Current state of Black-tailed Godwits *Limosa limosa limosa* breeding in France

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In recent decades, the NW Europe population of the nominate subspecies of the Black-tailed Godwit, *Limosa limosa limosa*, has been in steep decline. As no changes in survival have been apparent so far, these declines are likely to have been caused by declines in recruitment, possibly due to decreasing quality and availability of breeding habitat. Most nominate Black-tailed Godwits breed in agricultural grasslands in the Netherlands and, to some extent, in Germany. Here we show that, in contrast to the general decreasing trend, numbers of breeding pairs have actually increased at the southernmost limit of their distribution in France, from 51 pairs in 1985 to 164 pairs in 2011. We review current knowledge of this godwit population as a basis for a demographic study.

INTRODUCTION

The decline of the nominate subspecies of the Black-tailed Godwit *Limosa limosa limosa* has now been in progress for several decades at a rate of ~5% per year (Gill et al. 2007). Most *limosa* Black-tailed Godwits breed in the Netherlands (45,000–50,000 individuals; BirdLife International 2004), where they prefer herb-rich grasslands with high water tables coincident with non-industrial dairy farming (e.g. Groen et al. 2012). There are also smaller populations breeding in Germany (6,000–7,300 ind.), Belgium (1,100–1,300 ind.) and Denmark (700–725 ind.). *Limosa* godwits winter in W Africa, mostly in the rice plantations of Senegal, Gambia, Guinea-Bissau and in the flood plains of the Niger in Mali (Kirby & Scott 2009). Recently, a wintering population has also been discovered in the Doñana wetlands in S Spain (Marquez-Ferrando et al. 2011). During northward migration, these godwits stage for several weeks in harvested but unploughed wet rice-fields in Portugal and Spain (Lourenço et al. 2010). Largely, the decline in population size appears to reflect poor breeding habitat quality and low recruitment rates rather than reduced survival outside the breeding season (Kleij & van Zuijlen 2004, Kleijn et al. 2010, Schekkerman & Beintema 2007, Schekkerman et al. 2009).

The estuaries of W France are known to be important for migrating and wintering Icelandic Black-tailed Godwits *L. l. islandica* (Robin 2011). In France, nominate Black-tailed Godwits mostly occur in spring in the wetlands of the Charente Maritime and Vendée departments, and also in the Basse Vallée Angevine in the Maine-et-Loire department, mixing then with migrant Icelandic godwits en route to the Netherlands (Gill et al. 2007). The year to year variation in the numbers of staging birds may reflect variations in the extent of flooded grasslands in France (Jensen & Perennou 2007, Kuijper et al. 2006).

In contrast to the decline in the numbers of pairs further north, a small core of breeders in France has expanded over the last few decades (Robin & Dulac in press). However, except for knowledge of the number of breeding pairs, we know very little of the wintering range, migration and recruitment of this population at the southern breeding limit. Here, our aim is to review information on distribution, numbers and habitat-use of Black-tailed Godwits breeding in France as a basis for a programme of research into their demographics.

METHODS

Estimates of the breeding population of Black-tailed Godwits in France were derived from national surveys in 1984, 1995 and 1996 (Issa & Boutin 2010), and more recent surveys of rare and endangered breeding birds in France by Robin & Dulac (in press) for the period 2001–2011. Likely breeding areas were identified based on the knowledge of local naturalists in each region (Table 1). The number of breeding pairs in individual fields was estimated by walking a loop-transect twice in April and May, or in May if there was a single survey. An estimated range of the number of breeding pairs was determined for each discrete area from a minimum based on the number of pairs observed with clear breeding behaviour to a maximum that included pairs whose breeding status was...
uncertain. Indicators of presence (display flights, presence of chicks) and other observational details are described in Issa & Boutin (2010). During the breeding seasons 2010 and 2011, observations were geo-referenced in the Marais Breton (46°51’N, 2°1’W) and in the Marais Poitevin (46°23’N, 1°7’W), with the aim of documenting the spatial distribution of pairs in relation to habitat features more accurately. The information gathered on locations and habitats was entered into the regional observation database of Ligue pour la Protection des Oiseaux Vendée.

RESULTS AND DISCUSSION

Location and trends

About 85% of the French Black-tailed Godwit breeding population is to be found along the central Atlantic coast (Fig. 1), with about 75% in the departments of Loire-Atlantique and Vendée. The remaining 10% breed along the Channel coast from the Manche to the Nord. There is an isolated breeding location in eastern central France, in the department of Ain, which supports <5% of the population.

In 1984, the first systematic survey of the French breeding population resulted in an estimate of 38–51 pairs (Issa & Boutin 2010). Ten years later, in 1995 and 1996, the population was estimated at 165 pairs (Fig. 1; minimum 127 pairs, maximum 159 pairs). Although the population had tripled between the mid 1980s and mid 1990s, it was estimated at only 84 pairs in 2000 (range 81–87). After that time, the population grew to 172 pairs (range 164–181) in 2009, followed by a decrease to 146 pairs (range 127–164) in 2011 (Table 1). Comparison of the data for 1995 and 2011 indicates that while numbers increased in the Vendée, godwits disappeared from sites in Brittany and the Channel coast (Fig. 1).

