RE | CR | EN | VU | NT | DD | LC

SPECIES INFORMATION SHEET

Calidris alpina schinzii

English name: **Southern dunlin**	Scientific name: ***Calidris alpina schinzii***	
Taxonomical group: Class: Aves Order: Charadriiformes Family: Scolopacidae	Species authority: Linnaeus, 1758	
Subspecies, Variations, Synonyms: –	Generation length: 7 years	
Past and current threats (Habitats Directive article 17 codes): Overgrowth of open areas (A04.03), Alien species (I01), Competition and predation (I02), Ditching (J02.01.01, J02.05), potentially also Climate change (M) and Extra-regional threats (XE)	Future threats (Habitats Directive article 17 codes): Overgrowth of open areas (A04.03), Alien species (I01), Competition and predation (I02), potentially also Climate change (M) and Extra-regional threats (XE)	
IUCN Criteria: **A2ace, C1**	**HELCOM Red List Category:**	**EN Endangered**
Global / European IUCN Red List Category (BirdLife International 2004): LC / LC[1]	Annex I EU Birds Directive yes Annex II EU Birds Directive no	
Protection and Red List status in HELCOM countries: *Subject of special conservation measures in the EU Member states (Birds Directive, Annex I) and in Russia (Red Data Book of the Russian Federation)* Denmark: EN, Estonia: EN (species level), Finland: CR, Germany: 1 (Critically endangered, species level), Latvia: –, Lithuania: 1 (E, Endangered, species level), Poland: EN, Russia: 1 (under threat of extinction), Sweden: CR		

Range description and general trends

The southern sub-species of the dunlin, *Calidris alpina schinzii*, colonises south-eastern Greenland, Iceland, the Faeroe Islands, Great Britain and Ireland, southern Norway, and the Baltic. In the southern North Sea (Belgium, Netherlands and Germany), the dunlin has been a breeding bird in the past, but in recent times breeding records are few and irregular.

Distribution and status in the Baltic Sea region

During the 19th and at the beginning of the 20th century, the dunlin was still a widespread and common bird in most parts of the Baltic (Boie 1822, Fromholz 1913, Thorup 1997). However, already at the end of the 19th /beginning of the 20th century the dunlin has been declining in the southern Baltic (Wüstnei & Clodius 1900), and this decline has continued during the whole 20th century. Since the mid-1990s, the negative trend has even accelerated.

During the 20th century, the **Swedish** population has been declining rapidly. In the south-Swedish province of

Calidris alpina schinzii. Photo by Andrei Frenkel.

[1] Assessment on species level, not for the subspecies *C. a. schinzii*

Scania, the population amounted still 425 pairs in 1930, but dropped down to only 100 pairs in 1994, and 55 in 2004 (Tjernberg & Svensson 2007). The population decline in Sweden reached the magnitude of 50–60% during the period 2000–2010. The total number of breeding pairs in 2010 was estimated at 75–125 bp.

In **Finland**, the southern dunlin has never been numerous. The first documented breedings date back to the 1880s.

In the 1960s, the dunlin was still considered increasing, with a country total of 150–200 bp (Soikkeli 1964; Perttula 1998). New breeding sites were still found in the mid-1980s when the population peaked at 200 pairs. However, until the early 1990s the population had declined to 100 bp. In 1999 the number of confirmed breeding pairs was 71, and in recent years (2003–2009) about constant between 50 and 60 bp.

The only area with a continuous monitoring was in the Pori region (SW Finland), where the breeding pair numbers were 45 in 1947, 14 in 1955, and 60–70 in 1963. After the 1960s the population in this area started to decrease, and until the late 1980s it had dropped down to 26 bp. In the Vaasa region (Kvarken), also many breeding sites have been abandoned in the 1980s and early 1990s. In the northernmost breeding area in the Oulu region the breeding pair numbers still increased until the 1990s. After 2000 some more sites in Finland have been abandoned. The only sites with stable a population or even slight increase are situated in North Ostrobothnia (Oulu region). After 1990s the total number of dunlins in the Oulu region has been unchanged, but the number of breeding sites has decreased.

In the **St Petersburg** region of **Russia** the dunlin is obviously still a rare or sporadic breeder. In 2008, a nest was found on the shore of Kurgalsky peninsula (Fedorov 2009). In 2010, an adult bird with typical breeding behaviour was seen on a small islet near Sescar Island. In the **Kaliningrad** region, the species was known as a breeding bird until 2001 (1989–93: 4–5 bp; 1996–99: 3 pairs; 2001: 2 pairs). After that year, no further breeding could be confirmed (Grishanov & Lykov 2008).

