Beached bird surveys in The Netherlands

autumn 2021 & winter 2021/22

C.J. Camphuysen 2022

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Front cover: Stretched wings of common guillemots found in the wreck that occurred in autumn 2021 and that involved mostly mature, moulting males (bottom example) and chicks (top image) (photo's C.J. Camphuysen)

Summary - This is the annual report on beached bird survey (BBS) combining results obtained in The Netherlands during autumn 2021 (Aug-Oct) and the winter 2021/22. This was a more turbulent season, with a mass stranding of harbour porpoises in August 2021, and seabird wrecks in autumn 2021 and in winter 2021/22. The significant declines in (winter) oil rates that were reported in recent decades, especially since ~2005, continued and only very few oiled auks found in winter 2021/22. The sample size for Common Guillemots was much larger than most years before, more than sufficient for the OSPAR subregions covered in this study that are bordering the North Sea, and also sufficient for the interior Wadden Sea. The oil-rate (percentage of oiled Common Guillemots of all complete Common Guillemots found dead) reached a very low value of only 0.5% (n= 1216) for Dutch contributions to the OSPAR areas 8-10 combined; by far the lowest value ever measured within The Netherlands. The most recent data conform the declining trend once more, as a result of which the 5-year running mean of oil rates in Common Guillemots has now arrived at 4.3 ± 2.7% (mean ± S.D.) for all North Sea beaches combined. The OSPAR target of 10% over periods of at least 5 years for 2030 has been surpassed already.

Winter 2021/22 was another mild season overall, the 6th mildest season since registration began in 1901. The weather in January was turbulent, with a major storm (Corrie) on 29 January. A triplet of heavy storms occurred mid-February (Dudly, Eunice and Franklin). This turbulent weather, affecting the entire North Sea Area, was the reason that several seabird wrecks have occurred.

Another major die-off of waterbirds occurred in coastal areas, affecting mainly wildfowl, waders, and raptors, as a result of a highly pathogenic avian influenza (HPAI) virus, H5N1, in an epidemic season that began in autumn 2021 in Europe. Casualties were found throughout much of the Northern Hemisphere, and into the next spring and summer seasons of 2022 thereby affecting seabirds on a grand and unprecedented scale in the Old World as well as in the New World. Details of the effects of the avian influenza outbreak on seabirds in the Netherlands will be published later and elsewhere, even though beached bird surveys yielded increasing numbers of casualties, but mostly in late spring 2022.

Autumn 2021 and winter 2021/22 yielded some rather rare finds, including two great White Egrets *Egretta alba* and at least one, but perhaps two Brünnich;s Guillemots *Uria lomvia*. For seabirds, a major wreck of dead Atlantic Puffins *Fratercula arctica* was recorded, next to unusually large numbers of dead Northern Fulmars *Fulmarus glacialis*, and eventually Northern Gannets *Morus bassanus.*

Vogelstrandingen langs de Nederlandse kust, herfst 2021 en winter 2021/22

Samenvatting - Dit is de jaarlijkse weergave van de resultaten van systematische strandtellingen langs de Nederlandse kust, met een verslag over het seizoen 2021/22. Het langjarige onderzoek liet een gestage, lange termijn afname in oliebevuilingspercentages bij de Zeekoeten zien die versnelde vanaf 2005. Alle laatste seizoenen hebben bijzonder lage oliebevuilingspercentages laten zien, maar nog nooit zo laag als in winter 2021/22: slechts 0.5% olieslachtoffers onder Zeekoeten gevonden (n= 1216). Het meerjarig gemiddelde is inmiddels op een niveau van 4.3 ± 2.7% beland, waarmee de doelstellingen van OSPAR voor 2030 zelfs overschreden zijn.

Introduction

This is the annual update of seabird strandings reports and results of systematic beached bird surveys for The Netherlands for winter 2021/22. As always, the emphasis of this study is on Common Guillemots *Uria aalge*, because the Marine Strategy Framework Directive demanded an indicator for oil pollution, in order to evaluate the effectiveness of measures to reduce chronic oil pollution (Commission Decision of 2010, Chapter 8.2, Effects of contaminants, EU 2010). To monitor levels of chronic marine oil pollution, beached bird surveys have been suggested in the late 1990s (Camphuysen & Heubeck 2001), but the information need for the monitoring and assessment of oil fouling of seabirds was established much later in the form of an Ecological Quality Objective (EcoQO) for OSPAR. In the legal Dutch Kader Richtlijn Marien document (page 78; "Vervuilende stoffen"; Anon. 2012), the EcoQO indicator is explicitly implemented. In the EcoQOs for the North Sea, "the Proportion of oiled Common Guillemots among those found dead or dying on beaches" was subsequently listed Under Issue 4 (Seabirds), EcoQO element (f). The "Oiled Guillemot EcoQO", as agreed by the 5th North Sea Conference, was defined as: *"The proportion of such birds should be 10% or less of the total found dead or dying, in all areas of the North Sea"* (Anon. 2002), later refined to target mean proportions of 20% in 2020 and 10% in 2030 over periods of at least 5 years (Anon. 2012).

Further details are provided for several pelagic species (the Northern Fulmar *Fulmarus glacialis*, the Northern Gannet *Morus bassanus*, the Black-legged Kittiwake *Rissa tridactyla* and the Razorbill *Alca torda*). Four coastal species, including the often-highlighted Common Eider *Somateria mollissima*, Herring Gull *Larus argentatus*, and Great Black-backed Gull *Larus marinus*, confirmed earlier indications that oil pollution is no current threat in nearshore waters. Reported densities span the entire ~60 years period for which solid data are available (winter 1959/60 – winter 2021/22), whereas the analysis of oil rates spans a period of the most recent 44 winters (winter 1977/78 to 2021/22). Particular events causing elevated levels of sea- or waterbird mortality along the coast have been highlighted, whether or not the mortality had been caused by oiling.

Oil-rates (% oiled) of Common Guillemots are provided for the Dutch contributions to OSPAR areas 8, 9, and 10, and for the Dutch North Sea coast as a whole (areas 8 and 9 combined). Raw data are provided in Appendices. Given the nature of the underlying database (historical data can be merged with earlier published material whenever they are provided by volunteers walking our beaches to enlarge earlier sample sizes), the exact values may deviate slightly from earlier publications.

Meteorological background

Winter 2021/22 was a very mild season overall with a mean temperature of 5.8°C calculated over Dec-Feb, against a normal value of 3.9°C. In fact, winter 2021/22 was the 6th mildest season since registration began in 1901 (KNMI 2022): December was normally mild at 5.4 °C against 4.2 °C. January was very mild at 5.3 °C against 3.6 °C. In February, at 6.8°C against 3.9°C even milder, winter got even further out of the picture.

In De Bilt, frost was recorded on 21 days (normal 35 days). On the coast there were only 6 to 10 frost days, depending on the region. No frost has been recorded in Vlissingen. There were no ice days (days when the temperature does not rise above freezing; normally 6). The Hellmann number (sum of the negative 24-hour averages) was still at zero at the end of February on the southwest coast, in the northeast it was 15. In De Bilt it was 6.6 (normal Dec-Feb 42).

From the end of January, it was occasionally turbulent weather. The first serious storm was Corrie, on January 31. For this, the KNMI issued a code orange for all coastal provinces. From 16 to 21 February it was very windy, throughout the North Sea. Three named low-pressure areas occurred in only few days: storm Dudley struck February 16, storm Eunice struck February 18, thereby causing a severe westerly storm on the coast with gusts of wind up to 145 km/h (the heaviest storm since 1990). Code red applied in the coastal provinces. On February 20 the next storm (Franklin) passed by, causing code orange to be applied for a few hours in the western coastal provinces.

Observers and observer effort

In summer/autumn 2021 and in winter 2021/22, beached bird surveys (NSO files) and strandings reports (mostly derived from published records in waarneming.nl) were used from such a large number of individuals, that incidental reports were grouped per standard transect, per month. Accidental strandings reports and systematic surveys were received from: A. Verdaasdonk, A. van Hamelen, A. van Steensel, Aad de Koning, Aad van Gelswijk, Aart van den Berg, Aart van der Spoel, Aat Schaftenaar, Ab Aaldriks, Achim Holzem, Ad Hanegraaf, Ad Kliphuis, Ad van den Berge, Ad van den Herik, Addy Glas, Adri Clements, Adriaan Dijksen, Adrie van Heerden, Afra Geerling, Albert de Jong, Albert Fopma, Albert Molenaar, Alex Bos, Alex ten Hoor, Alwin Borhem, Andre Boven, André Geelhoed, André Hannewijk, Andre Hosp, Andre Slengan, André van Vliet, Andrea de Vries, Anja Dijkstra, Anja Langendoen, Anja Verweij, Anne Beri, Anne Diephuis, Anne van der Wal, Anneke Leferink, Annelies Marijnis, Annemieke Prozee, Annemijn de Groot, Antoine Mertens, Anton Cnudde, Arend Boosman, Arian van der Meulen, Arie Buurman, Arie Twigt, Arie van Dijk, Arien Slagt, Arja Bac, Arjan Bakker, Arjan van der Lugt, Arno Piek, Arno ten Hoeve, Arno Wouters, Arnold Wijker, Arnoud Heikens, Arnoud Huberts, Arnout W.R. de Vries, Art Wittingen, Auke Boets, Auke Jansen, Avifauna Groningen, Axel Gunderson, B. Bruggen, B. Fleer, Barry Kohne, Bart Friso, Bart Hoeymans, Bart Kooij, Bart ter Beek, Bas de Wilde, Bas Dros, Bas Klaver, Bas Lagerveld, Bas van Schooten, Bas vd Burg, Ben Delbaere, Ben Koks, Ben Kruijsen, Ben van Mourik, Benne Roelen, Bernard Lucas, Bernd de Bruijn, Bernd-Jan Bulsink, Bert Lamers, Bert van der Velden, Bert van 't Holt, Bert Winters, Bertie van Eldik, Bertus de Lange, Betsy van Oortmarssen, Bob Rodenburg, Bob van Vree, Bogi Vleeshouwers, Boudewijn Duivenvoorden, Bram Brinkman, Bram Koese, Bram van der Vaart, C. Schaap van den Bos, C. Sparreboom, Carel van der Zanden, Carl Zuhorn, Carla Kemme-Kroonsberg, Carolien Kok, Caroline ten Doeschate, Caroline Walta, Cas Heikens, Casper Zuyderduyn, Chantal Polman, Chris Grobbe, Chris Klemann, Christiaan de Vries, Christian Bos, Christophe Reijman, CJ Camphuysen, Claire van der Aa, Claudia van de Leur, Clemens Heijmen, Cobien van 't Riet, Coen Cramer, Coen van Nieuwamerongen, Colin Aalbers, Cor Wies, Cora Boesenach, Cora de Groot, Corine Osté, Corstiaan Beeke, D Gonzal, Dick Veenendaal, Daan Bijman, Daan Knoops, Daan Planting, Daniël Siepman, Danielle Timmerman-Ganzevoort, Danny Bregman, Danny Katerbarg, David Broek, David Uit de Weerd, Dedy Postmus, Dennis Mossink, Devon Delsman, Dick Belgers, Dick Bos , Dick Dooyewaard, Dick Slaa, Dick van Dorp, Dick van Houwelingen, Diederik Beuzekom, Dierenambulance Ameland, Dika Hekman, Dingeman van Wijnen, Dirk Eeuwes, Dirk Eijkemans, Dirk

Hoogendoorn, Dirk van Doorn, Dirk van Straalen, DJ Dollard, Donny Dolman, Dorothee Rabe, Douwe de Boer, Edo Kreuzen, Eduard Drenth, Edwin Benschop, Edwin De Weerd, Edwin Kerssens, Eef Weetjens, Eelke Warrink, Egbert Stelpstra, Ellen Kerkhof, Elly Rozemeijer, Els Marijs, Elze Kool, Emile Daniel de Leeuw, Emma Kok, Emma Zorgdrager, Emo Klunder, Enno Ebels, Eric Bos, Eric Brinkman, Eric Stockx, Erik Sanders, Erik Tanis, Erik van de Klippe, Erik van Dijk, Erik Verlind, Erika van Oldeneel, Ernst Loendersloot, Erwin Goutbeek, Es is Buiten, Esther Kraaijeveld-de Jong, Evelien de Olde, Eveline Zeilstra, Ewan van Stenis, F. 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Sluijter, Tello Neckheim, Teun de Boer, Thea van Gogh, Theo Bakker, Theo Briggeman, Theo Geenen, Theo Kiewiet, Theo Peters, Theo Ruppert, Thijmen Stolk, Thijs Glastra, Thijs Knol, Thijs ter Avest, Thom de Bruijn, Thomas Los, Thomas Schuurman, Thomas van der Es, Thomas Vermue, Tiemen de Smedt, Tiemen van Engelenhoven, Tijmen Majoor, Tijn Smeeman, Tim Bijl, Tim de Frel, Tim Langerak, Tim Meijer, Tim Oortwijn, Tim van de Vondervoort, Timothy Drane, Tineke Bosma, Tini Katz, Tjomme Fernhout, Tobias Verhulst, Tom van Noort, Tom van Spanje, Tom Zeegers, Ton de Groot, Ton Joore, Ton Kusters, Ton Oudshoorn, Ton Wijnalda, Tony van Mellaert, Toon Pop, Toon Van Elst, Toon van Oerle, Towi van der Putten, Tseard Mulder, Vasco van de Berg, Vasco van der Boon, Victor Simoncelli, Vincent Douwes, Vincent Hart, Vincent Kalkman, Vincent Schieveen, Vincent Stork, Vincent van der Spek, Vincent van Dijk, Viola Dahlmann, Virry Schaafsma, Vollot Benjamin, W van Yperen, Walter Das, Walter van der Meer, Wannes bellens, Wannes Lely, Ward Machielsen, Wessel J Schrik, Wijnand van Buuren, Wijndeldt Boelema, Wil Sluis, Wilbert Besseling, Wilbert Kerkhof, Wilco Jacobusse, Wilco van den Berg, Wiljan Hoornsman, Willem Bruul, Willem Jan Braakman, Willem Jas, Willem Renema, Willem Stel, Willem Stel, Willem Trip, Willem Wind, Willemein Kriesels, William de Jong, Wilma van der Vliet, Wils Herwig, Wim de Jong, Wim Kamphuis, Wim Kolber, Wim Kuitems, Wim Langbroek, Wim Mertens, Wim Snoeken, Wim van der Kooij, Wim van Gelder, Wim van Heumen, Wim van Nee, Wim Visser, Witse Williams, Wout Bouma, Wouter Knap, Wouter Kortleve, Wouter Mellink, Wouter Monster, Wouter Oe, Wouter Quist, Wouter Teunissen, Wouter van der Ham, Wouter van Goor, Wouter Wadden, www.waarneming.nl, X Doevendans, Y Hermes, Yorick Smakman en Yset Foppen.

