SPECIES INFORMATION SHEET *Melanitta fusca*

English name: **Velvet scoter**	Scientific name: ***Melanitta fusca***	
Taxonomical group: Class: Aves Order: Anseriformes Family: Anatidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: *Melanitta fusca fusca*; white-winged scoter	Generation length: 7 years	
Past and current threats (Habitats Directive article 17 codes): Breeding: Alien species (I01), Competition and predation (I02), Human disturbance (G01), Other threat factors (Loss of specific habitat features, J03.01), Eutrophication (H01.05) Wintering: Oil spills (H03.01), Bycatch (F03.02.05), Hunting (F03.01), Mining and quarrying (C01.01), Construction (C03.03, D03.03), Water traffic (D03.02)	Future threats (Habitats Directive article 17 codes): Breeding: Alien species (I01), Competition and predation (I02), Human disturbance (G01), Other threat factors (Loss of specific habitat features, J03.01), Eutrophication (H01.05) Wintering: Oil spills (H03.01), Bycatch (F03.02.05), Hunting (F03.01), Mining and quarrying (C01.01), Construction (C03.03, D03.03), Water traffic (D03.02)	
IUCN Criteria breeding: **A2b**	**HELCOM Red List Category breeding:**	**VU Vulnerable**
IUCN Criteria wintering: **A2b**	**HELCOM Red List Category wintering:**	**EN Endangered**
Global / European IUCN Red List Category EN / LC	EU Birds Directive: Annex II B (DK, DE, FR, IE, LV, FI, SE, UK)	
Red List status in HELCOM countries: Denmark: –, Estonia: LC, Finland: NT, Germany: “particularly protected” under Federal Species Protection Decree (Bundesartenschutzverordnung)/–, Latvia: –, Lithuania: –, Poland: –, Russia: –, Sweden: NT (breeding)		

Range description and general trends

The velvet scoter has an extensive Holarctic distribution, breeding across the higher middle latitudes of North America and Eurasia. Compared to common scoter, the breeding range is less restricted to arctic regions. Only the nominate form occurs in the Western Palearctic, with a breeding range that extends from Norway to east of the Yenisey River (85°E). There are also breeding populations along the Baltic coasts of Sweden, Finland, Russia and Estonia, with a tiny, isolated population in the Caucasus and Turkey. In Fennoscandia the population is mostly coastal, with Finland and Sweden having small inland populations only. In Norway the population breeds entirely inland. The European population counts 85 000–100 000 bp and was stable during 1970–1990. The Baltic population represents about 25% of the European one (BirdLife International 2004; European Commission 2007). The population in Russia suffered declines of 20–29% during 1990–2000, and those in Sweden of even >50% during 1980–2010. In Finland and Estonia, the species also has decreased.

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In the Western Palaearctic, velvet scoters winter mostly in the Baltic Sea as well as in the North Sea and along the North Atlantic coastal regions from Norway through the UK / Ireland to Brittany. A small winter population occurs in the Black Sea and Caucasus. Low numbers, mostly juvenile birds, are regularly seen in inland areas (Mendel et al. 2008, BirdLife International 2012). In the Pomeranian Bay, there is a small moulting site of velvet scoters around the Odra Bank, probably the southernmost moulting area of this species (Sonntag et al. 2004).

Melanitta fusca. Photo by Martti Hario, Finnish Game and Fisheries Research Institute.

Distribution and status in the Baltic Sea region

Velvet scoters breed along the Baltic Sea coast of Sweden, Finland, Russia and Estonia. The species is a regular and common winter and migration visitor in the Baltic Sea area from September to May. Besides, there is a small moulting area in the Pomeranian Bay around the Odra Bank. Thus, velvet scoters can be found in the Baltic Sea area throughout the year (Durinck et al. 1994, Sonntag et al. 2006).