Estonia holds 200–250 pairs, with a decreasing trend prevailing since the 1970s and accelerating since the 1990s (Elts *et al.* 2009).

There are no confirmed breeding records of the dunlin in **Latvia** from recent times. During the elaboration of the second Latvian Breeding Bird Atlas 2000–2004 (in preparation, results are available online: http://www.lob.lv/lv/atlants/sugu_kartes.php?kods=caalp) breeding of dunlins has been suspected for 3 sites: Ainazi and Randu plavas, Teich bog and Daugavgriiva. The population is estimated at 0–7 bp.

The **Lithuanian** population has never been very large; the maximum number reported was 25–30 pairs in 1996–1998 (Thorup 2006). In 2011, the former coastal breeding sites in have been surveyed. No breeding was recorded, and most of the sites were abandoned and overgrown (Thorup *et al.* submitted).

In **Poland**, the population was about 80–100 bp in the mid-1980s, but plummeted down to about 20 bp around 2000 (Tomiałojć & Stawarczyk 2003). Between 1986 and 1993, breeding was confirmed for 3 sites, and suspected for another 8–10 sites. In 1996–1998, the dunlin bred in the delta of the Świna River, at Lake Łebsko, at the mouth of the Reda River and in the Biebrza marshes. After 2000, only 2 breeding sites remained: Świna Delta and Reda River mouth (Sikora *et al*. 2007). In 2007, nine former breeding sites along the sea shore and the Biebrza marshes have been monitored without any breeding record (Sikora *et al.* 2008). However, some birds have been observed in May 2007 in the Świna Delta, and in May 2008 in the Beka Nature Reserve, suggesting that breeding of the species might still be

possible.

In **Mecklenburg-Western Pomerania, Germany**, there are many sources confirming a high abundance of the species in coastal areas at the beginning of the 20th century (*e.g.,* Fromholz 1913). In the mid-1960s the population was still estimated at about 250 bp. Probably as a direct consequence of considerable habitat losses due to land reclamation projects in coastal areas at the end of the 1960s, it declined to about 90–120 bp at the beginning of the 1970s (Nehls 1987). It maintained a level of 70–80 bp until the beginning of the 1990s, but then the population started to decline rapidly and is nowadays with only 7–9 bp close to extinction (Figure 1). However, during the last years (2005–2011) the population remained stable on this low level, but dropped to 4 bp in 2012.

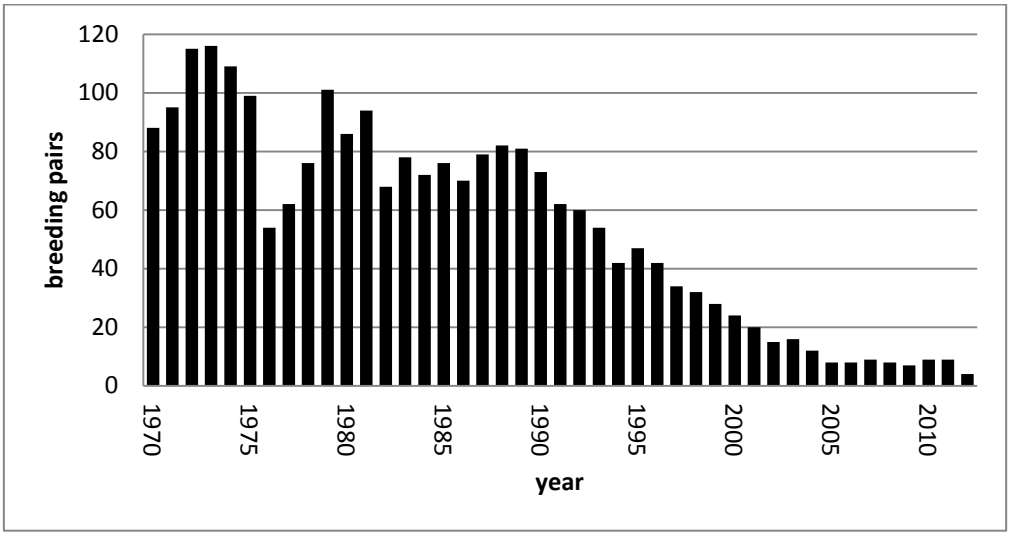

Figure 1: The breeding population of the southern dunlin in Mecklenburg-Western Pomerania 1970–2011.

