dredging of material or dumping of contaminated material.

1.1.5. Promote the legal protection of key sites (IBAs)

1.2.1. Develop a national action plan for the management and conservation of Steller's Eider in Lithuania.

1.2.2. Inclusion of environmental impact assessment in the legislation for industrial developments or exploitation of natural resources in areas identified as important for Steller's Eider.

1.2.3. Inclusion of Steller's Eider in the Lithuanian Red Data Book as a species of special responsibility.

2.1.1. Identify any additional international or national important sites for Steller's Eider and designate according to national and international criteria as appropriate.

2.1.3. Prepare a management plan for the Palanga coast area Nature Reserve to conserve Steller's Eider there.

2.2.3. Develop the necessary national and local legislation to reduce the risk of drowning of Steller's Eider in fishing nets including a fishing ban in the relevant area along Palanga coast during winter.

3.1.3. Continue monitoring of Steller's Eider in Lithuania, including counts of the proportion of adult males and identified juveniles in the flocks.

3.4. Conduct field studies of feeding ecology in the Lithuanian winter quarters.

- 3.5. Conduct studies of the mortality of Steller's Eider induced by fishing in the area and find ways to minimise this loss. area under appropriate national and international protective provisions.
- 4.1.1 Raise the conservation profile of Steller's Eider through efforts from relevant Lithuanian GO's and NGO's. 2.2.3. Develop the necessary national and local legislation to reduce the risk for Steller's Eider to drown in fishing nets.
- 4.1.2. Gain the commitment of the fishing people in the relevant areas to carry out their activities in a Steller's Eider friendly way and to report all incidents of drowned Steller's Eider to the local conservation authorities. 3.1.1. Initiate mounting of satellite transmitters to Steller's Eider when available in a suitable weight to locate the breeding areas.
- 4.2.2. Produce a public awareness programme in Lithuanian to increase the knowledge and conservation profile of Steller's Eider. 3.1.2. Initiate surveys for key moulting areas in northern Norway.
- 3.1.3. Continue monitoring of Steller's Eider in Norway, including counts of the proportion of adult males and identified juveniles in the flocks.
- Norway** 3.3. Initiate ringing of moulting or wintering birds to contribute to the work of assessing adult survival rate.
- 1.1.3. Signing, ratification and implementation of the African-Eurasian Waterbird Agreement (AEWA). 3.4. Conduct field studies of feeding ecology in the Norwegian winter quarters.
- 1.1.4. Adjust national legislation to the benefit of Steller's Eider: 3.5. Conduct studies of the mortality of Steller's Eider induced by fishing in the area and find ways to minimise this loss.
- (i) Shipping and transport of petroleum products and other pollutants at sea including the construction of oil terminals etc. 4.1.2 Gain the commitment of the c. 40 fishing boats in the relevant Norwegian areas to carry out their activities in a Steller's Eider friendly way and to report all incidents of drowned Steller's Eider to the local conservation authorities.
- (ii) Prospecting for and extraction of oil and other natural resources.
- (iii) Dredging of material or dumping of contaminated material.
- 1.1.5. Promote the legal protection of key sites (IBAs). **Russia**
- 1.2.1. Develop a national action plan for the management and conservation of Steller's Eider in Norway. 1.1.3. Signing, ratification and implementation of the Bonn, Bern and CITES Conventions and the African-Eurasian Waterbird Agreement (AEWA).
- 1.2.2. Inclusion of environmental impact assessment in the legislation for industrial developments, civil and military, or exploitation of natural resources in areas identified as important for Steller's Eider. 1.1.4. Adjust national legislation to the benefit of Steller's Eider:
- (i) Shipping and transport of crude oil and other pollutants at sea including the construction of oil terminals etc.
- (ii) Prospecting for and extraction of oil and other natural resources.
- (iii) Dredging of material or dumping of contaminated material.
- 2.1.1, 2.1.3 Identify any additional international or national important sites for Steller's Eider and designate according to national and international criteria as appropriate. In particular prepare a management plan for the conservation of Steller's Eider in Varanger Fjord and designate this 1.1.5. Promote the legal protection of key sites (IBAs)

