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FIFTH MEETING OF THE STANDING COMMITTEE
24 – 25 June 2008, Bonn, Germany

Draft International Single Species Action Plan for the Conservation of the Black-tailed Godwit *Limosa limosa*

INTRODUCTION

This International Single Species Action Plan for the Conservation of the Black-tailed Godwit (*Limosa limosa*) is based on the EU Species Action Plan for the species and will supersede it upon approval by the Meeting of the Parties. This SSAP was commissioned to Orbicon – the same consultancy which compiled the EU plan. It has been drafted by Flemming Pagh Jensen (Orbicon), Arnaud Béchet (Tour du Valat) and Eddy Wimenga (Altenburg & Wymenga). Drafts of the plan went through rigorous consultations with experts and the AEWA Technical Committee. The latest draft is now with governmental officials at the Range States of the species for final consultations. Comments are expected by 15 July after which the final draft of the action plan will be produced .

The Action Plan follows the format for Single Species Action Plans approved by the AEWA 2nd Meeting of the Parties in September 2002.

ACTION REQUESTED FROM THE STANDING COMMITTEE

The Standing Committee is requested to principally approve this SSAP for submission to the 4th session of the Meeting of the Parties with the provision that the final draft will additionally reflect comments received from Range States.

Agreement on the Conservation of
African-Eurasian Migratory Waterbirds (AEWA)

International Single Species Action Plan for the Conservation of the Black-tailed Godwit

Limosa l. limosa &
L. l. islandica

Second draft

AEWA Technical Series No. 1X

May 2008

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Milestones in the production of the Plan:
Workshop: 1st October 2007 in La Rochelle, France (organised by International Wader Study group)
First draft: December 2007.
Second draft: May 2008

Geographical scope
This International Single Species Action Plan requires implementation in the following countries regularly supporting the Western Palearctic population of *L. l. limosa* and the population of *L. l. islandica* of the Black-tailed Godwit: Albania, Algeria, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Cameroon, Chad, Croatia, Czech Republic, Denmark, Egypt, Estonia, Ethiopia, Finland, France, Gambia, Germany, Ghana, Greece, Guinea Bissau, Guinea Conakry, Hungary, Iceland, Iran, Republic of Ireland, Israel, Italy, Kazakhstan, Kenya, Latvia, Libya, Lithuania, Mali, Mauritania, Montenegro, Morocco, Netherlands, Niger, Nigeria, Norway, Oman, Poland, Portugal, Romania, Russia, Senegal, Serbia, Sierra Leone, Slovakia, Spain, Sudan, Sweden, Tunisia, Turkey, Ukraine, United Kingdom, United Arab Emirates and Yemen.

Review
This International Single Species Action Plan should be reviewed and updated every 5 years (first revised in 201X).

Credits
Thanks to José Alves, Nicola J. Crockford, Jennifer A. Gill, Tómas G. Gunnarsson, Rowena H.W. Langston, Ernst Oosterveld, Sami Timonen, Nuno Cidraes Vieira and Leo Zwarts.

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CONTENTS

Preface

This International Single Species Action Plan for the Conservation of the Black-tailed Godwit Western Palearctic breeding population *Limosa l. limosa* and the *L. l. islandica* of Iceland was commissioned by UNEP/AEWA Secretariat and financially supported by Vogelbescherming Nederland (BirdLife Partner The Netherlands). It has been compiled by a team consisting of Flemming P Jensen of Orbicon (Denmark), Arnaud Béchet of Tour du Valat (France) and Eddy Wymenga of Altenburg & Wymenga (The Netherlands).

The Action Plan follows the format for Single Species Action Plans approved by the AEWA 2nd Meeting of Parties in September 2002.

Executive summary

The Black-tailed Godwit has a widespread but disjunct distribution in the Western Palearctic. Two subspecies occur in this area; *islandica* which breeds mainly in Iceland and *limosa* with a main breeding range from The Netherlands to Russia. The populations of both subspecies are migratory and have separated migration systems. In the European part of the migration system subspecies can mix. The species increased during the 20th century throughout Western Palearctic but while the *islandica* population has continued to increase in numbers and expanded its breeding range, nominate *limosa's* has shown range contraction and major declines in most key breeding areas during the last decades. Today the *islandica* population numbers *c*.25,000 pairs while the nominate population of the Western Palearctic totals *c*.110,000 pairs. About 50% of the nominate population breeds in The Netherlands. Due to the continuing decline of nominate Black-tailed Godwits, its status on the IUCN Red List of Threatened Species was changes in 2006 from "Least Concern" to "Near Threatened".

The nominate form breed almost exclusively in man-made habitats in particular semi-natural grassland and meadows. In The Netherlands and adjacent Germany and Belgium the majority breeds in intensively managed moist to wet grassland used for dairy farming. The *islandica* subspecies breeds in lowland areas, primarily on coastal marshes and dwarf-birch bogs.

Throughout its range nominate godwits face loss and degradation of breeding habitat mainly due to urbanisation and infrastructure development, conversion of grassland into arable land, loss of openness and increasing disturbance. This has lead to a widespread decline of the species, although the development of the eastern populations is generally poorly known. In the Netherlands and Germany, which is the core breeding area of western nominate godwits, the population is currently declining by 5% annually. Intensification of grassland management, landscape changes and increased predation has lead to a very low reproduction in this area and is believed to be that main cause of this decline. The productivity of west European *limosa* populations are also hampered by the current hunting in France which mainly target juveniles and further reduces the recruitment.

During migration and in the winter quarters Black-tailed Godwits have traditionally largely been restricted to estuaries and large inland wetlands. In recent decades, rice fields have become increasingly important during winter in West Africa and in Spain and Portugal during spring migration. This, combined with progressively earlier arrival of godwits to West Africa, due to failed breeding, has created conflicts with farmers, and locally resulted in a loss of 5-6% of adult birds due to hunting.

The goal of this plan is to restore 'Least Concern' status of the Black-tailed Godwit on the global IUCN Global Red List of Threatened Species. The short term objective is therefore to halt the current decline and contraction of distribution while the long-term objective is to restore all Western Palaearctic populations to a favourable conservation status. In addition, the plan aims at maintaining the favourable status of the *islandica* population.

To achieve the goal and objectives the plan aims to addressing the most urgent issues in a specific, measurable, agreed, realistic and time-bound process. Since many results and proposed conservation actions apply to more than one country, the countries have been grouped into four categories, combining status and threats of the godwit and the political situation of each country: (1) Non-EU Member states, (2) EU Member States with the exception of The Netherlands and neighbouring areas in Germany and Belgium, (3) The Netherlands and neighbouring areas in

Germany and Belgium and (4) Countries within the migratory and wintering area of the flyway, consisting of EU Member States, non-EU countries as well as countries on the Middle East and in Africa.

For these four regions the conservation priorities are:

- Prevent further breeding habitat loss and degradation
- Reduce chick-mortality and nest destruction where Black-tailed Godwit breed in intensively managed farmland
- Provide adequate protection of important Black-tailed Godwit staging and wintering areas
- Ensure legal protection of Black-tailed Godwit in all range states
- Eliminate illegal hunting
- Improve the understanding of the distribution and trend of the eastern breeding populations
- Improved the understanding of the migration and wintering areas of the eastern populations.

1. Biological assessment

General information	The Black-tailed Godwit is a large wader species which has a widespread but disjunctive distribution in the Palearctic, extending from Iceland across northern Europe to western Siberia. Two subspecies occur in Europe. The main breeding range of the nominate form *L. l. limosa* ranges from The Netherlands to Germany, Poland, Belarus, Ukraine and western Russia. Small populations occur in other European countries. Historical data suggest that this population increased during the 20th century in particular in The Netherlands and NW Germany, to reach a maximum population size between *c*.1940 and 1960. Throughout much of its range, this population has been in decline since then. Today about half of the population breeds in The Netherlands. The subspecies *L. l. islandica* breeds mainly in Iceland, and increased its breeding range and population over the last 100 years, especially between 1960 and 1990. This increase still goes on.
Taxonomy	The Black-tailed Godwit belongs to the *Scolopacidae* family (sandpipers and allies), the subfamily *Tringinae* (Godwits, Curlews and other sandpipers). In the Western Palearctic two subspecies occur: the nominate race *L.l. limosa* and *L.l. islandica*. The breeding populations east of the Yenisei River are separated as the subspecies *L. l. melanuroides*; these are not treated in this action plan.
Population Development	Since the first half of the 20th century, the nominate race has been adapting to man-induced changes of the landscape and has spread into agricultural habitats

	over much of West and Central Europe (Glutz von Blotzheim *et al.* 1977, Cramp & Simmons 1983). In recent decades, the North-West European *limosa*-population has declined in many areas, mainly because of intensification of grassland management and loss of breeding habitat. Between 1970 and 2000 declines occurred in several countries, collectively holding up to 85% of the European population, including The Netherlands, Germany, Poland and Russia (BirdLife International 2004, Hötker *et al.* 2007). In The Netherlands, which forms the stronghold of the European population, the population grew between 1920 and 1960 to reach a maximum of 125-135,000 breeding pairs (Mulder 1972). In the 1980s the population was estimated at 85-100,000 pairs (van Dijk 1983, Piersma 1986). The most rapid declines occurred in the 1970s and again since the mid-1990s (Altenburg & Wymenga 2000, Teunissen *et al*. 2004). The present annual decline is estimated at *c*. 5% on a national scale (Teunissen & Soldaat 2006), resulting in a current population of *c*. 55,000 pairs (SOVON, W. Teunissen pers. com.). This number may even be lower, as in Fryslân, where half of the Dutch population breeds the annual decline during 2000-2005 was 9% (Oosterveld 2006). Locally, however, there are populations in The Netherlands which increase or are stable (Oosterveld 2006). In Eastern and South-eastern Ukraine numbers were low around 1880-1890, but increased from *c*. 1920s to reach high numbers in 1930-1940s before it started to declined slowly in 1980-1990 and rapidly since 2000 (Banik & Vergeles 2003). In Western Ukraine including the Desna and Dnipro river basins godwits have also declined rapidly in the last decades, with breeding numbers halved in some areas over 10 years (Gorban pers. com, Voblenko pers. com). The wintering population in the western Sahel has decreased with 2/3 during the last 20 years, paralleling the development of the breeding population. Numbers in the Inner Niger River Delta (Mali) and the Lake Chad basin have remained more or less stable (Zwarts *et al.* in press.). Very little information is available regarding the development of the populations wintering further east, such as in the Sudd (Sudan) and in East Africa. The population of *L. l. islandica*, which basically consists of the breeding population in Iceland, has been increasing from estimated 2,000-3,000 individuals in 1900 (Gunnarsson *et al.* 2005a) to a mid-winter population of 50,000-75,000 birds (Gill *et al.* in press).
Distribution throughout the annual cycle	All populations from the Western Palearctic are migratory. The Icelandic and nominate godwits have clearly separated migration systems. The majority of adult nominate godwits in West and Central Europe leaves the breeding grounds in late June - July. The populations further east depart later, sometimes as late as September (Dementiev *et al.*1969). In areas with high densities, godwits roost communally after (and before) the breeding season (Piersma 1983, Gerritsen 1990). Following fattening for about two weeks most adult godwits from The Netherlands fly non-stop to the wintering areas in West Africa *(*Zwarts *et al*. in press.). The migration of juveniles lasts from July to September. The majority of juveniles are also believed to migrate non-stop to the winter quarters in West Africa, while a portion of them stop-over in the south-west of France; from an analysis of the EURING-data it appears that 85% of godwits recovered in France in July are juveniles (Zwarts *et al*. in

