BREEDING LESSER BLACK-BACKED GULLS *LARUS GRAELLSII* IN THE NETHERLANDS DURING THE 20TH CENTURY

VOORKOMEN VAN DE KLEINE MANTELMEEUW ALS BROEDVOGEL IN NEDERLAND IN DE TWINTIGSTE EEUW

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Early in the 20th century, the Lesser Black-backed Gull *Larus graellsii* was lacking as a breeding bird in The Netherlands. The first three breeding cases were recorded in 1926. Since then, the species has shown an enormous increase in numbers to 50,000 pairs by 1996. During the last twenty years, the distribution over the country has changed drastically. Until the mid 1970s, at least 70% of the birds were found in the Wadden Sea area. Since then, the proportion fell to 51% by 1991-96, whilst that in the Delta area increased from 4% to 47% during the same period. The proportion of gulls breeding on the mainland North Sea coast first rose to 14% by 1985, and then fell to 2% by 1991-96 as a result of a heavy predation by Red Foxes *Vulpes vulpes*. In 1996, numbers amounted to 22,000 pairs for the Wadden Sea area, 730 pairs for the mainland North Sea coast, 27,000 pairs for the Delta area and 88 pairs for inland areas. The largest colony now numbers 18,000 pairs (Port of Rotterdam, opposite Hoek van Holland, 1998), the next largest 9600 pairs (Terschelling, Wadden Sea area, 1996). Since the mid 1980s, Lesser Black-backed Gulls have regularly nested on roofs of buildings up to 25 km from the mainland North Sea coast. In 1993-96, about 500 pairs bred on buildings. Coastal breeding Lesser Black-backed Gulls mainly feed on marine fish at sea. Inland colonies are completely terrestrial in their feeding habits. Gulls in flourishing colonies reproduce better than colonies with stabilising or declining numbers.

INTRODUCTION

The Lesser Black-backed Gull *Larus graellsii* (including the former subspecies *L. fuscus intermedius*, see Rose & Scott 1997) has a widespread breeding distribution from southern Norway in the north to the Iberian peninsula in the south (del Hoyo *et al.* 1996). The species is mainly coastal, but locally, there are also large breeding colonies inland. The total breeding population amounts to at least 225,000 pairs (Lloyd *et al.* 1991; updated with recent data from The Netherlands and Germany).

The Lesser Black-backed Gull is one of the gull species now commonly breeding in The Netherlands which were unknown as a breeding bird here at the beginning of the 20th century (Spaans 1998a, for a discussion on the

possible breeding of dark-backed gulls in previous centuries see Dijksen 1996 and Eigenhuis 1996). The first breeding cases were recorded in 1926, when 3 pairs were found nesting on the Wadden Sea island of Terschelling (Haverschmidt 1942). Breeding on Terschelling was soon followed by nesting elsewhere on the coast (Schiermonnikoog 1927, Schouwen 1929, but probably already in 1927, Texel and Schoorl 1934, Vlieland 1935). Since then, the number of breeding pairs has increased dramatically. This paper summarises the distribution and numerical development of the Dutch nesting population since the species' arrival as a breeding bird. Earlier reviews of the situation have been published by Haverschmidt (1942), Teixeira (1979), Spaans (1980), Spaans *et al.* (1994) and van Dijk & Meininger (1995).

METHODS

Unless otherwise stated, the data on breeding numbers presented in this paper have been derived from the database on coastal breeding birds, compiled by Arts (1993) for SOVON Vogelonderzoek Nederland and the Rijksinstituut voor Kust en Zee (RIKZ). The database is based on literature and unpublished reports until the 1970s, and on data on breeding distribution and numbers systematically gathered by the RIKZ for the Delta area since the mid 1970s and by the Instituut voor Bos- en Natuuronderzoek (IBN-DLO) for the rest of the country between the late 1970s and the late 1980s. Since 1990, the data on colonial nesting birds in The Netherlands are collected by SOVON Vogelonderzoek Nederland and RIKZ. The data presented are a reconstruction of the actual numbers of birds nesting in The Netherlands, *i.e.* a missing value for a colony in a certain year is estimated at the basis of data for this colony in earlier or later years and the regional trend in numbers between the years involved.