At the Baltic coast of **Schleswig-Holstein**, the dunlin has been a widespread breeder in the past (*e.g.,* Boie 1822), but disappeared during the 1990s. However, at the North Sea coast it re-established as a breeding bird in 2007 in Rickelsbüller Koog close to the Danish border. In this area (Rickelsbüller and the adjacent Margrethe Koog), the dunlin had already disappeared in 1996. The number of breeding pairs was 1 bp in 2007, 2 bp in 2008, 5 bp in 2009 and 4 bp in 2010. The return of the dunlin to the Rickelsbüller Koog is probably related to dispersal or interchange of birds from the Danish breeding site Rømø (distance *c.* 25 km).

The **Danish** breeding population at the beginning of the 20th century was estimated at 50 000–100 000 bp (Thorup 1997). It plummeted down to less than 1 000 bp at the beginning of the 1960s, but was about stable between 1970 and 1990. Starting at the beginning of the 1990s, the population declined rapidly to 170–180 bp currently, perhaps showing a slight recovery 2008–2011. The population development during the last 5 decades is shown in Table 1 (Thorup *et al.,* in prep.).

Table 1: Population development of the dunlin in Denmark.

	1964	**1970**	**1990**	**2011**
Baltic[2]	596	504	379	88
North Sea	243	240	359	86
Denmark total	**839**	**744**	**738**	**174**

The total Baltic population was estimated at about 1 380–1 660 bp for the period 1994–1998 (HELCOM 2002, amended), 1 110–1 360 bp in 2002 (Thorup 2006), and 500–640 bp in 2007–2011 (Table 2).

Table 2: Population numbers of the dunlin in the Baltic Sea area 1994–1998 and 2007–2011. Data for 1994–1998 according to HELCOM (2002, amended). For Denmark and Schleswig-Holstein, the numbers include the breeding pairs at the North Sea coast.

Country	**Breeding pairs**		**Short-term population trend (10 years)**	**Long-term population trend (50 years)**
	1994–1998	**2007–2011**		
Denmark	450[3]	170–180 (2011)	-	--
Estonia	400–500	200–250	--	-
Finland	100	50–55	0	-
Germany - SH	12–15	1–5	-	--
Germany - MV	32–47	7–9	--	--
Latvia	2–5	0–7 (2000–2004)	?	--
Lithuania	5–50	0–3 (2011)	--	--
Poland	30–40	0	--	--
Russia, KAL	5–8	0		--
Russia, PET	20–30	1-5 (2008)	--	--
Sweden	325–410	75–125 (2010)	--	--
Baltic Sea	**1 380–1 660**	**500–640**		

[2] Includes the Helsinki Convention area, *i.e.* the Limfjord and adjacent waters (Venø Bugt, Kås Bredning, but not Nissum Bredning).
[3] According to Grell (1998)

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Distribution map

Habitat and ecology

The southern dunlin is a characteristic bird of grazed coastal meadows, but small numbers also breed in peat bogs. Nowadays, the breeding sites are almost exclusively found in coastal areas, whereas in the past the species was also common in the inland.

Description of major threats

Habitat loss due to land reclamation, drainage and conversion to arable land has been considered as reasons for the population decline in the past. However, habitat loss cannot explain the full scope of decline (Blomquist *et al.* 2010).

Changes of the characteristics of the remaining habitats (*e.g.*, due to changes in management / grazing practices; changes in hydrology; abandonment of meadows) seem to be the key factors of the most recent declines. Although a too low grazing pressure on coastal meadows is apparently the main problem, overgrazing by cattle may also play a role (Beintema & Müskens 1987, Baines 1990). On Gotland (Sweden), high numbers of grazing barnacle geese may have a negative impact on otherwise suitable habitats.

Predation, especially by predatory mammals (Red Fox, Raccoon Dog and American Mink) is another important factor (Ottvall 2005). The increase of predatory mammals and the invasion of introduced species are currently considered to be some of the most severe problems for coastal bird conservation (Langgemach & Bellebaum 2005; Kube *et al.* 2005). In Germany, since the mid-1990s coastal birds have largely declined in all areas with free access for predatory mammals (Herrmann 2010), and the dunlin even has completely disappeared from these areas. The last stable breeding site is the island Kirr, where predatory mammals are controlled.