Total observer effort comprised 675 reports of stranded wildlife which reflected 2636km surveyed or visited between 1 May 2021 – 30 April 2022 (winter effort in Table 1).

Table 1. Beached surveys (n counts) and overall coverage (km surveyed) in winter (Nov-Apr) over the last 62 years. The effort since 1977/78 was used for the analysis of trends in oiling. All effort was used to assess fluctuations in densities over the entire period.

Winter	Reports	km	Winter	Reports	km	Winter	Reports	km
1959/60	7	43	1980/81	313	2125	2001/02	397	1969
1960/61	38	452	1981/82	287	1968	2002/03	370	1869
1961/62	17	41	1982/83	388	3126	2003/04	262	1310
1962/63	48	145	1983/84	336	2448	2004/05	299	1499
1963/64	19	92	1984/85	298	1869	2005/06	241	1250
1964/65	7	28	1985/86	287	1833	2006/07	270	1109
1965/66	28	300	1986/87	189	1420	2007/08	246	934
1966/67	19	164	1987/88	207	1839	2008/09	204	921
1967/68	30	322	1988/89	231	1671	2009/10	164	776
1968/69	23	541	1989/90	237	1506	2010/11	126	685
1969/70	60	832	1990/91	215	1406	2011/12	310	1213
1970/71	21	510	1991/92	164	1208	2012/13	124	463
1971/72	25	605	1992/93	147	1182	2013/14	163	547
1972/73	19	465	1993/94	167	1128	2014/15	151	482
1973/74	30	138	1994/95	130	923	2015/16	171	533
1974/75	49	393	1995/96	138	956	2016/17	305	544
1975/76	35	255	1996/97	121	833	2017/18	314	487
1976/77	20	244	1997/98	141	953	2018/19	214	850
1977/78	49	408	1998/99	318	1795	2019/20	177	637
1978/79	93	579	1999/00	350	1979	2020/21	328	1217
1979/80	88	721	2000/01	316	1730	2021/22	427	1475
	725	7277		4980	33898		5263	20770

Table 2. Species found and reported, Aug-Oct 2021.

Euring	Soortnaam	Wetenschappelijke naam	English name	
20	Roodkeelduiker	*Gavia stellata*	Red-throated Diver	2
220	Noordse Stormvogel	*Fulmarus glacialis*	Northern Fulmar	8
710	**Jan van Gent**	***Morus bassanus***	**Northern Gannet**	**73**
720	Aalscholver	*Phalacrocorax carbo*	Great Cormorant	23
1210	Grote Zilverreiger	*Egretta alba*	Great Egret	1
1610	Grauwe Gans	*Anser anser*	Greylag Goose	1
1730	Bergeend	*Tadorna tadorna*	Common Shelduck	5
1790	Smient	*Anas penelope*	Eurasian Wigeon	1
1840	Wintertaling	*Anas crecca*	EurasianTeal	1
1890	Pijlstaart	*Anas acuta*	Northern Pintail	3
2030	Kuifeend	*Aythya fuligula*	Tufted Duck	1
2060	Eidereend	*Somateria mollissima*	Common Eider	28
2130	Zwarte Zee-eend	*Melanitta nigra*	Black Scoter	15
2150	Grote Zee-eend	*Melanitta fusca*	Velvet Scoter	1
2670	Havik	*Accipiter gentilis*	Northern Goshawk	1
2870	Buizerd	*Buteo buteo*	Common Buzzard	1
3040	Torenvalk	*Falco tinnunculus*	Common Kestrel	2
4500	Scholekster	*Haematopus ostralegus*	Eurasian Oystercatcher	7
4850	Goudplevier	*Pluvialis apricaria*	European Golden Plover	1
4960	Kanoetstrandloper	*Calidris canutus*	Red Knot	1
4970	Drieteenstrandloper	*Calidris alba*	Sanderling	1
5190	Watersnip	*Gallinago gallinago*	Snipe	1
5290	Houtsnip	*Scolopax rusticola*	Eurasian Woodcock	2
5690	Grote Jager	*Stercorarius skua*	Great Skua	3
5699	ongedeterm. jager	*Stercorarius spec.*	skua	1
5820	Kokmeeuw	*Chroicocephalus ridibundus*	Black-headed Gull	7
5900	Stormmeeuw	*Larus canus*	Mew Gull	5
5909	ongedet. kl. meeuw	*Chroicocephalus/Rissa spec.*	small gull	15
5910	Kleine Mantelmeeuw	*Larus fuscus*	Lesser Black-backed Gull	28

Euring	Soortnaam	Wetenschappelijke naam	English name	
5919	Kleine Mantel/Zilvermeeuw	*L. fuscus/michahellis/argentatus*	Herring / Lesser Black-backed gull	50
5920	Zilvermeeuw	*Larus argentatus*	Herring Gull	101
6000	Grote Mantelmeeuw	*Larus marinus*	Great Black-backed Gull	23
6020	Drieteenmeeuw	*Rissa tridactyla*	Black-legged Kittiwake	9
6110	Grote Stern	*Thalasseus sandvicensis*	Sandwich Tern	1
6150	Visdief	*Sterna hirundo*	Common Tern	1
6340	**Zeekoet**	***Uria aalge***	**Common Guillemot**	**1369**
6360	Alk	*Alca torda*	Razorbill	24
6700	Houtduif	*Columba palumbus*	Common Wood Pigeon	1
7680	Velduil	*Asio flammeus*	Short-eared Owl	1
11870	Merel	*Turdus merula*	Common Blackbird	1
12010	Koperwiek	*Turdus iliacus*	Redwing	12
15820	Spreeuw	*Sturnus vulgaris*	Common Starling	2
23510	Bruinvis	*Phocoena phocoena*	Harbour Porpoise	2
24320	Grijze Zeehond	*Halichoerus grypus*	Grey Seal	1
24330	Gewone Zeehond	*Phoca vitulina*	Common Seal	8
30003	Haas	*Lepus capensis*	Brown Hare	2

Table 3. Species found and reported, winter (Nov-Apr) 2021/22.

Euring	Soortnaam	Wetenschappelijke naam	English name	Number
0	Geen vogels gevonden		No birds found dead	6
20	Roodkeelduiker	*Gavia stellata*	Red-throated Diver	13
30	Parelduiker	*Gavia arctica*	Black-throated Diver	1
40	IJsduiker	*Gavia immer*	Great Northern Diver	1
90	Fuut	*Podiceps cristatus*	Great Crested Grebe	14
220	**Noordse Stormvogel**	***Fulmarus glacialis***	**Northern Fulmar**	**111**
710	**Jan van Gent**	***Morus bassanus***	**Northern Gannet**	**179**
720	Aalscholver	*Phalacrocorax carbo*	Great Cormorant	12
1210	Grote Zilverreiger	*Egretta alba*	Great Egret	1
1220	Blauwe Reiger	*Ardea cinerea*	Grey Heron	1
1574	Toendrarietgans	*Anser serrirostris*	Tundra Bean Goose	3
1580	Kleine Rietgans	*Anser brachyrhynchus*	Pink-footed Goose	1
1590	Kolgans	*Anser albifrons*	Greater White-fronted Goose	4
1610	Grauwe Gans	*Anser anser*	Greylag Goose	10
1670	Brandgans	*Branta leucopsis*	Barnacle Goose	14
1680	Rotgans	*Branta bernicla*	Brent Goose	5
1699	ongedeterm. gans	*Anser/Branta spec.*	unidentified goose	2
1730	Bergeend	*Tadorna tadorna*	Common Shelduck	7
1790	Smient	*Anas penelope*	Eurasian Wigeon	2
1840	Wintertaling	*Anas crecca*	EurasianTeal	1
1890	Pijlstaart	*Anas acuta*	Northern Pintail	1
2060	Eidereend	*Somateria mollissima*	Common Eider	20
2120	IJseend	*Clangula hyemalis*	Long-tailed Duck	1
2130	Zwarte Zeeëend	*Melanitta nigra*	Black Scoter	10
2150	Grote Zeeëend	*Melanitta fusca*	Velvet Scoter	1
2870	Buizerd	*Buteo buteo*	Common Buzzard	1
3090	Smelleken	*Falco columbarius*	Merlin	1
3940	Fazant	*Phasianus colchicus*	Common Pheasant	1
4500	Scholekster	*Haematopus ostralegus*	Eurasian Oystercatcher	5
4960	Kanoetstrandloper	*Calidris canutus*	Red Knot	5
5290	Houtsnip	*Scolopax rusticola*	Eurasian Woodcock	23
5340	Rosse Grutto	*Limosa lapponica*	Bar-tailed Godwit	1
5410	Wulp	*Numenius arquata*	Eurasian Curlew	3
5460	Tureluur	*Tringa totanus*	Common Redshank	1
5610	Steenloper	*Arenaria interpres*	Ruddy Turnstone	1
5659	ongedeterm. steltloper	*unidentified wader*	unidentified wader	2
5690	Grote Jager	*Stercorarius skua*	Great Skua	8
5820	Kokmeeuw	*Chroicocephalus ridibundus*	Black-headed Gull	10
5900	Stormmeeuw	*Larus canus*	Mew Gull	23
5910	Kleine Mantelmeeuw	*Larus fuscus*	Lesser Black-backed Gull	3
5920	Zilvermeeuw	*Larus argentatus*	Herring Gull	77

Euring	Soortnaam	Wetenschappelijke naam	English name	Number
6000	Grote Mantelmeeuw	*Larus marinus*	Great Black-backed Gull	73
6020	Drieteenmeeuw	*Rissa tridactyla*	Black-legged Kittiwake	80
6049	ongedeterm. meeuw	*Larus spec.*	gull	1
6110	Grote Stern	*Thalasseus sandvicensis*	Sandwich Tern	2
6340	**Zeekoet**	***Uria aalge***	**Common Guillemot**	**1861**
6345	Alk / Zeekoet	*Alca torda / Uria aalge*	Common Guillemot / Razorbill	14
6350	**Kortsnavelzeekoet**	***Uria lomvia***	**Brünnich's Guillemot**	**2**
6360	Alk	*Alca torda*	Razorbill	197
6470	Kleine Alk	*Alle alle*	Little Auk	7
6540	**Papegaaiduiker**	***Fratercula arctica***	**Atlantic Puffin**	**100**
6655	Postduif	*Columba 'domestica'*	domestic pigeon	3
6700	Houtduif	*Columba palumbus*	Common Wood Pigeon	1
11870	Merel	*Turdus merula*	Common Blackbird	7
11980	Kramsvogel	*Turdus pilaris*	Fieldfare	3
12010	Koperwiek	*Turdus iliacus*	Redwing	6
15671	Zwarte Kraai	*Corvus corone corone*	Carrion Crow	2
15820	Spreeuw	*Sturnus vulgaris*	Common Starling	7
23510	Bruinvis	*Phocoena phocoena*	Harbour Porpoise	4
24310	ongedeterm. zeehond	*unidentified pinniped*	unidentified seal	3
24320	Grijze Zeehond	*Halichoerus grypus*	Grey Seal	6
24330	Gewone Zeehond	*Phoca vitulina*	Common Seal	9
26071	Hondshaai	*Scyliorhinus canicula*	Small-spotted Catshark	2

Results

Birds found – Two lists of birds found have been provided, one for the autumn 2021 period, during which a major wreck of Common Guillemots *Uria aalge* occurred (**Table 2**), followed by the list for winter 2021/22 covering the winter season highlighted in this annual report (**Table 3**). Species that were particularly numerous have been highlighted in **bold**, showing that two species, the Common Guillemot, and the Northern Gannet *Morus bassanus* were remarkably numerous in both periods, while high numbers of Northern Fulmars *Fulmarus glacialis* and Atlantic Puffins *Fratercula arctica* occurred in winter.

Numbers of pelagic seabirds washing ashore - The long-term fluctuations in densities in **Figs. 1-2**, should be treated with some caution, given that an increasing number of reports is currently without proper effort correction (reports not included within a systematic count). Data from waarneming.nl are biased towards 'unusual' or otherwise particular species, and for example the apparent increase in densities of Northern Gannets can also be explained as an artefact, not necessarily as a genuine increase in numbers. It is in these unusual species (but also divers, skuas, tube noses and rare auks) that a rigorous check for 'doubles' (*i.e.* recorded more than once or by multiple observers at the same time and under their own name) is essential.