	press). The main wintering areas of the north-west European *limosa*-populations are situated in Senegal (Casamance) and Guinea Bissau and to a lesser extent in the large Sahelian floodplains: the Senegal River Delta and the Inner Niger River Delta. The godwits arrive in West Africa from late June to September where they mainly congregate in the rice field zone. Initially the godwits are found mainly on recently ploughed land and just sown seedbeds and parcels (July-September). Later on the godwits use the rice zone more extensively whilst feeding on animal and vegetal matter. During the harvest period (November-December) they basically feed on rice grains (Tréca 1975, 1984, van der Kamp *et al.* 2008). When the rice fields in South Senegal and Guinea Bissau are drying out and harvested by the end of December, the godwits start to migrate north (probably mostly non-stop) to utilise rice fields in Spain and Portugal (Kuijper *et al*. 2006, Sanchez-Guzman *et al.* 2007). Colour marking of individual birds has shown that the first *limosa* return to Spain and Portugal in December and numbers build up in January-February with some also reaching France (Hooijmeijer pers. com.). In March most *limosa's* have left Spain and Portugal, and numbers subsequently increase in France and in particular in The Netherlands (Hooijmeijer pers. com.). Godwits arrive in The Netherlands from late February to March with 50% of the population normally present by mid-March (Wymenga 2005a). Wetlands and rice-fields in Morocco were previously important stop-over for these godwits. In recent years the Moroccan wetlands have lost much of their significance, although 5,000 – 10,000 birds may still stop-over briefly in January-February (Green 2000, Kuijper *et al*. 2006). The eastern populations (east of Germany) seem to have a more eastern migration route with ringing recoveries from Italy and Turkey and to winter mainly in the Inner Niger River Delta, the Lake Chad Basin and possible the Sudd in southern Sudan and further south to Kenya. Some also winter in the Middle East. However, generally very little is known of the movements and winter quarters of these populations. Important staging grounds are found in Azerbaijan, Iran, Greece, Bulgaria (1,000-5,000 at Atanasovsko Lake, Kostadinova & Gramatikov 2007), Kazakhstan, Turkey (the Kizilirmak and the Ceyhan Delta (Doga Dernegi) and Tunisia. On spring migration large flocks have been recorded in March-April in wetlands of the East Mediterranean Basin (Turkey, Greece, Bulgaria, Cyprus), in the Middle East and around the Black Sea. In Kazakhstan concentrations of 3,000-8,000 birds have been recorded in 2005 and 2006 (BirdLife Int. 2007). In southern Belarus up to 2,000 have been recorded from the Pripyat floodplain in spring (P. Pinchuk in litt.). In Western Ukraine 600 – 1,100 have been observed on spring migration in the Tuiria, Stokhid floodplains and in the Ukrainian part of the Pripyat (Prypyat) floodplains (Gorban 1999, 2002). In southern and eastern Ukraine fewer godwits are recorded on spring migration. In autumn the numbers passing through Western Ukraine are usually lower than in spring with flock of up to 200 recorded in Volyn and Lviv regions (Gorban 1999, 2002). In the Danube Delta flock of 8,000 were recorded during autumn migration in the 1980s but in recent years numbers have decreased to 1,200 – 2,000 individuals, with the sharpest decline recorded during the last five years (Zhmud pers. com). In the south-central part of Ukraine flocks of up to 500 are regularly recorded in August-September in the Kinsburn Regional Landscape Park (Petrovich pers. com.) and in Karkinitska Bay, Crimea (Tarina pers. com.).

	The majority of godwits wintering in the Inner Niger River Delta in Mali most probably originate from these eastern populations (Zwarts *et al.* in press.). These godwits first occupy the fringes of the delta but subsequently tend to concentrate in the central delta when flood recedes. In late January –February they feed mainly on small bivalves for pre-migratory fattening. Departure is mainly in the second decade of March (Wymenga *et al*. 2002, Zwarts *et al.* in press.). Birds belonging to *islandica* initially migrate to England and France in September-October but by mid-winter most have left the UK, for France and in particular Spain and Portugal (Gill *et al.* in press, Triplet *et al.* 2007) with a few reaching Morocco (J. Alves pers. com.). Numbers of wintering *islandica* in Spain and Portugal have increased significantly since the 1960s, but fluctuate much between years (J. Alves pers. com.). During spring migration in March/April many *islandica* from Portugal and France first move to The Netherlands (Gerritsen & Tijsen 2003) or eastern England where they forage primarily on grasslands, before continuing to Iceland (Gill *et al.* in press). In Portugal, both *islandica* and *limosa* are present in winter. Although it is not possible to differentiate the proportion of the two subspecies, it is likely that the majority (50-70%) in January is *limosa.* Counts from the Tejo Estuary between early December and late February show a steady increase in numbers until the first week of February, when numbers can peak at 80,000 birds, suggesting the return of birds from "wintering" grounds further south.
Survival and productivity	In general, long term data on survival and productivity are lacking, in particular for the eastern *limosa*-populations. The annual adult survival of *islandica* has been estimated at 87-94% (Gill *et al.* 2001a). In a Dutch study from 1984-1987 the annual adult survival was 81.4%, with no significant survival difference between sexes (Groen and Hemerik 2002). A recent study of Roodbergen *et al.* (in press) suggests adult survival rates of western *limosa* and *islandica* of 0.97-0.98. Another Dutch study mentioned adult survival rates of 0.94 between 1994 and 2007 (Kentie *et al.* 2007). Recent colouring studies suggest annual survival rates of c. 81 – 96% (Both et al. 2006, J. Schröder in prep.), though national estimates from ring-recoveries suggest annual survival rates of c. 80% (van Noordwijk & Thomson 2008). Using EURING-data, completed with ringing data from the Dutch Centre for Avian Migration and Demography, Zwarts *et al*. (in press.) showed that the adult survival has increased over the past decennia. In The Netherlands chick survival decreased from 17-42% in the 1980s to 0-24% in 2003-2005 (Schekkerman *et al.* in press). In Germany, 0.91 fledging per pair was recorded (Bairlein & Bergner 1995) while a Dutch study from 1984-1987 showed a productivity of 0.58-1.18 fledged chicks per pair – lowest in cold and wet springs – with decreasing net productivity in the course of the study (Groen and Hemerik 2002). In The Netherlands reproductive success has declined dramatically from *c*. 0.7 chicks per pair per year in the 1980s to 0.1–0.4 chicks per pair per year in 2003-2005 (Schekkerman & Beintema 2007, Schekkerman *et al.* in press). This is probably far below the threshold for a sustainable population.

Life history	**Pre-breeding:**	**Breeding:**	**Feeding:**	**Post-breeding:**

	Highly gregarious. Flock size varies with the highest concentrations occurring at roosts in early spring when tens of thousands are found together (Snow & Perrins 1998).	In dispersed colonies and sub-colonies. Age of first breeding normally two years or older However, *limosa* may breed in the first year. According to Snow & Perrins (1998) laying in the West and Central Europe is from early to mid-April (mean laying date for first egg in The Netherlands is around 15 April) while further north in Iceland laying begins in late May. The single brood is found on the ground in short or fairly short vegetation. If lost early in the season some *limosa* produce second clutch. Clutch size is normally 4 (Beintema 1991). The incubation is 22-24 days.	Mainly invertebrates such as insects, annelids, earthworms and molluscs, small crustacean and arachnids (Snow & Perrins 1998). Populations wintering in West Africa mainly feed on plant material, in particular rice grains. Chicks of the *islandica* and *limosa* population feed mostly on invertebrates gleaned from vegetation (Gunnarsson et al. 2006; Schekkerman *et al.* 2007).	After breeding Icelandic godwits move to moulting sites in the UK, in particular the Wash, Humber and Dee estuaries. Continental godwits start moulting at least 2-3 primaries on breeding grounds, migrate south in suspended moult, and continue to moult in their African whereabouts (Timmerman 1985).
Habitat requirement	*Breeding* Originally mires, wet moor land, blanket bogs, flooded grasslands, river valley fens and marshy margins of lakes, damp grassy steppes and probably estuarine habitats. Some birds still breed in such habitats, especially in Iceland and eastern part of Western Palearctic. The core of the continental range is situated on clay, clay-on peat or peat soil (Wymenga *et al.* 2006). Wet or moist grassland is a feature of many of the lowlands that supports the majority of the breeding numbers in the countries surrounding the North Sea. In The Netherlands and North West Germany the population reached its maximum in the 1960s and 1970s in open, moist to wet, rather extensively used grasslands[1].			