- 1.2.1. Develop a national action plan for the management and conservation of Steller's Eider in Russia. success, predation, dependance of abundance of lemmings etc.
- 1.2.2. Inclusion of environmental impact assessment in the legislation for industrial developments, civil and military, or exploitation of natural resources in areas identified as important for Steller's Eider.
- 1.2.3. Inclusion of Steller's Eider in the Russian Red Data Book as vulnerable (rare) and as a species of special responsibility.
- 2.1.1. Identify all international or national important sites for Steller's Eider during breeding, moulting, staging or wintering and designate these areas according to national and international criteria as appropriate.
- 2.1.2. Give core breeding areas the fullest possible protection from industrial development and tourism.
- 2.1.3. Prepare a management plan for the internationally important sites for Steller's Eider.
- 2.2.1. Stop all illegal hunting for Steller's Eider implementing existing legislation.
- 2.2.2. Stop all illegal hunting for Steller's Eider in staging and wintering areas
- 2.2.3. Develop the necessary national and local legislation to reduce the risk for Steller's Eider to drown in fishing nets.
- 3.1.1. Locate the breeding areas for the European winter population of Steller's Eider by analysis of satellite images and aerial photographs of potential tundra areas followed by field expeditions.
- 3.1.2. Locate and assess key moulting grounds for the European population of Steller's Eider by coastal surveys of coastal areas in western Russia.
- 3.1.3. Monitor Steller's Eider in Russia including the Kurile Islands. Counts of the proportion of adult males and identified juveniles in the flocks is important.
- 3.2. Conduct extensive studies of the breeding biology of Steller's Eider including habitat requirements, breeding
- 3.4. Conduct field studies of feeding ecology in the breeding and moulting areas.
- 3.5. Conduct studies of the magnitude and impact of spring hunting on Steller's Eider in Russia.
- 4.1.1. Raise the conservation profile of Steller's Eider through efforts from relevant Russian GO's and NGO's.
- 4.2.2. Produce a public awareness programme in local language of the breeding areas for Steller's Eider to increase the knowledge and conservation profile of the species.
- Sweden**
- 1.1.3. Signing, ratification and implementation of the African-Eurasian Waterbird Agreement (AEWA).
- 1.1.4. Adjust national legislation to the benefit of Steller's Eider:
- (i) Shipping and transport of crude oil and other pollutants at sea including the construction of oil terminals etc.
- (ii) Prospecting for and extraction of oil and other natural resources.
- (iii) Dredging of material or dumping of contaminated material.
- 1.1.5. Promote the legal protection of key sites (IBAs)
- 2.1.1. Identify any international or national important sites for Steller's Eider and designate according to national and international criteria as appropriate.
- 3.1.3. Continue monitoring of Steller's Eider in Sweden, including counts of the proportion of adult males and identified juveniles in the flocks.

**TABLE 1 :** The numbers of Steller's Eider in winter or spring in the European range states (source: Nygård et al. 1995, Wetlands International Seaduck Database).

<b>Country</b>	<b>Period of surveys</b>	<b>Maximum numbers</b>
Estonia	1988-1995	5,760
Finland	1968-1994	320
Latvia	1990-1996	6
Lithuania	1987-1996	1,924
Norway	1980-1994	12,553
Russia	1994	ca. 16,000
Sweden	1968-1991	285

**FIG. 1.:** Distribution of breeding areas and staging and wintering grounds of the Steller's Eider (from Nygård et al. 1995). Note that hatching (known breeding area) should have included New-Siberian Islands and wintering areas should have included the north part of the Alaskan Peninsula.