The Common Guillemot is the indicator species for as far as oil contamination on European beaches is concerned, but it is always useful to evaluate the results in the context of other species of the open seas: the pelagic seabirds. Guillemot densities in winter 2021/22 were high, and followed on major autumn 2021 wrecks that involved mostly adult (moulting) males and developing juveniles (**Table 2**). Various additional wrecks of guillemots occurred throughout the winter 2021/22, leading to high densities and low oil rates (**Table 3, Fig. 1**). Oil rates are expectedly low during wrecks, for most of the mortality is largely 'food driven' (the

result of starvation of the birds involved), but, as in recent years, there were no indications for significant oiling incidents. In fact, with only 0.5% oiled (*n*= 1216), by far the lowest oil rate ever was recorded for the Dutch North Sea coastline (see also Camphuysen 2022 for a long-term overview). Most oiled Guillemots were all only slightly contaminated and had starved to death as a result of hypothermia, some individuals were completely smothered with tar.

More aerial pelagic seabirds, the Northern Fulmar, Northern Gannet, and Black-legged Kittiwakes are less prone to oil contamination simply as a result of their lifestyle, tend to have much lower densities than auks (**Fig. 2**). Numbers of gannets washing ashore peaked in April (60 recorded dead bodies), but this formed only the onset of what was about to happen and struck this species in particular: an unprecedented outbreak of HPAIV (highly pathogenic avian influenza virus) killed thousands of gannets on Scottish and Canadian colonies, but also during the spring (2022) and subsequent autumn migrations (see next annual report).

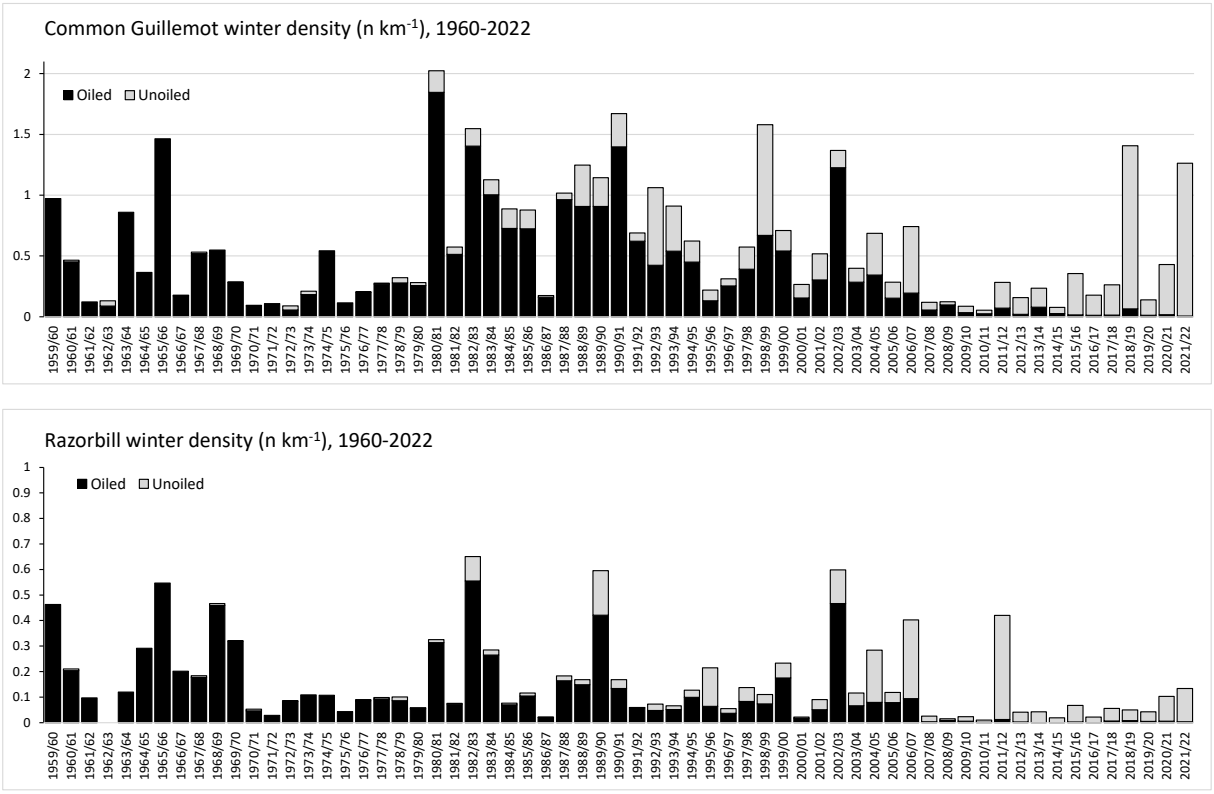

Figure 1. Densities (n km^{-1}) of Common Guillemots and Razorbills washing ashore in winter, 1959/60-2021/22 along the North Sea coast in The Netherlands.

Guillemots, Razorbills and Black-legged Kittiwakes share particular resources within the North Sea ecosystem and can often be seen feeding in the same or in similar habitats, if not even in close association. The fact that only guillemots peaked in numbers (cf. **Figs. 1-2**) and were involved in the autumn and winter wrecks is important and will be the subject of special investigations, that are beyond the scope of this report. Common Guillemot strandings were widespread, covering the entire Dutch coastline in both periods (**Fig. 3**), which is interesting, because the Southern Bight is normally 'invaded' by wintering auks in the course of autumn. The fact that adult guillemots and their chicks were so abundant (and died) this far south is without any precedents in one century of systematic beached bird surveys.

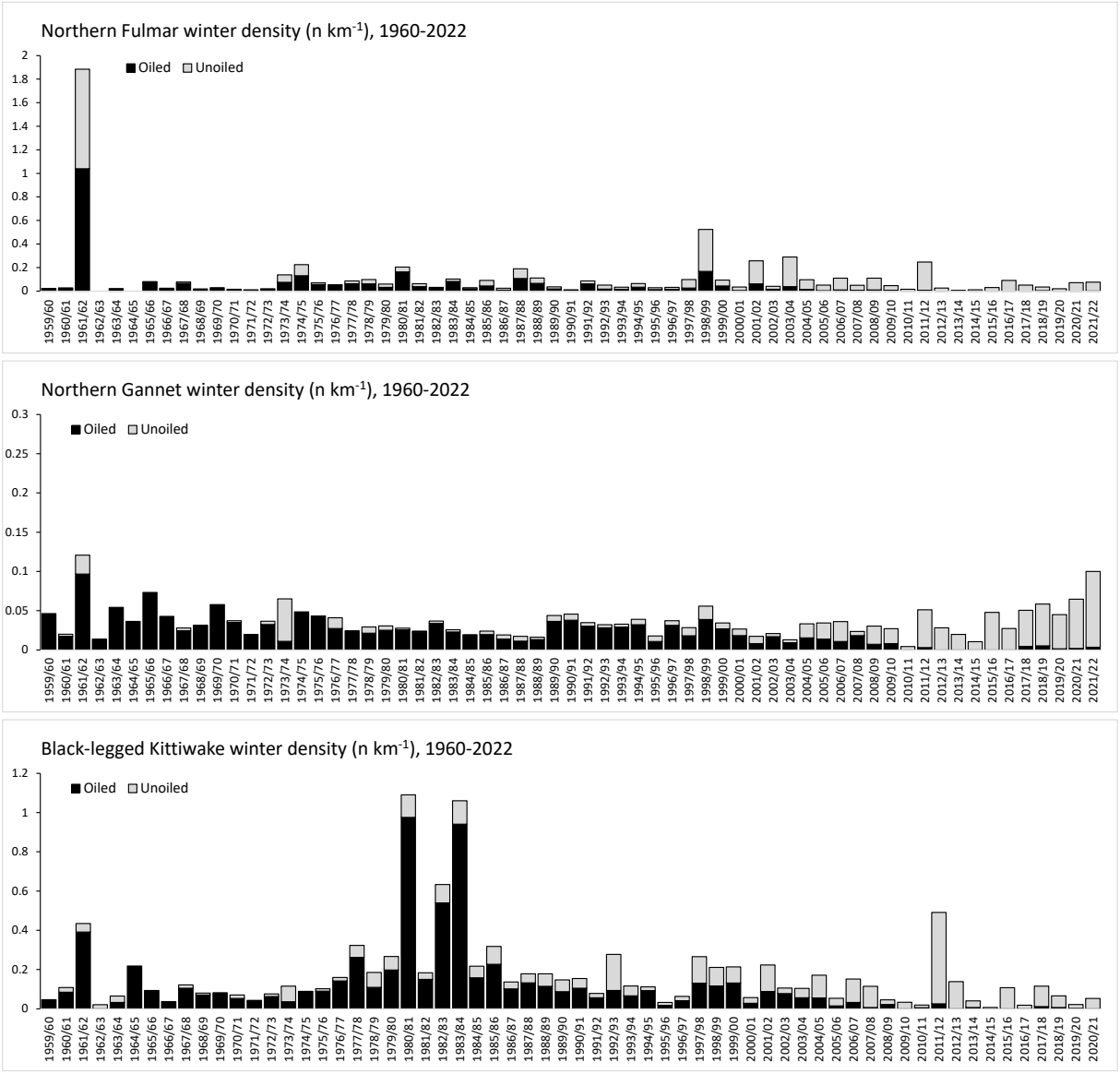

Figure 2. Densities (n km^{-1}) of some more aerial pelagic seabirds washing ashore in winter, 1959/60-2021/22 along the North Sea coast in The Netherlands.

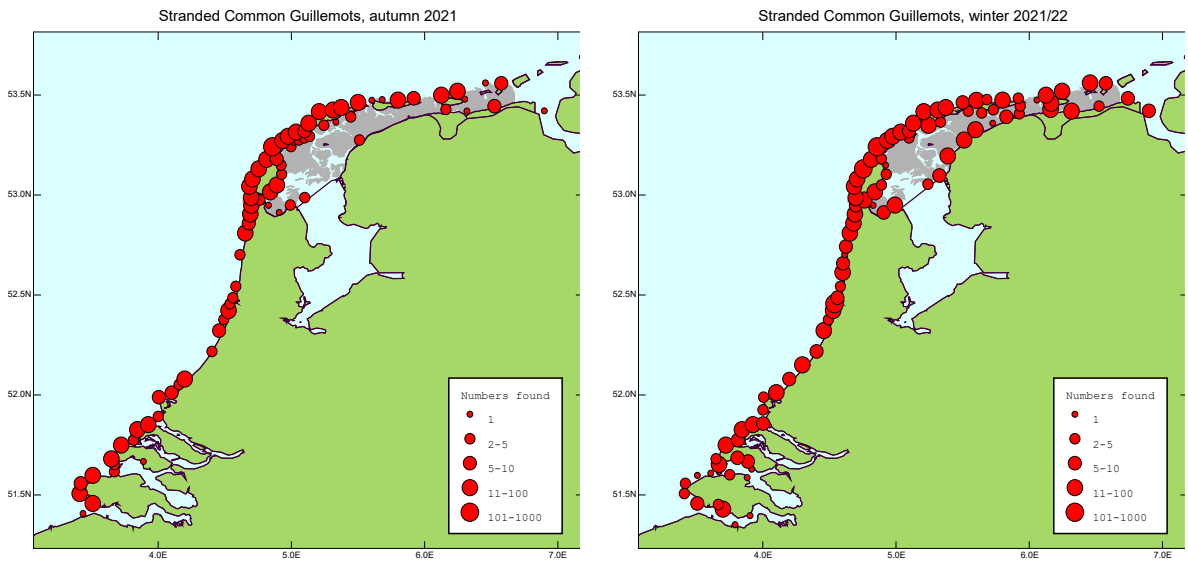

Figure 3. Spatial pattern in Common Guillemots autumn (Aug-Oct, left) and in winter 2021/22 (Nov-Apr, right).

The more aerial pelagic seabirds, notably Northern Fulmars and Northern Gannets, reached higher densities in the northern areas (**Fig. 4**). Northern Gannets were distinctly more numerous than in most previous seasons. Only two gannets were entangled in fishing gear, which is well below average (Camphuysen 2008).

Uncommon seabirds found were: 1 Black-throated Diver *Gavia arctica* (28 Feb 2022, Mokbaai Texel, no description provided), 1 Great Northern Diver *Gavia immer* (4 Jan 2022, Ameland, J Krol), 1 Brünnich's Guillemot *Uria lomvia*, January 2022, live-stranding Texel (died in captivity; Ecomare), and a probable second bird 6 Jan 2022 Borssele-Sloehaven (Henk Huige). Another species, normally uncommon to rare, was found in large numbers: 100 Atlantic Puffins *Fratercula arctica*. Only two puffins were oiled (2.4%; *n*= 84). The puffins were part of a repeated wreck that was witnessed around the North Sea.

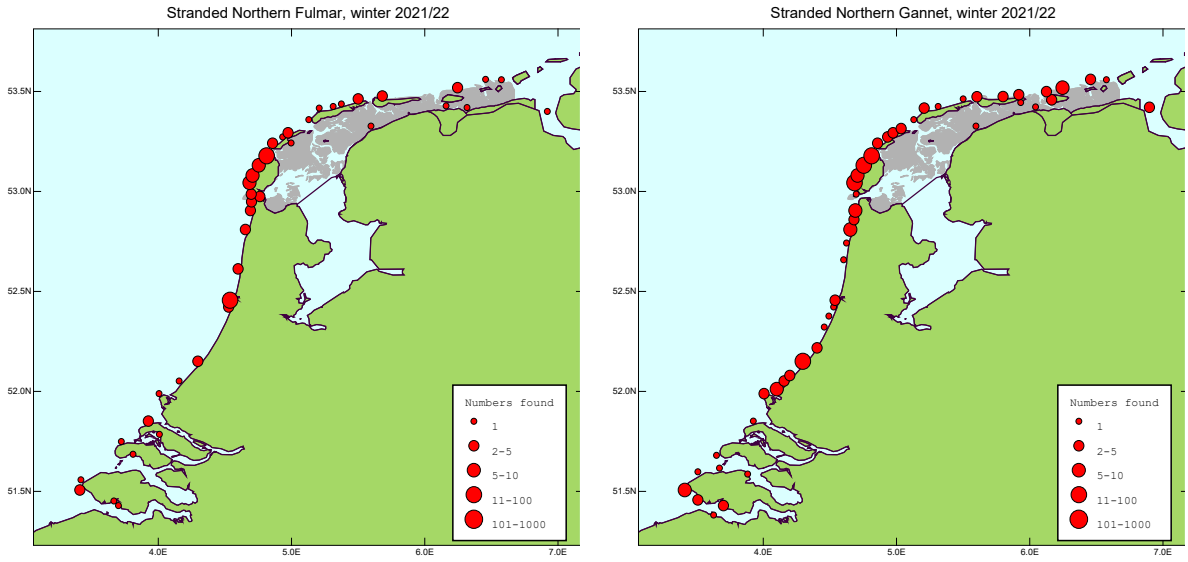

Figure 4. Spatial pattern in Northern Fulmars (left) and Northern Gannets (right) washing ashore, winter 2020/21.