Breeding

In **Sweden**, there are two geographically separate breeding populations. Most velvet scoters breed on the Baltic coast (*c*. 8 800), while a smaller population (about 1 200 bp) is found in mountain areas (Ottosson et al. 2012). A substantial decrease was reported from the 1940s to the 1990s for the south-east coast (Curry-Lindahl et al. 1970, Svensson et al. 1999).

In the Stockholm archipelago area, a decline of 89% of the breeding population was recorded between 1975 and 2000 to 2003 (European Commission 2007). Along the northern part of the east coast the species has increased during the last few decades (Svensson *et al.* 1999). For the entire Swedish coastal population, a decline of 50–79% during the last 30 years, 20–40% during the last 20 years (3 generations), and 10–19% during the last 10 years has been noted. A new inventory in the mountain area shows that the population has decreased with about 50% during last 30 years. At present, the total Swedish breeding population is estimated at 8 000–12 000 bp.

In **Finland,** the velvet scoter breeds inland and along the coast with a particularly large population in the Åland Archipelago. The inland population is confined to the north and northeast being sparsely distributed only in the lake areas (Hario 2000). During the middle of the twentieth century a marked decline was reported due to hunting. In the early 1990s about 1 000 pairs were believed to breed inland (Väisänen et al. 1998). A census of the Finnish coastal breeding population during 1997 estimated 13 000 pairs with about 6 000–7 000 pairs occupying the Åland Islands and most of the others breeding on the mid-Bothnian coast (Hario 2000). The census showed the Finnish coastal population having stabilized at a low level following a period of continuous decrease in numbers and range from the 1960s to the early 1990s (Hario 2000). The size of Åland population estimates has been subject to some controversy. Earlier estimates by the Provincial Government were of 60 000–70 000 pairs (Tucker 1996). Survey work (during 1986–1989) for the second Finnish breeding atlas, however, gave a maximum of 8

000 pairs for the entire south-west archipelago of Finland, which includes Åland, with 1 000–5 000 pairs elsewhere on the coast. In 1999–2001, the breeding population in Finland was estimated at 14 000–16 000 pairs (BirdLife International 2004). An almost similar figure for Finland of 12 000–15 000 pairs in the mid-1990s is given by Koskimies (1997). For 2009, the population was estimated at 10 000 bp.

The **St Petersburg** region of **Russia** hosts a small population of *c.* 10 bp, perhaps slightly more, with a negative short-term trend.

The **Estonian** population was estimated at *c.*1 000 pairs during the mid-1980s (Berndt & Hario 1997). This estimate is not very different from that of *c.*1 100 pairs made by Onno (1965, cited in Cramp & Simmons 1977) who thought the population to be steadily decreasing. Surveys in the early 1990s resulted in an estimate of less than 500 pairs with some areas suffering significant reductions. For 1998, the Estonian population was estimated at 500–900 bp (BirdLife International 2004). The latest numbers given by Elts *et al.* (2009) are 400–700 bp.

Table1: Population numbers of the velvet scoter in the Baltic Sea area. For population trends 0=stable, -=decreasing, (+)=slightly increasing.

Country	Population size		Short-term population trend (10 years)	Long-term population trend (50 years)
	Breeding pairs	Year		
Sweden	8 000–12 000	2010	-	-
Finland	10 000	2009	-	-
Russia, PET	10	2009	-	0
Estonia	400–700	2003–2008	(+)	-
Baltic Sea	**18 400–22 700**			