Beside the mammalian predators also some avian predators have increased considerably in recent times. The marsh harrier (*Circus aeruginosus*) has increased since the 1970s in much of its European range (Hagemeijer & Blair 1997). Within the distribution area of the Baltic dunlin, 5–10 fold increases have been observed. At some breeding sites (*e.g.*, Tipperne, DK), the marsh harrier is probably the singlemost important predator for breeding dunlins. Another predator with strong population increase in recent times is the peregrine falcon (*Falco peregrinus*).

However, the factors affecting the breeding success und recruitment rate are obviously quite complex. Field studies in southwest Sweden (Pauliny *et al.* 2008) showed that protection measures against predators increased the hatching success, but not the fledgling success and recruitment rate. Weather conditions, food availability, chick predation and genetic effects are other factors affecting hatching and survival after hatching. According to recent research results, genetic effects (inbreeding depressions) pose a threat to small and isolated populations of the dunlin. Blomquist *et al.* (2010) combined long-term population and fitness data of a metapopulation of southern dunlins breeding on coastal pastures in SW Sweden with two types of molecular markers. The decline of the population was associated with increased inbreeding and loss of genetic diversity (assessed as loss of allelic heterozygosity at 7 microsatellite loci). The loss of genetic diversity resulted in a reduced embryonic survival and probably also a reduced fitness and survival after hatching. However, it has to be emphasized that these results have been derived from a small and isolated population; they probably only apply for such situations. Comprehensive investigations for larger populations in SW Sweden, on Öland, in Estonia and Finland are currently done by the Universities of Göteborg and Oulu, but the results are not yet published. However, as a consequence of the general declining trend in the Baltic Sea area isolation of breeding populations is becoming an increasing phenomenon. For instance, there is currently not one single larger population along the entire southern coast of the Baltic Sea from Germany to Latvia! Hence, the genetic effects may gain increasing importance on the level of the whole Baltic population in the future, if the rate of decline

of the last decade continues.

It is still poorly understood, how general weather patterns and climate change have contributed to the population development. A considerable population increase on the well managed sites in the 1980s and a very rapid decline between 1990 and 2005 in most populations may partly be attributed to climate factors. However, since most dunlin breeding sites are managed, unfavourable climate effects at the presently seen scale can be counteracted by appropriate adjustments of management and land use (*e.g.,* water retention, grazing intensity).

In many Danish sites improper habitat management is still a major issue with fragmentation, drainage and over- or undergrazing being crucial factors affecting the population. But there are probably also other problems. It is worth to mention that in the four most important Danish breeding sites for the species where meadow management is adapted particularly to the demands of Baltic dunlins – Tipperne and Agger Tange in the North Sea part, Bygholm Vejle and Læsø in the Baltic part – the number of breeding dunlins was higher in 2010 than in 1970.

In Mecklenburg-Western Pomerania, the area of coastal meadows with a natural flood regime has increased after 1990 due to restoration projects. In Denmark, Sweden and Lithuania, *Life* projects with the aim to restore or improve habitats for dunlin, Ruff and other waders have been implemented or are under implementation. In Poland, a special project aiming on restoration of breeding habitats for the Dunlin is implemented by the Polish Society for the Protection of Birds in the Beka Nature Reserve. However, to become effective, restoration programmes need to be carried on for years, and even then their ability to re- establish populations seems controversial when immediate results are wanted. Yet, at sites still inhabited by the dunlin, results have been encouraging. In Finland, the population decline has recently halted, which has been attributed to habitat restoration measures. However, on Öland, Sweden, the supply of suitable breeding habitats has not changed during the last two decades when the population was declining.

Since predation of nests and chicks may affect the breeding success and eventually the viability of a population, conservation measures for the remaining breeding sites should also include a management of predatory mammals. Since fragmentation of the landscape favours generalist predators, appropriate habitat management that avoids fragmentation is another element of conservation for the breeding sites.