[1] The term extensive agricultural use in this Action plan means in general a rather high ground water table (spring 20-30 below surface, winter 0-10 cm below surface or (ir)regularly inundated), an annual Nitrogen input of 50-150 kg N/ha and a first mowing or grazing date > 15th June, with normally 2-3 crops per annum and a short sward height at the onset

	The majority of the North West European population now breeds in open, secondary habitat: meadows, semi-natural grasslands and intensively managed grassland. Mown grasslands are selected over grazed pasture. In intensively managed grasslands in The Netherlands nest site selection is positively influenced by increasing ground water level (Wymenga *et al.* 2006, Verhulst *et al.* 2007), but substantial breeding densities are also possible at lower ground water levels (80-100 cm below surface level (Oosterveld 2006), depending on soil structure, spatial configuration of feeding and breeding habitats, and on grassland management. In agricultural grasslands, areas mown annually hold higher densities than areas with grazing only (e.g. in Denmark, Thorup 1998, in The Netherlands, Buker & Groen 1989, and in Sweden, Larsson 1976). In Hungary, Black-tailed Godwits prefer either extensive or intensive pastures depending on the biogeographical region considered (Baldi *et al.* 2005). In Dutch grasslands chicks strongly prefer tall but not dense grass (>15-20 cm), either not yet mown or re-grown after first cut (Schekkerman & Beintema 2007). In Iceland *islandica* breeds in lowland areas, primarily on coastal marshes and dwarf-birch bogs (Gunnarsson *et al.* 2006). The expansion from south-west Iceland (around 1900) to the major basins in the north and west (1920s-1940s) and then the east and north-east of Iceland (1970s-1980s) was characterised by an increase in the proportion of dwarf-birch bog sites occupied (Gunnarsson *et al.* 2005a). The lowland areas of Iceland have seen widespread drainage of wetlands and increases in numbers of hayfields since the 1960s, and godwits are now frequently recorded feeding on hayfields during the summer season (Gunnarsson *et al.* 2005a). *Non-breeding* The nominate race winter predominantly in open freshwater and brackish habitats south of the Sahara while *islandica* winters in estuarine habitats along the Atlantic coast from Britain south to Morocco (Beintema & Melter 1997). Most of these birds winter on "soft coasts", mainly estuaries and areas of inter-tidal mud, but substantial numbers of *islandica* winter on floodlands in Ireland (e.g. Delany 1996). These birds also feed in adjacent grassland as the tide limits the time they can feed on tidal mudflats and where prey are subject to strong seasonal depletion (Gill *et al.* in press). Mudflats are a key staging habitat in Iceland when the birds arrive in spring, especially in cold years (Gunnarsson *et al.* 2005b). Some *islandica* also use the Iberian rice fields in December-February. Post-harvest moist and flooded rice fields are important habitats for *limosa* in West Africa and in Portugal/Spain (Roux 1973, Tréca 1984, Altenburg *et al.* 1985, Bos et al. 2006). Godwits also winter in natural freshwater habitats, like the floodplains of the Senegal and Niger Rivers (Wymenga *et al*. 2002, Kuijper *et al*. 2006). On the Iberian Peninsula large concentrations use the rice fields adjacent to the Tagus Estuary in Portugal, and in the Sado estuary (Kuijper *et al*. 2006, Sanchez-Guzman *et al*. 2007); the birds feed on rice grains left after the previous harvest. Despite an increasing preference for rice fields, intertidal

of spring. Intensively used grasslands refer to a Nitrogen inputof above 250 N kg/ha/y, in general a first mowing or grazing date < 15th May, and a grazing density of 2-3 cows/ha. The vegetation of these grasslands contains few species and the sword height is much longer than in extensive grasslands.

	feeding (especially on *Scrobicularia plana* and *Nereis diversicolor*) and use of salt-pans remain important at the Tagus site (Moreira 1994), but the latter feeding behaviour may well refer to *islandica*. In extremely wet winters, a significant proportion of the birds in Portugal feed on pasture land and stubbles, which are partially flooded (R. Rufino pers. com.).

Table 1. Geographical distribution of Black-tailed Godwits during the annual cycle.

Breeding	**Migrating** *(July – September & January – May)*	**Non breeding visitor** *(July – March)*
Austria Belarus Belgium Czech Republic Denmark Estonia Finland France Germany Hungary Iceland Republic of Ireland Italy Kazakhstan Latvia Lithuania Netherlands Norway Poland Romania Russia Serbia Slovakia Spain Sweden United Kingdom Ukraine	Probably all countries in Western Palearctic	Albania Algeria Azerbaijan Bulgaria Burkina Faso Cameroon Chad Croatia Egypt Ethiopia France Gambia Greece Ghana Guinea Conakry Guinea Bissau Iran Republic of Ireland Israel Kazakhstan Kenya Libya Mali Mauritania Montenegro Morocco Netherlands Niger Nigeria Portugal Spain Senegal Sierra Leone Sudan Tunisia Turkey United Arab Emirates United Kingdom Yemen

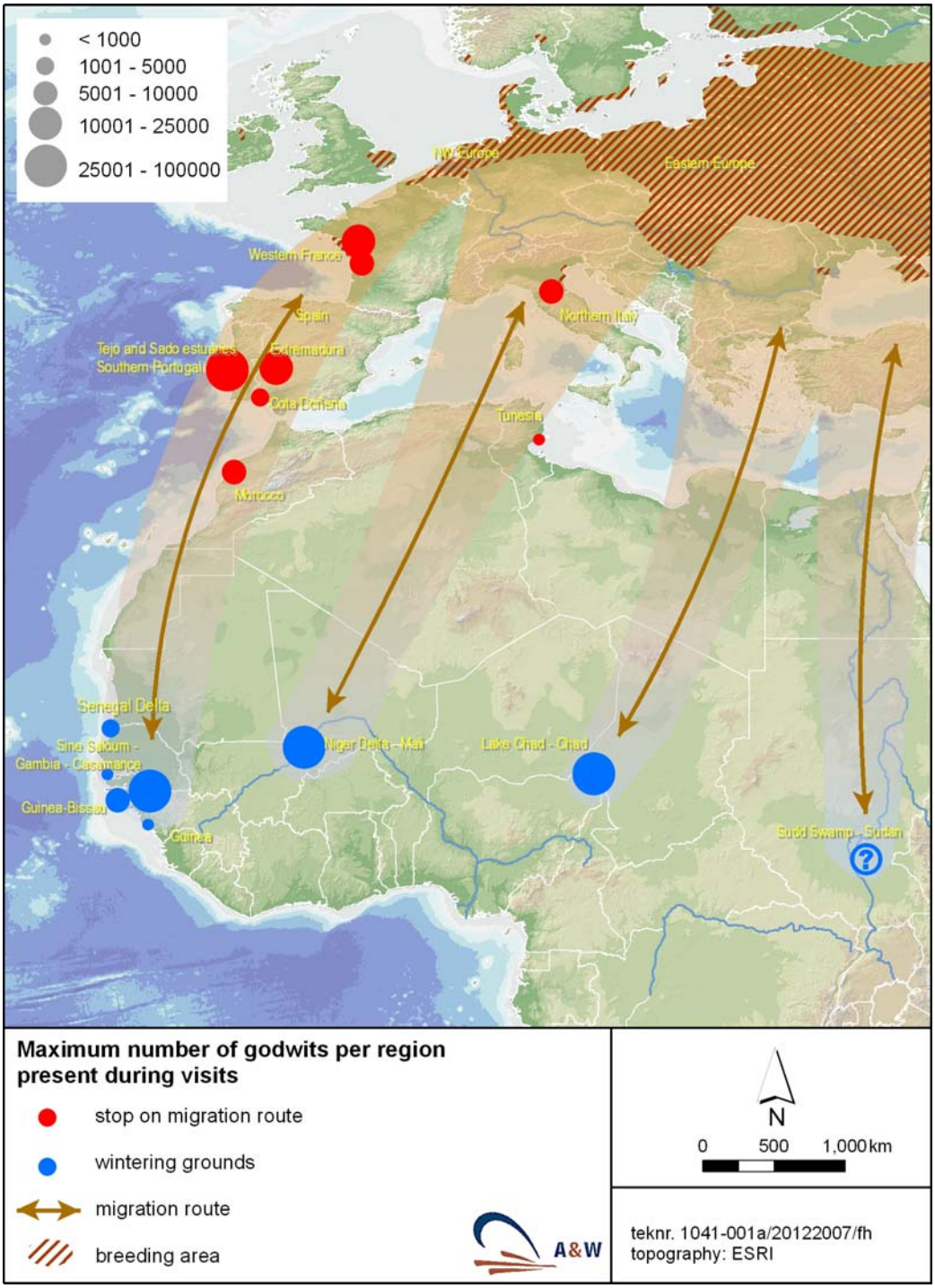


Figure 1. Breeding range, important stop- over sites and (known) main wintering areas of nominate Black-tailed Godwit Limosa l. limosa.

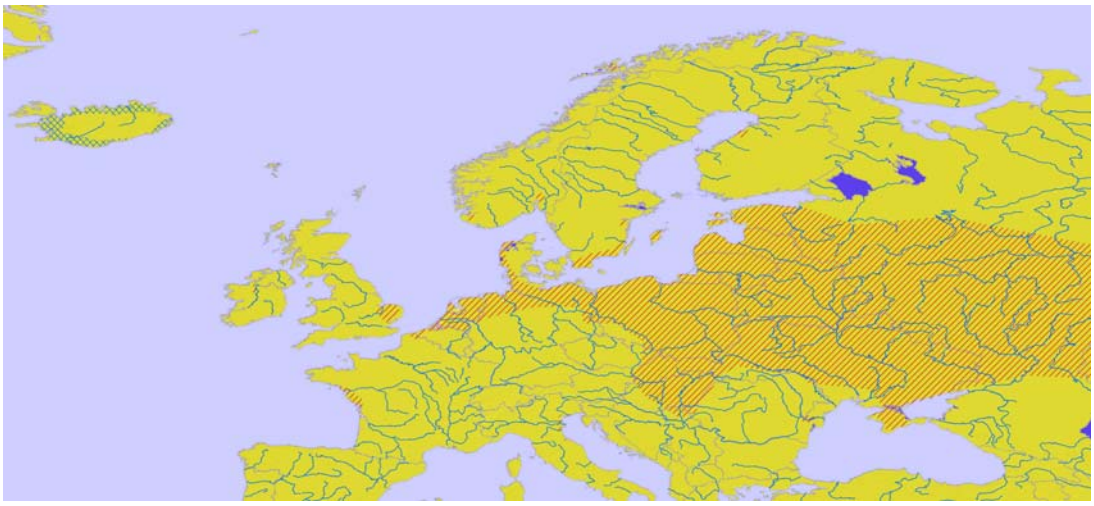


Figure 2. Breeding range of the West Palearctic population of the nominate form of Black-tailed Godwit Limosa l. limosa *(hatched brown) and the islandica subspecies* Limosa l. islandica *(hatched green).*

2.Available key knowledge

The most contemporary information on the numbers and trend for the Western Palearctic populations of the Black-tailed Godwit across its range is presented in Table 2 - 4.

Table 2. Numbers and trends for the Black-tailed Godwit Limosa l. limosa *in individual countries in the Western Palearctic*.