Wintering

During the Baltic Sea survey in the early 1990s, the Pomeranian Bay and the Gulf of Riga – Irbe Strait were identified to be of exceptional importance for velvet scoters. The main concentrations in the Gulf of Riga were found in Latvian waters, while the largest flocks in the Irbe Strait occurred in Estonian waters. Other important wintering areas were the north-west Kattegat, the shallow waters off the cast of Poland and the southern part of the Lithuanian coast (Durinck et al. 1994). The survey from 2007–2009 confirmed the Irbe-Strait - Gulf of Riga and the Pomeranian Bay as the most important wintering areas of velvet scoters, and high concentrations were also found along the Polish coast and the coast of Latvia and Lithuania (Skov et al. 2011; Fig.). However, numbers of wintering birds have been decreasing considerably between the two survey periods. Numbers in the Pomeranian Bay and in the Irbe Strait / Gulf of Riga have dramatically declined by 65% and 86%, respectively, numbers in the northwestern Kattegat by 99% and numbers along the Central Polish coast by 52%. Significant increases in numbers were observed in the coastal areas along Lithuania and Latvia (Skov et al. 2011). The overall Baltic Sea winter population of velvet scoters has declined from c. 932 700 birds in 1988–1993 to 373 000 birds in 2007–2009, equivalent to 60% over 16 years.

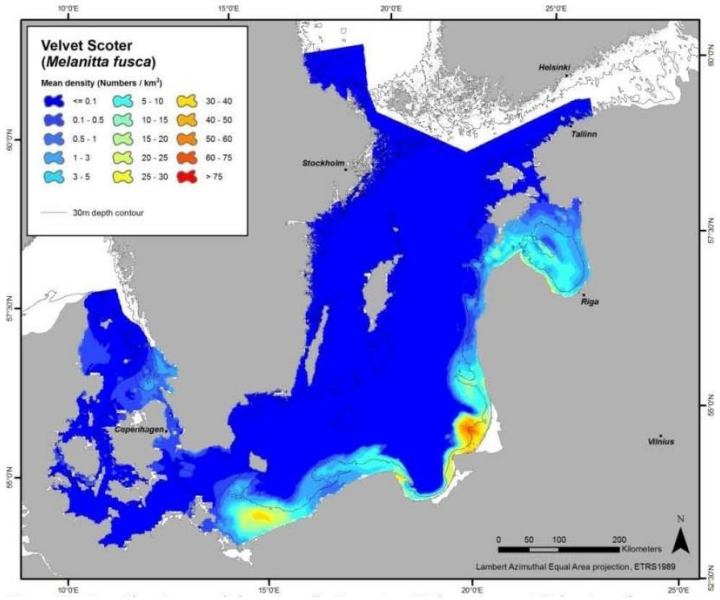

Fig. 1. Distribution and density of wintering velvet scoter *Melanitta fusca* in the Baltic Sea, 2007–2009. From Skov et al. (2011).

Habitat and ecology

The velvet scoter is a seaduck, *i.e.* a diving duck species that outside the breeding season inhabits marine environments. Velvet scoters mainly **breed** in boreal and montane habitats in the upper middle latitudes. There is a frequent association with trees and shrubs during breeding both at inland lakes, pools and rivers within wooded tundra and taiga zones in the continental interior, and on wooded shores and islands of the Baltic (Cramp & Simmons 1977). Nests are well dispersed at concealed sites close to either fresh or brackish water. In Sweden and Finland, the largest numbers are found in coastal archipelagos where the velvet scoter prefers clear water. Inland they breed scattered among mountain lakes of the north and on boreal coniferous forest lakes in Kuusamo district of north-eastern Finland. In Finland, many islands of the coastal archipelagos are less than 5 ha and densities of 2.5 breeding pairs per ha have been found (M. Hario, *unpubl.*). Although the species is not colonial, birds on islets can exceptionally breed in aggregations with distances between nests as close as 3 m (Cramp & Simmons 1977). In some coastal areas, as a means to reduce egg depredation, velvet scoters nest in association with gull (Laridae) and tern (Sternidae) colonies.

