

# Wet Grassland Meadowbird Workshop

## Introduction

JENNIFER SMART<sup>1</sup>, HERMAN HÖTKER, MEINTE ENGELMOER, MARK SMART & JENNIFER GILL

<sup>1</sup>Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire, SG19 2DL, UK  
[jennifer.smart@rspb.org.uk](mailto:jennifer.smart@rspb.org.uk)

At the International Wader Study Group conference in the Netherlands at Kollumerpomp (2001), members held a workshop on farmland waders. This resulted in the production of a list of key issues requiring further work (see *WSG Bulletin* 96). Whilst the current workshop did not review that document in full, it demonstrated progress on some of the key issues. For example, there have been significant improvements in our understanding of the impact of nest predation and the increase in predator numbers. Three talks, including one experimental study, reviewed current knowledge of predator impacts on wader hatching success in the UK and Germany. The overriding message from these studies was that, at the nest stage, mammal predators are more important. For the chick phase, a very comprehensive study in the Netherlands has revealed that avian predators play a greater role (Theunissen *et al.* 2006, [http://www.sovon.nl/pdf/SOVON\\_Predatie\\_bij\\_weidevogels.pdf](http://www.sovon.nl/pdf/SOVON_Predatie_bij_weidevogels.pdf)). There have also been significant advancements in our understanding and testing of different habitat management options. Six talks were presented using a combination of experimentation, tests of habitat preferences and management case studies for a range of species and countries. In the UK, the key to managing lowland wet grasslands centres on the provision of wet features (pools and linear features) whilst avoiding areas of widespread flooding. On the Baltic coast, large-scale habitat restoration projects are being undertaken to increase populations of Dunlin and Ruff breeding in coastal meadows. In Germany, an analysis of the factors determining success of protected areas in conserving meadowbirds will be completed soon.

Although we have advanced some of the issues raised in the Kollumerpomp statement, there are many others that are still outstanding, for example, the causes of the rapid decline in the Dutch breeding Black-tailed Godwit population are still not fully understood and the gaps in monitoring identified for countries such as Iceland and Russia still need to be addressed.

Participants in the 2006 IWSG wet grassland meadowbird workshop agreed that the day had been well spent, with 18 talks and 80 participants. At the end of the workshop, the following question was posed:

### **WHAT ARE THE KEY ISSUES THAT THE INTERNATIONAL WADER STUDY GROUP STILL NEEDS TO ADDRESS TO IMPROVE BREEDING WADER POPULATIONS ON WET GRASSLANDS ACROSS EUROPE?**

The ensuing discussion is summarised below. Our hope is that by highlighting these issues IWSG members will be prompted to undertake at least some of the activities necessary to resolve these questions and knowledge-gaps.

### **Knowledge transfer**

1. Creation of a relevant grey literature bibliography. IWSG members could be invited to submit reference information from their own grey literature sources. These could then be collated, key subject matter listed and sources of these documents identified. It is suggested that this could form part of the IWSG website and where the authors agree or there are no copyright issues, PDF documents could be available for download.
2. Provision of summaries of the current level of understanding of key issues. It is possible that IWSG members through their work may already have summarised or collated reference sources for many of the key issues. IWSG could play a role in collating and publishing reviews on the website with pages covering different issues.
3. Communicating and engaging with policy-makers to ensure relevant research findings are accessible. For example, engaging with BirdLife partners to pass on new management information may ensure this information is used to influence agri-environment schemes.
4. Establishing communication routes between researchers and land managers: it was suggested that *Conservation Evidence.com* could be one mechanism to facilitate this. This is a searchable website which invites contributions which describe management techniques and evidence for their effectiveness. IWSG members could provide such case studies either as individuals or through the Wet Grassland Working Group.
5. Working with BirdLife partners on a country-by-country basis to highlight the current failure to comply with obligations under the EU Birds and Habitats Directives, which are evident from the continuing large-scale population declines in many species.
6. Considering ways in which information can be provided to developing countries to ensure minimal loss or degradation of the non-breeding grounds of European wet grassland waders.