Numbers of coastal seabirds washing ashore - For nearshore seabirds and coastal species (wildfowl and shorebirds), the new high pathogenic avian influenza (HPAIV) outbreak, had significant effects on observed mortality patterns in areas near the coast, but not evidently on stranded numbers of waterbirds. It should be realised that only few birds were tested for HPAIV, so that the effect is incompletely known.

Divers Gaviidae were not commonly found, but 13 Red-throated Divers *Gavia stellata* was more than in most recent winters. Eleven individuals could be checked and none of these birds were oiled. There was a more or less constant trickle of cormorants on beaches, without any peaks or particular (mass-) strandings. Records of Common Eiders peaked Dec-Jan. Total numbers washing ashore were low (20; **Fig. 5**), with no unusual peaks in strandings rates. Common Scoters *Melanitta nigra* washed ashore in very low numbers and mostly in Nov-Dec. Of all these coastal birds, only a single Common Scoter was reported as being oiled.

Most other coastal species (other seaduck and waterfowl, waders and gulls) all peaked Dec-Jan, with smaller numbers of birds in all other months. None of these birds were oiled.

Serious oil-related events all date back to the 1960s-1980s, while some other and more recent mortality events were food- or disease rather than oil related. It should be noted that an important modern source of information for recent bird strandings (https://waarneming.nl) is a poor source for strandings data of commoner species such as Herring Gulls and Greater Black-backed Gulls (**Fig. 5**), so that several strandings will have been overlooked and densities are compromised by a lack of reporting. Great Black-backed Gulls were notorious HPAIV suspects and several tested birds were positive.

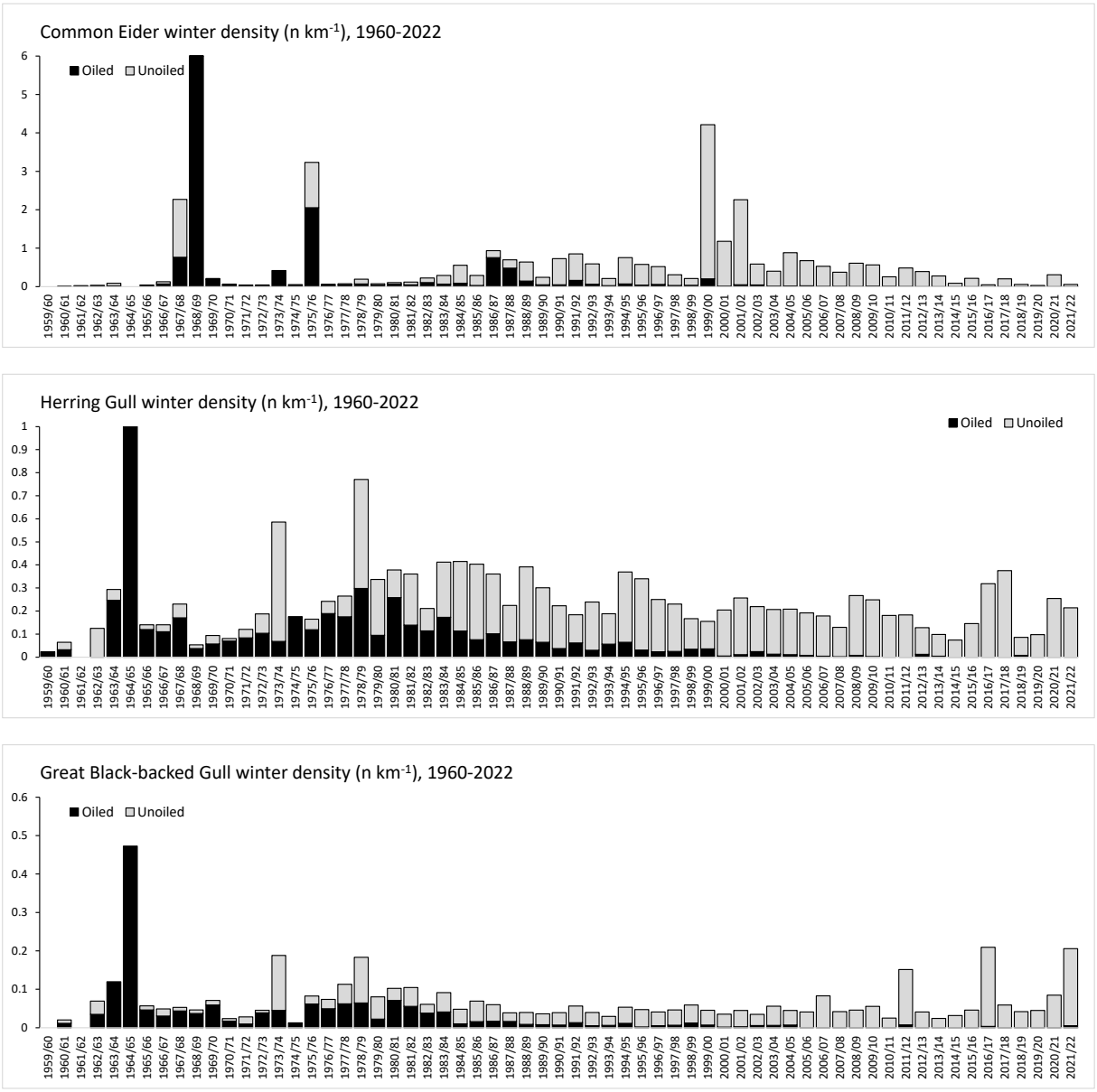

Figure 5. Densities (n km^{-1}) of Common Eiders *Somateria mollissima,* Herring Gulls *Larus argentatus* and Great Black-backed Gulls *Larus marinus* washing ashore in winter in The Netherlands, 1959/60- 2021/22.

Oil rates updated

For this analysis, only *intact* carcasses were selected (hence, a smaller sample size than in **Table 3**), since only these were fit for purpose: to assess the fraction of birds washing ashore that was, or was not, contaminated with mineral oil. The values produced are all tabulated in the Appendices, whereas the proportions and a long-term running mean and a logit-transformed presentation of the oil rates allowing a linear regression to examine the trends are shown in this chapter. A warning beforehand, is that the logit transformation is impossible for any values equal to 100% or 0% (e.g. all birds oiled, or none of the birds oiled), for a logit transformation would lead to $+\infty$ or $-\infty$ respectively. In cases where 0% of the birds found were oiled, the outcome was therefore transformed to logit -2 (e.g. ~1% oiled), as a more reliable and workable guesstimate of the actual oil rate to be used in the regression analysis. The problem of 'no oil' is increasingly common in recent years, now that chronic oil pollution is really pushed back.

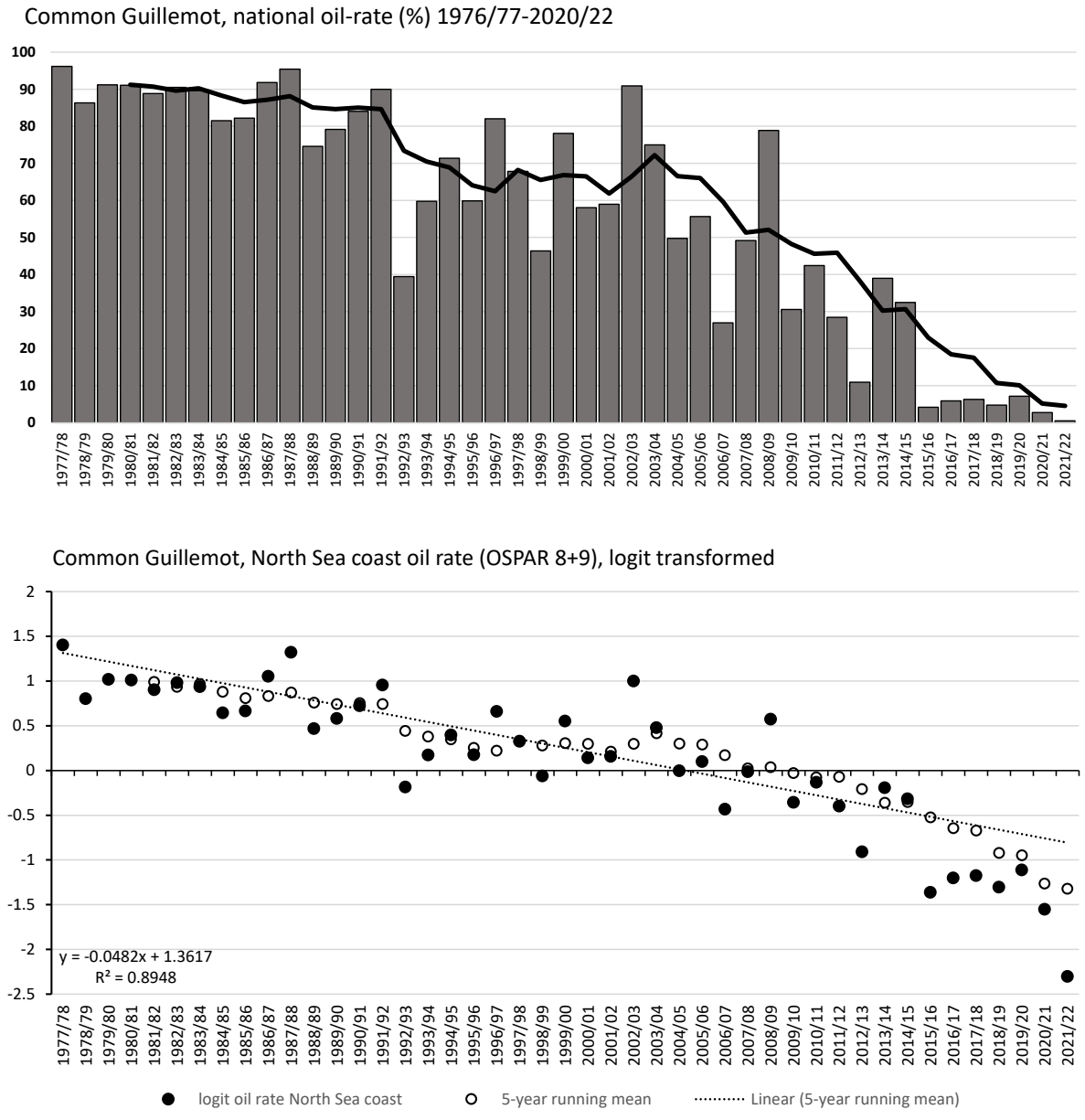

Fig. 6. Proportions oiled and 5-year running mean in oil rates (top panel) and a significant decline in logit-transformed oil rates in Common Guillemots, 1977/78-2019/21.

The significant decline in oil rates in **Common Guillemots** continued, and in winter 2021/22 the lowest oil rate ever was recorded (**Fig. 6**). The five-year running mean (4.3 ± 2.7%) is well below what has to be achieved by 2030 according to OSPAR. In a long-term overview, Camphuysen (2022) showed that the decline in oil rates accelerated since winter 2004/05 (**Fig. 7**). It was concluded that marine oil pollution has been an issue of concern for at least a century, and even the earliest reports contained outrage over oil-contaminated, dead seabirds washing ashore. Trends in strandings and oil rates of common guillemots ('as sentinels') were analysed to illustrate the history of oil pollution and its effects in the North Sea. A short history was presented, including measures taken to reduce the oil problem. In recent decades, unexpectedly, the oil problem has disappeared almost completely. Given the global nature of current environmental issues, such as the climate or biodiversity crises, it was helpful to evaluate the backgrounds of this stunning success: it required major oil incidents to drive the community into action. The process of international conventions was notoriously slow and the implementtation of concrete measures even slower. Economic arguments prevailed to prevent or delay immediate action, an instructive insight given global environmental issues we now face.

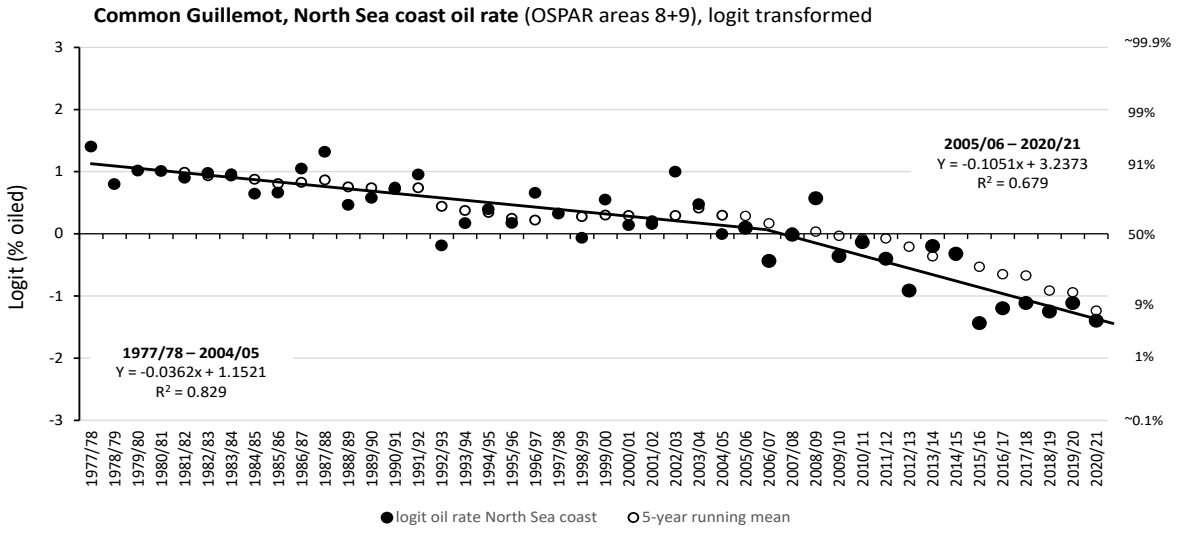

Fig. 7. Decline in the logit-transformed proportion (%) of guillemots with oil of the total numbers found per winter (Nov-Apr, 1977/78-2019/21) in The Netherlands (from Camphuysen 2022). The line shows the linear trends over annual values, split between 1977/78-2004/05 and 2005/06-2020/21 given the apparent acceleration of the decline around that time.