Velvet scoters **winter** in brackish or marine areas as well as on large, deep lakes, large rivers or reservoirs. In the Baltic Sea, they are found in shallow offshore waters with a preference for areas with water depths between 10 and 30 m (Skov et al. 2011). A study of velvet scoters wintering along the Lithuanian coast demonstrated a preference for marine areas with sandy substrates at depths between 2 and 30 m (Žydelis 2000). In the Pomeranian Bay the species occurred in waters with sandy sediments up to 30 m depth but was most frequently found up to 15 m depth (Sonntag 2009).

During the breeding season, velvet scoters feed on a variety of organisms, including insects and insect larvae, small fish, and plant material (del Hoyo et al. 1992). In the Baltic Sea wintering areas the diet largely consists of marine bivalves, which are harvested on or up to three centimeters below the surface of pure coarse or sandy sediment in waters up to 20 m deep (Fox 2003). Besides, the species also takes small fish, polychaete worms, gastropods and crustaceans (Mendel et al. 2008).

Description of major threats

Velvet scoters migrate between their breeding grounds in the tundra and the wintering sites in temperate areas and are thus exposed to threats in both ecosystems. Furthermore, velvet scoters use the Baltic Sea area for moulting, a phase in which they are flightless and particular sensitive to disturbance. Although the reasons for the dramatic decline of the Baltic Sea winter population are not yet understood, various pressures were identified that have possibly caused or at least contributed to the observed declines, including **hunting**, **oiling, drowning in fishing gear, human disturbances**, and at least in the north also **eutrophication** and **predation** by gulls. Yet, no new analysis of the vital rates of the species has been conducted since the pioneering work of Koskimies (1957a,b) in the Gulf of Finland. Hence, the mechanisms of the present-day decline – whether due to increased mortality or decreased natality – are unclear. Traditionally, the velvet scoter has been seen as poorly adapted to the marine milieu due to its loose parent-offspring relationships. Yet, females show anti-predator tools that equal those of the eider, and in some years the fledgling production in the Finnish archipelago is very good (Hario 2008). In most years, however, the breeding success is poor in the outer archipelago, but it can be reasonable good in the vast inner zones of SW Finland and Åland archipelagos. Due to the late timing of the breeding season in mid-summer, velvet scoters are particularly sensitive to **human disturbance** (Berndt & Hario 1997). In the 1990s, Mikola et al. (1994) observed a strong influence of recreational boat traffic on breeding velvet scoters in the SW Finland archipelago, leading to smaller broods and restricted feeding time of ducklings. At least 60% of the ducklings died within the first three weeks. Furthermore, the authors observed considerable higher **predation** by large *Larus*-gulls in disturbed situations. Velvet scoters suffering from predation by ground predators, like feral American Mink, in the breeding grounds in SW Finland has also more recently been described by Nordström et al. (2002). In the Taiga and lower Tundra regions the species is threatened by **habitat degradation** due to human exploitation of natural resources (Kear 2005, zit. in BirdLife International 2012). As velvet scoters are listed under Annex II of the European Birds Directive, **hunting** is allowed in certain EU countries, and several thousand birds are shot e.g. in Denmark each year (Bregnballe et al. 2006). Population declines of velvet scoters at the beginning of the 20th century were caused by hunting activities and illegal poaching (Berndt & Hario 1997). Seaducks are among the species most seriously affected by **mortality in gillnets**, as the nets are mainly set in coastal areas and on shallow offshore banks, which are also the most important habitats for species like velvet scoters. More than 73 000 birds are annually caught in gill nets in the Baltic Sea, with sea ducks forming the majority of victims. Velvet scoters are frequently caught in gill nets in the eastern part of the Baltic Sea, especially in Poland and in Lithuanian coastal waters (Žydelis et al. 2009). Velvet scoters spend large amounts of time swimming on the water and usually form large flocks and concentrate in certain sea areas. Thus, they are highly vulnerable to **oil pollution**. Oiling has been identified as one of the most important threats to seabirds and waterbirds in several Baltic Sea countries and wintering and moulting sea ducks are among the species most seriously affected (Žydelis & Dagys 1997, Mendel et al. 2008). More than 7 200 oiled velvet scoters were counted during an aerial survey following the oil tanker accident in the Kattegat in March 1972 (Joensen & Hansen 1977). Velvet scoters mainly feed on benthic molluscs and thus depend on areas where bivalves are abundant and accessible to them. Many important habitats of velvet scoters have already been affected by activities that lead to a **reduction of food supply**, e.g. sand and gravel extraction or sediment dredging. Besides, increasing winter water temperatures and changes in phytoplankton communities due to climate change effects or decreasing nutrient levels can lead to a lower quality of bivalves and thus to food shortage for velvet scoters. Velvet scoters have a large flight distance with regard to vessels and usually take flight when a ship is approaching (Garthe et al. 2004; Bellebaum et al. 2006). Thus they are very sensitive to **disturbance by ship traffic**. In the Pomeranian Bay flight distances of several hundred metres up to 1 km were measured (Schwemmer et al. 2011). This pronounced sensitivity to shipping movements may cause velvet scoters to avoid busy shipping lanes and thus leading to permanent habitat loss, as has been observed for several other seaduck species (e.g. Hüppop et al. 1994, Kube & Skov 1996). Velvet scoters migrate in low flight altitudes and also during night and have only moderate flight manoeuvrability. Furthermore, they have restricted habitat use flexibility and are easily disturbed by ship and helicopter traffic. Hence, the species is particularly at risk of colliding