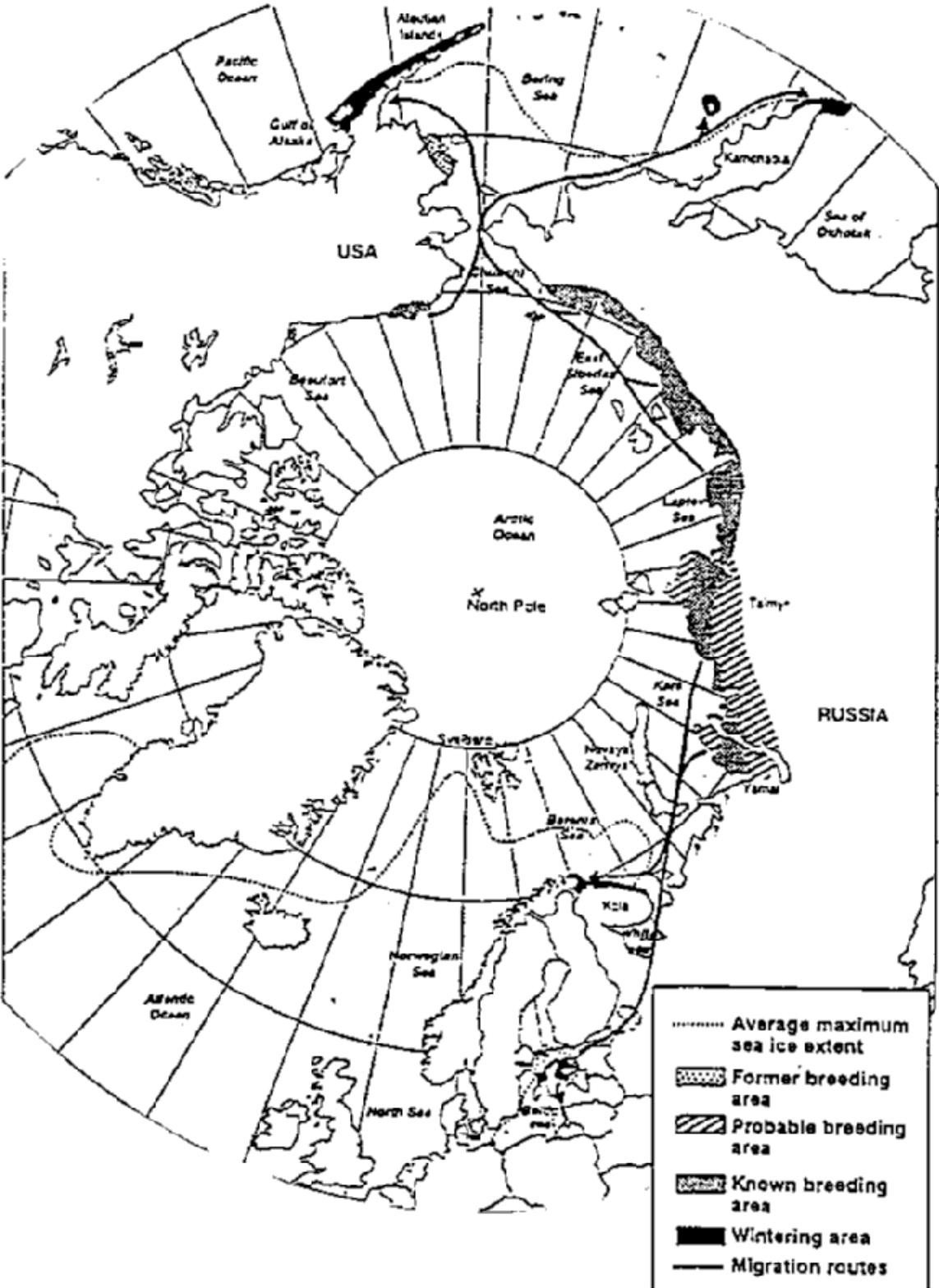


FIG. 2a: Breeding and wintering areas for Steller's Eider in Siberia and Alaska.



FIG. 2b: Recoveries of Steller's Eider ringed in Izembek Lagoon, Alaska up to 1986 (both from Kertell (1991)).