### **Habitat management**

1. Continue to carry out trials of novel habitat management techniques and to report the results as widely as possible.
2. Developing protocols for assessing the success of habitat management. The success of the conservation manage-



ment of wet grassland can be assessed in a variety of ways. A process for assessing the success of management techniques (e.g. a flow diagram of management outcomes and targets) would be a helpful tool in ensuring future conservation funding.

3. Exploring the role of landscape-scale habitat management as a means of reducing predator impacts on breeding waders. There is a great deal of evidence for the role of predation in limiting wader productivity. Designing appropriate habitat mosaics is a possible mechanism to limit predation effects, but little is currently known about the effectiveness of such techniques. Comparative and experimental studies of landscape-scale impacts on predation levels could be very informative. In addition, there is also a need to understand more about the role of predation in limiting chick survival.
  4. Assessing the impact of agricultural chemicals. Agricultural chemicals (e.g. pesticides, herbicides, fertilisers and veterinary drugs) are widely acknowledged as potentially detrimental to breeding wader populations on wet grassland through e.g. reducing invertebrate abundance. Despite this, little is known of the implications for breeding waders and studies to quantify these effects are thus important.
  5. Evaluating the effectiveness of the efforts of different countries to conserve breeding wader populations. In addition to identifying which approaches have been most successful, this could also highlight countries where IWSG could attempt to encourage efforts to improve wader populations.
3. Habitat fragmentation, dispersal and landscape-scale management. Extending the application of methods of improving habitat structure for breeding waders into the wider countryside is now a realistic option in some countries, through mechanisms such as agri-environment schemes. Landscape-scale decisions about the locations at which such methods should be applied will be greatly informed by better understanding of the constraints on natal and breeding dispersal, and how these are influenced by habitat fragmentation.
  4. The impacts of climate change on meadow bird populations needs to be investigated.

### Population assessment

1. There is an urgent need to be able to carry out rapid assessments of wader productivity. Currently, productivity assessment is extremely labour-intensive, often involving radio tracking and other such methods which cannot easily provide estimates over large spatial and temporal scales. Diagnosing the causes of population declines and linking breeding and non-breeding processes will be greatly helped if productivity estimates could be gathered over much larger scales than is currently possible. The progress already made in the development of some of these methods is welcomed and IWSG will strongly support continued efforts to evaluate and disseminate the results of these studies.
2. There is still a major gap in knowledge about survival rates of meadow birds. Only a few species have been studied recently using modern methods.

### Large-scale processes

1. Seasonal connectivity and the links between breeding populations and migratory and winter processes. There is clearly a need to establish the mechanisms linking demographic processes in the breeding and non-breeding seasons. A key aspect of this work could involve linking researchers working on the same species at different locations throughout the migratory range, which could be facilitated by IWSG by publicising projects and encouraging collaborative work.
2. Population-scale impacts of predators. Most studies of predator impacts have wisely focussed on detailed studies of predator identity and effects on local populations. However, there is a growing need to assess the impact of predators at larger spatial scales, and especially to address the conditions under which predators focus on high-density breeding wader hotspots. Advice for site managers is urgently needed.

### The next steps:

The IWSG has a Wet Grassland Working Group, which was involved in the preparation of the workshop in Sweden (contact: [mark.smart@rspb.org.uk](mailto:mark.smart@rspb.org.uk)). The group works through e-mail communication. Discussions after the workshop helped to identify some actions that the Wet Grassland Working Group could take immediately. One of them is the creation of a bibliography of relevant grey literature and it may also be possible to review this literature to some extent. To create this grey literature resource, your help is needed. In the near future, we hope to e-mail a simple spreadsheet where members can type in details of grey literature that they may have authored or sources of relevant information. We hope to produce a simple and open list of references for the IWSG web-site within the next few months.



## Workshop talk abstracts

### **Mammals, waders and wetland management – a German perspective**

Jochen Bellebaum

*Institute for Applied Ecology, Alte Dorfstraße 11, 18184 Neu Broderstorf, Germany. bellebaum@ifae.de*

Increased nest and chick predation by carnivores has been observed in central Europe in many medium-sized or large species of ground breeding birds. Management of meadow bird reserves should seek long-lasting solutions. In spite of a wide range of approaches, from habitat management to protecting single nests and control of predators, satisfactory results are still scarce. Based on results mainly from Germany, I will present some views on the role of some native and introduced species of carnivores as predators on wader nests, the likely causes of high predation rates, and the prospects for restoring predation-free source habitats.