with **offshore wind turbines and other obstacles** and has one of the highest rankings in the wind farm sensitivity index (Garthe & Hüppop 2006). Barrier effects and habitat loss for migrating velvet scoters have been documented at wind farms in the North and Baltic Sea (summarized in Dierschke & Garthe 2006).

Assessment justification

Breeding

In the long term, the Baltic population of the velvet scoter has declined considerably. In Sweden, the decline was c. 30% during the last 20 years (3 generations). For Finland, the 2010 TRIM estimates of the Ntl. Archipelago Bird Census gave an annual mean decrease of 3.7% since the mid-1990s. In Estonia, however, stabilization seems to have happened. The species is categorized as *Vulnerable* (VU) according to criterion A2b.

Wintering

The species has a very large range and a large population size and hence it does not approach the thresholds for a Red List Category under criteria B, C and D. However, the two comprehensive Baltic Sea surveys indicated that the winter population of velvet scoters has undergone a dramatic decline from ca. 932 700 birds in 1988–1993 to 373 000 birds in 2007–2009, equivalent to 70% over three generations (1993–2014, 21 years; 1993–2014, according to the Swedish Red List, Tjernberg & Svensson 2007). Hence, the species is classified as *Endangered* (EN) according to criterion A2b, as the causes of the reduction are not yet understood and the reduction may not have ceased.

Recommendations for actions to conserve the species

As probably only the cumulative effects of the various threat factors eventually drive the dramatic decline, various management measures in the breeding and wintering areas need to be considered. Disturbance of nesting sites and duckling feeding areas need to be prevented in the breeding areas to avoid human-induced impacts on breeding success. Improving the reproduction by reducing predation pressure on ducklings could be taken in consideration and the species should be deleted from Annex II B of the EU Bird's Directive. Reducing bycatch in fishing gear, the prevention of accidental and chronic oil pollution, preservation of feeding grounds and ship traffic regulations are some options for the wintering areas that are likely to support the recovery of this species. A molecular study should be started to reveal whether there exist exchange and recruitment from the Siberian passing birds to the Baltic Sea breeding population.

Common names

Denmark: fløjlsand, Estonia: tõmmuvaeras, Finland: pilkkasiipi, Germany: Samtente, Latvia: baltspoguļa tumšpīle, tumšā pile, Lithuania: nuodegule, nuodėgulė, Poland: uhla, Russia: Турпан, Sweden: svärta

References

Bauer, H.G., E. Bezzel & W. Fiedler (2005): Das Kompendium der Vögel Mitteleuropas. Band 1: Nonpasseriformes – Nichtsperlingsvögel. Aula Verlag, Wiebelsheim.

