Recent Population Estimates of Meadow-Breeding Waders in Belgium

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This paper gives the recent population estimates of meadow-breeding waders in Belgium. These estimates are mainly based on unpublished data of regional censuses. As most waders species, with the exception of the Lapwing, are not very numerous and occur in well surveyed areas, we can assume that the population estimates are quite accurate.

The most important breeding areas in Belgium are indicated in Figure 1. The current status of meadow-breeding species in the different regions of Belgium is given in Table 1 and Figure 2. In Table 2, the breeding numbers are compared with previous estimates.

The recent population estimates, trends in numbers and numeric distribution are discussed species by species. The population of Oystercatchers is steadily increasing, mainly by range expansion. Black-tailed Godwits show recent increases. Whether or not this will be a continuing trend is not yet clear. Lapwing and Curlew populations remain fairly stable. Snipe and Redshank numbers are decreasing considerably. Different species show a marked habitat shift. Where possible this is discussed.

The discussion deals mainly with the threats for breeding waders and their habitat and summarizes the situation in Belgium.

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Introduction

The number of breeding waders in Belgium is rather small in comparison to the populations in some nearby North Sea countries (Piersma 1986). This can be explained by the small size of the country and the fact that several species reach the southern limit of their breeding range in the northern part of Belgium. Despite this, several regions in Belgium are characterized by their typical breeding populations of waders.

In contrast to, for example, The Netherlands and Great Britain, Belgium has less tradition of monitoring breeding birds. Most wader populations are however restricted to small areas that are often of great importance to nature conservation. Hence they are mostly covered by regional census programmes. This makes it possible to produce reliable population estimates for most species. Population estimates of breeding waders in Belgium have been published regularly since 1957 (Verheyen 1957, Voet 1970, Lippens & Wille 1972, Voet *et al.* 1982).

As the last estimates were published almost ten years ago, the aim of this paper is to update the information on the numbers of breeding waders in Belgium and to discuss the observed trends.

Materials and methods

Population estimates

Former population estimates (Verheyen 1957, Voet 1970, Lippens & Wille 1972) were mainly the result of assembling relevant regional papers (*e.g.* Devocht *et al.* 1974, Meeus *et al.* 1979, Van Gompel 1978) and correspondence with local ornithologists. More recently, an atlas of breeding birds in Belgium was published, mainly with information of the period 1973-1978

(Devillers *et al.* 1988). In 1981 a special breeding census of waders was organized in Flanders (Voet *et al.* 1982).

This review is also mainly based on unpublished data of regional censuses which were kindly supplied to us by the co-ordinators. The information was collected during the breeding seasons of 1989 and 1990.

Accuracy of the estimates

The accuracy of breeding censuses improved considerably during the last 50 years, mainly because of new census methods and an increasing number of birdwatchers. Breeding numbers in the past have often been underestimated. Population trends are hence the combined effect of methodological artifacts and real population changes. Where possible, the distinction between both factors is made in the species accounts.

The accuracy not only varies between years but also within a year. When compiling the present population estimates it became clear that not all species and all breeding sites in Belgium have been censused with the same intensity and accuracy. However, as most wader species are not very numerous and occur largely in well-surveyed areas, we can assume that the estimates given below are now close to the actual population sizes. The Lapwing *Vanellus vanellus*, the most abundant species, is however not counted in many of its breeding areas. The population size can therefore only be estimated with a large degree of uncertainty.

Description of the most important breeding areas

The most important breeding areas are indicated in Figure 1. The letters and numbers used in this text refer to those in Figure1.

In Flanders (A), the most important breeding areas are the polder areas along the coast (1) and the Schelde estuary near Assenede (2) and Antwerpen (3), the 'Kempen' or Campine region (4) of the province of Antwerp (4a, c) and Limburg (4b, c) and the alluvial plains of several rivers.

The 'Coastal Polders' (1) is a typical agricultural area. In the lower parts, large grassland-complexes occur, characterized by a typical microrelief and in some places still seepage of brackish water.