### **Caught in the extinction vortex? Population decline and genetics in a metapopulation of Southern Dunlins**

Donald Blomqvist & Angela Pauliny

*Dept of Zoology, Univ. of Gothenburg, Box 463, SE-405 30 Gothenburg, Sweden  
donald.blomqvist@zool.gu.se*

Habitat fragmentation has resulted in population declines of many species. The remaining small and isolated populations are threatened by extinction for several reasons, including genetic factors such as inbreeding and loss of genetic diversity. We examined the interaction between population decline and genetics in a fragmented population of Southern Dunlins *Calidris alpina schinzii* breeding on coastal pastures in SW Sweden. During 12 years, we recorded one re-colonization and six extinctions of local populations, suggesting that the entire metapopulation is threatened by extinction. In parallel, pedigrees and molecular markers revealed an increased frequency of matings between related individuals in the population (including incestuous inbreeding). Furthermore, we found evidence of inbreeding depression and other negative effects of reduced genetic diversity: genetically similar pair members suffered increased hatching failure, and young that died prematurely were more homozygous than those that hatched. Individual genetic diversity also predicted long-term survival of the offspring. Our results suggest that the incessant decline of the Baltic population of Southern Dunlins has substantial genetic consequences, further increasing the extinction risk of this endangered wader.

### **Northern Lapwing nest predation: the impact of different predator species and options for mitigation**

Mark Bolton & Michael MacDonald

*Royal Society for the Protection of Birds, The Lodge, Sandy, Beds SG19 2DL, UK. mark.bolton@rspb.org.uk*

Whilst the severe declines of Northern Lapwings in the UK and elsewhere in Europe are considered to be driven by

changes in agricultural practices, concern is mounting that the effects of predation may hinder population recovery, even in locations where habitat is apparently suitable. The impact of predation may have intensified through a variety of mechanisms. These include a reduced ability to deter avian predators by lapwings nesting at low densities; changes in habitat availability resulting in a higher proportion of lapwings nesting in habitats associated with high predation rates, and changes in the densities or foraging behaviour of predators. Lapwings have a wide range of potential predators and for conservation managers to ensure that predation does not compromise population recovery, it is important to establish the relative impact of different predator species, and assess the options for mitigation if impacts are unacceptably large. Here we review the literature and present preliminary field data from the UK to assess the relative importance of the common predators of nests of lapwing and other waders in lowland wet grassland and similar habitats. We also examine the predation probability of lapwing nests in lowland wet grassland in relation to environmental variables to assess the options for habitat-mediated mitigation measures.

### **The use of meadows at night by wintering Eurasian Woodcock**

Olivier Duriez & Yves Ferrand

*Netherlands Institute of Ecology (NIOO),  
Rijksstraatweg 6, PO Box 1299, 3600BG Maarssen,  
The Netherlands. o.duriez@nioo.knaw.nl*

Eurasian Woodcocks *Scolopax rusticola* relies mainly on open habitats at night in winter. Sixty-five radio-tagged woodcocks were monitored during three winters in W France. Fields were used on 85% of nights but there were large differences between individuals: 43% used fields every night while others only occasionally. However, all birds used fields intensively during the 10 days before departure on migration. Meadows, especially wet ones and old grazed pastures, were preferred to maize or wheat fields. Earthworm biomass in such places was five times higher than in cultivated fields and twelve times higher than in neighbouring woodlands. Activity sensors in the radio-tags indicated that the birds spent 23% of night time foraging in meadows (3.5 hours). The amount of time spent foraging at night in meadows depended on time foraging the previous day in woodlands, temperature and the age of the birds. There was a continuum of strategies in relation to night time movements: 33% of birds remained faithful to a single "core" area (c.4.5 ha) while 67% used several cores (mean 4.3 ha, spaced by 383 m). However the benefit of excellent foraging opportunities in meadows is counterbalanced by a higher predation risk by terrestrial mammals. It appears essential to include the management of meadows to provide essential food supply when designing protected areas for wintering woodcocks.