The data are presented on both a national and a regional scale. For the latter, the country has been divided into four regions: (1) the Wadden Sea area, including the islands and the Wadden Sea coast of the mainland, (2) the mainland North Sea coast (the coastal area of the provinces of Noord-Holland and Zuid-Holland between Den Helder in the north and Hoek van Holland in the south), (3) the Delta area and (4) the interior (see Fig. 1 in Spaans 1998a; page 122 of this issue). Throughout the paper, numbers above 100 are rounded (101-1000 to nearest 10, 1001-10,000 to nearest 100, > 10,000 to nearest 1000).

RESULTS

Breeding numbers After the first three pairs of Lesser Black-backed Gulls had bred in 1926, the species gradually increased in numbers to 19 pairs by 1939, 44 pairs by 1948 and 81 pairs by 1960, an increase of 10.2% per annum. From 1960 onwards, the gulls doubled their numbers about every four years (annual

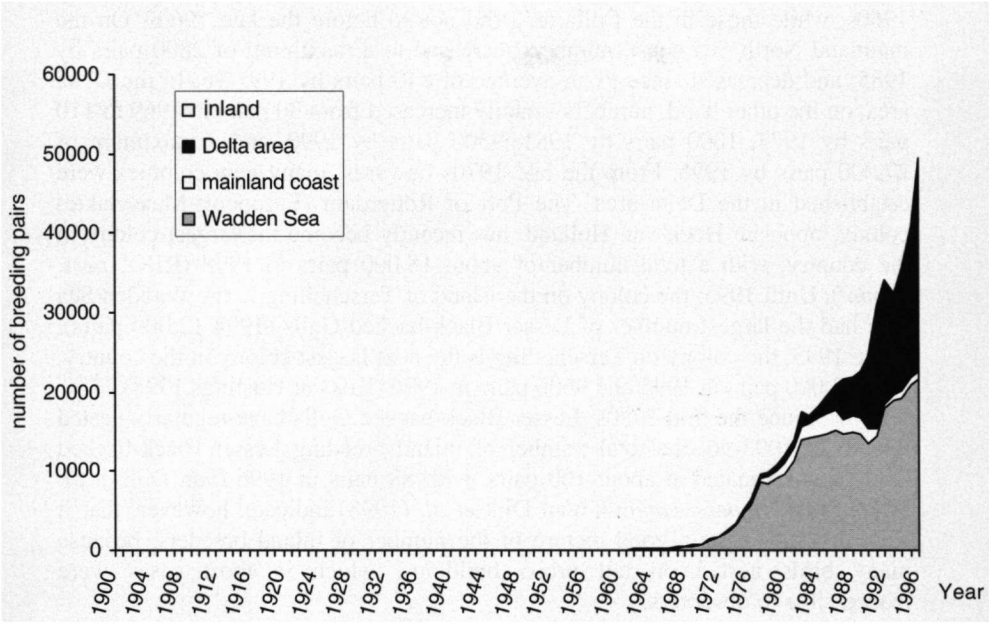

Figure 1 Population trend of Lesser Black-backed Gulls (pairs) breeding in four areas in The Netherlands, 1900-96.

Figuur 1 Populatieontwikkeling van de Kleine Mantelmeeuw (broedparen) in vier deelgebieden in Nederland, 1900-96.

increase 19.5%) to a maximum of 50,000 pairs in 1996 (Fig. 1). The increase was particularly fast in the 1960s and 1970s, when numbers doubled almost every three years (annual increase 28.4%). Since then, the increase was only 9.3% per annum. At the end of the 1960s, the total population amounted to 610 pairs, at the end of the 1970s to 11,000 pairs and at the end of the 1980s to 23,000 pairs.