Table 2. Proportions oiled and 5-year running means (±SD) in pelagic seabirds in 2021/22.

Species	Oiled (%)	n=	Mean		SD
Common Guillemot	0.5	1216	4.3	±	2.7
Razorbill	2.9	70	9.4	±	5.6
Northern Fulmar	0.0	77	1.9	±	4.3
Northern Gannet	3.7	81	4.1	±	2.3
Black-legged Kittiwake	11.5	26	8.3	±	6.9

For the **other pelagic seabirds** (**Fig. 8**) similar trends and patterns were found, although the data were slightly more erratic in species in which the sample sizes are small. Oil rates in recent years were often nihil (0%), something that never occurred prior to 2008. Oil rates (including 5-year running means) tend on average to be slightly lower in the aerial species than in the more sensitive auks, but the difference is small and smaller in recent years (**Table 2**).

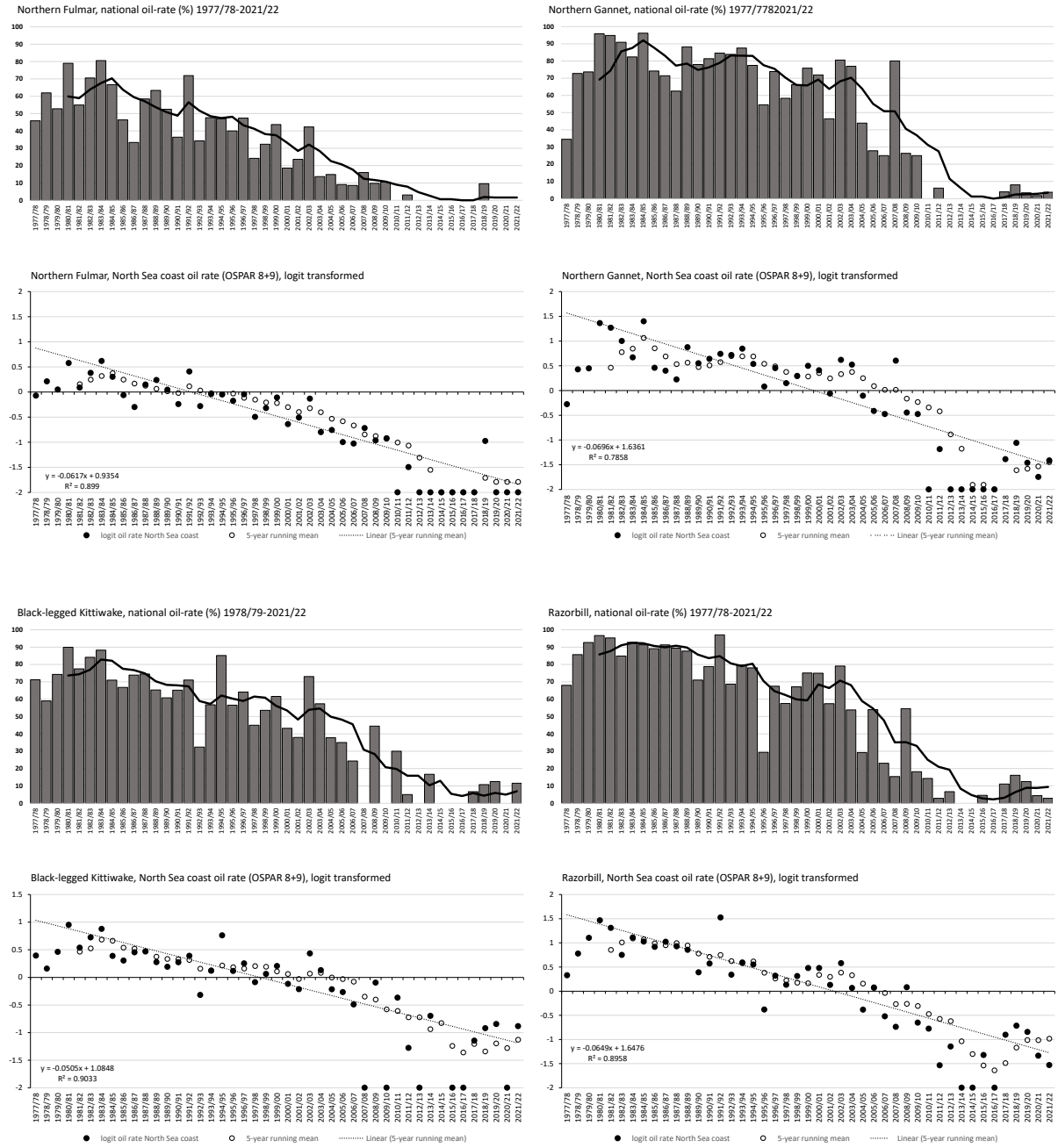

Fig. 9. Proportions oiled and 5-year running mean in oil rates (top panels) and a significant decline in logit-transformed oil rates (lower panels) in the four commoner pelagic species: Northern Fulmar (top left), Northern Gannet (top right), Black-legged Kittiwake (bottom left), and Razorbill (bottom right), 1977/78-2021/22.

For the more **coastal species**, an oil rate trend analysis is pointless in recent years, for the oil rates are essential nihil with occasional casualties every now and then. For these species, in this part of the world, chronic oil pollution is no longer an issue of concern, even though an accidental spill could still potentially kill thousands of birds on a single occasion. Oil rates equalling 0% predominate in recent years.

Densities of Common Guillemots in autumn 2021 were evidently without precedent, and in even earlier years (1900-1959) there were also no indications that mass strandings on this scale have ever occurred in early autumn. Background levels based on recent strandings with known quality (1977-2020) were 0.05 ± 0.07 guillemots km^{-1}, whereas densities in 2021 were ~25x higher at 1.19 guillemots km^{-1} (1369 casualties over ~1150 km search effort; **Fig. 10**).

Most adult birds found washed ashore were in active wing moult (see example on front cover), and this type of birds is normally rare closer to the coast. Along the mainland coast of Noord-Holland, however, the first signs that something had gone wrong were picked up by seawatchers 5 September 2021 (G.O. Keijl, Castricum), when over 50 guillemots were recorded swimming nearshore, including several birds in active wing moult. Eagerly foraging Common Guillemots were seen later in the Wadden Sea, and moulting adults (**Fig. 11**) and young chicks (**Fig. 12**) dominated the strandings until November. Only a single individual was oiled (*n*= 1025).

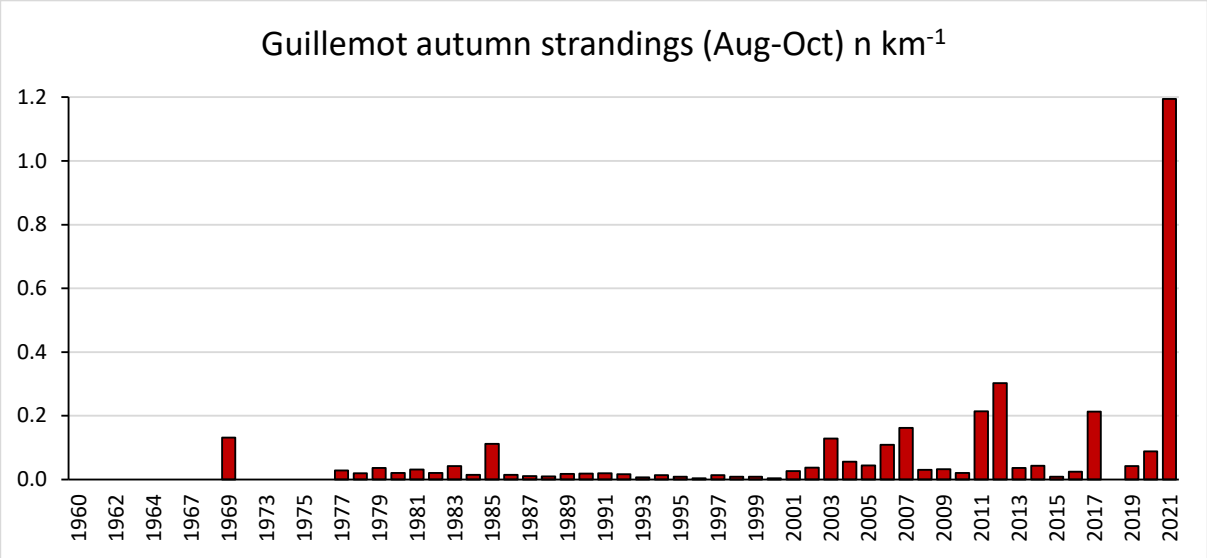

Fig 10. Approximate densities (n km^{-1}) of dead Common Guillemots found between August and October since 1960.

Fig 11. Dead Common Guillemots, moulting adult male Hoornderslag Texel, 11 Nov 2021 (CJ Camphuysen). Primaries grown half way, secondaries just dropped and growing, old greater underwing coverts, developing greater upperwing coverts,

Fig 12. Dead Common Guillemots pullus, parking P9 Texel, 31 Aug 2021 (R. Bos).

Puffin wreck December 2021

Early December 2021, the first Atlantic Puffins washed ashore, including some animals that were still alive (**Fig. 13-14**). Relatively high numbers of mature birds were found initially (**Fig. 15**), juveniles predominated in early 2022, during the 3rd and 4th phases of the wreck.

Fig 13. Atlantic Puffin under care, 16 December 2021, Ecomare, Texel (TAW Schreurs)

Fig 14. Atlantic Puffin release, 18 December 2021, TESO harbour ‘t Horntje, Texel (R. Pop)

Fig 15. Atlantic Puffins found dead on Vlieland, 4 December 2021 (C. Zuhorn)

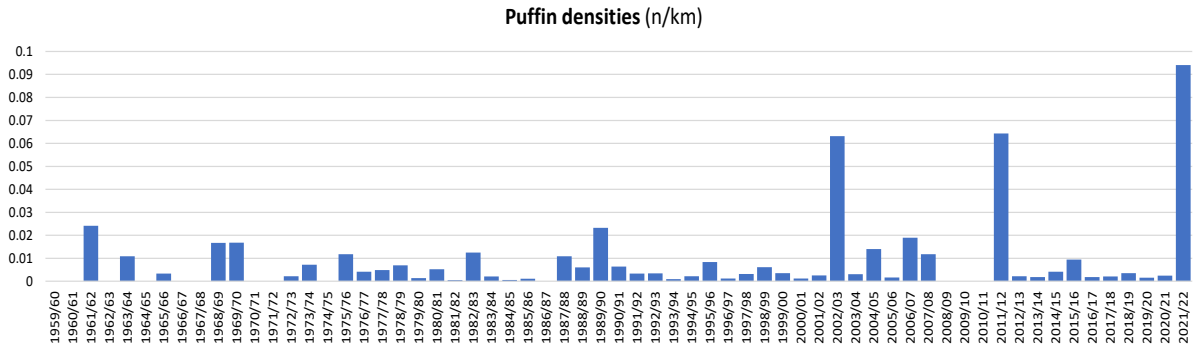

Fig 16. Atlantic Puffin densities, Dutch beached bird surveys, 1959/60 – 2021/22.

Puffin densities were higher than in any previous winter (**Fig. 16**), even though in comparison with the world population, numbers were still small. Strandings in The Netherlands could be linked to further strandings in Scotland, Germany, Denmark en Norway, suggesting that the wreck struck in particular in the central North Sea, such that most casualties may have been missed in beached bird surveys. The age composition of the dead Puffins appeared to be more problematic than expected, and studies are underway to document this for Scottish and Dutch finds in more detail. As in most wrecks, starvation was the main issue that could explain the mortality and several of the peaks in strandings coincided with particularly severe storms.

Avian influenza related mortality, winter 2021/22

Within the Netherlands, an ad-hoc working group is monitoring Avian mortality related bird mortality for some years now (AI-impact 21/22 group, chaired by Thijs Kuiken, Erasmus University, Rotterdam). Another major die-off of waterbirds occurred in coastal areas, affecting mainly wildfowl, waders, and raptors, as a result of a highly pathogenic avian influenza (HPAI) virus, H5N1, in an epidemic season that began in autumn 2021 in Europe. Casualties were eventually found throughout much of the Northern Hemisphere, and into the next spring and summer seasons of 2022 it affected seabirds on a grand and unprecedented scale in the Old World as well as in the New World. Most severely hit in the breeding areas were Northern Gannet, Great Skua *Stercorarius skua*, and Common Guillemot, among many other species that were infected but in which mortality rates remained thus far quite low. Details of the effects of the avian influenza outbreak on seabirds in the Netherlands will be published later and elsewhere. Beached bird surveys yielded increasing numbers of casualties, but mostly in late spring and summer 2022, which will be dealt with in the next annual report.