Since 2000, the breeding population of Black-tailed Godwits in France has increased (Fig. 2), which is in stark contrast with that of the core breeding area in the Netherlands. There the population has declined at ~5% per year (Gill et al. 2007). The increase in France is probably the result of effective habitat management, particularly the extension of protected areas and the implementation of local agricultural management plans by local conservation agencies and also by private farmers. However, it is unclear whether the growth is the result of local recruitment or dispersal away from the declining northern population; though no Netherlands-ringed birds have yet been identified as breeding in France.

Table 1. Sites at which Black-tailed Godwits have bred in France since 2000. The "Godwit habitat cover" column gives estimates of the % of the area of the site that is suitable godwit habitat, the % of the area that is suitable godwit habitat and comprises humid or mesophile grassland and the % of the area that is suitable godwit habitat and comprises bogs, marshes, water-fringed vegetation and fens. Sources: Inventaire National du Patrimoine Naturel and Important Bird Areas–Ligue pour la Protection des Oiseaux database.

<table>
<thead>
<tr>
<th>Site</th>
<th>Special Protection Area site code</th>
<th>Coordinates</th>
<th>Area (ha)</th>
<th>Godwit habitat cover (%)</th>
<th>Pairs of Black-tailed Godwits breeding in 2011 (min–max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marais Breton, baie de Bourgneuf, île de Noirmoutier et forêt de Monts</td>
<td>FR5212009</td>
<td>46°25’25”N, 2°42’1”W</td>
<td>52,420</td>
<td>50 30 20</td>
<td>70–80</td>
</tr>
<tr>
<td>Marais Poitevin</td>
<td>FR5410010</td>
<td>46°21’1”N, 1°6’21”W</td>
<td>47,745</td>
<td>40 40 0</td>
<td>19–33</td>
</tr>
<tr>
<td>Grande Brière, marais de Donges et du Brivet</td>
<td>FR5212008</td>
<td>47°22’25”N, 2°14’24”W</td>
<td>19,754</td>
<td>93 55 38</td>
<td>28–34</td>
</tr>
<tr>
<td>Basses Vallées du Cotentin et Baie des Veys</td>
<td>FR2510046</td>
<td>49°21’0”N, 1°9’0”W</td>
<td>33,695</td>
<td>70 0 70</td>
<td>0</td>
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<tr>
<td>Vallée de la Sélune</td>
<td>FR4312006</td>
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<td>17,906</td>
<td>45 40 5</td>
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<td>Estuaire de la Loire</td>
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<td>20,193</td>
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</tr>
<tr>
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<td>18,840</td>
<td>50 33 17</td>
<td>0–2</td>
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<tr>
<td>Marais de Brouage, île d’Oléron</td>
<td>FR5410028</td>
<td>45°51’0”N, 1°30’W</td>
<td>26,080</td>
<td>45 40 5</td>
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<td>Estuaires picards: Baie de Somme et d’Authie</td>
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</tr>
<tr>
<td>Plaine des Moëres</td>
<td>Not an SPA</td>
<td>51°05’1”N, 2°29’24”E</td>
<td>9,568</td>
<td>No data No data No data</td>
<td>4–6</td>
</tr>
</tbody>
</table>

Total 127–164
Fig. 1. Estimated maximal number of breeding pairs of breeding Black-tailed Godwits per department in 1995–96 from Issa & Boutin (2010) and in 2011 from Robin & Dulac (in press).

Fig. 2. (right) Population trend of continental Black-tailed Godwits breeding in France. The black line shows the mean number of pairs, and grey shading indicated the range between the minimum and maximum estimates (Robin & Dulac in press); also shown is the slope of the decline in the overall population of the subspecies estimated by Gill et al. 2007.

Fig. 3. (below) Location of pairs of Black-tailed Godwits in spring 2010 and 2011 in (A) the Marais Breton, Vendée, and (B) the North part of Marais Poitevin, Vendée (regional nature reserve of la Vacherie). Natural Zones of Animal and Plant Ecological Interest (Zones Naturelles d’Intérêt Ecologique, Faunistique et Floristique) are indicated in green and salt-marshes by blue hatching.
water levels and vegetation structure are managed for waders (Fig. 3B). Most of the areas in which godwits breed are large, open meadows with steadily lowering water tables during the breeding season and a degree of cattle grazing (Fig. 4B).

**Summary of research plans**

The nominate limosa subspecies of the Black-tailed Godwit is classified as vulnerable (BirdLife International 2004) and is protected by a 5-year hunting moratorium in France covering 2007–2012. Despite this special status, few studies have been carried out on Black-tailed Godwits in France. Recruitment rates in particular are completely unknown. Moreover, as limosa godwits occur in France as late as end of October (database of the Nature Reserve of Moëze-Oléron), it is uncertain whether the birds that are present in autumn are local breeders or come from elsewhere in Europe. This needs special attention, especially if there are any moves to allow the resumption of hunting in late August or early September. To fill these knowledge gaps, a colour-ringing programme was initiated in 2012 in the two main breeding areas in Vendée, Marais Breton and Marais Poitevin (Fig. 3). The study aims to document: (1) individual site-faithfulness and habitat use; (2) (local) recruitment and survival, (3) the length of the post-breeding period, and (4) the wintering areas used by this most southerly breeding population. Do they go to W Africa or stay in Iberia?

These studies should help site managers to adjust and optimize agro-environmental schedules and other management measures (timing of mowing, nest protection, water level). We also hope they will generate data that will inform decisions on the hunting moratorium.

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