Of the 'Schelde Polders', two parts can be distuingished in Belgium. In the 'Schelde Polders near Assenede' (2), large creeks occur but the amount of grassland is rather small. Near Antwerpen small remnants of the 'Beneden Schelde Polders' (3) remain after huge areas have been destroyed for the expansion of the harbour since the 1960s. On the left bank of the river Schelde this fallow land has not been used for many years and some parts have become ornithologically important. The value of these areas is however only temporary. On the right bank most of the area is industrialized.

In the 'Kempen' in the province of Antwerp ('Antwerpse Kempen', 4a) and Limburg ('Limburgse Kempen', 4b) very important

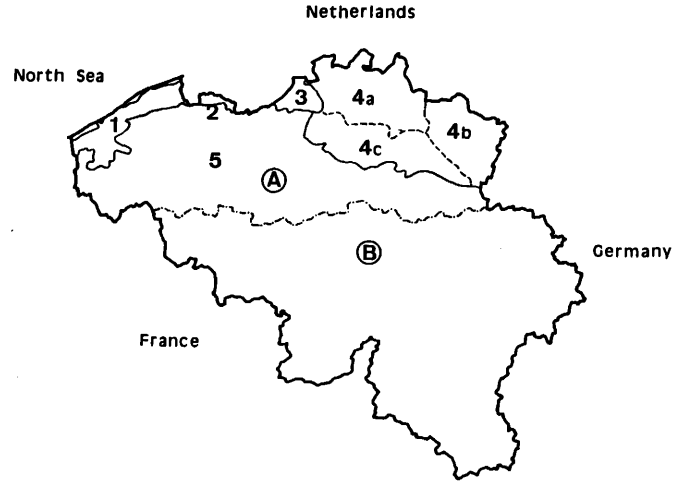

Figure 1. Map of Belgium showing the different regions of major importance for waders breeding on meadows:
A Flanders
1. Coastal Polders;
2. Schelde Polders near Assenede;
3. Beneden Schelde Polders;
4. 'Kempen',
   4a. Antwerpse Kempen;
   4b. Limburgse Kempen;
   4c. Zuiderkempen;
5. Other areas in Flanders;
B Southern part of Belgium.

breeding areas of meadow birds occur. The southern part of the 'Kempen', the 'Zuiderkempen' (4c), is of minor importance. The former very extensive 'Kempische' moorlands have largely been cultivated and are now restricted to some relatively small areas. As the moorlands disappeared, most wader species moved to the grassland areas which now occur all over the area. Gradually, however, these are now being changed to arable land.

Outside these areas most breeding waders are found in the alluvial plains of the river Schelde and its tributaries (5) and in the valley of the river Maas.

In the southern part of Belgium (B), with the exception of the Lapwing, very few breeding waders occur. Most breeding is restricted to the 'Condroz', 'Fagne' and 'Famenne' as well as in the valley of the Haine.