As in the previous season, in winter 2021/22 several species of geese (notably Barnacle Goose *Branta leucopsis* and Grey-lag Goose *Anser anser*), ducks (notably Wigeon *Mareca penelope*), some raptors and Great Black-backed Gulls were found in The Netherlands in unusual numbers, not necessarily during beached bird surveys, and many of these casualties tested positive for H5N1.

Unusual finds

Beached bird surveys always yield unexpected finds of all sorts, and that includes unusual bird species. Some species are just 'rarely' encountered and the Great Northern Diver *Gavia* immer found 4 Jan 2022 on Ameland is an example thereof. One immature, transitional plumage Brünnich's Guillemot *Uria lomvia* was delivered alive at the Texel seabird rehabilitation centre Ecomare in January 2022 but died soon (**Fig. 17**). Another suspect, but an old corpse, was listed as a Common Guillemot by Henk Huige on 6 Jan 2022 (www.waarneming.nl). The morphology of the beak of this winter plumage individual strongly suggests that in fact it may have been another Brünnich's Guillemot.

Great White Egrets *Egretta alba*, a newcomer in the Dutch avifauna, are still rarely found on the beach. The NZG/NSO database holds now only three records, one from Vlieland (28 Feb 2021), and two from Texel (8 Oct 2021 and 30 November 2021). Not a particularly rare birds, but still an unusual find was a beautiful, moulting adult male Long-tailed Duck *Clangula hyemalis* on Texel, found 24 March 2022 by Dennis Mosk (NIOZ; **Fig. 17**). And then there is those funny finds. A deflated, but originally inflatable penguin found on Texel is one of those.

Great White Egret Texel (Rob Dekker)

Brünnich's Guillemot Texel (Ecomare)

Great Northern Diver Ameland (Andries Zijlstra)

Inflatable penguin Texel (Suse Kühn)

Long-tailed Duck adult male, Texel (Kees Camphuysen)

Fig. 17 Rare finds on Dutch beaches in winter 2021/22.

Discussion

In winter 2021/22, overall densities of seabirds were on the high side, particularly for some species (Common Guillemots, Atlantic Puffins, Northern Fulmars, and Northern Gannets *Morus bassanus*). Yet, oil rates were low again and the lowest on record for the key sentinel species, the Common Guillemot, signalling a further improvement in marine ecosystems for as far as chronic oil pollution is concerned. The current figure is well below 10%, and it consolidates the sharp drop in oil-rates that occurred after winter 2005/06 (Camphuysen 2022). The OSPAR target of 10% over periods of at least 5 years for 2030 has been exceeded.

The Dutch data collected for OSPAR regions 8 and 9 must be seen as contributions to the data set. An international coordinator, or OSPAR itself, will have to combine Dutch, Belgian and German data for these areas in order to arrive at OSPAR area specific oil rates for Common Guillemots in the south-eastern North Sea.

As said in previous reports, beached bird surveys are a vital part of both the Oiled-Guillemot EcoQO, but also for the plastic particle monitoring conducted by using Northern Fulmar carcasses around the North Sea (Suse Kühn & SNS Fulmar Study Group, WMR Project Fulmar-EcoQO-NL2020-26, 4315100164). Northern Fulmars have been rather scarce in recent years, so that the study group had to struggle to get sufficient carcasses for inspection. This season formed an exception, as a result of what could be called an influx of Northern Fulmars in the Southern Bight which generated quite some strandings.

Another aspect, now only touched upon, however, is the importance for this kind of data to document (major) seabird wrecks, because back-ground data can be made available to put found numbers into a longer-term perspective. Autumn 2021 and the winter that followed have been very busy periods for beach-combers, for the numbers of seabirds washing ashore were large and new mortality events kept coming, particularly so in Common Guillemots and Atlantic Puffins (but see notes about other seabirds in this report). These ‘wrecks’ have to be evaluated in depth, which is beyond the scope of this report, to assess temporal and spatial patterns in strandings rates, age composition, sex ratio and likely causes of death. The counting data have been stored, dissections are still underway, but plenty material is kept deep-frozen at the Royal Netherlands Institute for Sea Research to facilitate that further research.

As food for thought, for the past year, a series of strandings of single species, quite different in timing (but together as a continuous stream), requires special attention because they may be somehow connected: (1) mass stranding of (often pregnant, adult) Harbour porpoises *Phocoena phocoena* in late summer 2021, (2) mass stranding of (moulting adult male and chicks) Common Guillemots in late summer and autumn, (3) mass stranding of (often adult) Atlantic Puffins in December-February, (4) multiple mass strandings of Common Guillemots, sometimes together with other pelagic seabirds, throughout the winter, (5) a late peak in Northern Gannet strandings in April, followed by an exceptional peak in strandings starting in June 2022 and into July (almost certainly Avian Influenza related). Beached bird surveys are an important mechanism to signal such strandings, but we can only put a finger on underlying causes when the events are properly documented and studied, which is unfortunately still a side-track for some scientists that feel sufficiently concerned.

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Appendices

The tables below show raw data underlying the graphs in this report, except the long-term trends in densities. Shown are the oil rates (%), in parentheses when the sample size was <25 intact carcasses in a given winter and/or area, and the sample size (n), for each of the OSPAR regions (8-10) and for the North Sea coast as a whole (8+9).

(1) Common Guillemot – Zeekoet – *Uria aalge*

OSPAR	Subregion 8		Subregion 9		subregion 10			National (8+9)		
	ratio	n=	ratio	n=	ratio	n=		Ratio	n=	mean
1977/78	96.3	82	(100.0)	23			1977/78	96.2	105	
1978/79	83.9	93	91.3	46			1978/79	86.3	139	
1979/80	94.1	118	85.9	64	(66.7)	3	1979/80	91.2	182	
1980/81	90.4	3061	96.0	448	91.8	233	1980/81	91.1	3509	91.2
1981/82	86.8	675	95.5	202	92.2	115	1981/82	88.8	877	90.7
1982/83	87.6	2494	95.6	1449	91.9	434	1982/83	90.5	3943	89.6
1983/84	87.4	1625	95.2	660	77.9	163	1983/84	89.6	2285	90.3
1984/85	77.1	855	89.5	474	87.2	47	1984/85	81.5	1329	88.3
1985/86	78.4	812	90.2	378	81.1	159	1985/86	82.2	1190	86.5
1986/87	89.8	108	96.1	51	(92.0)	25	1986/87	91.8	159	87.1
1987/88	96.1	1177	92.7	288	78.3	83	1987/88	95.4	1465	88.1
1988/89	73.0	1224	82.7	248	49.6	133	1988/89	74.6	1472	85.1
1989/90	79.5	1266	76.6	158	73.5	83	1989/90	79.1	1424	84.6
1990/91	83.9	1861	85.4	144	42.9	35	1990/91	84.0	2005	85.0
1991/92	88.9	522	92.2	268	(100.0)	6	1991/92	90.0	790	84.6
1992/93	41.4	794	28.7	150	40.7	123	1992/93	39.4	944	73.4
1993/94	60.8	559	56.4	179	52.8	106	1993/94	59.8	738	70.5
1994/95	69.1	246	75.8	124	71.1	83	1994/95	71.4	370	68.9
1995/96	58.6	111	62.3	61	(57.1)	7	1995/96	59.9	172	64.1
1996/97	84.2	146	77.5	71	(66.7)	6	1996/97	82.0	217	62.5
1997/98	69.5	285	64.6	144	(61.9)	21	1997/98	67.8	429	68.2
1998/99	43.3	1054	51.5	631	24.1	411	1998/99	46.4	1685	65.5
1999/00	78.7	675	76.8	310	60.4	149	1999/00	78.1	985	66.8
2000/01	48.1	108	63.5	197	42.9	49	2000/01	58.0	305	66.5
2001/02	62.6	340	55.0	320	50.7	138	2001/02	58.9	660	61.8
2002/03	95.9	1992	58.9	314	46.8	77	2002/03	90.9	2306	66.5
2003/04	83.7	141	69.3	215	45.9	61	2003/04	75.0	356	72.2
2004/05	61.5	265	39.7	312	42.7	103	2004/05	49.7	577	66.5
2005/06	53.7	82	56.8	132	47.9	71	2005/06	55.6	214	66.0
2006/07	28.4	356	23.5	153	13.2	76	2006/07	26.9	509	59.6
2007/08	(50.0)	18	48.8	43	(35.0)	20	2007/08	49.2	61	51.3
2008/09	(86.4)	22	76.5	68	(66.7)	9	2008/09	78.9	90	52.1
2009/10	(23.1)	13	34.8	23	(66.7)	9	2009/10	30.6	36	48.2
2010/11	(55.6)	9	37.5	24	( )	0	2010/11	42.4	33	45.6
2011/12	29.2	106	27.5	91	0.0	28	2011/12	28.4	197	45.9
2012/13	3.6	28	18.5	27	(33.3)	3	2012/13	10.9	55	38.2
2013/14	(0.0)	16	53.5	43	(12.5)	16	2013/14	39.0	59	30.3
2014/15	(55.6)	18	(10.5)	19	( )	0	2014/15	32.4	37	30.6
2015/16	(10.5)	19	3.2	126	4.0	25	2015/16	4.1	145	23.0
2016/17	2.7	37	9.7	31	(16.7)	6	2016/17	5.9	68	18.5
2017/18	0.0	26	10.5	38	(0.0)	20	2017/18	6.3	64	17.5
2018/19	9.8	51	4.1	436	(0.0)	15	2018/19	4.7	487	10.7
2019/20	7.7	39	6.5	31	(14.3)	14	2019/20	7.1	70	10.1
2020/21	1.3	77	3.1	254	(20.0)	25	2020/21	2.7	331	5.1
2021/22	0.7	563	0.3	653	0.4	274	2021/22	0.5	1216	4.5
								4.3	**5yr mean**	
								2.7	**SD**	

(2) Razorbill – Alk – *Alca torda*

OSPAR	Subregion 8		Subregion 9		subregion 10			National (8+9)		
	ratio	n=	ratio	n=	ratio	n=		Ratio	n=	mean
1977/78	92.6	27	(100.0)	23			1977/78	68.0	50	
1978/79	84.0	25	(88.2)	17			1978/79	85.7	42	
1979/80	96.8	31	(80.0)	10	(0.0)	0	1979/80	92.7	41	
1980/81	96.2	496	100.0	77	88.5	26	1980/81	96.7	573	85.8
1981/82	94.8	77	96.7	30	(100.0)	19	1981/82	95.3	107	87.7
1982/83	84.7	1299	85.9	311	85.8	141	1982/83	84.9	1610	91.1
1983/84	92.9	547	91.9	37	96.8	31	1983/84	92.8	584	92.5
1984/85	90.1	71	93.3	45	(100.0)	2	1984/85	91.4	116	92.2
1985/86	87.6	129	93.5	46	(100.0)	4	1985/86	89.1	175	90.7
1986/87	(88.2)	17	(100.0)	6	(0.0)	0	1986/87	91.3	23	89.9
1987/88	94.3	175	75.4	61	(85.0)	20	1987/88	89.4	236	90.8
1988/89	87.5	152	88.9	36	(81.8)	11	1988/89	87.8	188	89.8
1989/90	72.0	690	60.6	66	48.0	25	1989/90	71.0	756	85.7
1990/91	79.3	174	76.5	34	(100.0)	2	1990/91	78.8	208	83.7
1991/92	97.6	42	96.3	27	(100.0)	6	1991/92	97.1	69	84.8
1992/93	72.9	59	(37.5)	8	(33.3)	6	1992/93	68.7	67	80.7
1993/94	83.7	49	(66.7)	15	(0.0)	2	1993/94	79.7	64	79.1
1994/95	77.4	53	79.3	29	(73.3)	15	1994/95	78.0	82	80.5
1995/96	28.9	121	30.4	46	(25.0)	4	1995/96	29.3	167	70.6
1996/97	62.5	24	75.0	16	(33.3)	3	1996/97	67.5	40	64.6
1997/98	58.4	77	55.2	29	(100.0)	2	1997/98	57.5	106	62.4
1998/99	71.4	77	61.4	57	(55.6)	18	1998/99	67.2	134	59.9
1999/00	75.7	259	73.3	86	(53.8)	13	1999/00	75.1	345	59.3
2000/01	(70.0)	10	77.8	18	(50.0)	2	2000/01	75.0	28	68.5
2001/02	58.4	77	55.3	38	(33.3)	18	2001/02	57.4	115	66.4
2002/03	87.8	841	38.2	178	(26.1)	23	2002/03	79.1	1019	70.7
2003/04	45.6	57	63.3	49	(66.7)	6	2003/04	53.8	106	68.1
2004/05	34.8	135	22.9	118	(13.0)	23	2004/05	29.2	253	58.9
2005/06	50.0	24	55.8	52	91.4	35	2005/06	53.9	76	54.7
2006/07	25.5	145	16.0	50	(22.2)	18	2006/07	23.1	195	47.8
2007/08	(16.7)	6	(14.3)	7	(0.0)	4	2007/08	15.4	13	35.1
2008/09	(60.0)	5	(50.0)	6	( )	0	2008/09	54.5	11	35.2
2009/10	(25.0)	8	(0.0)	3	(100.0)	1	2009/10	18.2	11	33.0
2010/11	(0.0)	4	(33.3)	3	( )	0	2010/11	14.3	7	25.1
2011/12	1.9	209	4.1	145	0.0	36	2011/12	2.8	354	21.0
2012/13	) 0.0)	10	(20.0)	5	(0.0)	1	2012/13	6.7	15	19.3
2013/14	) 0.0)	9	(0.0)	7	(0.0)	2	2013/14	0.0	16	8.4
2014/15	( )	0	(0.0)	7	( )	0	2014/15	0.0	7	4.8
2015/16	(0.0)	2	(5.0)	20	(0.0)	5	2015/16	4.5	22	2.8
2016/17	(0.0)	4	(0.0)	5	(0.0)	0	2016/17	0.0	9	2.2
2017/18	(11.1)	9	(11.1)	9	(0.0)	0	2017/18	11.1	18	3.1
2018/19	(0.0)	2	17.2	29	(0.0)	1	2018/19	16.1	31	6.4
2019/20	(7.7)	13	(33.3)	3	(0.0)	2	2019/20	12.5	16	8.9
2020/21	(7.7)	13	3.6	55	(12.5)	8	2020/21	4.4	68	8.8
2021/22	3.8	26	2.3	44	(0.0)	12	2021/22	2.9	70	9.4
								9.4	**Final 5yr average**	
								5.6	**SD**	