The main wintering areas of the Baltic dunlin are the estuaries of N and NW Africa (Mauritania, Tunisia, Morocco), which it shares with other dunlin populations of the subspecies *C. alpina schinzii* and *C. alpina arctica* breeding in Greenland and Svalbard, Iceland, Faeroe Islands, Ireland and Great Britain. Furthermore, there are also mid-winter ringing recoveries from southern France (both Atlantic and Mediterranean coasts), indicating that a certain proportion of the population winters in south-west Europe (France, Iberian Peninsula). The autumn migration follows the Wadden Sea and the Atlantic coasts of southern Britain and France (especially the Channel and the Bay of Biscay). Also during spring migration the Bay of Biscay is the staging site with most recoveries. Ringing recoveries from the Mediterranean Sea mainly date from the period 21 February – April, indicating that the Mediterranean coast is mainly frequented during spring migration. Especially the Gulf of Lion is obviously an important staging area (Thorup *et al.* 2009). Factors affecting the birds in their staging and wintering areas may play a role for the development of the Baltic dunlin population, but knowledge on this aspect is scarce.

Assessment justification

The reduction of population size of the dunlin during the last 15 years (3 generations) has been >50%. The reasons for the decline are not well understood and possibly not reversible. Hence, the species is classified as *Endangered* (EN) according to criterion A2ace, and due to the small population size also

according to C1.

Recommendations for actions to conserve the species

The main conservation action is the adjustment of the optimisation of the remaining breeding sites to the habitat requirements of the dunlin. This includes both grazing and water management. Control of predatory mammals is also essential.

Common names

Denmark: Engryle, Estonia: Risla, Risla, rüdi, rüdi, soorüdi, Finland: Suosirri, Germany: Alpenstrandläufer, Latvia: Parastais šņibītis, Šinca šņibītis, Lithuania: Juodakrutis begikas, Juodkrūtis bėgikas, Poland: Biegus zmienny, Russia: Чернозобик, Sweden: Kärrsnäppa

References

Baines, D. (1990): The roles of predation, food and agricultural practice in determining the breeding success of the Lapwing (Vanellus vanellus). J. Anim. Ecol. 59: 915–929.

Beintema, A.J. & Müskens, G.J.D.M. (1987): Nesting success of birds breeding in Dutch agricultural grasslands. J. Appl. Ecol. 24: 743–758.

Blomquist, D., A. Pauliny, M. Larsson & L.Å. Flodin (2010): Trapped in the extinction vortex? Strong genetic effects in a declining vertebrate population. BMC Evolutionary Biology 10: 33.

Boie, F. (1822): Ornithologische Beyträge. Isis 1: 768–781, 871–886.

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 Red List of Threatened Species (2008): Available at http://elurikkus.ut.ee/prmt.php?lang=eng.

Fedorov, V.A. (2009): Nest record of the Dunlin *Calidris alpina schinzii* in the Kurgalsky Zakaznik, Leningrad Oblast. Russian Journal of Ornithology 486, Express issue 18: 351–354 (in Russian).

Fromholz, R.J. (1913): Tagebuchnotizen aus dem Odermündungsgebiet. Orn. Jahrb. 24, Heft 1–2, 27–45 u. 91–108

Głowaciński, Z. et al. (2001): Państwowe Wydawnictwo Rolnicze i Leśne, (Polish Red Data Book of Animals, Vertebrates). Warszawa.

Grell, M.B. (1998): Fuglenes Danmark. Dansk Orn. Foren. Gads Forlag.

Grishanov G.V. & E.L. Lykov (2008): Dynamics of Numbers and the Current Status of Breeding waders Species at the Mouth of the Pregol River inside of Kaliningrad City. Achievements in waders Species Studies in the North Eurasia: Materials of VII Conference on waders Species Studies; Michurinsk: 45–53.

Hagemeijer, E.J.M. & M.J. Blair (eds.) (1997): The EBCC Atlas of European Breeding Birds: Their Distribution and Abundance. T. & A.D. Poyser, London.

HELCOM (2002): Environment of the Baltic Sea area 1994-1998. Baltic Sea Environ. Proc. 82B.

Herrmann, C. (2010): Küstenvögel und Küstenvogelschutz in Mecklenburg-Vorpommern. Vogelkundl. Ber. Nieders. 41, 179–191.

Kube, J., U. Brenning, W. Kruch & H.W. Nehls (2005): Bestandsentwicklung von bodenbrütenden Küstenvögel auf Inseln in der Wismar-Bucht (südwestliche Ostsee: Lektionen aus 50 Jahren Prädatorenmanagement. Vogelwelt 126: 299–320.

Langgemach, T. & J. Bellebaum (2005): Prädation und der Schutz bodenbrütender Vogelarten in Deutschland. Vogelwelt 126, 259–298.

Lietuvos Raudonoji Knyga, the Red List of Lithuania. Available at http://www.raudonojiknyga.lt/.