There were, however, large differences in population development between regions (Fig. 1). In the Wadden Sea area, numbers steadily grew from 1926 until the 1980s, when numbers stabilised at 14,000-15,000 pairs, and birds started to nest on the small island of Griend in the centre of the Wadden Sea (1983) and on the mainland coast of the province of Groningen (Delfzijl 1986). From 1991 onwards, there was a second spurt of growth to 22,000 pairs in 1996. However, on the island of Terschelling, which had the largest colony in the region (1982-86 13,000 pairs), numbers remained relatively constant until the mid 1990s (Spaans *et al.* 1994). In contrast to the situation in the Wadden Sea

area, numbers on the mainland North Sea coast did not build up before the early 1960s, while those in the Delta area did not so before the late 1960s. On the mainland North Sea coast, numbers increased to a maximum of 2800 pairs by 1985, and decreased since to an average of 840 pairs by 1991-96. In the Delta area, on the other hand, numbers steadily increased from 30 pairs in 1969 to 110 pairs by 1974, 1000 pairs by 1981, 9300 pairs by 1990, and a maximum of 27,000 pairs by 1996. From the late 1970s onwards, many new colonies were established in the Delta area. The Port of Rotterdam (Europoort-Maasvlakte) colony, opposite Hoek van Holland, has recently become the largest colony in the country, with a total number of about 18,000 pairs in 1998 (RIKZ *pers. comm.*). Until 1995, the colony on the island of Terschelling in the Wadden Sea area had the largest number of Lesser Black-backed Gulls (1994 12,000 pairs). Since 1995, the colony on Terschelling is the next largest colony in the country, with 13,000 pairs in 1995 and 9600 pairs in 1996 (Koks & Hustings 1998).

Since the mid 1980s, Lesser Black-backed Gulls have regularly nested inland. In 1993-96, the total number of inland breeding Lesser Black-backed Gulls was estimated at about 100 pairs, with 88 pairs in 1996 (van Dijk *et al.* 1998; SOVON *pers. comm.*). Van Dijk *et al.* (1998) indicate, however, that it was difficult to get a good picture of the number of inland breeders, because many birds nested on tall urban buildings, which in most cases were inaccessible to observers.

During the late 1920s and early 1930s, Lesser Black-backed Gulls regularly formed mixed breeding pairs with Herring Gulls *L. argentatus* (review in Haverschmidt 1942). In later years, interbreeding with Herring Gulls was seldom recorded, and in most cases probably the result of manipulation by man (*e.g.* Wassenaar; Bouman *et al.* 1991). However, since the mid 1980s, the newly arrived Yellow-legged Gull *L. michahellis* has regularly interbred with the Lesser Black-backed Gull (van Swelm 1998).

Breeding distribution Because Lesser Black-backed Gulls often nest in mixed colonies with Herring Gulls, their breeding distribution is very similar to that of the latter. So, most Lesser Black-backed Gulls nest in the immediate vicinity of the coast, and only very few do so inland (Fig. 2). Because Lesser Black-backed Gulls regionally differ in their numerical development, the geographical distribution over the regions has changed dramatically since the species' arrival as a breeding bird. Until the mid 1970s, at least 70% of all pairs nested in the Wadden Sea area, with the island of Terschelling as the main stronghold. Since then, the proportion of pairs nesting in the Wadden Sea area dropped from 90% in 1975 to 51% in 1991-96, whilst that in the Delta area increased from 4% to 47%. The proportion of Lesser Black-backed Gulls nesting on the mainland North Sea coast first rose from 7% during the early 1970s to 14% in 1985, and then fell to 2% by 1991-96. The proportion of Lesser Black-backed Gulls nest-