### Designing wet features for waders

Sarah Eglington

*University of East Anglia, Norwich,  
NR4 7JT Norwich, UK. s.eglington@uea.ac.uk*

Waders and wet grassland habitats have suffered severe declines in recent decades. Nature reserves are effective conservation islands for breeding waders, but management of the wider countryside is needed to aid population recovery. Across Europe, large amounts of grazing marsh that are intensively managed as agricultural land could hold huge nature conservation potential if they were managed more sympathetically. However, conservation-friendly management needs to also be compatible with farming needs. One of the key features required by breeding waders is shallow areas of flooding. Implementation of managed wet features could provide a solution to this conflict, as they can be constructed and maintained with relatively little disruption to farming practises such as livestock management. This study aims to assess the design and density of wet features that are sufficient to influence Northern Lapwing *Vanellus vanellus* ecology and demography but also acceptable to farmers within the Broads Environmentally Sensitive Area (ESA), England.

### Wet grassland waders under Frisian Polder-circumstances

M. Engelmoer

*Bentismaheerd 39, 9736EC Groningen,  
The Netherlands.  
m.engelmoer@planet.nl*

Since the early 1970s, a lot of effort has been put into protecting the waders of European grasslands. This is also true of the province of Fryslân in the Netherlands. In this talk, I will discuss past, present and future efforts to organize the protection of wet grassland waders in Fryslân. First, I will focus on changes in the numbers of waders breeding in Fryslân and make comparisons with other areas. In the second part of the talk, I will concentrate on the organisation of protection amongst stakeholders.

### The impact of predator removal on upland breeding waders

Kathy Fletcher, Andrew Hoodless & David Baines

*Game Conservancy Trust, The Gillett, Forest in  
Teesdale, DL12 0HA Barnard Castle, UK  
kfletcher@gct.org.uk*

Among conservationists, predator removal is often considered a controversial management technique. An eight-year experiment in N England aims to quantify any effects of predator removal, as conducted by gamekeepers seeking to increase Red Grouse numbers, on numbers and breeding success of key upland ground-nesting birds. The experiment has been running since 2000 comparing two sites with predator removal and two without. The data collected so far indicate higher breeding success on sites with predator removal for the three most abundant wader species, Eurasian Curlew, Eurasian Golden Plover and Northern Lapwing. The numbers of breeding birds has also increased on some sites for lapwing and golden plover. The experiment will finish in 2008 by

which time enough data will have been collected to undertake robust analysis. At this interim stage the data are suggestive of predator removal benefiting a range of upland breeding waders.

### Efficiency of conservation measures for wet grasslands

Hermann Hötter

*Michael-Otto-Institute in NABU, Goosstroot 1,  
24861 Bergenhusen, Germany  
nabu-inst.hoetker@t-online.de*

In W Europe, the populations of most meadow bird species have declined rapidly over recent decades despite the implementation of extensive conservation programs. In many cases protection measures have not been successful in a sustainable way. A project supported by Deutsche Bundesstiftung Umwelt (DBU) has been set up to determine under which conditions and at which sites certain conservation measures have been successful. It also investigates the economical efficiency of such measures. The first results of the project will be presented.

### Next to extinction?

### Trends in population size and breeding success of meadow birds in Central Europe

Hermann Hötter

*Michael-Otto-Institut im NABU, Goosstroot 1,  
24861 Bergenhusen, Germany  
nabu-inst.hoetker@t-online.de*

Meadow bird communities are one of the most endangered in Europe. Monitoring data reveal that the population sizes of most grassland-breeding waders have declined over recent decades; particularly Eurasian Oystercatcher, Northern Lapwing, Dunlin, Ruff, Common Snipe, Eurasian Curlew, and Black-tailed Godwit. These declines have been especially pronounced in the Netherlands, which is the most important country for several meadow bird species, but they have also occurred in Germany and other European countries. Only Redshank shows no overall negative trend. On a regional scale, however, not all meadow bird communities show the same trend. Coastal populations, for instance, have been found to be relatively stable. The distribution of several formerly common species has become patchy. Literature data have been used to investigate trends in the breeding success of grassland breeding waders. These show that the breeding success of lapwings and Black-tailed Godwits (species with strongly negative population trends) has declined over several decades whilst that of oystercatchers, curlews and Redshanks (species with more stable populations) shows no clear trend.