Country	**Breeding pairs**	**Quality**	**Year(s) of the estimate**	**Breeding Population trend**	**Baseline population** (year)	**Reference**
Austria	100- 160	1	1998-02	+ 2	1998	BirdLife Int. 2004
Belarus	6,000-8,500	3	2007	-1	1997	P. Pinchuk *in litt*. 2007
Belgium	1,100-1,300	1	2000-02	+ 1	1990	BirdLife Int. 2004
Czech Rep.	10 - 20	1	2000	- 2	-	BirdLife Int. 2004
Denmark	700 - 725	1	2000 - 02	- 1	1987	BirdLife Int. 2004
Estonia	500 – 1,000	2	1998	- 2	-	BirdLife Int. 2004
Finland	40 – 60	1	1998-2002	+ 2	1992	BirdLife Int. 2004
France	160 – 170	1	1997 - 2000	+ 1/+2	1989	BirdLife Int. 2004
Germany	4,300	2	2004	- 2	1990	Hötker *et al.* 2007
Hungary	400 – 1,500	2	1995 - 2002	F	-	BirdLife Int. 2004
Italy	10 - 12	1	2000	0	-	BirdLife Int.2004
Kazakhstan	Min. 1000	1	2006	-	-	Birdlife Int. 2007
Latvia	80 - 100	2	1990 - 2000	- 2	-	BirdLife Int.2004
Lithuania	300 - 400	1	1999 - 2001	F	-	BirdLife Int. 2004
Netherlands	c. 55,500	1	2007	-2	1990s	W. Teunissen *in litt.*
Norway	25	1	1990	-	-	Thorup 2005
Poland	5,000 – 6,000	1	1995 - 2000	- 1	-	BirdLife Int. 2004
Romania	100	1	1990 - 2005	+ 1	-	BirdLife Int. 2004, Muller, 2005, Botond Kiss & Marinov 2005,
Russia-Europe:	13,000-30,000	1	1990-2000	-2	-	BirdLife Int. 2004
- northwest	(2,000-7,850)		1990-2000	-	-	Thorup 2005
- northeast	(960 – 1, 350)		1991-2000	-	-	Thorup 2005
- central-west	(5,505-12,205)		1990-2000	-	-	Thorup 2005
- central-east	(3,065-5,250)		1992-1999	-	-	Thorup 2005
- south-southeast	(2,650 – 4,650)		1990-2000	-	-	Thorup 2005
Serbia	20 - 40	2	1990 - 2002	0	-	BirdLife Int. 2004
Slovakia	5 - 40	2	1980 - 1999	- 2	-	BirdLife Int. 2004
Spain	4 - 4	2	1998 - 2002	(F)	-	BirdLife Int. 2004
Sweden	100 – 250	1	1999 - 2000	- 1	-	BirdLife Int. 2004
UK	50	1	2006	+1	2000	J.A. Gill pers. com.
Ukraine	5,000-9,000	2	1990-2000	-2	-	BirdLife Int. 2004
Total	***c*. 110,000**					

Table 3. Numbers and trends for the Black-tailed Godwit Limosa l. islandica *in individual countries.*

Country	**Breeding pairs**	**Quality**	**Year(s) of the estimate**	**Breeding Population trend**	**Baseline population** (year)	**Reference**
Iceland	*c*. 25 000	1	2007	+ 1	-	T. Gunnarsson pers. com.
Norway (Lofoten)	40 – 100	2	1990 - 2003	(0)	-	BirdLife International 2004
Ireland	1 – 10	2	1988 - 1991	?	1989	BirdLife International 2004
UK (Shetland islands)	?					
Total	***c*. 25,000**					

Breeding population data quality:
1: Reliable quantitative data, 2 Incomplete quantitative data, 3 No quantitative data

Breeding population trend:
- 2 Large decrease, - 1 Small decrease, + 2 Large increase, +1 Small increase, 0 Stable, F Fluctuating.

Table 4. Numbers and trends of winter population of the Black-tailed Godwit Limosa limosa *in individual countries. For many countries trends are only indicative due to poor quality of data. The data mentioned refer in most cases to January-counts (mid-winter census).*

Country	Wintering population (individuals)	Quality	Year(s) of the estimate	Trend in numbers	Baseline population	Reference
Albania	314	1	1997			Gilissen *et al.* 2002
Algeria	200	3	2003			Samraoui B. (pers. com.)
Azerbaijan	3.200	1	2003	0		Solokha 2006
Bulgaria	8	1	1999			Gilissen *et al.* 2002
Burkina Faso	1,075	?	Mar 2003	-	-	African Waterbird Census
Cameroon	See Chad					
Chad (basin)	40,000	1	Jan 2007	+1?	Mid 1980s	B. Trolliet *in litt.*
Egypt	<50 ('rare')		1980s	-	-	Goodman & Meininger 1989
Ethiopia	800-900		1999-2000			Dodman & Diagana 2003
France	11,000-17,000 (9,520*)	1	1999	+ 2	-	LPO-Wetlands International 2005.
Gambia	<1,000	2	2000 - 2005	-2	1980s	Kuijper *et al.* 2006
Ghana	2,216		2000			Dodman & Diegana 2003
Greece	173	1	1999			Gilissen *et al.* 2002
Guinea Conakry	1,480	1	2001	-2	1990	Trolliet & Fouquet 2004
Guinea Bissau	40,000**	1	2005	- 2	1983	Kuijper *et al.* 2006
Iran	9,934	2	2007			Iran Dept of Environment 2007
Iraq	500-2,500	2	1975	-	-	BirdLife Int. 2007
Ireland	10,454*	1	1999	+ 1	-	Colhoun 2001
Israel	319	1	1999			Gilissen *et al.* 2002
Kenya	56		1999-2001			Dodman & Diegana 2003
Libya	4	1	2007			Etayeb *et al.* 2007
Mali	40,000	1	1985-2007	0/-1	1985	Wymenga et al. 2002, Zwarts et al. In press.
Mauritania	5000***	1	2006			Troillet *et al.* 1995, Triplet & Yésou 1998, Kuijper *et al.* 2006,
Morocco	5000		2005	-2	1980s	Kuijper *et al.* 2006
Netherlands	148*	1	1999	(F)	-	Gunnarsson *et al.* 2005a
Niger	215	?	2001	-	-	Dodman & Diegana 2003
Nigeria	> 5,000	?	1990s	-	-	Zwarts *et al.* in press
Portugal	22,500 – 56,000	1	1993 - 2005	+ 1	-	N.C. Vieira *in litt.* 2005, D. Tanger *in litt.* 2005
Senegal	10,000 – 20,000****	1	2006	-2	1980s	van der Kamp et al. 2008. Database Wetlands International
Sierra Leone	1,000 – 1,500	1	Mid-1980s	-2*****	1980s	Tye & Tye 1987
Spain	11,000 – 61,000	1	1990 – 2001	- 2	-	BirdLife International 2004
Sudan	No data					No recent information
Tunisia	1,008	1	2007			Azafzaf & Feltrup-Azafzaf 2007
Turkey	1,000 – 1,500	2	1991 - 2001	0	-	BirdLife International 2004
United Arab Emirates	36	1	1999			Gilissen *et al.* 2002
UK	11,577*	1	1999	+ 2	-	Gunnarsson *et al.* 2005a

Yemen	160	1	1997			Gilissen *et al*. 2002
Total	**[250,000 – 270,000[1]]**					

Wintering population data quality:
1 Reliable quantitative data, 2 Incomplete quantitative data, 3 No quantitative data

Wintering population trend:
+ 2 Large increase, + 1 Small increase, - 2 Large decrease, - 1 Small decrease, 0 Stable, F Fluctuating.

* Estimated number belonging to the *islandica* subspecies.
** This estimated is based on the ratio of birds (compared to 1980s) as well as density counts. The number of wintering birds may be (substantially) higher (Kuijper *et al.* 2006).
*** Includes basically birds at Senegal River Delta incl. Senegalese part. Today, more inland wetlands reveal irregularly 10s to 100s of godwits, incidentally up to more than 3000 birds (i.e. Lac d'Alèg 3112 birds, 19 Jan 1996). One recent saltwater record: 360 birds, 22 Feb 2004, Iwik Bay (Banc d'Arguin; database Wetlands International).
**** refers to the estimate for southern Senegal including Sine Saloum and Casamance. For Senegal Delta, see Mauritania.
***** supposed decline since 1980s as observed in main Atlantic wintering areas in Sub-Saharan West Africa.

[1] It should be noted that there is considerable redistribution of populations during the non-breeding season, and, therefore, simply adding peak counts from each country cannot give the international population estimate. NB. No data are available from the Sudd (Sudan) which potentially is an important wintering area.

3. Threats

This chapter gives an overview of threats that are believed to have a negative impact on the West Palearctic Black-tailed Godwit populations in their breeding areas, during migration and in their wintering quarters.

Overall, the threats can be subdivided into two main categories:

- factors, which directly affect population size, through increased mortality of chicks and adult birds (including nest destruction);
- factors, which indirectly affect population size, through loss of suitable habitat and disturbance by other environmental conditions.

To describe the importance of the threats to the Black-tailed Godwit population, the following categories are used:

Critical*:* a factor causing or likely to cause very rapid declines (>30% over 10 years);
High: a factor causing or likely to cause rapid declines (20-30% over 10 years);
Medium*:* a factor causing or likely to cause relatively slow, but significant, declines (10-20% over 10 years);
Low: a factor causing or likely to cause fluctuations;
Local: a factor causing or likely to cause negligible declines;
Unknown: a factor that is likely to affect the species but it is unknown to what extent

3.1. Factors, which directly affect population level (increased mortality)

3.1.1. Nest destruction and increased chick-mortality by mowing of grasslands

Importance: critical

A very low chick survival is generally believed to be the driver of the decline of the large Dutch population (Schekkerman 2008, Schekkerman & Müskens 2000, Schekkerman & Beintema 2007, Schekkerman *et al.* submitted). The low survival is caused by several factors but massive, early and fast mowing of the intensively managed grassland is probably the principal factor. Since the 1970s the first mowing advanced, driven by drainage and the use of fertilizers, and is now taken place in the first weeks of May, in some years starting even in the end of April. This has had a dramatic effect on Black-tailed Godwit productivity as large numbers of nests are lost and chicks killed during the mowing (Wymenga 1997, Kleefstra 2007). Loss of nests and chicks due to mowing is probably mainly a problem in The Netherlands and neighbouring Germany.

3.1.2. Nest and chick predation

Importance: high (locally critical)

Losses of nests due to predation has increased in The Netherlands by a factor 2.5 between the 1980s and in the 1990s (Teunissen & Willems 2004) and accounts for 60% of all reproductive losses of Black-tailed Godwits (Teunissen *et al.* 2005). In another Dutch study a chick survival of only 0-24% was recorded during 2003-2005 (average 11%, compared to 17-42% in the 1980s), mainly due to predation (Schekkerman *et al* in press). Predation may be enhanced by intensive farming practises (Schekkerman 2008). In The Netherlands the numbers of Red Fox, Stoat, Buzzard and Grey Heron have increased in the godwit breeding areas (Schekkerman *et al.* in press). Important causes behind these processes is a slowly but profound change of landscape

through drainage, road construction (opening up of relative remote polder areas) in combination with a loss of openness. In the intensively used agricultural grassland, such as in The Netherlands, the openness of grassland habitat is mainly lost due to urbanization of the countryside and tree planting along roads. This loss of openness has lead to the (re)colonisation of the meadow landscape by several predator species. Although the consequences of these landscape changes to godwit breeding populations have been documented mainly in The Netherlands (Wymenga *et al.* 2006, see above), this is believed to be a major problem for all populations of *L. l. limosa* in Western Europe. Apart from urbanization loss of openness can also be a result from vegetation succession and/or land abandonment, being widespread in many parts of the breeding range of the nominate form.

