SPECIES INFORMATION SHEET — *Gavia stellata* (wintering)

English name: **Red-throated diver**	Scientific name: ***Gavia stellata* (wintering population)**	
Taxonomical group: Class: Aves Order: Gaviiformes Family: Gaviidae	Species authority: Pontoppidan, 1763	
Subspecies, Variations, Synonyms: red-throated loon	Generation length: 9 years	
Past and current threats (Habitats Directive article 17 code): Breeding: Contaminant pollution (H04.01, H04.02), Eutrophication (H01.05), Other threat factors (Loss of specific habitat features, J03.01), Human disturbance (G01) Wintering: Oil spills (H03.01), Bycatch (F03.02.05), Construction (C03.03, D03.03), Water traffic (D03.02)	Future threats (Habitats Directive article 17 codes): Breeding: Contaminant pollution (H04.01, H04.02), Eutrophication (H01.05), Other threat factors (Loss of specific habitat features, J03.01), Human disturbance (G01) Wintering: Oil spills (H03.01), Bycatch (F03.02.05), Construction (C03.03, D03.03), Water traffic (D03.02)	
IUCN Criteria: **A2b**	**HELCOM Red List Category:**	**CR Critically Endangered**
Global / European IUCN Red List Category (BirdLife International 2004): LC / LC	Annex I EU Birds Directive yes	
Protection and Red List status in HELCOM countries: *Subject of special conservation measures in the EU Member states (Birds Directive, Annex I)* Denmark: – (on the 1997 Danish Amber List as a species of national responsibility outside the breeding season), Estonia: RE, Finland: NT (listed as "Threatened Species" in the Nature Conservation Decree Annex 4), Germany: "particularly protected" under Federal Species Protection Decree (Bundesartenschutzverordnung)/–, Latvia: –, Lithuania: –, Poland: –, Russia: –, Sweden: NT		

Range description and general trends

The red-throated diver has a circumpolar and Holarctic distribution, occurring throughout the Arctic and in large parts of the boreal zone of Eurasia and North America. It mainly inhabits treeless tundra and heath terrain near oceanic coasts and also breeds over much of the boreal coniferous forest zone. West Palearctic birds mostly move to the North Sea and Baltic Sea for wintering, as well as to the Atlantic coast of Norway, UK and France southwards to the Bay of Biscay. In severe winters, the species may even reach the northern Mediterranean coast. Occasionally, wintering birds are recorded on inland lakes (Hagemeijer & Blair 1997, Mendel et al. 2008). Birds breeding in Arctic Central Eurasia winter in the Caspian and Black Sea and in the eastern Mediterranean. The NW European winter population was estimated at 150 000 to 450 000 birds (Wetlands International 2012).

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*Gavia stellata.*Photo by Jana Kotzerka

Distribution and status in the Baltic Sea region

Since the identification of the two diver species at sea is rather difficult, red-throated and black-throated divers were treated together in the two comprehensive surveys 1988–1993 and 2007–2009. Thus, the distribution and phenology of the two species in the Baltic Sea is only partly known. Both species begin to arrive in the Baltic Sea in September and gradually increase in numbers during the following month. Some divers rest in the Baltic for only a few weeks before moving on to other wintering areas and returning to the Baltic from January onwards. Between mid-April and mid-May divers leave the Baltic Sea (Skov et al. 2011). At the beginning of the 1990s, the Irbe Strait and the Gulf of Riga were the most important wintering areas of divers. Other important areas were the shallow waters off the coast of Lithuania, the Pomeranian Bay, NW Kattegat, Smålandsfarvandet and off the central Polish coast. The majority of birds wintering north of the Kursiu Lagoon as well as in Smålandsfarvandet were red-throated divers, while black-throated divers dominated in the central parts of the Baltic Sea, in the area from the coast of Poland to north of Öland and west of Rügen. In Danish waters (except Smålandsfarvandet) the divers seemed to winter in equal numbers (Durinck et al. 1994). The more recent Baltic survey revealed that the number of divers wintering in the Baltic Sea decreased by 86 %. Numbers dramatically declined in the Irbe Strait and Gulf of Riga, while the largest concentrations of divers were found from the Irbe Strait southwards along the coasts of Lithuania, Latvia and southern Estonia as well as in the Pomeranian Bay (Skov et al. 2001; **Error! Reference source not found.**). Despite significantly smaller numbers, the overall distribution patterns in the Baltic Sea have not changed. The highest densities were still found in a narrow band along the mainland coast north of Rügen up to the Gulf of Riga. In this concentration area the vast majority of identified divers were red-throated divers, while south of this areas the proportion of black-throated divers appeared to be higher (Skov et al. 2011). Based on the provided information of the distribution of both species, the total number of 56 665 divers given by Durinck et al. (1994) could be assigned to 43 713 (77%) Red-throated and 12 952 (23%) black-throated divers wintering in the Baltic Sea in the early 1990s, while the total number of 8 575 observed in the period 2007–2009 could be assigned to 6297 (73%) Red-throated and 2278 (27%) black-throated divers, indicating similar proportions of both species compared to the early 1990s. Based on these figures, the total number of red-throated divers wintering in the Baltic Sea has declined from c. 44 000 birds in 1988–1993 to 6 300 birds in 2007–2009, equivalent to 86% over 16 years.