Bellebaum, J., A. Diederichs, J. Kube, A. Schulz & G. Nehls (2006): Flucht- und Meidedistanzen überwinternder Seetaucher und Meeresenten gegenüber Schiffen auf See. Ornithologischer Rundbrief Mecklenburg-Vorpommern 45: 86–90.

Bellebaum, J., K. Larsson & J. Kube (2012): Research on Sea Ducks in the Baltic Sea. Gotland University.

Berndt, R.K & M. Hario (1997): Velvet Scoter. In: Hagemeijer, W.J.M. & M.J. Blair (eds): The EBCC Atlas of European breeding birds. Poyser, London.

BirdLife International (2004): Birds in Europe. Population Estimates, Trends and Conservation Status. Cambridge, UK: BirdLife Conservation Series 12, 147.

BirdLife International (2012): IUCN Red List for birds. Species factsheet: *Melanitta fusca*. Downloaded from http://www.birdlife.org on 21/11/2012.

Bregnballe, T., H. Noer, T.K. Christensen, P. Clausen, T. Asferg, A.D. Fox& S. Delany (2006): Sustainable hunting of migratory waterbirds: the Danish approach. In: Boere, G., C. Galbraith & D. Stroud (eds.): Waterbirds around the world, pp. 854–860. The Stationary Office, Edinburgh, UK.

Cramp, S. & K.E.L. Simmons (eds.) (1977): Handbook of the Birds of Europe, the Middle East and North Africa. The Birds of the Western Palearctic, Vol. 1. OUP, Oxford.

Curry-Lindahl, K., L.E. Esping & J. Hojer (1970): Proc. Int. Reg. Meet. Cons. Wildfowl Res, Leningrad 1968: 88-96.

del Hoyo, J., A. Elliot & J. Sargatal (1992): Handbook of the Birds of the World, vol. 1: Ostrich to Ducks. Lynx Edicions, Barcelona, Spain.

Dierschke, V. & S. Garthe (2006): Literature review of offshore wind farms with regards to seabirds. In: Zucco, C., W. Wende, T. Merck, I. Köchling & J. Köppel (eds.): Ecological research on offshore wind farms: international exchange of experiences. Part B: literature review of ecological impacts. BfN-Skripten 186: 131–198.

Durinck, J., H. Skov, F.P. Jensen & S. Pihl (1994): Important marine areas for wintering birds in the Baltic Sea. EU DG XI research contract no. 2242/90-09-01, Ornis Consult Report, Copenhagen, 109 pp.

European Commission (2007): European Management Plan for Velvet Scoter *Melanitta fusca* 2007–2009. Technical Report 008/2008, 45pp.

Elts, J., A. Kuresoo, E. Leibak, A. Leito V. Lilleleht, L. Luigujõe, E. Mägi, R. Nellis, R. Nellis & M. Ots (2009): Status and Numbers of Estonian Birds, 2003–2008. Hirundo 22, 3–31.

Estonian eBiodiversity. Red List 2008 results and species information available at http://elurikkus.ut.ee/prmt.php?lang=eng

Fox, A.D. (2003): Diet and habitat use of Scoters Melanitta in the Western Palaearctic – a brief overview. Waterfowl 54: 189–208.

Garthe, S., N. Ullrich, T. Weichler, V. Dierschke, U. Kubetzki, J. Kotzerka, T. Krüger, N. Sonntag & A.J. Helbig, (2003): See- und Wasservögel der deutschen Ostsee – Verbreitung, Gefährdung und Schutz. Bundesamt für Naturschutz, Bonn - Bad Godesberg, 170 pp.