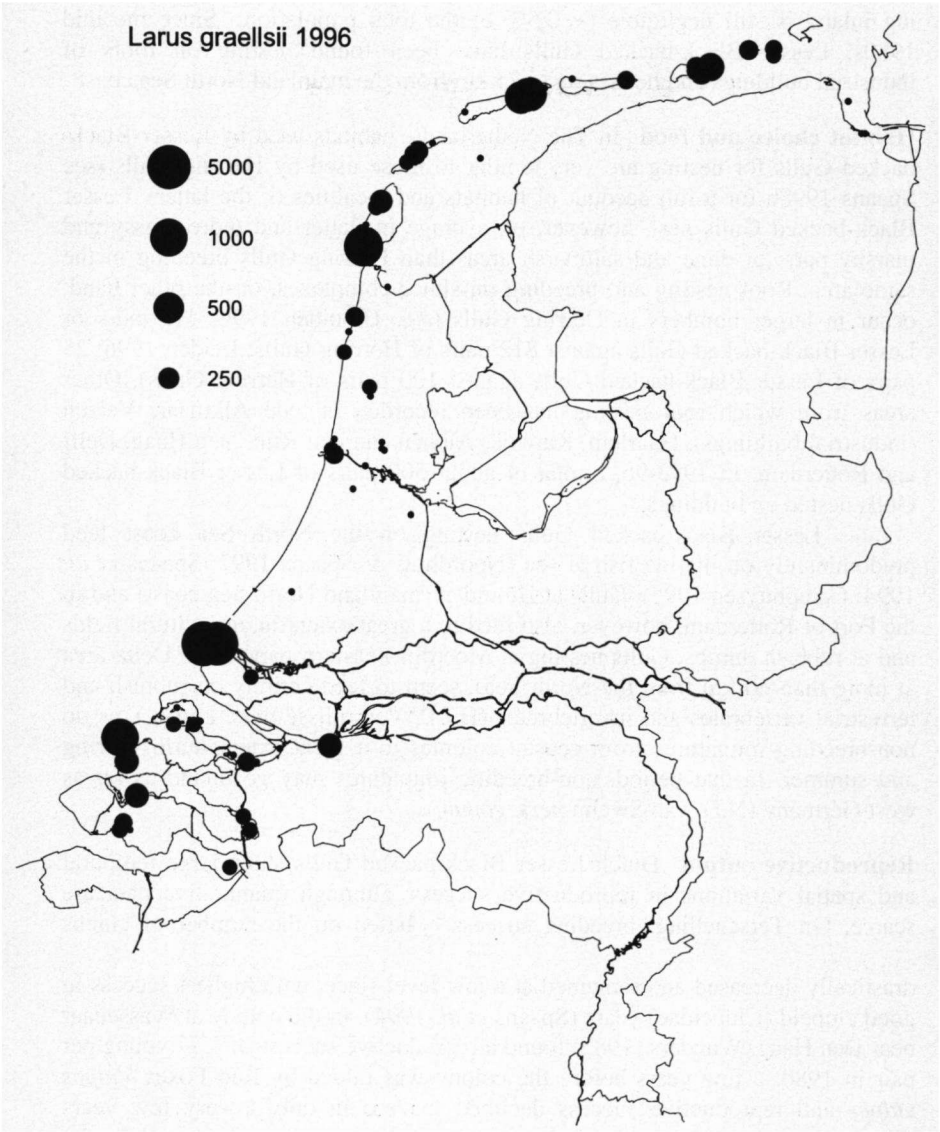

Figure 2. Distribution of breeding Lesser Black-backed Gulls in The Netherlands in 1996.

Figuur 2. Verspreiding van de Kleine Mantelmeeuw als broedvogel in Nederland in 1996.

ing inland is still negligible (< 0.5% of the total population). Since the mid 1980s, Lesser Black-backed Gulls have been found nesting on roofs of industrial buildings and houses up to 25 km from the mainland North Sea coast.

Habitat choice and food In The Netherlands, habitats used by Lesser Black-backed Gulls for nesting are very similar to those used by Herring Gulls (see Spaans 1998b for a full account of habitats and localities of the latter). Lesser Black-backed Gulls nest, however, on average in flatter and more grassy and marshy parts of dune and saltmarsh areas than Herring Gulls breeding in the same area. Roof nesting and breeding on sluice complexes, on the other hand, occur in larger numbers in Herring Gulls (*e.g.* IJmuiden 1996, 419 pairs of Lesser Black-backed Gulls against 812 pairs of Herring Gulls; Leiden 1996, 25 pairs of Lesser Black-backed Gulls against 100 pairs of Herring Gulls). Other areas from which roof nesting has been recorded include Alkmaar, Velzen (industrial buildings), Haarlem, Katwijk, Alphen aan den Rijn, Den Haag, Delft and Rotterdam. In 1993-96, a total of about 500 pairs of Lesser Black-backed Gulls nested on buildings.