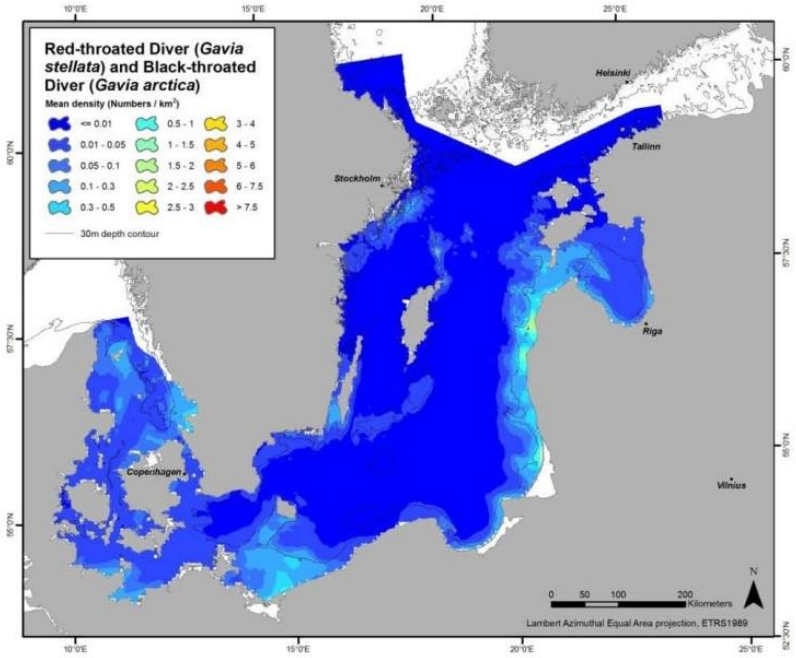

Fig. 2. Distribution and density of wintering divers (red-throated diver *Gavia stellata* and black-throated diver *Gavia arctica*) in the Baltic Sea, 2007–2009. Taken from Skov et al. (2011).

Habitat and ecology

During the non-breeding season, red-throated divers are predominantly found at sea. Besides, they may also be found inland on slow-flowing rivers, on lakes, fish ponds and reservoirs (Mendel et al. 2008). In the German Bight in the North Sea, the species apparently favours sea areas in the vicinity of frontal systems (Skov & Prins 2001). In the Baltic Sea, most divers winter offshore in areas of 5 to 30 m water depths, often far at sea. Some birds are even found in waters up to 100 m depth (Durinck et al. 1994, Skov et al. 2011). In winter, red-throated divers feed almost entirely on fish and are assumed to be opportunistic feeders. In the Baltic Sea, benthopelagic (swarming) fishes such as Herring, Smelt and Percids are important prey species (Žydelis 2002, Guse et al. 2009).

Description of major threats

Beside threat factors in the breeding areas, like **acidification**, **eutrophication** and **degradation** of **breeding habitats, heavy metal pollution** and **disturbances** near the nesting sites (Bauer et al. 2005, del Hoyo et al. 1992), various pressures in the wintering areas were identified that have possibly contributed to the observed declines in the Baltic Sea winter population:

Intense **gillnet fisheries** in the Baltic Sea impose a high risk of **entanglement** and **drowning** for diving bird species. The fisheries often overlap with resting and feeding areas of red-throated divers (e.g. Guse et al. 2009). According to Žydelis et al. (2009), hundreds of divers are caught annually in gillnets in the Baltic Sea, especially in Sweden, Latvia, Lithuania, Poland and Germany. In a small area of the German Baltic Sea, Schirmeister (2003) recorded 370 drowned red-throated divers over a 12 winter period. Red-throated divers usually spend large portions of time swimming on the water and sometimes occur locally in dense concentrations. 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 (e.g. Žydelis & Dagys 1997). During beached-birds surveys along the German North Sea coast in winter 2001/2001, red-throated divers exhibited with 84 % the highest rate of oiled birds recorded (Fleet et al. 2003). Red-throated divers have a very large disturbance distance with regard to vessels and usually