Garthe, S., V. Dierschke, T. Weichler, P. Schwemmer (2004): Rastvogelvorkommen und Offshore-Windkraftnutzung: Analyse des Konflikt¬potenzials für die deutsche Nord- und Ostsee. Final report of ub-project 5 within the research project MINOS to the German Federal Environmental Ministry. http://www.nationalpark-sh-wattenmeer.de/themen/unten9.htm (June 2009).

Garthe, S. & O. Hüppop (2006). Scaling possible adverse effects of marine wind farms on seabirds: developing and applying a vulnerability index. Journal of Applied Ecology 41: 724–734.

Hario, M. (2000): The status of scoters in Finland. Scoter Workshop, Wetlands International Seaduck Specialist Group / N.E.R.I., Denmark. 29 Nov – 3 Dec 2000, Mols, Denmark (abstract).

Hario, M. (2008): Anti-predator tools of brood-rearingVelvet Scoters *Melanitta fusca* in the northern Baltic Sea. Suomen Riista 54: 105–118.

Hüppop, O., S. Garthe, E. Hartwig & U. Walter (1994): Fischerei und Schiffsverkehr: Vorteil oder Problem für See- und Küstenvögel? – In: Lozan, J.L., E. Rachor, K. Reise, H. von Westernhagen & W. Lenz (eds): Warnsignale aus dem Wattenmeer. Wissenschaftliche Fakten. Blackwell Wissenschafts-Verlag Berlin:

pp. 278–285.

Joensen, A.H. & E.B. Hansen (1977): Oil pollution and seabirds in Denmark 1971–1976. Danish Review of Game Biology 10: 1–31.

Koskimies, J. (1957a): Verhalten und Ökologie der Jungen und jungenführenden Weibchen der Samtente. (Zur Fortpflanzungsbiologie der Samtente, *Melanitta f. fusca* (L.), II). Ann. Zool. Soc. 'Vanamo' 18 (9): 69 pp.

Koskimies, J (1957b): Nistortstreue und Sterblichkeit bei einem marinen Bestand der Samtente, *Melanitta fusca*. Vogelwarte 19: 46–52.

Koskimies, P. (1997): Population sizes and trends of birds in the Nordic Countries 1978–1994. Tema Nord 1997; 614.88, Copenhagen: 88 pp.

Kube, J. & H. Skov (1996): Habitat selection, feeding characteristics, and food consumption of long-tailed ducks, *Clangula hyemalis*, in the southern Baltic Sea. Meereswissenschafltiche Berichte Warnemünde 18: 83–100.

Mendel, B., N. Sonntag, J. Wahl, P. Schwemmer, H. Dries, N. Guse, S. Müller, & S. Garthe (2008): Profiles of seabirds and waterbirds of the German North and Baltic Seas. Distribution, ecology and sensitivities to human activities within the marine environment. Naturschutz und Biologische Vielfalt 61, Bundesamt für Naturschutz, Bonn - Bad Godesberg, 427 pp.

Mikkola-Roos, M., J. Tiainen, A. Below, M. Hario, A. Lehikoinen, E. Lehikoinen, T. Lehtiniemi, A. Rajasärkkä, J. Valkama & R. A. Väisänen (2010): Linnut, Birds. Aves. In Rassi, P., E. Hyvärinen, A. Juslén & I. Mannerkoski (eds.). Suomen lajien uhanalaisuus – Punainen kirja 2010. Ministry of the Environment & Finnish Environment Institute, Helsinki. P. 183–203.

Mikola, J., M. Miettinen, E. Lehikoinen & K. Lehtilae (1994): The effects of disturbance caused by boating on survival and behaviour of Velvet Scoter *Melanitta fusca* ducklings. Biological Conversation 67: 119–124.

Nordström, M., J. Högmander, J. Nummelin, J. Laine, N. Laanetu & E. Korpimäki (2002): Variable responses of waterfowl breeding populations to long-term removal of introduced American mink. Ecography 25: 385–394.