(3) Kittiwake – Drieteenmeeuw – *Rissa tridactyla*

OSPAR	Subregion 8		Subregion 9		subregion 10			National (8+9)		
	ratio	n=	ratio	n=	ratio	n=		Ratio	n=	mean
1977/78	83.3	102	(50.0)	23			1977/78	71.2	125	
1978/79	53.7	54	(100.0)	7			1978/79	59.0	61	
1979/80	73.7	114	76.7	30	(0.0)	0	1979/80	74.3	144	
1980/81	89.6	1371	92.3	209	84.2	184	1980/81	89.9	1580	73.6
1981/82	76.9	147	79.2	53	90.6	64	1981/82	77.5	200	74.4
1982/83	84.5	969	82.2	202	82.1	262	1982/83	84.1	1171	77.0
1983/84	88.8	1750	80.7	119	82.4	142	1983/84	88.3	1869	82.8
1984/85	68.0	175	78.8	66	(84.6)	13	1984/85	71.0	241	82.2
1985/86	65.4	254	75.0	44	74.2	31	1985/86	66.8	298	77.5
1986/87	73.5	83	(77.8)	9	(20.0)	5	1986/87	73.9	92	76.8
1987/88	75.8	124	69.7	33	54.5	33	1987/88	74.5	157	74.9
1988/89	66.7	102	(57.9)	19	(41.2)	17	1988/89	65.3	121	70.3
1989/90	59.8	132	(68.8)	16	(37.5)	16	1989/90	60.8	148	68.3
1990/91	64.5	124	(71.4)	14	(75.0)	4	1990/91	65.2	138	68.0
1991/92	67.3	55	(85.7)	14	(50.0)	6	1991/92	71.0	69	67.4
1992/93	32.4	182	32.1	28	38.9	36	1992/93	32.4	210	58.9
1993/94	53.5	43	61.3	31	(46.7)	15	1993/94	56.8	74	57.2
1994/95	81.4	43	(100.0)	11	(66.7)	15	1994/95	85.2	54	62.1
1995/96	(50.0)	20	(100.0)	3	(0.0)	2	1995/96	56.5	23	60.4
1996/97	63.6	33	(66.7)	6	(0.0)	0	1996/97	64.1	39	59.0
1997/98	42.1	114	57.7	26	(33.3)	15	1997/98	45.0	140	61.5
1998/99	51.1	131	58.5	65	40.0	35	1998/99	53.6	196	60.9
1999/00	61.9	134	61.0	82	42.5	40	1999/00	61.6	216	56.2
2000/01	46.4	28	37.5	16	(25.0)	4	2000/01	43.2	44	53.5
2001/02	46.3	108	25.7	74	34.0	47	2001/02	37.9	182	48.2
2002/03	85.8	106	34.3	35	(68.8)	16	2002/03	73.0	141	53.9
2003/04	67.6	37	45.2	31	(20.0)	10	2003/04	57.4	68	54.6
2004/05	34.8	69	44.8	29	10.8	37	2004/05	37.8	98	49.9
2005/06	(38.5)	13	(28.6)	7	(0.0)	5	2005/06	35.0	20	48.2
2006/07	(13.6)	22	(36.8)	19	(9.1)	11	2006/07	24.4	41	45.5
2007/08	(0.0)	4	(0.0)	12	(11.8)	17	2007/08	0.0	16	30.9
2008/09	(50.0)	4	(42.9)	14	(0.0)	1	2008/09	44.4	18	28.3
2009/10	(0.0)	7	(0.0)	6	(0.0)	0	2009/10	0.0	13	20.8
2010/11	(20.0)	5	(40.0)	5	(0.0)	0	2010/11	30.0	10	19.8
2011/12	3.3	151	10.2	49	0.0	28	2011/12	5.0	200	15.9
2012/13	(0.0)	20	(0.0)	9	(0.0)	3	2012/13	0.0	29	15.9
2013/14	(0.0)	1	(20.0)	5	(0.0)	0	2013/14	16.7	6	10.3
2014/15	(0.0)	0	(0.0)	0	(0.0)	0	2014/15		0	12.9
2015/16	(0.0)	1	(0.0)	16	(0.0)	4	2015/16	0.0	17	5.4
2016/17	(0.0)	1	(0.0)	1	(0.0)	0	2016/17	0.0	2	4.2
2017/18	(0.0)	9	(16.7)	6	(0.0)	4	2017/18	6.7	15	5.8
2018/19	(0.0)	7	(14.3)	21	(0.0)	3	2018/19	10.7	28	4.3
2019/20	(16.7)	6	(0.0)	2	(0.0)	2	2019/20	12.5	8	6.0
2020/21	(0.0)	5	(0.0)	15	( )	0	2020/21	0.0	20	5.0
2021/22	(0.0)	6	(15.0)	20	( )	0	2021/22	11.5	26	6.9
								8.3	**Final 5yr average**	
								5.1	**SD**	

(4) Northern Fulmar – Noordse Stormvogel – *Fulmarus glacialis*

OSPAR	Subregion 8		Subregion 9		subregion 10			National (8+9)		
	ratio	n=	ratio	n=	ratio	n=		Ratio	n=	mean
1977/78	76.0	25	(60.0)	23		0	1977/78	45.8	48	
1978/79	58.8	34	(75.0)	8		0	1978/79	61.9	42	
1979/80	59.3	27	(33.3)	9	( )	0	1979/80	52.8	36	
1980/81	81.6	256	67.2	58	84.2	38	1980/81	79.0	314	59.9
1981/82	61.5	52	(36.8)	19	(65.2)	23	1981/82	54.9	71	58.9
1982/83	72.4	58	(65.0)	20	(66.7)	12	1982/83	70.5	78	63.8
1983/84	81.1	169	(75.0)	16	(66.7)	15	1983/84	80.5	185	67.5
1984/85	(66.7)	24	(66.7)	18	(100.0)	1	1984/85	66.7	42	70.3
1985/86	43.8	80	53.3	30	(37.5)	8	1985/86	46.4	110	63.8
1986/87	(22.2)	9	(50.0)	6	(0.0)	1	1986/87	33.3	15	59.5
1987/88	63.9	166	46.8	77	35.7	28	1987/88	58.4	243	57.1
1988/89	61.0	82	68.4	38	(25.0)	16	1988/89	63.3	120	53.6
1989/90	50.0	34	(66.7)	6	(0.0)	1	1989/90	52.5	40	50.8
1990/91	(36.4)	11	( )	0	( )	0	1990/91	36.4	11	48.8
1991/92	63.6	44	78.8	52	(33.3)	6	1991/92	71.9	96	56.5
1992/93	40.7	27	(12.5)	8	(33.3)	12	1992/93	34.3	35	51.7
1993/94	(33.3)	12	(66.7)	9	(50.0)	2	1993/94	47.6	21	48.5
1994/95	(57.1)	21	(30.8)	13	(63.6)	11	1994/95	47.1	34	47.4
1995/96	(50.0)	12	(25.0)	8	(100.0)	1	1995/96	40.0	20	48.2
1996/97	(38.5)	13	(66.7)	6	( )	0	1996/97	47.4	19	43.3
1997/98	29.0	31	19.4	31	(0.0)	2	1997/98	24.2	62	41.2
1998/99	26.3	399	42.1	247	29.9	97	1998/99	32.4	646	38.2
1999/00	43.5	69	43.9	57	(53.8)	13	1999/00	43.7	126	37.5
2000/01	(12.5)	16	22.2	27	(0.0)	4	2000/01	18.6	43	33.2
2001/02	21.3	244	30.8	78	25.0	28	2001/02	23.6	322	28.5
2002/03	67.9	28	(12.5)	24	(0.0)	4	2002/03	42.3	52	32.1
2003/04	18.4	103	10.6	161	3.6	28	2003/04	13.6	264	28.4
2004/05	14.7	34	15.0	40	(16.7)	18	2004/05	14.9	74	22.6
2005/06	4.2	24	(15.0)	20	(0.0)	4	2005/06	9.1	44	20.7
2006/07	12.0	25	(0.0)	10	(0.0)	10	2006/07	8.6	35	17.7
2007/08	(0.0)	5	(20.0)	20	(7.7)	13	2007/08	16.0	25	12.4
2008/09	(7.4)	27	10.9	55	(0.0)	7	2008/09	9.8	82	11.7
2009/10	(33.3)	3	(6.3)	16	(33.3)	3	2009/10	10.5	19	10.8
2010/11	(0.0)	4	(0.0)	5	( )	0	2010/11	0.0	9	9.0
2011/12	3.8	78	1.9	52	(0.0)	13	2011/12	3.1	130	7.9
2012/13	(0.0)	2	(0.0)	3	( )	0	2012/13	0.0	5	4.7
2013/14	(0.0)	2	( )	0	(0.0)	1	2013/14	0.0	2	2.7
2014/15	(0.0)	0	(0.0)	2	( )	0	2014/15	0.0	2	0.6
2015/16	(0.0)	3	(0.0)	10	( )	0	2015/16	0.0	13	0.6
2016/17	(0.0)	11	(0.0)	13	(0.0)	3	2016/17	0.0	24	0.0
2017/18	(0.0)	9	(0.0)	2	(0.0)	3	2017/18	0.0	11	0.0
2018/19	(0.0)	4	(11.8)	17	(0.0)	0	2018/19	9.5	21	1.9
2019/20	(0.0)	3	(0.0)	4		0	2019/20	0.0	7	1.6
2020/21	(0.0)	20	0.0	32	(0.0)	7	2020/21	0.0	52	1.6
2021/22	0.0	36	0.0	41	(0.0)	2	2021/22	0.0	77	1.6
								1.9	**Final 5yr average**	
								4.3	**SD**	

(5) Northern Gannet – Jan-van-Gent – *Morus bassanus*

OSPAR	Subregion 8		Subregion 9		subregion 10		National (8+9)		
	ratio	n=	ratio	n=	ratio	n=	Ratio	n=	mean
1977/78	(100.0)	6	(100.0)	23			34.5	29	
1978/79	(66.7)	9	(100.0)	2			72.7	11	
1979/80	(92.9)	14	(20.0)	5	( )	0	73.7	19	
1980/81	95.1	41	100.0	7	(50.0)	4	95.8	48	69.2
1981/82	96.4	28	(90.9)	11	(100.0)	6	94.9	39	74.3
1982/83	91.4	81	(88.9)	18	(77.8)	9	90.9	99	85.6
1983/84	81.0	42	(88.9)	9	(100.0)	6	82.4	51	87.5
1984/85	100.0	18	(87.5)	8	(100.0)	2	96.2	26	92.0
1985/86	70.8	24	(85.7)	7	(83.3)	6	74.2	31	87.7
1986/87	(70.6)	17	(75.0)	4	( )	0	71.4	21	83.0
1987/88	86.7	15	22.2	9	(100.0)	1	62.5	24	77.3
1988/89	81.8	11	(100.0)	6	(60.0)	5	88.2	17	78.5
1989/90	74.5	51	(100.0)	8	(66.7)	3	78.0	59	74.9
1990/91	80.8	52	(85.7)	7	(100.0)	1	81.4	59	76.3
1991/92	84.0	25	(85.7)	14	(0.0)	6	84.6	39	78.9
1992/93	88.9	27	(50.0)	4	(33.3)	3	83.9	31	83.2
1993/94	87.5	24	(87.5)	8	(100.0)	3	87.5	32	83.1
1994/95	78.3	23	(75.0)	8	(100.0)	5	77.4	31	83.0
1995/96	(80.0)	5	(33.3)	6	( )	0	54.5	11	77.6
1996/97	(80.0)	15	(62.5)	8	( )	0	73.9	23	75.4
1997/98	76.9	13	36.4	11	( )	0	58.3	24	70.3
1998/99	66.7	45	65.6	32	66.7	12	66.2	77	66.1
1999/00	66.7	36	90.9	22	(60.0)	5	75.9	58	65.8
2000/01	(71.4)	7	72.0	25	(33.3)	3	71.9	32	69.2
2001/02	50.0	16	41.7	12	( )	0	46.4	28	63.7
2002/03	86.7	30	(50.0)	6	(0.0)	1	80.6	36	68.2
2003/04	60.0	5	87.5	8	0.0	1	76.9	13	70.3
2004/05	33.3	21	55.0	20	(25.0)	4	43.9	41	63.9
2005/06	(33.3)	3	(26.7)	15	(66.7)	6	27.8	18	55.1
2006/07	30.0	20	(12.5)	8	(40.0)	5	25.0	28	50.8
2007/08	(66.7)	3	83.3	12	(66.7)	3	80.0	15	50.7
2008/09	12.5)	8	36.4	11	(0.0)	2	26.3	19	40.6
2009/10	(50.0)	2	(20.0)	10	(0.0)	1	25.0	12	36.8
2010/11	(0.0)	2	( )	0	( )	0	0.0	2	31.3
2011/12	5.4	37	8.3	12	(0.0)	7	6.1	49	27.5
2012/13	(0.0)	4	(0.0)	5	( )	1	0.0	9	11.5
2013/14	(0.0)	3	( )	3	(0.0)	2	0.0	6	6.2
2014/15	( )	2	(0.0)	3	( )	0	0.0	5	1.2
2015/16	(0.0)	1	(0.0)	18	( )	1	0.0	19	1.2
2016/17	(0.0)	14	(0.0)	13	(0.0)	8	0.0	27	0.0
2017/18	2.6	38	(7.7)	13	(37.5)	8	3.9	51	0.8
2018/19	(0.0)	9	(12.5)	16	( )	0	8.0	25	2.4
2019/20	(7.1)	14	(0.0)	16	(0.0)	2	3.3	30	2.5
2020/21	0.0	28	3.4	29	(0.0)	9	1.8	57	2.8
2021/22	5.6	36	2.2	45	(0.0)	2	3.7	81	3.5
							4.1	**Final 5yr average**	
							2.3	**SD**	