### Monitoring breeding wader populations in the coastal meadows of West Estonia, 1999–2006

Andres Kuresoo, Leho Luigujõe & Hannes Pehlak

*Inst. of Agric. & Env. Sciences, Estonian University of  
Life Sciences, Riia St. 181, 51014 Tartu, Estonia  
akuresoo@zbi.ee*

The coastal meadows of W Estonia belong to the North



European group of maritime salt marshes. These grasslands are much influenced by the neotectonic land uplift (2–3 mm per year) and more brackish conditions than in W Fennoscandia. The grasslands have a long history of use for grazing and to a lesser extent for haymaking. The rapid decline of traditional management after World War II, which took place elsewhere in Europe, was postponed in Estonia for several decades due to Soviet agricultural practices. Species-rich coastal communities were preserved until re-privatization of land in the early 1990s. In the course of the latest economical transition, extensive use of coastal meadows practically ceased. Management of coastal areas was started again in 1996 (Matsalu NP) and since 2000 in several other protected areas. The total area of Estonian coastal grasslands was estimated at 288 km<sup>2</sup> in the 1950s, but only 80 km<sup>2</sup> in 2000 (Luhamaa *et al.* 2001).

Bird monitoring has been carried out in the coastal meadows of W Estonia throughout 1999–2006. Altogether there are 20 census plots totalling 1,805 ha in 4 counties. Each year 12–14 permanent census plots have been surveyed. Plots were set up in meadows with high or medium nature conservation value as determined during the countrywide inventory of semi-natural meadows in 1993–1995 (Leibak & Lutsar 1996). The modified mapping census of land birds used in Swedish coastal meadows (Öland & Gotland islands) was applied (Ottoson *et al.* 1989). During field work, the plots sampled were divided into sub-areas according to the boundaries of existing management regimes. Each plot was visited 2–3 times between mid-May and mid-June.

Altogether 11 wader species bred in the sampled meadows. Of these, only seven were common enough for the production of annual population indices (average number of breeding pairs >20). Four species – Redshank *Tringa totanus* (32.4 % of the breeding community of waders), Northern Lapwing *Vanellus vanellus* (26.0%), Eurasian Oystercatcher *Haematopus ostralegus* (11.1%) and Dunlin *Calidris alpina schinzii* (11.0%) – were clearly dominant in the community. Population indices were also calculated for Ringed Plover *Charadrius hiaticula* (7.3 % of the breeding community of waders), Common Snipe *Gallinago gallinago* (4.0 %) and Black-tailed Godwit *Limosa limosa* (3.6%).

Since 2002, breeding waders (with exception of Common Snipe) have shown a continuous declining trend, which has been most dramatic in Black-tailed Godwit, Ringed Plover and Dunlin. The main reasons for these declines are insufficient or incorrect management of meadows, habitat fragmentation and high predation rates. The future of the populations of Dunlin and Ruff *Philomachus pugnax* in Estonia will depend almost entirely on the continuation of the traditional use of semi-natural meadows. Lapwings and Black-tailed Godwits are more flexible in their requirements and sometimes colonize other habitats.

### Spring stop-over of European Black-tailed Godwits in Portuguese rice fields

Pedro Lourenço & Theunis Piersma

University of Groningen, Kamperfoeliestraat 63,  
9713RV Groningen, The Netherlands  
oceanblue@portugalmail.com

European Black-tailed Godwits *Limosa limosa limosa* breed in N Europe and winter in W Africa. During northward migration, they make an extended stop-over in the Iberian

Peninsula, refuelling on Portuguese and Spanish rice fields. Despite being a declining population, available information on its ecology is focused mainly on the breeding grounds. Little is known about them on their wintering grounds or during migration, a critical part of their yearly cycle. We monitored the main rice field areas in the two most important Portuguese wetlands, the Tejo and the Sado estuaries, analysing the phenology and abundance of Black-tailed Godwits, and evaluating their habitat preferences throughout the range of different types of rice field. We also performed focal observations of foraging behaviour and collected faeces in order to analyse diet composition. Godwits were present in these areas from early January until early March, with the largest numbers in February. The maximum count of nearly 45,000 represents almost 50% of the total population of the subspecies. Godwits seem to prefer ploughed rice fields, particularly the ones that are partially flooded. Their main food is rice seeds, which allow them to achieve very high intake rates, probably higher than the intake rates of godwits foraging on mudflats.