3.1.3 Trampling loss

Importance: medium

The presence of cattle and horses during breeding season on floodplain meadows leads to destruction of many clutches and chicks of many waterbirds, including Black-tailed Godwits. For instance, trampling in intensively grazed meadows is a problem in The Netherlands (Beintema & Müskens 1987), although it probably is declining as cattle are increasingly kept out of intensive grasslands which are mowed instead (Schekkerman pers. com.). The scale of this problem in a wider population context is unknown but although it has been be assigned to the population in The Netherlands it appears likely to be a potential threat to all populations breeding in farmland. The risk of trampling losses depends on cattle density and the duration of grazing. In Ukraine, the risk of trampling increases in years with a cold spring (Gorban pers. com.) In some areas in The Netherlands protective devices are being placed over nests by volunteers, in an attempt to save as many clutches as possible. In Fryslân, a core breeding area for meadow birds, hundreds of volunteers are involved in this practice (Roodbergen *et al.* in press).

3.1.4. Hunting

Importance: medium (western population of *limosa*) / *unknown* (eastern populations)

Within the European Union (and in Western Europe) the Black-tailed Godwit is legally hunted only in France. Hunting is closed from 1 February to 28 August, thus outside the spring and post-breeding migration. Further east this species is hunted in Serbia, Ukraine and in Belarus where also spring hunting in May is allowed.

In the current situation (2000s) hunting during migration seems not to have a significant impact on the western *limosa* population; using ringing recoveries Zwarts *et al.* (in press) showed that the hunting pressure in Europe decreased considerably over the last 15 years. This is mainly achieved through closure or shortening of the hunting season during migration (Italy, France and other countries) and better protection of staging sites along the flyway. There is no proper information on the annual bag size of the western *limosa* population in France; detailed information on age, monthly distribution of shot birds and locations are also lacking. Trolliet (2006) estimates 200-300 *L.l. limosa* - birds annually being shot (an estimated annual hunting bag for *L.l. islandica* is lacking). These birds are presumably most juveniles, as (1) spring migration occurs in February – March when hunting is closed, and (2) the majority of adult *limosa* godwits in West and Central Europe leaves the breeding grounds in late June - July and pass France before the hunting season start on 28 August, while during post-breeding migration adults largely pass France in a non-stop flight.

The high adult survival rate of *c.* 0.81-0.96 recorded among Dutch breeding birds (Both *et al.* 2006, Kentie *et al.*2007, van Noordwijk & Thomson 2008) suggest little mortality other than the hunting that takes place in the wintering area in West Africa (see below). An estimate of the impact of hunting on the annual recruitment is harassed by lack of proper parameters and can only by suggestive. With an estimated breeding population of 55,500 pairs in The Netherlands (Table 2) and an average annual reproduction of 0.2 per pair (Schekkermann *et al.* 2005) on average

11,000 juveniles would leave the breeding areas annually. An annual hunting bag of 200-300 birds (if largely juveniles) would comprise 1.8-2.7% of the annual reproduction.
The number of birds shot in Eastern Europe (Serbia, Ukraine and Belarus) and belonging to the eastern *limosa* population is unknown.

Today, increasing numbers of failed breeders of the Dutch population leave the breeding ground early and return to south Senegal in late June – July. Here they feed on sown or just planted rice fields, either by eating rice kernels or trampling plants (Tréca 1975, 1984). The alleged crop damage leads to conflicts with local farmers, who shoot the godwits to chase them away from rice fields. Van der Kamp *et al*. (2008) estimate that in the southern Casamance in 2006 and 2007 c. 5% of the local population of staging godwits was shot; this estimate is based on surveys of godwits in the rice fields in August-September 2006 and 2007 and 104 interviews with farmers. The situation in South-Senegal might also apply to Guinea Bissau, as has been suggested by farmers in the north of this country (van der Kamp unpubl.). In Mali - and neighbouring countries - godwits are not intentionally pursued, but shooting by fishermen operating near dense flocks of this species has been observed. Bird-netting takes place on a large scale - mainly for Garganey and Ruff, which very incidentally may involve godwit by-catch. (Zwarts *et al*. in press).

Summarising, the impact on hunting appears to have declined in Europe during the last decade. The number shot in France in autumn is most probable not significant at population level. However, since it seemingly involves mainly juveniles it leads to a direct decrease of the annual reproduction of the western *limosa* population, of which the reproduction is already below a sustainable level. This point should therefore be taken very seriously. The hunting in West Africa by local farmers to avoid alleged crop damage needs further investigation.

3.1.5. Pollution

Importance: unknown
Very little is known on how pollution affects birds and the possible contamination of birds by chemicals. Indirectly, there is some evidence for pollution of habitats. A recent study in The Netherlands showed that heavy metals soil contamination in habitats of breeding Black-tailed Godwit resulted in 23% lower population growth of the earthworm *Lumbricus rubellus*, one of their main prey for godwits and may lead to a less optimal foraging conditions (Klok *et al.* 2006).

Evidence from studies of snipes (Beck & Granval 1997) suggest that ingestion rates of lead shot by some wader species may be as high as amongst Anatidae, but there have been no specific studies of Black-tailed Godwit to date. Sub-lethal PCB levels have been found in this species (Denker & Buthe 1995), but there have been few reports of this species being directly affected by pollution. It is unknown to what extent the use of chemicals in rice fields is impacting foraging godwits (for instance see Mullié *et al*. 1989).

3.2. Factors, which indirectly affect population level (habitat loss and disturbance)

3.2.1. Loss of breeding habitat

Importance: high
Throughout continental Europe breeding sites of godwits on agricultural habitats are being lost (Tucker & Heath 1994, Tucker & Evans 1997), in particular outside protected areas. This habitat loss is caused by several developments, from which urbanization and fragmentation of the remaining grassland by the construction of roads, cycle-paths etc. (under influence of urbanization) are most important. For instance, the area of open grasslands, which form the main breeding habitat for the Dutch core population, has been reduced by 24% since the 1980s

(Wymenga *et al.* 2006). Urbanization and road construction in open polder areas may result in a significant reduction of the number of breeding pairs on a regional level, as has been shown in an impact assessment by Wymenga (2005b). Loss of breeding habitat in The Netherlands still goes on, although in some provinces compensation measures are now compulsory (for instance in the provinces of Fryslân and Overijssel). Other factor involve the change of permanent grassland into temporary grassland or maize, which – because of draining - increasingly occurs in former optimal breeding areas like wet and moist grassland areas on peat soils.

In Belarus and Ukraine (and probably also in parts of Russia) important breeding habitat was lost when semi-natural meadows along rivers (floodplains) were ploughed for agricultural use (P. Pinchuk in litt., Banik & Vergeles 2003). This was in particular widely conducted during the second half of last century, but still takes place in Belarus. In Hungary and Ukraine, livestock abandonment following communism collapse continues to participate in pasture abandonment and afforestation (Baldi *et al.* 2005). These processes often start with as a gradual degradation and ends up in permanent loss.

3.2.2 Degradation of breeding habitat

Loss of openness
Importance: high
Black-tailed Godwits, and other meadow-breeding birds (for instance Sky Lark), in general have a high preference for open habitats. As a result godwits avoid areas with lines of trees and ascending buildings and the widespread urbanization, vegetation succession and/or land abandonment and spreading of settlements into farmland areas leads to significant fragmentation and degradation of essential breeding habitat. This preference for openness is possibly related to predation risk (see 3.1.2) and disturbance, but partly depends on habitat quality.

The distance on which impact of trees and buildings on the breeding densities of godwits can be measured varies from 150-250 m or more, depending on local situation. Oosterveld (2006) has found that the population development of Black-tailed Godwits in 60 meadow bird reserves in Fryslân (The Netherlands) was negatively correlated with the openness of the landscape in combination with densities of predators within 1 km distance of the reserves. Restoring openness has proven to be a good tool to improve breeding habitat quality.

The loss of openness also lead to the (re)colonisation of the meadow landscape by several predator species that can have a serious impact on the chick production (see 3.1.2)

3.2.3 Changes of the hydrological regime and lowering water tables

Importance: high
Changes of the hydrological regime can affect godwits at several levels. The widespread elimination of spring flooding of meadows (which create essential moist conditions during breeding) and changes to the groundwater level of grassland appear particularly important to the godwits compared with most other waders. In the past, the lowering of (ground) water levels have been instrumental in the process of agricultural intensification, facilitating fertilisation, a more rapid grass growth in spring and early moving (3.2.4).

The constructions of dikes that reduce spring flooding of breeding areas appear to be a widespread problem in Eastern Europe. For instance in Belarus, large areas of floodplain meadows are reduced or lost due to embankment and canalization of the rivers to avoid floods (P. Pinchuk *in litt*.), as a result of which they become too dry for godwits without annual flooding. Drainage and

lack of flooding on peat soils lead to an increased mineralization and subsequent vegetation succession, thereby losing the open grassland character. These processes also occur in some parts of Ukraine, especially in the south and west. Along the Dnipro, Dniester and Pripyat rivers the floodplains have become dry and covered with overgrowth of shrub and reeds following the canalisation of the rives for agricultural purposes in the 1960s (Gorban & Flade 2000).

In The Netherlands godwits have shown to choose nest sites in areas with a relative high groundwater level or moist soil, as such areas will remain wet in March-June and thereby secure food availability for the chicks (Beintema *et al*. 1995, Kleijn *et al*. in prep.) and adults. The driving determinant for birds in relation to the hydrological regime seems to be the availability and exploitability of food resources. On permanent wet soils (and regularly flooded) benthic fauna is marginally present (Ausden *et al*. 2000). Exploitability of benthic fauna (rain worms) depends on soil penetration, which is illustrated by the situation in the very dry spring of 2007 (hardly any precipitation between 22 March and 8 May) in The Netherlands: several Godwit-pairs breeding on clay soils left the breeding area by the end of April as the top layer became impenetrable for a godwit-bill. On the contrary, locations which were partially inundated for the sake of meadow birds attracted more godwit-pairs than usual (own observations). The optimal (ground) water level for Black-tailed Godwits therefore depends on soil type, soil structure and the hydrological situation.