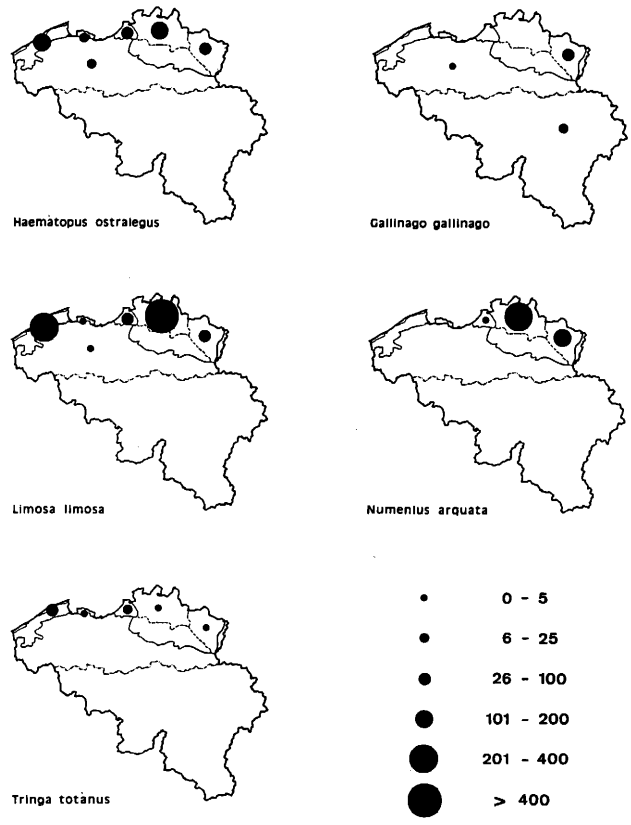

Figure 2. Numeric distribution of Oystercatcher *Haematopus ostralegus*, Snipe *Gallinago gallinago*, Black-tailed Godwit *Limosa limosa*, Curlew *Numenius arquata* and Redshank *Tringa totanus* in Belgium, 1990.

Species accounts

The breeding numbers for the different parts of Belgium are given in Table 1 and Figure 2. A summary of the population estimates since the middle of the 1950s is shown in Table 2. As already mentioned, some of these figures have to be interpreted with care. Therefore the results will be discussed species by species.

Oystercatcher *Haematopus ostralegus*

The current population size can be estimated at 610-640 pairs. It is a rather widespread and non-colonial species and therefore sometimes

Table 1. Numbers of meadow-breeding waders in different regions in Belgium in 1990.

regions (see. Fig. 1)	1	2	3	4a	4b,c	5	B
Oystercatcher	175-195	30	150	>130	48-53	>80	0
Lapwing	+	+	800	>3,000	+	+	5,000-6,500
Snipe	0	0	0	0	30-35	0-3	15-25
Curlew	0	0	4	250-265	185-205	0	0
Black-tailed Godwit	272-285	2	100-105	400-420	78-87	12-15	0
Redshank	59	0-4	85-90	2-5	0-2	0	0

Table 2. Numbers of breeding pairs of meadow-breeding wader species in Belgium: summary of the available data.

years	1956	1968	1972	1977	1981	1990
Oystercatcher	16-20	65	60	170-175	380	610-640
Lapwing	1,300-1,500	>4,000	5,000	+	>15,000	+
Snipe	>60	45	80	+	115-130	45-65
Curlew	230-270	300-310	350	380-385	475	440-475
Black-tailed Godwit	150	225-235	240	>400	750-780	865-910
Redshank	160	180-190	190	190	210	145-160

Sources: 1956 - Verheyen 1957; 1968 - Voet 1970; 1972 - Lippens & Wille 1972; 1981 - Voet *et al.* 1982; 1990 - this paper. + : not surveyed.

difficult to count precisely. However, as this species is not very numerous and it is very conspicious we can assume this estimate to be quite accurate.

The increase of the population as illustrated in Table 2 is largely a real one. Originally the Oystercatcher was a rare breeding bird in Belgium (< 20 pairs), restricted to some coastal sites. Since the middle of the 1950s, numbers increased and the distribution range extended rapidly. The colonization of inland habitats was very successful and the species is now widespread in the northern part of Belgium. This expansion seems to be still continuing.

The largest breeding numbers in Belgium are found in the Coastal Polders: 175-195 pairs in 1990. Some 30-40 years ago, the 'Zwin' at Knokke-Heist and the 'IJzermonding' at Nieuwpoort were the only breeding places in the Coastal Polders. Now with 31 and 3-5 pairs respectively, they hold only a minor part of the population. In these coastal sites, numbers have not changed much since 1960. It is the spread inland during the last decades that caused the coastal population to increase.

In other regions, the same development has been apparent. Since 1981, a 30 % increase was noticed in the "Antwerpse Kempen" and the population in Limburg has doubled. In the 'Beneden Schelde Polders', numbers increased from 89 pairs in 1981 to 150 in 1990. The species is also still expanding its breeding range to the south, with a preference for cultivated land in river valleys.