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

Nehls, H.W. (1987): Alpenstrandläufer – Calidris alpina (L., 1758). In: Klafs, G. & J. Stübs (eds.): Die Vogelwelt Mecklenburgs. 3rd revised edition, VEB Gustav Fischer Verlag Jena: 2006–2008.

Ottvall, R. (2005): Boöverlevnad hos strandängshäckande vadare: den relativa betydelsen av predation

och effekter av betesdjur. (Nest survival among waders breeding on coastal meadows: the relative importance of predation and trampling damages by livestock, in Swedish with English summary); Ornis Svecica 15: 89–96.

Pauliny, A., M. Larsson & D. Blomquist (2008): Nest predation management: Effects on reproductive success in endangered shorebirds. J. Wildlife Management 72: 1579–1583.

Perttula, H. (1998): *Calidris alpina schinzii*. In: Kotiranta, H., P. Uotila, S. Sulkava & S.-L. Peltonen (eds): Red Data Book of East Fennoscandia. Ministry of the Environment, Finnish Environment Institute & Botanical Museum, Finnish Museum of Natural History. Helsinki. 351 pp.

Red Data Book of the Russian Federation (RDBRF) (2000): Available at http://biodat.ru/db/rb/

Sikora, A., Z. Rohde, M. Gromadski, G. Neubauer & P. Chylarecki (2007): The Atlas of Breeding Birds in Poland 1985–2004. Bogucki Wydawnictwo Naukowe, Poznan.

Sikora, A., M. Wieloch, M. Zielińska, T. Mokwa, P. Chylarecki, P. Zieliński & Z. Rohde (2008): Monitoring of rare species (Whooper Swan, Ferruginous Duck, Dunlin, and Mediterranean Gull), Report for the Chief Inspectorate of Environmental Protection 2007, Gdansk.

Soikkeli, M. (1964): The distribution of the Southern Dunlin (*Calidris alpina schinzii*) in Finland. Ornis Fennica 41: 13–21.

Südbeck, P., Bauer, H.-G., Boschert, M., Boye, P. & W. Knief (2007): Rote Liste der Brutvögel Deutschlands, 4. Fassung. Ber. Vogelschutz 44: 23–81.

Thorup, O. (1997): Langtidsstudier af Baltisk Ryle på Tipperne. [Long-term studies of Baltic Dunlin at Tipperne]. Dansk Orn. Foren. Tidsskr. 91: 50–51.

Thorup, O. (2006): Breeding waders in Europe 2000. International wader Studies 14.

Thorup, O., S. Timonen, D. Blomquist, L.Å. Flodin, P.E. Jönsson, M. Larsson, V.M. Pakanen & M. Soikkeli (2009): Migration and wintering of Baltic Dunlins Calidris alpine schinzii with known breeding origin. Ardea 97: 43–50.

Thorup, O., M. Erit, L.-Å. Flodin, L. Kvist, R. Ottvall, V.-M. Pakanen, H. Pehlak, J. Pessa, N. Rönkä, R. Thomson & S. Timonen (in prep.): Baltic Dunlins need urgent conservation concern and action – the biogeographical population is facing extinction (working title).

Thorup, O., Z. Preiksa, H. Pehlak, M. Altemüller & H. Drews (submitted): Status of the Baltic Dunlin Calidris alpina in Lithuania. wader Study Group Bull.

Tjernberg, M., Ahlén, I., Andersson, Å., Eriksson, M. O. G., Nilsson, S. G. & Svensson, S. (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

Tomiałojć, L. & T. Stawarczyk (2003): Awifauna Polski. Rozmieszczenie, liczebność i zmiany. - The Avifauna of Poland. Distribution, Numbers and Trends. Vol. I, Wroclaw, 336–338.

Tjernberg, M. & M. Svensson (ed.) (2007): Artfakta Rödlistade ryggradsdjur i Sverige. ArtDatabanken, SLU, Uppsala, 254–257.

Wind, P. & Pihl, S. (eds.). (2004–2010): The Danish Red List. - The National Environmental Research Institute, Aarhus University [2004]-. http://redlist.dmu.dk (updated April 2010). Species information available at http://bios.au.dk/videnudveksling/til-myndigheder-og-saerligt-interesserede/redlistframe/soegart/

Wüstnei, C. & G. Clodius (1900): Die Vögel der Grossherzogthümer Mecklenburg. Opitz & C. Güstrow, 243 pp.