3.2.4 Intensification of grassland management

Importance: high/critical
The widespread intensification of grassland management in many parts of the godwits range has a significant negative impact on its breeding success. However this is a particular problem in The Netherlands and adjacent NW Germany where 60-85% of the population (depending on the region) breeds in intensively exploited grasslands (Teunissen & Soldaat 2006). Here, the intensification has been more radical than in other parts of Europe and includes drainage and lowering water tables (see 3.2.3.), reseeding of grasslands and increased use of fertilisers (>>250 kg N/ha/y), all resulting in a particularly fast growth of the sward and opening for early mowing and/or grazing in high densities. Today large scale mowing often starts by the end of April or at the beginning of May. This result in a very poor breeding success and many failed breeders (Wymenga 1997, Kleefstra 2007, Schekkerman & Müskens 2000) – and chick mortality (Schekkerman 2008; see 3.1.1). There are indications that intensively exploited grassland is also low quality feeding habitat for chicks (Kleijn *et al.* in prep.). For instance, Schekkerman & Beintema (2007) found that in re-growth after the first cut, chicks had a 31% reduced prey intake rate compared to herb rich, low productive grassland. Despite large-scale Agri-Environment Schemes in The Netherlands – being effective on a large scale from the 1990s onwards – the decline has not been stopped (Kleijn & Sutherland 2003, Verhulst *et al*. 2007).

The recent enlargement of the European Union to Eastern Europe countries threatens to shift largely extensive pasture practices into intensive ones due to inappropriate balance between production and environmental incentives (Baldi *et al.* 2005). In some places the socio-economic developments in landownership and agriculture may lead to abandonment of former floodplain meadows (3.2.5). Also, the general developments in agriculture in Western Europe with larger farms may leave few possibilities for breeding meadow birds, unless this scaling-up goes hand in hand with a more extensive land use or other measures.

3.2.5 Extensification of land use / grassland management

Importance: medium-high

The abandonment of farming activities in meadows often lead to rapid vegetation succession including loss of openness and will within a few years make important godwit breeding habitat unsuitable for the species. The widespread reduction of haymaking and cattle grazing in many parts of Central and Eastern Europe leading to overgrowing of open (floodplain) meadows by perennial vegetations (*Magnocaricion, Phragmitatea*) and shrubs therefore have serious implications for the godwits.

3.2.6 Burning of the vegetation

Importance: low

Burning of dry meadow vegetation in spring is widespread in Belarus (P. Pinchuk in litt.*)* and Russia (O. Thorup pers comm.) and also in neighbouring Ukraine. This practice has serious consequences for all birds breeding on the ground as the fire not only destroys nests and eggs but also changes the habitat and leads to decrease of food recourses (invertebrates).

3.2.7 Disturbance

Importance: high

The Black-tailed Godwit is generally rather sensitive to disturbance during the breeding season (e.g. Frikke 1991). This includes agricultural and recreational activities, such as fishing in rivers in breeding areas or cycle paths near breeding areas. It appears especially susceptible to road traffic disturbance (Reijnen *et al.* 1996). De Molenaar *et al.* (2000) also found that street lighting had a negative impact on the breeding densities up to of 250-300 m from a highway. The construction of more and more roads, cycling paths or recreational facilities in the open country may therefore have a significant impact on breeding densities. At present this is probably mainly a problem in Western Europe, severely reducing habitat quality.

Godwits may also be disturbed during migration and in the winter quarters. In particular disturbance from hunting (of other species) and recreational activities (especially near concentration and roosts) appears to be important problems but in Bulgaria also salt production in wetlands disturb the staging godwits. However, while wintering in the UK and in rice fields in Portugal and southern Senegal the species seems to habituate to normal human routines and allow people to come close (N. Cidraes-Vieira in litt., Gill *et al.* 2001b, van der Kamp *et al*. 2008).

3.2.8. Loss and degradation of habitat of stop-over sites and wintering areas

Importance: high

On migration and during winter Black-tailed Godwits often concentrate in large numbers in few sites. This makes the species particularly vulnerable to habitat change in the stop-over sites and key wintering areas. For instance, wetlands in Morocco used to be an important staging areas during spring migration with over 10,000 godwits regularly observed at the coastal wetlands up till 1980 (for example Zwarts 1972). Since then loss and degradation of wetland sites such as Merja Zerga and the Loukos Delta have caused a decline in these areas. Also former major staging/stopover sites in France appear to have lost much of their importance, although other reserves with specific management still attract many Godwits (for example Moëze). Hydrological changes (drainage) in Marais de Poitevin during the last decades and conversion of grasslands into maize fields have led to loss of habitat and godwit numbers. Up to 40,000 – 50,000 birds used to be counted during the early 1980s whereas since the 1990s totals roughly fluctuate in a range around 10% of former peak levels. In the Basse Vallée d'Angévines (near Angers) planting of trees in the river bed may lead to degradation and even loss of important spring habitat (open flooded pastures).

Birds belonging to the continental population now use a few mostly man-made sites in Spain/Portugal during the spring migration, as well as a number of additional sites in France. In Portugal/Spain a large part of the population assembles in January-February on two rice field complexes, which makes the species vulnerable. Here future changes in land use and urban planning may possess serious threats to some of the staging/wintering sites. For instance, the Tagus estuary in Portugal is threatened by plans for a new airport just a few km away that may lead to collisions, disturbance and loss of habitat of this key staging/wintering area (P. Lourenço pers. com.).

Also the eastern population faces loss and degradation of stop-over sites and wintering areas. In Turkey, the Ceyhan Delta hydrological regime and its intertidal habitats which are important stop-over sites for eastern godwits are threatened by land claim and overgrazing as well as the industrial expansion linked to the Baku-Tbilisi-Ceyhan pipeline (Eken *et al.* 2006).

In West Africa several wetlands important to wintering godwits have been significantly reduced by embankment and canalization of rivers in the framework of a flood control strategy aiming at irrigation, energy production and/or sufficient water supply during the low water period (such as the Lower Senegal River). The controlled flooding and reduction of the floodplain of the Senegal Delta has in the past significantly reduced the importance of the sites as wintering areas for Black-tailed Godwits (Zwart *et al.* in press.). Wintering numbers are in the order of 3,000-5,000 birds, with higher numbers in the early 1990s (Triplet & Yésou 1998). Given the much smaller population in the 2000s, habitat availability seems not to be a bottleneck in the winter quarters (Kuijper et al. 2006).

Figure 3a. Problem tree for the Western Palearctic populations of Black-tailed Godwit (L. l. limosa) – I: Direct Threat.

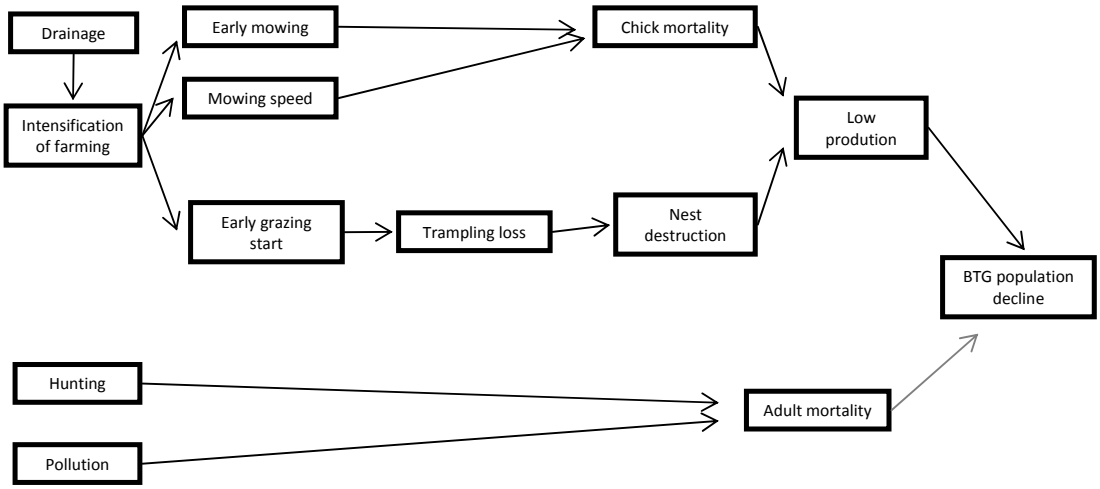
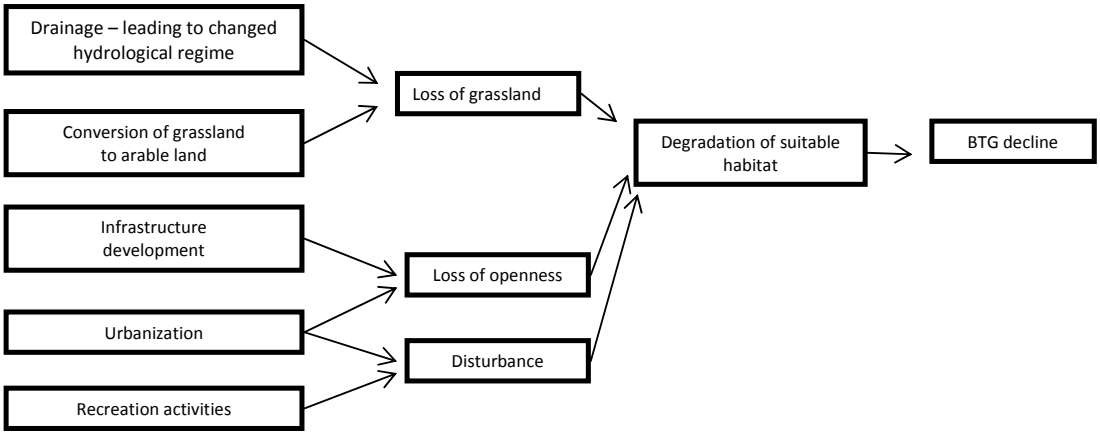


Figure 3b. Problem tree for the Western Palearctic populations of Black-tailed Godwit (L. l. limosa) – II: Indirect Threats.



4. Policies and legislation relevant for management

4.1. International conservation and legal status of the species

Table 5 gives the status of the Western Palearctic populations Black-tailed Godwit under the main international legislative instruments for conservation.

Table 5. International conservation and legal status of the Black-tailed Godwit Limosa limosa.

World Status[1] (Criteria)	**European Status[2]**	**SPEC category[3]**	**EU Birds Directive Annex**	**Bern Convention Annex**	**Bonn Convention Annex**	**African-Eurasian Migratory Waterbird Agreement**	**Convention of International Trade on Endangered Species**
Near threatened	Vulnerable	2	Annex II/2	Appendix III	Appendix II	Column B 2c[4] except *islandica* population: Column A 3a[5]	Not listed

Besides international agreements, the Black-tailed Godwit is included in Red Data lists of individual countries (see Table 6).