In the most important breeding areas, the species prefers to breed on arable land (maize). The presence of nearby (wet) meadows is however essential as the birds use these as feeding areas.

Lapwing *Vanellus vanellus*

We are not able to give a recent estimate of the Belgian breeding population. In most regions, this abundant species is not covered by census programmes. A rather detailed census in 1981 revealed a population of 15,000-20,000 pairs for Belgium.

Some local monitoring programmes show that the breeding numbers have been relatively stable during the last 10 years (Devos, unpublished data; and pers. comm. local co-ordinators).

The Lapwing was originally a breeding bird of grasslands. However, in many areas, especially reallotment areas, there is often a

decrease in the surface of permanent grassland. The species seems to adapt to this loss of old, wet pastures by the colonization of arable land.

Lapwings are widespread. Most birds occur in the northern part of the country, especially in the Coastal Polders (> 2,000-2,500 pairs) and in the 'Antwerpse Kempen' (> 3,000 pairs). During the last decades, there was a marked expansion during which the southern part of Belgium was colonized (5,000-6,500 pairs).

Ruff *Philomachus pugnax*

Until the middle of this century, a small population occurred in the large and wet moorlands of the 'Antwerpse Kempen'. In the period 1950-1980 the Ruff became a very rare (maximum 2 pairs) and irregular breeder, mainly in the Polder areas. As far as we know, no breeding attempts have been observed during the last ten years.

Snipe *Gallinago gallinago*

The total of only 45 to 65 pairs in 1990 makes the Snipe one of the rarest meadow-breeding wader species in Belgium. Table 2 indicates the considerable decrease which has taken place since 1981 (115-130 pairs). Numbers were always underestimated before the census in 1981, so we are probably dealing with a long term decrease that is already going on for decades. Numbers in 1990 were extremely low due to the very dry summer season.

The species' range has contracted almost entirely to the eastern part of Belgium. In Limburg, the breeding population is estimated at 30 to 35 pairs. In the southern part of Belgium there is a small and declining population, fluctuating around 15-25 pairs.

Habitat loss, mainly through extensive drainage and agricultural improvement projects, has caused the extinction of the species in many other areas. In the Coastal Polders, particularly in the flood plains of the river IJzer, the last breeding birds were seen during the late 1970s. In the valley of the river Schelde (3-5 pairs in 1981) and in the 'Antwerpse Kempen' (7 pairs in 1981), the Snipe became an irregular breeder.

Curlew *Numenius arquata*

In 1989, all breeding places were censused quite well and the population can now be estimated at 440-475 pairs, a little less than the 475 pairs in 1981 (Table 2). The breeding population is now probably quite stable. Table 2 shows a gradual increase since the middle of the 1950s until 1981. It is not certain, however, that this reflects a real population growth; numbers have probably been underestimated in the past.

Breeding Curlew are almost entirely restricted to the 'Kempen'. In the 'Antwerpse Kempen', 250-265 pairs were counted in 1989. At least 185-205 pairs are breeding in the 'Limburgse Kempen'.

In both regions, there have been obvious changes in both distribution and breeding habitat, mainly as a consequence of landscape and agricultural alterations. In the past, the species was restricted to heather moors with fens and wet depressions. During the last decades, extensive areas of this habitat type have been changed into agricultural land. However, decreases in Curlew numbers due to the disappearance of moorlands were offset by shifts to cultivated land. A considerable part of the Belgian population is now breeding on meadows. This adaptation to grassland has led to the colonization of a new region in 1987: the 'Beneden Schelde Polders', where 4 pairs were counted in 1990.

Black-tailed Godwit *Limosa limosa*

The total Belgian population reached about 810 - 860 pairs in 1989 and 865 - 910 pairs in 1990. These numbers are quite accurate because all breeding areas were well covered.

The population gradually increased after 1950, although breeding numbers have probably been underestimated until 1981

(Table 2). In 1981, the total number of breeding pairs was about 750 pairs. The breeding population remained relatively stable during the following years, but in 1989 and 1990 numbers were considerably higher, an increase which was not seen in all regions.