take flight when a ship is approaching (Garthe et al. 2004, Schwemmer et al. 2011). Thus they are very sensitive to **disturbance by ship traffic.** Measurements in the North Sea revealed flight distances of red-throated divers up to 2 km in front of the observation vessel, with a median value of 400 m (Bellebaum et al. 2006). This pronounced sensitivity to shipping movements may cause the birds to avoid busy shipping lanes and thus influence the distribution of red-throated divers, as has been documented for the North Sea (Hüppop et al. 1994; Schwemmer et al. 2011). Even in less frequently sailed areas, ship traffic may cause fragmentation and loss of suitable feeding and resting habitats. According to Schwemmer et al. (2001), habituation to passing ships is unlikely to occur in red-throated divers. Red-throated divers migrate in low flight altitudes, have only poor flight manoeuvrability and are supposed to frequently move between different feeding and resting sites. Hence, they are particularly at risk of colliding with **offshore wind turbines and other obstacles**. The species is ranked second to the black-throated diver in the wind farm sensitivity index and is thus recognized as highly vulnerable (Garthe & Hüppop 2004). The disturbance or displacement effect of offshore wind farms can lead to large-scale losses of habitats suitable for red-throated divers, as has been documented for the North Sea (Dierschke et al. 2006). Collisions of the species with wind turbines have also been documented (see Dierschke & Garthe 2006). At the wind farm in Horns Rev in the Danish North Sea, red-throated divers were observed to avoid the installations at distances up to 4 km (Petersen et al. 2004). Even more than five years after construction, red-throated divers did not habituate to wind farms in the Danish North and Baltic Sea (Petersen & Fox 2007, Petersen et al. 2008).

Assessment justification

Based on the information of the distribution of both diver species provided by Durinck et al. (1994) and Skov et al. (2011), the number of red-throated divers wintering in the Baltic Sea dramatically decreased from c. 44 000 birds in 1988–1993 to 6 300 birds in 2007–2009, equivalent to a decline of 96% over three generations (1993–2020; 27 years, GL = 9 according to the Swedish Red List, Tjernberg & Svensson 2007). Hence, the species is classified as *Critically Endangered* (CR) according to criterion A2b, as the causes of the reduction are not yet understood and the reduction may not have ceased. Although there might be some inaccuracy in the number of each diver species, the assessment is rather distinct and it would require an extra several thousand red-throated divers to fall below the threshold of CR.

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 need to be considered. In the wintering areas, reducing bycatch in fishing gear, the prevention of accidental and chronic oil pollution, preservation of feeding grounds and ship traffic regulations are some options that are likely to support the recovery of this species.

Common names

Denmark: rødstrubet lom, Estonia: punakurk-kaur, Finland: kaakkuri, Germany: Sterntaucher, Latvia: brūnkakla gārgale, Lithuania: rudakaklis naras, Poland: nur rdzawoszyi, Russia: Краснозобая гагара, Sweden: smålom

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.

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.

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

Fleet, D.M., S. Gaus & M. Schulze Dieckhoff (2003): Zeigt die Ausweisung der Nordsee als MARPOL-Sondergebiet für Öl die ersten Erfolge? Ölopfer in der Deutschen Bucht in den Wintern 2000/2001 und 2001/2002. Seevögel 24: 16–23.

Garthe, S., V. Dierschke, T. Weichler, P. Schwemmer (2004): Rastvogelvorkommen und Offshore-Windkraftnutzung: Analyse des Konfliktpotenzials 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 (2004): Scaling possible adverse effects of marine wind farms on seabirds: developing and applying a vulnerability index. Journal of Applied Ecology 41: 724–734.

Guse, N., S. Garthe & B. Schirmeister (2009): Diet of Red-throated Divers *Gavia stellata* reflects the seasonal availability of Atlantic Herring *Clupea harengus* in the southwestern Baltic Sea. Journal of Sea Research 62: 68–275.

Hagemeijer, W.J.M. & M.J. Blair (1997): The EBCC Atlas of European breeding birds. Poyser, London.

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.

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.

Petersen, I.K., I. Clausager & T.K. Christensen (2004): Bird numbers and distribution in the Horns Rev offshore wind farm area. Annual status report 2004. NERI Report commissioned by Elsam Enginering A/S. National Environmental Research Institute, Kalø, Denmark.

Petersen, I. K. & A. D. Fox (2007): Changes in bird habitat utilization around the Horns Rev 1 offshore wind farm, with particular emphasis on Common Scoter NERI Report. Vattenfall A/S, DK. National Environmental Research Institute, Kalø, Denmark.

Petersen, I. K., A. D. Fox & J. Kahlert (2008): Waterbird distribution in and around the Nysted offshore wind farm, 2007. NERI Report. National Environmental Research Institute, Kalø, Denmark.

Schirmeister, B. (2003): Verluste von Wasservögeln in Stellnetzen der Küstenfischerei – das Beispiel der Insel Usedom. Meer & Museum 17: 160–166.

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.

Skov, H. & E. Prins (2001): Impact of estuarine fronts on the dispersal of piscivorous birds in the German Bight. Marine Ecology Progress Series 214: 279–287.

Tjernberg, M., I. Ahlén, Å. Andersson, H. Andrén, M.O.G. Eriksson, S.G. Nilsson, S. Svensson (2010): Däggdjur – Mammals. Mammalia. In Gärdenfors, U. (ed.) Rödlistade arter i Sverige 2010 – The 2010 Red List of Swedish Species. ArtDatabanken, SLU, Uppsala. P. 301–306. 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.

Wetlands International (2012). Waterbird Population Estimates. Retrieved from wpe.wetlands.org on Friday 7 Dec 2012.

Žydelis, R. (2002): Habitat selection of waterbirds wintering in Lithuanian coastal zone of the Baltic Sea. PhD-thesis, University of Vilnius.

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.