4.2. National conservation and legal status

The status in national red-data books and hunting status is shown in Table 6

Table 6. National conservation and legal status

Country	Status in national Red Data Book	Legal protection from killing	Year of protection status	Highest responsible authority
Albania	-	?	-	National government
Algeria	-	?	-	-
Austria	-	Yes	-	National/federal government
Azerbaijan	-	?	-	-
Belarus	-	No	-	National government
Belgium	-	Yes	-	National government

[1] BirdLife International/IUCN Red List assessment. - 2007 IUCN Red List Category
[2] BirdLife International (2004).
[3] BirdLife International (2004). - SPEC 2: Species whose world populations are concentrated in Europe, but which have an unfavourable conservation status in Europe.
[4] Showing significant long-term decline
[5] Concentration onto a small number of sites at any stage of their annual cycle

Bulgaria	Least Concern	Yes	2002	National government
Croatia	Least Concern	Yes	-	National government
Czech Republic	-	Yes	-	National government
Denmark	Vulnerable	Yes	1982	Ministry of Environment
Egypt	-	?	-	-
Estonia	-	Yes	-	National government
Finland	-	Yes	-	National government
France	-	No[1]	-	Ministry of Environment
Germany	-	Yes	-	National/federal government
Greece	-	Yes	-	-
Guinea Bissau	-	?	-	-
Hungary	-	Yes	-	National government
Iceland	-	Yes	-	National government
Iran	-	?	-	-
Iraq	-	?	-	-
Rep. Ireland	-	Yes	-	National government
Israel	-	?	-	-
Italy	-	Yes	1997	National government
Kenya	-	?	-	-
Latvia	-	Yes	-	National government
Libya	-	?	-	-
Lithuania	-	Yes	-	National government
Mali	-	?	-	-
Montenegro	-	?	-	-
Netherlands	Sensitive	Yes	-	National government
Norway	-	Yes	-	National government
Oman	-	?	-	-
Poland	-	Yes		National government
Portugal	-	Yes	-	National government
Romania	-	Yes		National government
Russia	-	?	-	-
Senegal	-	Yes	-	Ministry of Environment and Nature Protection
Serbia	-	No	-	-
Slovakia	-	Yes	-	National government
Slovenia	-	Yes		National government
Spain	-	Yes	-	-
Sweden	-	Yes	-	-
Tunisia	Vulnerable	Yes	-	-
Turkey	-	?	-	National government
United Arab Emirates	-	?	-	-
Ukraine	Not listed	No[2]	-	National government
United Kingdom	-	Yes	-	National government
Yemen	-	?	-	-

[1] National open season from 28 Aug – 31 Jan, Regional season 7 Aug to 31 Jan (2004/2005 season).

[2] Hunting season from second Saturday in August to last Monday in December or first Monday in January. It is currently considered to remove the species for the list of huntable species in Ukrania due to the population decline.

5. Framework for action

This section of the plan initially summarises the conservation status of the Western Palearctic populations of Black-tailed Godwit populations and set the overall priorities for the Single Species Action Plan. In section 5.2 the purpose of the plan is described with the goals identified and defined, targets set and means of verification of its implementation outlined.

5.1 Priority statement

The two subspecies of Black-tailed Godwit that breed in the Western Palearctic (*Limosa l. limosa* and *L. l. islandica*) have shown contrasting population developments over the last decades. While the population of *L. l. islandica* has increased significantly in numbers and expanded its breeding range, the *Limosa l. limosa* has shown range contraction and major declines in most key breeding areas. For this reason the actions in breeding areas described in this chapter will focus on the recovery of the nominate form. Many important staging areas and wintering sites used by godwits belonging to both subspecies are threatened in one way or the other and the actions for stating and wintering areas therefore apply to the populations of both subspecies.

The nominate form of the Black-tailed Godwit has a large breeding range across the Western Palearctic consisting of many more or less isolated populations. It is well established that several of these populations differ in behaviour and should be treated as separately. For instance, due to a unique genetic variation of the godwits breeding in the Baltic basin and especially on the island Gotland in Sweden it has been suggested that these areas qualify as a "conservation unit" (Johansson 2001). The strong preference for human managed habitats during breeding, migration and in the winter quarters in particular by the Dutch populations points to another separate "conservation unit" and suggests a general high genetic variation of the species. For practical reasons the unique population in The Netherlands and neighbouring areas in Germany and Belgium will be considered separately in the context of this plan. However, when national or local management prescriptions are to be developed for the godwits throughout the Western Palearctic, it is essential to take into account the unique specialisations of the population in question.

Nominate Black-tailed Godwits of Western Palearctic breed almost exclusively in man-made habitats or habitats modified by man. In most of its range it is associated with semi-natural grassland and meadows while in The Netherlands and adjacent areas in Germany and Belgium the majority breeds in intensively managed open, moist to wet grassland used for dairy farming. Throughout its range the Black-tailed Godwit is and has been facing a loss and degradation of breeding habitat due to urbanisation and infrastructure, conversion of grassland into arable land, loss of openness and in some areas increasing disturbance. With exception of some marginal populations (for instance in France and the UK), this has lead to a widespread decline (although the development of the eastern populations is generally poorly known). The intensification of grassland management in The Netherlands and adjacent areas of Germany, often in combination with an increased predation, has lead to a very low annual reproduction, and are the main causes for the ongoing decline of about 5% per year of the Dutch core population.

During migration and in the winter quarters Black-tailed Godwits have traditionally largely been restricted to estuaries and large inland wetlands including the traditional rice fields in the coastal zone of West Africa. More recently also wet rice fields in Spain and Portugal are used during spring migration. The importance of rice fields as wintering grounds, combined with progressively earlier arrival in Africa of godwits from the North-West European population due to failed breeding, create conflicts with farmers due to alleged crop damage, locally resulting in shooting of godwits; the impact of this on population level has yet to be investigated.

Presently, the breeding population of the nominate form in the Western Palearctic is estimated at *c*.110,000 pairs. However, due to the large decline (>30%) since 1990 the species was classified as Near Threatened by IUCN in 2006. More effective management and protection of important breeding sites and better protection of sites utilised during migration and in winter should lead to the recovery of the nominate populations of the Western Palearctic. Essential however for the recovery of the unique core population in The Netherlands and adjacent areas in Germany are measures to increase the reproduction.

This action plan will address these issues by proposing activities that focus on the management of key habitats and sites throughout the range. To minimise in particular the critical juvenile mortality the plan also calls for a stop of hunting of the species throughout the range covered by this plan. Finally, a need has been identified for further studies to improve estimates of juvenile survival and improve survey information of the distribution and abundance during migration and in the winter grounds.

Agri-Environmental Schemes and other measures for Black-tailed Godwit

Over the years a large number of initiatives have been taken to improve the situation for the Black-tailed Godwit, in particular in the breeding areas in Western Europe. This includes the preparation of national management plans (for instance in Denmark) and large scale and often very costly management activities in Sweden, Denmark, Germany and in particular in The Netherlands. Here so called mosaic-management was tested on 52 sites in 2003 – 2005 in an attempt to improve chick-survival as part of the project Nederland-Gruttoland.

In The Netherlands large scale Agri-Environment Schemes (AES) are implemented with annual budgets of *c*. 35 million euros aimed at all meadow birds and other biodiversity. However, the implementation of AES in The Netherlands has so far not halted the decline of the species, which has – since 2000 - lead to many initiatives to further assess the causes of decline and improvement the management. Key issues in this respect are optimizing water tables, restoring openness of the landscape, soil conditions and creation of optimal chick habitat through mosaic management of grasslands. In many areas predation control is undertaken in combination with initiatives to restore the openness of the habitats. Essential to these initiatives has been a change in attitude from farmers who are now often eager to participate in the new forms of management, especially where there is a collective drive and coordination, to work on meadow bird conservation. To further support this, several so-called 'godwit-circles' have been formed in which groups of farmers, nature managers and volunteers work together on a local level (500-1,000 ha) to improve meadow bird conservation. This development is highly supported by the Dutch government. Because of the unfavourable status of the species, an additional effort is planned in 2008-2009 (8 million euros), aiming at improving habitat quality in special managed reserves including Natura 2000-sites. The aim is to direct this support specifically to core regions, where still relative high densities of godwits are breeding, where the potentials for restoration of reproduction are good and this type of innovative grassland management is welcomed by the farmers.

Essential to the restoration of the Dutch godwit population is also the unique efforts made by over 10,000 volunteers who mark thousands of nests before the grasslands are mowed or grazed. This significantly improves the nesting success (number of hatched eggs) - although it not necessarily improves chick survival.

Notwithstanding these efforts, the priorities and activities listed in Table 8-11 remain.

5.2 Purpose of the plan

Recognising that the Western Palearctic populations of the nominate form of Black-tailed Godwit have a “Near Threatened” Conservation Status due to a continuing decline of key populations the Goal of this plan is to restore 'Least Concern' status on the global IUCN Global Red List of Threatened Species.

The short term objective is therefore to halt the current decline and contraction of distribution while the long-term objective is to restore all Western Palaearctic populations to a favourable conservation status. In addition the plan aims at maintaining the favourable status of the *islandica* population.

To achieve this, the plan aims to addressing the most urgent issues in a specific, measurable, agreed, realistic and time-bound process.

Table 7. The framework for action for the Black-tailed Godwit Species Action Plan. The actions and results listed cover the period up to 5 years after endorsement of the plan.

Summary of objectives /Activities	Objectively Verifiable Indicators (OVIs)	Means/Sources of verification (MOVs)	Important assumptions
Overall goal: To restore 'Least Concern' status on the IUCN/BirdLife Global Red List	The Black-tailed Godwit populations have recovered to favourable conservation status	IUCN/BirdLife Global Red List classification of the Black-tailed godwit	Black-tailed Godwit AEWA Action plan approved and supported and implemented by AEWA member states
Purpose of this action plan: To halt the decline of the Western Palearctic populations of *L. l. limosa* and to maintain the favourable status of the *islandica* population	• Decline of western population *L. l. limosa* has stopped • Eastern population of *L. l. limosa* remain at 2000 level • *Islandica* population maintains favourable conservation status	• Summarised results of national Black-tailed Godwit surveys (BirdLife World Bird Database) • National Black-tailed Godwit censuses / atlas surveys	Habitat conservation measures are maintained beyond the time frame of this action plan
Results: Degradation of breeding habitat quality and habitat loss has stopped (*L. l. limosa*)	Breeding range and population size of BTG have been maintained at 2007 level or have increased	National inventories	Climate change will not have negative impact on the BTG breeding range
Low reproduction has increased to levels that sustain the population (*L. l. limosa*)	Chick-mortality and nest destruction have decreased where BTG breed in intensively	New research documents	CAP[1] Reform will provide framework for sustainable management of BTG habitats within

[1] Common Agriculture Policy of the European Community

	managed farmland		the EU
Wintering are maintained and migratory sites are maintained or have increased (*L. l. limosa & L. l. Islandica*)	Adequate protection of important BTG staging areas		
Hunting stopped throughout the range	BTG is legally protected in all range states	National legislation National hunting bag statistics	Implementation and acceptance of AEWA plan
	Illegal hunting is not reported	Reports of Eurogroup Against Bird Crime	
Knowledge gaps filled	Improved understanding of the distribution and trend of the eastern breeding populations	New research document National inventories	
	Improved understanding of the migration and wintering areas of the eastern populations.	New research document National inventories	

6. Activities by country/region

Table 8 – 11 summarises the necessary actions for Black-tailed Godwit conservation for each country. The terminology of actions follows the "results" column in Table 7.