The 'Antwerpse Kempen' which holds most breeding Black-tailed Godwits, has a population that fluctuates around 400-420 pairs (1987-1990). No recent increase has occurred. The census in 1981 revealed more than 500 pairs but that was an exceptional year. The species is somewhat less numerous in the adjacent 'Limburgse Kempen': 78-87 pairs in 1989. This number is slightly higher than in previous years (60-70 pairs).

More to the West, the Coastal Polders also hold a considerable part of the Belgian population. Recent censuses revealed the following numbers: 185-190 pairs in 1988, 210-220 pairs in 1989 and 272-285 pairs in 1990 which was the highest number ever recorded. The recent increase of the Belgian total population can clearly be ascribed to the trend in the Coastal Polders. No explanation for this recent increase is available. In the past, the species was mainly restricted to large areas of wet hay meadows. These are, however, disappearing quickly. The Black-tailed Godwit seems to adapt quite well to this evolution; in many areas there is a shift to grazing meadows.

Redshank *Tringa totanus*

In 1989-1990, the population size was probably not higher than 145-160 pairs. As the species is not very widespread and not very common, this estimate is thought to be quite exact. It is the lowest breeding number ever recorded. It has to be mentioned that 1989 and 1990 were both dry summer seasons, which proved to have a negative effect on breeding Redshanks (Van Gompel 1988). In wet breeding seasons, breeding numbers might probably be slightly higher.

It is clear, however, that a considerable decline has occured since 1981 (210 pairs). Earlier estimates during the period 1955-1977 were somewhat below 200 pairs, but an underestimate is almost certain. Therefore this decline is probably a long term trend.

The decline of Redshank numbers has been noticed simultaneously at all breeding sites. In some areas this species seems to be on the verge of extinction. As the species is concentrated in very few areas the population is very vulnerable for further habitat loss.

Two main breeding areas can be distinguished. One is in the North-Eastern part of the Coastal Polders. A detailed survey in 1982 revealed 84 to 86 pairs (Desmet 1985). In 1990 only 59 pairs were counted. In this Polder area, the Redshank is strongly tied to the brackish habitats on clay soils. Microrelief, ditches that are silted up, watering places for cattle and other muddy spots are most attractive for this species (Desmet 1985). This habitat type is disappearing rapidly as a consequence of changed agricultural practices. The species is very sensitive to drainage and pasture improvements. In addition, one of the most important breeding places (20 pairs in 1982, 31 in 1990) is gradually disappearing due to the expansion of the harbour of Zeebrugge. This site will be lost completely in the near future.

In the 'Beneden Schelde Polders', the decline was less dramatic. A total of 94-97 pairs in 1981 was reduced to 85-90 pairs in 1990. Here the expansion of the harbour of Antwerp has led to the disappearance of large wet grassland areas. It has to be stressed that more than half of the population in Belgium is now breeding on temporary grounds.

In the 'Schelde Polders near Assenede', a progressive decline in numbers has already resulted in irregular breeding of the species in that area: 29-30 pairs in 1968, 5-10 pairs in 1981, 0-4 pairs in 1990.

In the 'Kempen' in the province of Antwerpen and Limburg, numbers fell from 18-19 pairs in 1981 to 2-7 pairs in 1990.

Discussion

As mentioned in the introduction the number

of most meadow-breeding wader species in Belgium is very small indeed. This is confirmed by Table 3 in which our estimates are compared to the population estimates given by Van Dijk *et al.* (1989) for Europe and the nearby arctic (excl. USSR). In an international context, our country is most important for breeding Lapwings. About 2% of the population are estimated to breed in Belgium. Very little information on this species is available however.

On a national scale the other species are much more important, especially because their decline is linked to the disappearence of a specific habitat, this applies to Redshank and Snipe. Other species such as the Curlew showed a clear habitat shift from moorlands to grasslands, but as these are now also disappearing, the future is uncertain.