Lesser Black-backed Gulls nesting on the North Sea coast feed predominantly on marine fish at sea (Noordhuis & Spaans 1992; Spaans *et al.* 1994; Camphuysen 1995). Gulls at IJmuiden (mainland North Sea coast) and in the Port of Rotterdam, however, also feed to a great extent in agricultural fields and at rubbish dumps. Gulls nesting at Moerdijk (eastern part of the Delta area at more than 60 km from the North Sea), seem to feed entirely on rubbish and terrestrial vertebrates and invertebrates (H.J.P. Vercruijsse *pers. comm.*), as do non-breeding immatures from coastal colonies to a great extent during spring and summer. In that period, non-breeding immatures may go inland as far as west Germany (N.D. van Swelm *pers. comm.*).

Reproductive output Dutch Lesser Black-backed Gulls show large temporal and spatial variations in reproductive success, although quantitative data are scarce. On Terschelling, breeding success – based on the number of chicks

drastically decreased and remained at a low level since, with highest success in good clupeid (Clupeidae) years (Spaans *et al.* 1994). In the colony at Wassenaar near Den Haag, Wanders (1985) found a reproductive success of 1.77 young per pair in 1980, a few years before the colony was raided by Red Foxes *Vulpes vulpes* and reproductive success declined to zero in only a very few years (Bouman *et al.* 1991). In the Delta area, reproductive success – based on the number of full-grown chicks seen in the colony – is still classified as relatively high (Port of Rotterdam, N.D. van Swelm *pers. comm.*; Moerdijk 1997 1.5 young per pair, H.J.P. Vercruijsse *pers. comm.*; Schouwen: *pers. observ.*; Vlissingen-Oost, R.-J. Buijs *pers. comm.*).

DISCUSSION

In 1926, the Lesser Black-backed Gull bred for the first time in The Netherlands during the present century. Since then, the population increased in numbers from 3 pairs in the first year of breeding to 50,000 pairs in 1996. Initially, the population growth was moderate. This was followed by a rapid increase during the 1960s-1970s and a period with a much slower increase during the 1980s and 1990s. The reduced growth rate since the 1980s may indicate that the population is reaching its ceiling. At present, an increasing population trend is found around the entire North Sea (*e.g.* Great Britain and Ireland, Lloyd *et al.* 1991; Gibbons *et al.* 1993; Belgium, Seys *et al.* 1998; Germany, Vauk & Prüter 1987), and strongly contrasts with the decreasing trend in the related Baltic Gull *L. fuscus* in north Europe (*e.g.* Kilpi 1983; Strann & Vader 1992).

In The Netherlands, the numbers of Lesser Black-backed Gulls gradually increased without any interruption between the 1940s and 1960s. This strongly contrasts with the situation in the Herring Gull, whose numbers no longer increased during that period due to large-scale gull control measures undertaken in these years (*e.g.* Mörzer Bruijns 1958; Swennen 1982). Lesser Black-backed Gulls escaped the control measures in the mixed breeding colonies of Herring and Lesser Black-backed Gulls, because at that time the latter was still a rare breeding bird and also fully protected. Hence, special attention was paid during the culls to save clutches and adults of the Lesser Black-backed Gull.

Like Herring Gulls (Spaans 1980, 1998b), Lesser Black-backed Gulls nesting on the mainland North Sea coast significantly suffered from the pollution of the Dutch coastal waters with organochlorine pesticides during the 1960s. At that time, however, the majority of the Dutch Lesser Black-backed Gulls bred in the Wadden Sea area, where gulls, in contrast to other seabird species (Koeman 1970), were hardly affected by the pesticides. The impact of the pollution on the national number of the Lesser Black-back was therefore less heavy than in the Herring Gull, of which 57% of the population nested in the Wadden Sea area at that time, against 91% of the Lesser Black-backed Gull population.