Priority is defined as:

- *Essential*: an action that is needed to prevent a large decline in the population, which could lead to extinction.
- *High*: action needed to prevent declines of > 20% of the population within less than two decades;
- *Medium*: action to prevent declines of < 20% of the population within less than two decades;
- *Low*: action needed to prevent local declines or processes, which are assumed to have a low impact on the population as a whole

Priorities in brackets indicate that the priority criteria do not follow the above scale but express the importance of the action to support the implementation of the plan.

Time scales are according to the following criteria:

- *Immediate*: completed within the next year;
- *Short*: completed within the next 1-3 years;
- *Medium*: completed within the next 1-5 years;
- *Long*: completed within the next 1-10 years;
- *Ongoing*: current action in progress and should continue;
- *Completed*: actions, which were completed during the preparation of this plan.

Since many results and proposed conservation actions apply to more than one country, the countries have been grouped into four categories, combining status and threats of the Black-tailed Godwit and the political situation of each country:

- Non-EU Member states
- EU Member States with the exception of The Netherlands and neighbouring Germany and Belgium
- The Netherlands and adjacent areas in Germany and Belgium
- Countries within the migratory and wintering area of the flyway, consisting of EU Member States, non-EU countries as well as countries on the Middle East and in Africa.

Table 8. Non-EU Member States supporting the eastern breeding population (Russia, Kazakhstan, Belarus, Ukraine and Serbia).

Results	National activities	Priority	Time Scale	Responsible organisation
Degradation of breeding habitat quality and habitat loss has stopped	• Identify and protect key breeding sites for the BTG under national legislation	High	Medium	National Government, National Nature Protection Agency/NGOs
	• Prevent further breeding habitat is lost when meadows are ploughed for agricultural use and floodplain meadows are reduced, lost or the hydrological regime changes by embankment and canalization of the rivers to avoid floods	High	Medium	National Government/Local authorities
	• Support haymaking and cattle grazing of important breeding habitat by providing aid to sustainable farming to prevent overgrowth of important breeding habitat	High	Medium	National Government/Local authorities
	• Take into account the habitat requirements of the BTG in management of protected areas	Medium	Medium	National Government, National Nature Protection Agency
	• Prevent disturbance of nesting BTG including recreational activities, such as fishing in rivers in breeding areas	Low/Medium	Medium	National Government/Local authorities
	• Prevent the current practice of burning the dry meadow vegetation in spring which leads to loss of BTG nests and decrease in food recourses	Low/Medium	Medium	National Government/Local authorities
	• Ensure that national legislation requires Environmental Impact Assessments are carried out preceding activities that could lead to breeding habitat degradation or loss.	Low	Short	National Government/Local authorities

Improved survival and recruitment by reducing mortality	• Provide legal protection of the BTG, as far this is not yet the case	(Medium)	(Short)	National Government/Local authorities
	• Stop hunting in spring (high priority) and other hunting and control illegal hunting.	(Medium)	(Short)	National Government/Local authorities/NGOs
Knowledge gaps filled	• Prepare distribution maps and update estimates of breeding population and trend	(High)	(Short)	National Government/Local authorities/NGOs
	• Carry out inventory of key sites and determine habitat threats	(High)	(Short)	National Government/Local authorities/NGOs
	• Starting colouring schemes to monitor and investigate staging sites, migration routes and wintering areas of these populations	(High)	(Short)	National Government/NGOs

Table 9. EU Member States with the exception of NW European core population (Netherlands and neighbouring areas in Germany and Belgium)

Results	National activities	Priority	Time Scale	Responsible organisation
Loss and degradation of breeding habitat has stopped	• Prevent important breeding areas to be lost through urbanisation, infrastructure and other planning. Implement this kind of protection in national legislation	High	Short	National Government/Local authorities
	• Support grazing and/or mowing of important breeding habitat to prevent overgrowth.	High	Short	National Government/Local authorities
	• Prevent loss and degradation of permanent grasslands important to breeding BTG	Medium	Medium	National Government, National Nature Protection Agency
	• Improvement of management of protected areas by taking into account the habitat requirements of the BTG.	Medium	Medium	National Government, National Nature Protection Agency
Low productivity caused by agricultural practice is significantly reduced	• Support activities that maintain the openness of BTG habitats and thereby reduce mortality from predators. Develop actions to restore openness in former breeding areas.	High	Short	National Government/Local authorities
	• Support activities for maintaining/re-introducing optimal groundwater levels of grasslands and meadows, needed both for an optimal management and to secure food availability for adults and chicks.	Medium	Medium	National Government/Local authorities

Improved survival and recruitment by reducing mortality	• Provide legal protection of the BTG • Minimize man-induced mortality along the flyway by stop hunting and control of illegal hunting	(Medium) (Medium)	(Short) (Short)	National Government/Local authorities National Government/Local authorities/NGOs
Knowledge gaps filled	• Improve estimates of juvenile survival and causes of mortality and implement a model with population dynamics to be able to quantify the significance of threats and measures.	(High)	(Short)	National Government/Local authorities/NGOs

Table 10 .The Netherlands and neighbouring areas in Germany and Belgium

Results	National activities	Priority	Time Scale	Responsible organisation
Degradation of breeding habitat quality and habitat loss has stopped	• Prevent further habitat loss in key breeding area to urbanisation, infrastructure and other planning, and loss of openness of the landscape. Implement this kind of protection in national legislation • Prevent loss (such as turning wet grassland into maize fields) and degradation of permanent grasslands important to breeding BTG • Improvement of management of protected areas by taking into account the habitat requirements of the BTG.	High High	Short Medium	National Government/Local authorities National Government/Local authorities
Low productivity caused by agricultural practice is significantly reduced	Support agri-environmental schemes specifically target at: • Maintaining/re-introducing grassland areas with optimal groundwater level to secure food availability for adults and chicks • Maintaining/re-introducing the openness of the landscape (and thereby also reduce predation) • Return to late mowing of grasslands to reduce nest destruction and reduce chick mortality in core breeding area, such measures being part of AES.	Essential/High	Immediate/Short	National Government, National Nature Protection Agency

Knowledge gaps filled	• Gather long-term and representative data on reproduction, survival in relation to breeding habitat quality, migration etc.	(High)	(Short)	National Government, National Nature Protection Agency, universities, NGOs
	• Chick survival in relation to modern practices of agriculture resulting in a further optimizing of mosaic management.	(High)	(Short)	
	• Improve estimates of juvenile survival and causes of mortality and implement a model with population dynamics to be able to quantify the significance of threats and measures.	(High / medium)	(Short)	
	• Better understanding of the arrival – and settling ecology of godwits.	(Medium)	(Medium)	

Table 11.Countries with staging and winter populations of Black-tailed Godwit (L. l. limosa and L. l. islandica).

Results	National activities	Priority	Time Scale	Responsible organisation
Wintering and migratory sites are maintained or restored	**Portugal and Spain**			
	• Bilateral development of legislation aiming at effective protection of staging areas	High	Short	National Governments
	• Bilateral water management in rice fields with special focus on creation of steady and suitable staging/wintering conditions for Black-tailed Godwits	High	Medium	Regional/Local authorities
	• Portugal: urban planning which takes into account the ecological requirements of Black-tailed Godwit feeding and roosting areas.	High	Short	Relevant Planning Ministry
	France			
	• Support data-based awareness for Black-tailed Godwit protection	Low	Short	National authorities/NGO's Regional authorities
	• Restore degraded and lost staging sites/habitats.	Medium	Low	
	Turkey			
	• Urban planning which takes into account the ecological requirements of the Black-tailed Godwit	Medium	Medium	Relevant national/regional authorities
	• Regulation of grazing.	Medium	Medium	Relevant national/regional authorities
	Morocco			
	• Start restoration of habitats in (former) important spring staging areas, in particularly Merja Zerga and the Loukos Delta	Medium	Medium	Relevant national/regional authorities – Private sector

	• Set up monitoring schemes to register ecological development of wetlands before, during and after restoration.	High	Short	NGO's
	Senegal and Mauritania • Initiate partial restoration of wetland habitats in the Senegal River Delta with focus on enlargement (in time and space) of existing wintering habitat through bilaterally fine-tuning of water management	High	Short	National Government Agencies/Private sector/NGO's
	• Initiate restoration of the former wintering area at the southern edge of the Senegal River Delta: the Ndiael. Revitalising this area by restoring its outlet function in combination with water storage during high floods is a serious option to work on.	High	Long	National and Regional Government Agencies/Private sector/NGO's
	Senegal – Guinea Bissau • Create protected areas, in agreement with local farmers, where Black-tailed Godwits can roost and feed on rice without disturbance	High	Short	National Government/ NGO's
	• Initiate the development of a support-program for farmers in the core wintering areas for BTG, aiming at the development of alternative feeding grounds for BTG to avoid alleged crop damage and protect BTG	High	Short	National Government/ NGO's / international donors
	• Develop legislation as to protected areas of special importance for Black-tailed Godwits; being a flagship species for wetlands many more water bird species will take advantage from this.	Medium	Short	National Government/ NGO's
Improved survival and recruitment by reducing mortality	• Hunting ban introduced in all countries where hunting is permitted to reduce mortality	Medium	Short	National Government
	• Strict enforcement of species protection legislation across the range	Medium	Medium	National Government

	• Local total hunting ban introduced in and near important staging sites where disturbance from hunting of other species may occur (such as in Portugal and Spain).	Medium	Medium	National Government and related agencies
Knowledge gaps filled	• Support further in-depth studies of the movements, numbers, timing, distribution and ecological requirements of the Black-tailed Godwits wintering in West Africa including aerial counts, colour-marking of individual birds and satellite telemetry studies	High	Short	National Governments and related agencies, International Nature Protection organisations, Universities
	• Initiate studies of the migration routes, key staging areas and main wintering areas of the eastern populations with focus on colour-marking of individual birds and satellite telemetry	High	Short	National Governments and related agencies, International Nature Protection organisations, Universities
	• Start studies of the whereabouts of first-year birds (in Africa)	Medium	Short	
	• Support further studies of the ecological needs of Black-tailed Godwit in the Portugal and Spain, focusing on the pre-migratory energy storage period.	High	Ongoing	National Governments and related agencies

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