The loss of habitat is a crucial problem for several species of meadow breeding birds. In the last few decades, agriculture has had to give up a large area of highly productive land for urban and industrial expansion. In Belgium 265,000 ha were lost to building development between 1960 and 1984, of which 60% were in Flanders. The expansion of the harbours in Zeebrugge and Antwerpen have been, for example, responsible for the loss of important wader breeding areas.

Besides these spatial threats, pollution, acidification, eutrophication, over-use of fertilzers and disturbance of water supply are major qualitative threats. As a result of all these factors, interest has increased in the remaining less cultivated semi-natural areas in an attempt to compensate for the losses. Here the effects of modern agricultural improvement cause even more conflicts with conservationist than in traditional productive areas. The following stages illustrate how these semi-natural, ecologically very important grasslands which are the key breeding areas for meadow birds are threatened:

- lowering the water level in valleys and polder depressions: building pumping stations, straightening of rivers, rivulets and brooks, creation of artificial water reservoirs for stocking water "surplus" to avoid larger inundations (mainly in winter);

- on these drained soils, earlier access in spring with heavier machines is possible, enabling earlier and increased use of fertilizer (plus use of herbicides). After only one season there is a drastic decline in the original diversity of the plant community, with several sensitive plant species disappearing;

- old permanent grasslands (especially hayfields) are then ploughed and reseeded with highly productive mixtures of grass species and even more fertilizers are added;

Table 3. Proportions of the Belgian breeding wader populations in the total of Europe (excl. USSR) and the nearby arctic as estimated by van Dijk *et al.* (1989). For Belgium, maximum estimates are used.

species	Belgium	Europe	% in Belgium
Oystercatcher	640	209,000-245,000	0.3%
Lapwing	20,000	923,000-994,000	2.0%-2.2%
Snipe	65	530,000-539,000	<0.1%
Curlew	475	122,000-128,000	0.4%
Black-tailed Godwit	910	94,700-119,000	0.8%-1.0%
Redshank	160	164,000-172,000	<0.1%

- as a result of decreased flooding, better drainage and nutrient input, earlier and more frequent mowing (silage grass) becomes a general practice: this causes conflict with breeding birds and gives plant species no chance to seed: the most sensitive species only survive in the field margins and along ditches;

- due to the European milk quotas more and more grasslands are irreversibly changed into arable fields (between 1977 and 1984 3,570 ha of grasslands disappeared each year in Belgium!); besides the traditional crop of potatoes, maize crops are preferred at present, because of the high amount of animal dung that can be dumped here (a surplus available from intensive bio-industries);

- as a result, a tremendous over-fertilization has occurred during the last ten years, notably in the northern and western part of Flanders; this causes many negative side effects even in the best protected nature reserves (ruderalization); furthermore, sport fisheries and catchment of drinking-water became quite impossible (Kuijken 1988).

Most of these developments form part of reallotments and hydraulic improvement plans, which still aim at increased productivity. In the context of the European Community's agricultural surpluses, it is debatable whether the subsidies concerned are still justified. It would be more rewarding to extend EC subsidies for farming in areas with a natural handicap to the last inundable valleys. In 1960, flooded areas in Flanders covered 35,000 ha; this has been reduced to less than 10 percent of that area in 1987 (Kuijken 1988). There are, however, some positive developments. Under the EC Directive on the conservation of wild birds, over 100,000 ha have been designated as special protection areas in Flanders, much of which is semi-natural grassland, and covering most of the important meadow bird breeding sites. Hopefully this will result in a better protection. In 1991, the Flemish government will start some pilot projects in these EC Bird Directive areas in which farmers will receive financial support for farming in a manner that is less harmful for breeding waders, following examples in *e.g.* The Netherlands and Germany. In 1990, a private nature conservation organization also bought a first reserve of special interest for meadow breeding waders in the Coastal Polders. This is at present the only meadow bird reserve in Belgium.

The protection of these wet meadows is not only important for the breeding birds. On an international scale the numbers breeding in Belgium may be very small indeed, but on migration these breeding areas are used by very large numbers of migrating birds.

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