The Lesser Black-back has shown large differences in population development between regions. In the Wadden Sea area, numbers increased from the beginning onwards and already began to level off during the 1980s. Although there was a second spurt of growth in the 1990s, numbers in the main colony (Terschelling), where the reproductive output has been very low since the 1980s (Spaans *et al.* 1994), remained relatively stable until the mid 1990s. The low reproductive output on Terschelling is primarily due to food shortages,

resulting in both starvation and a high predation rate of eggs and particularly chicks by conspecifics and Herring Gulls (Bukacinski *et al.* 1998).

In contrast, numbers in the Delta area did not increase before the late 1960s and are still rapidly increasing, while the reproductive output is still high. On the mainland North Sea coast, numbers increased from the early 1960s until the mid 1980s paralleled by a high reproductive success. Since then, numbers rapidly fell due to a heavy and persistent predation of eggs and young by Red Foxes, resulting in a very low breeding success and ultimately in the desertion of these colonies by the gulls (Bouman *et al.* 1991; van Dijk & Meininger 1995). Colour-ringing data suggest that many gulls which deserted colonies on the mainland North Sea coast of Zuid-Holland, joined gulls in the Port of Rotterdam or established new colonies outside the dune area (Bouman *et al.* 1991; N.D. van Swelm and R.M. Wanders *pers. comm.*). The present data suggest that colonies with increasing numbers of gulls achieve a higher reproductive success than those with stabilising or decreasing numbers.

Notwithstanding the problems the species has met on the mainland North Sea coast and in the Wadden Sea area since the 1980s, the total number of Lesser Black-backed Gulls has increased until the present day. As a breeding bird, the species is now almost as abundant as the Herring Gull (1996 68,000 pairs against 50,000 pairs of Lesser Black-backed Gulls, see Spaans 1998b). If the present trends in the two species continue during the next few years, the Lesser Black-back will outnumber the Herring Gull around the turn of the century. Who would have predicted this 50 years ago?

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SAMENVATTING

De Kleine Mantelmeeuw Larus graellsii *heeft in 1926 voor het eerst in deze eeuw in ons land gebroed (Terschelling, 3 paren). De populatie is sindsdien gegroeid tot 50,000 broedparen in 1996. Tot 1960 nam het aantal met gemiddeld 10.2% per jaar toe. Gedurende de jaren zestig en zeventig was de jaarlijkse toename 28.4%. Daarna was er, met een toename van 9.3% per jaar, weer sprake van een geringere groei. Dit laatste zou erop kunnen wijzen dat de broedpopulatie in Nederland binnenkort zijn plafond zal bereiken.*

Gedurende de laatste twee decennia is de verdeling van de vogels over Nederland sterk gewijzigd. Tot het midden van de jaren zeventig broedde ten minste 70% van de vogels in het Waddengebied. Dit aandeel is sindsdien door voedseltekorten op zee teruggevallen tot 51% in de jaren negentig. In het Deltagebied nam het aandeel in dezelfde tijd toe van 4% tot 47%. Het aandeel meeuwen langs de kust tussen Den Helder en Hoek van Holland nam eerst toe tot 14% in 1985 en kelderde daarna als gevolg van een hevige predatie van eieren en jongen door Vossen Vulpes

vulpes *tot 2% in de jaren negentig. Sinds het midden van de jaren tachtig broedt de soort ook met tientallen paren in het binnenland (1994-96 rond 100 paren) en op daken van gebouwen tot op 25 km van de kust (1993-96 ongeveer 500 paren). De twee grootste kolonies van ons land tellen respectievelijk 9600 (Terschelling, 1996) en 18.000 paren (Europoort-Maasvlakte, 1998).*

De Kleine Mantelmeeuwen die langs de kust broeden, zijn voor hun voedselvoorziening vooral op zee aangewezen. De meeuwen van IJmuiden en Europoort-Maasvlakte foerageren echter ook vrij veel op land. De vogels van de kolonie op het industrieterrein Moerdijk (60 km van de kust) is geheel terrestrisch georiënteerd. Groeiende kolonies hebben over het algemeen een hoger voortplantingssucces dan stabiele of in grootte afnemende kolonies.

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