Ottosson, U., R. Ottvall, J. Elmberg, M. Green, R. Gustafsson, F. Haas, N. Holmqvist, Å. Lindström, L. Nilsson, M. Svensson, S. Svensson & M. Tjernberg (2012): Fåglarna i Sverige – antal och förekomst. SOF, Halmstad

Schwemmer, P., B. Mendel, N. Sonntag, V. Dierschke & S. Garthe (2011): Effects of ship traffic on seabirds in offshore waters: implications for marine conservation and spatial planning. Ecological Applications 21: 1851–1860.

Skov, H., S. Heinänen, R. Žydelis, J. Bellebaum, S. Bzoma, M. Dagys, J. Durinck, S. Garthe, G. Grishanov, M. Hario, J.J. Kieckbusch, J. Kube, A. Kuresoo, K. Larsson, L. Luigujõe, W. Meissner, H.W. Nehls, L. Nilsson, I.K. Petersen, M. Mikkola Roos, S. Pihl, N. Sonntag, A. Stock & A. Stipniece (2011): Waterbird populations and pressures in the Baltic Sea. TemaNord 550, 201 pp.

Sonntag, N. (2009): Investigating a seabird hotspot: factors influencing the distribution of birds in the southern Baltic Sea. PhD-thesis, University of Kiel.

Sonntag, N., B. Mendel & S. Garthe 2006: Die Verbreitung von See- und Wasservögeln in der deutschen Ostsee im Jahresverlauf. Vogelwarte 44: 81–112.

Sonntag, N., O. Engelhard & S. Garthe (2004): Sommer- und Mauservorkommen von Trauerenten *Melanitta nigra* und Samtenten *M. fusca* auf der Oderbank (südliche Ostsee). Vogelwelt 125: 77–82.

Svensson, S., M. Svensson & M. Tjernberg (1999): Svensk fågelatlas. (Swedish Bird Atlas), Stockholm.

Tjernberg, M., I. Ahlén, Å. Andersson, M.O.G. Eriksson, S.G. Nilsson & S. Svensson (2010): Fågler – Birds. Aves. In Gärdenfors, U. (ed.) Rödlistade arter i Sverige 2010 – The 2010 Red List of Swedish Species. ArtDatabanken, SLU, Uppsala. P. 201–221. Red List categories available also at http://www.artfakta.se/GetSpecies.aspx?SearchType=Advanced

Tjernberg, M. & M. Svensson (eds.) 2007: Artfakta – Rödlistade ryggradsdjur i Sverige [Swedish Red Data Book of Vertebrates]. ArtDatabanken, SLU, Uppsala.

Tucker, G. (1996): Investigation on the conservation measures taken by member states for bird species of Annex II of the Council Directive 79/409/EEC which have an unfavourable conservation status (Reference D2//4294/1209). Ecoscope Applied Ecologists, Cambridge.

Väisänen, R.A., E. Lammi & P. Koskimies (1998): Muuttuva pesimälinnusto. Otava. (The second Finnish Bird Atlas Survey).

Žydelis, R. (2000): The habitat and feeding ecology of Velvet Scoters wintering in Lithuanian coastal waters. Scoter Workshop, Wetlands International SeaDuck Specialist Group/N.E.R.I., Denmark. 29 Nov–3 Dec 2000, Mols, Denmark (abstract).

Žydelis, R., J. Bellebaum, H. Österblom, M. Vetemaa, B. Schirmeister, A. Stipniece, M. Dagys, M. van Eerden & S. Garthe (2009): Bycatch in gillnet fisheries – an overlooked threat to waterbird populations. Biological Conservation 142: 1269–1281.

Žydelis, R. & M. Dagys (1997): Winter period ornithological impact assessment of oil related activities and sea transportation in Lithuanian inshore waters of the Baltic Sea and in the Kursiu Lagoon. Acta Zoologica Lituanica 6: 45–65.