(6) Common Eider – Eidereend – Somateria mollissima

OSPAR	Subregion 8		Subregion 9		subregion 10		National (8+9)		
	ratio	n=	ratio	n=	ratio	n=	Ratio	n=	mean
1977/78	(71.4)	14	(75.0)	23			35.1	37	
1978/79	(53.3)	15	27.6	29			36.4	44	
1979/80	(71.4)	7	54.8	31	(25.0)	4	57.9	38	
1980/81	(76.2)	21	69.6	56	39.3	61	71.4	77	50.2
1981/82	(36.4)	22	44.0	50	37.0	119	41.7	72	48.5
1982/83	47.1	34	58.0	169	41.3	392	56.2	203	52.7
1983/84	57.7	52	17.2	122	17.7	379	29.3	174	51.3
1984/85	22.9	96	15.7	287	14.3	509	17.5	383	43.2
1985/86	(50.0)	8	15.9	107	5.7	211	18.3	115	32.6
1986/87	62.9	35	78.6	355	84.6	279	77.2	390	39.7
1987/88	99.5	555	52.8	322	17.3	237	82.3	877	44.9
1988/89	40.0	50	45.8	216	10.9	523	44.7	266	48.0
1989/90	(87.5)	8	16.2	68	17.7	209	23.7	76	49.2
1990/91	11.0	429	2.0	204	2.0	200	8.1	633	47.2
1991/92	36.8	261	7.6	340	(13.5)	6	20.3	601	35.8
1992/93	34.1	123	8.5	153	2.3	343	19.9	276	23.3
1993/94	28.6	28	3.4	58	12.0	108	11.6	86	16.7
1994/95	29.3	41	6.1	66	8.1	533	15.0	107	15.0
1995/96	4.6	108	9.0	178	(4.1)	121	7.3	286	14.8
1996/97	9.7	31	25.9	81	(4.4)	206	21.4	112	15.1
1997/98	18.5	27	3.8	78	(9.5)	105	7.6	105	12.6
1998/99	(6.3)	16	29.1	55	11.1	171	23.9	71	15.1
1999/00	20.2	455	4.7	1631	3.4	4982	8.1	2086	13.7
2000/01	6.6	91	1.9	377	0.2	965	2.8	468	12.8
2001/02	1.5	323	3.9	613	1.6	2723	3.1	936	9.1
2002/03	73.7	57	4.3	232	1.1	474	18.0	289	11.2
2003/04	(20.0)	10	4.2	71	1.4	209	6.2	81	7.6
2004/05	(0.0)	14	2.9	170	1.7	483	2.7	184	6.6
2005/06	(16.7)	12	4.0	101	1.5	267	5.3	113	7.1
2006/07	(0.0)	4	0.0	38	1.5	130	0.0	42	6.4
2007/08	( )	0	4.2	24	0.0	59	4.2	24	3.7
2008/09	(0.0)	1	1.5	67	0.0	82	1.5	68	2.7
2009/10	( )	0	0.0	51	2.8	71	0.0	51	2.2
2010/11	(0.0)	3	(0.0)	16	( )	0	0.0	19	1.1
2011/12	(0.0)	6	0.9	112	0.0	61	0.8	118	1.3
2012/13	( )	0	(0.0)	5	(0.0)	5	0.0	5	0.5
2013/14	( )	0	(0.0)	9	(0.0)	6	0.0	9	0.2
2014/15	( )	0	(0.0)	5	( )	0	0.0	5	0.2
2015/16	( )	0	(0.0)	8	(0.0)	14	0.0	8	0.2
2016/17	( )	0	(0.0)	11	(0.0)	8	0.0	11	0.0
2017/18	( )	0	(0.0)	3	(0.0)	42	0.0	3	0.0
2018/19	(0.0)	2	(0.0)	1	(0.0)	14	0.0	3	0.0
2019/20	(0.0)	17	(0.0)	10	0.0	32	0.0	27	0.0
2020/21	( )	8	0.0	39	0.0	25	0.0	47	0.0
2021/22	( )	0	(0.0)	8	(0.0)	2	0.0	8	0.0
							0.0	**Final 5yr average**	
							0.0	**SD**	

(7) Herring Gull – Zilvermeeuw – *Larus argentatus*

OSPAR	Subregion 8		Subregion 9		subregion 10		National (8+9)		
	ratio	n=	ratio	n=	ratio	n=	ratio	n=	mean
1977/78	68.8	64	(71.4)	23	0.0	3	56.3	87	
1978/79	38.9	211	(36.8)	19			38.7	230	
1979/80	32.0	122	18.4	38	(0.0)	4	28.8	160	
1980/81	73.7	350	63.6	88	25.0	40	71.7	438	48.9
1981/82	52.1	257	27.4	84	13.2	121	46.0	341	48.3
1982/83	61.2	237	61.7	60	20.1	134	61.3	297	49.3
1983/84	46.4	412	47.4	38	12.3	162	46.4	450	50.8
1984/85	31.7	227	26.8	82	17.4	144	30.4	309	51.2
1985/86	22.2	189	14.7	95	10.9	119	19.7	284	40.8
1986/87	36.5	115	21.0	81	(11.7)	77	30.1	196	37.6
1987/88	47.2	106	37.0	46	5.2	116	44.1	152	34.2
1988/89	24.7	174	19.6	56	5.1	137	23.5	230	29.6
1989/90	21.4	215	(26.1)	23	8.2	49	21.8	238	27.8
1990/91	14.2	169	(60.0)	5	0.0	9	15.5	174	27.0
1991/92	25.7	105	(50.0)	20	(0.0)	6	29.6	125	26.9
1992/93	10.5	105	10.0	30	9.7	72	10.4	135	20.2
1993/94	30.4	92	(46.2)	13	0.0	24	32.4	105	21.9
1994/95	31.4	70	8.0	50	6.8	73	21.7	120	21.9
1995/96	9.6	83	11.1	36	(0.0)	54	10.1	119	20.8
1996/97	6.3	64	12.9	31	(0.0)	29	8.4	95	16.6
1997/98	8.6	81	(17.4)	23	(5.0)	20	10.6	104	16.6
1998/99	17.6	102	28.0	25	12.5	40	19.7	127	14.1
1999/00	17.9	84	25.7	35	9.1	44	20.2	119	13.8
2000/01	5.0	40	2.2	46	0.0	99	3.5	86	12.5
2001/02	2.7	74	9.4	32	3.6	166	4.7	106	11.7
2002/03	41.2	51	6.7	45	0.7	135	25.0	96	14.6
2003/04	(16.7)	24	14.3	28	0.0	74	15.4	52	13.8
2004/05	10.8	37	0.0	25	2.2	93	6.5	62	11.0
2005/06	(7.1)	14	(5.3)	19	3.4	117	6.1	33	11.5
2006/07	(0.0)	10	(5.9)	17	0.0	63	3.7	27	11.3
2007/08	(0.0)	6	(0.0)	8	(0.0)	47	0.0	14	6.3
2008/09	(0.0)	13	3.8	26	(0.0)	61	2.6	39	3.8
2009/10	(0.0)	7	2.3	44	(0.0)	40	2.0	51	2.9
2010/11	(0.0)	11	0.0	18	( )	0	0.0	29	1.6
2011/12	0.0	26	0.0	30	0.0	37	0.0	56	0.9
2012/13	(28.6)	7	(0.0)	7	(0.0)	8	14.3	14	3.8
2013/14	(0.0)	3	(0.0)	14	(12.5)	8	0.0	17	3.2
2014/15	(0.0)	5	(0.0)	6	( )	0	0.0	11	2.9
2015/16	(0.0)	2	(0.0)	21	0.0	25	0.0	23	2.9
2016/17	( )	0	0.0	46	(0.0)	15	0.0	46	2.9
2017/18	(0.0)	2	0.0	43	(0.0)	9	0.0	45	0.0
2018/19	(0.0)	1	(11.1)	18	(0.0)	3	10.5	19	2.1
2019/20	(0.0)	1	(0.0)	3		0	0.0	4	2.1
2020/21	(0.0)	1	0.0	38	(0.0)	7	0.0	39	2.1
2021/22	(0.0)	2	0.0	37	(0.0)	5	0.0	39	2.1
							2.1	**Final 5yr average**	
							4.7	**SD**	

(8) Great Black-backed Gull – Grote Mantelmeeuw – *Larus marinus*

OSPAR	Subregion 8		Subregion 9		subregion 10			National (8+9)		
	ratio	n=	ratio	n=	ratio	n=		Ratio	n=	mean
1977/78	59.3	27	(0.0)	23	(0.0)	2	1977/78	32.0	50	
1978/79	38.1	63	(18.2)	11			1978/79	35.1	74	
1979/80	31.6	38	(12.5)	8	(0.0)	1	1979/80	28.3	46	
1980/81	73.7	95	(54.2)	24	(50.0)	6	1980/81	69.7	119	41.3
1981/82	66.3	95	26.5	34	35.7	28	1981/82	55.8	129	44.2
1982/83	66.2	77	(73.7)	19	39.6	48	1982/83	67.7	96	51.3
1983/84	62.3	77	(53.3)	15	11.3	53	1983/84	60.9	92	56.5
1984/85	19.4	36	(13.3)	15	(12.5)	8	1984/85	17.6	51	54.4
1985/86	34.4	32	(6.3)	16	12.1	33	1985/86	25.0	48	45.4
1986/87	14.8	27	(60.0)	15	(8.3)	12	1986/87	31.0	42	40.4
1987/88	42.9	7	(61.1)	18	(15.0)	20	1987/88	56.0	25	38.1
1988/89	38.5	13	(25.0)	8	(4.8)	21	1988/89	33.3	21	32.6
1989/90	18.2	22	(28.6)	7	(25.0)	4	1989/90	20.7	29	33.2
1990/91	17.9	28	(25.0)	4	(0.0)	2	1990/91	18.8	32	31.9
1991/92	22.5	40	(33.3)	3	(0.0)	6	1991/92	23.3	43	30.4
1992/93	30.8	13	(0.0)	3	(0.0)	17	1992/93	25.0	16	24.2
1993/94	25.0	8	(33.3)	6	(0.0)	6	1993/94	28.6	14	23.3
1994/95	15.4	13	(25.0)	12	(12.5)	8	1994/95	20.0	25	23.1
1995/96	7.1	14	(0.0)	7	(0.0)	5	1995/96	4.8	21	20.3
1996/97	33.3	6	(14.3)	7	(0.0)	11	1996/97	23.1	13	20.3
1997/98	18.2	11	(28.6)	7	(0.0)	10	1997/98	22.2	18	19.7
1998/99	29.6	27	(29.4)	17	0.0	28	1998/99	29.5	44	19.9
1999/00	7.7	13	(18.2)	11	11.8	34	1999/00	12.5	24	18.4
2000/01		0	(11.1)	18	(0.0)	23	2000/01	11.1	18	19.7
2001/02	8.3	12	(11.1)	9	0.0	30	2001/02	9.5	21	17.0
2002/03	50.0	8	(6.7)	15	(9.5)	21	2002/03	21.7	23	16.9
2003/04	25.0	8	(14.3)	14	(0.0)	24	2003/04	18.2	22	14.6
2004/05	23.1	13	(30.0)	10	(0.0)	15	2004/05	26.1	23	17.3
2005/06	0.0	7	(0.0)	10	(0.0)	18	2005/06	0.0	17	15.1
2006/07	0.0	4	(0.0)	15	(0.0)	24	2006/07	0.0	19	13.2
2007/08	( )	0	(0.0)	3	(0.0)	15	2007/08	0.0	3	8.9
2008/09	(0.0)	6	(0.0)	11	(0.0)	9	2008/09	0.0	17	5.2
2009/10	(0.0)	5	(0.0)	14	(0.0)	7	2009/10	0.0	19	0.0
2010/11	(0.0)	2	(0.0)	5	( )	0	2010/11	0.0	7	0.0
2011/12	8.3	24	(5.3)	19	(0.0)	18	2011/12	7.0	43	1.4
2012/13	0.0	3	(0.0)	5	(0.0)	4	2012/13	0.0	8	1.4
2013/14	(0.0)	3	(0.0)	2	(0.0)	3	2013/14	0.0	5	1.4
2014/15	(0.0)	3	(0.0)	4	( )	0	2014/15	0.0	7	1.4
2015/16	(0.0)	2	(0.0)	13	(0.0)	2	2015/16	0.0	15	1.4
2016/17	(0.0)	2	0.0	48	(0.0)	13	2016/17	0.0	50	0.0
2017/18	(0.0)	2	(0.0)	3	(0.0)	0	2017/18	0.0	5	0.0
2018/19	(0.0)	7	(0.0)	8	(0.0)	1	2018/19	0.0	15	0.0
2019/20	(0.0)	2		0	(0.0)	4	2019/20	0.0	2	0.0
2020/21	(0.0)	7	(0.0)	16	(0.0)	1	2020/21	0.0	23	0.0
2021/22	(0.0)	10	(3.7)	27	(0.0)	4	2021/22	2.7	37	0.5
								0.5	**Final 5yr average**	
								1.2	**SD**	