### Survival in meadow birds

Maja Roodbergen

Alterra WageningenUR/Rijksuniversiteit Groningen,  
Droevendaalsesteeg 3, 6708 PB Wageningen,  
The Netherlands.  
maja.roodbergen@wur.nl

An overview of survival data of meadow birds based on literature is given. The four main meadow waders are discussed: Eurasian Oystercatcher, Northern Lapwing, Redshank and Black-tailed Godwit. Survival does not seem to have declined over recent decades. However, there are some gaps in the data: there are no recent survival data (after 1988) available for lapwing, little data were collected in the 1960s when meadow bird populations peaked and most data on oystercatcher and Redshank come from coastal breeding populations, not from populations breeding on grasslands. In addition, comparison of data is difficult, as different techniques have been used to calculate survival. A list with relevant literature is provided.

### Adult survival and breeding site fidelity in two Dutch Black-tailed Godwit populations

Maja Roodbergen

Alterra WageningenUR/Rijksuniversiteit Groningen,  
Droevendaalsesteeg 3, 6708 PB Wageningen,  
The Netherlands.  
maja.roodbergen@wur.nl

Numbers of Black-tailed Godwits breeding in the Netherlands have been declining since the 1970s, and attempts to stop this decline seem to have been ineffective. In the 1980s, a study was conducted on the survival rates of colour-ringed Black-tailed Godwits. However, there were no further colouring studies until 2002 and ringing chicks has become less popular, decreasing the reliability of survival analyses based on ringing recoveries. To obtain recent estimates of survival rates, 99 adult Black-tailed Godwits were colour ringed during 2002–2004 as part of an extensive population study at two sites in the western part of the Netherlands. Breeding site fidelity has also been estimated in relation to breeding



success. Differences in survival rates, resighting probabilities and breeding site fidelity between males and females and between the two areas are discussed, as well as consequences for conservation measures, and results are compared to historical data.

### **Assortative mating by breeding plumage in Black-tailed Godwits**

J. Schroeder, P. Loureno, J. Hoijmeijer, C. Both & T. Piersma

*University of Groningen, Animal Ecology,  
Kerklaan 30, 9751 NN Haren, The Netherlands  
j.schroeder@rug.nl*

Theory of sexual selection predicts that both sexes choose their mates most cautiously in long lived, monogamous species with a considerable degree of biparental care. Black-tailed Godwits are long-lived, monogamous shorebirds and both partners take part in incubation and caring for chicks. Sexes are dimorphic with respect to both size and breeding plumage. Their breeding plumage is astonishingly variable with respect to coloration and the degree of winter feather retention. In a unique approach, we use digital web cameras at Black-tailed Godwit nest sites to capture images of both incubating partners. From these images, we scored several plumage variables which we used for analysis. We compare these variables with ones scored on birds in the hand, from photographs and in the field, in order to gain a set of plumage variables that gives reliable results which are comparable between all the named situations. We then analyze the plumage variables with regard to body mass, size and time of year. We find that godwits mate assortatively with regard to plumage. We further look at whether pairs in which the sexes are more similar to each other are also more compatible, especially with regard to timing of breeding.

### **Managing lowland wet grassland for Redshank: what, where and how!**

Jen Smart<sup>1,2</sup>, Jenny Gill<sup>2</sup>, Bill Sutherland<sup>2</sup> & Andrew Watkinson<sup>2</sup>

<sup>1</sup>*Royal Society for the Protection of Birds,  
The Lodge, Sandy, Bedfordshire, SG19 2DL, UK  
jennifer.smart@rspb.org.uk*

<sup>2</sup>*University of East Anglia, Norwich, Norfolk, UK*

Globally, wetland ecosystems are amongst the most threatened habitats due to large-scale drainage for agriculture and a significant proportion of coastal wetlands are currently threatened by sea-level rise. Wetland loss and degradation has been implicated in the widespread decline of breeding waders in Europe. In the UK, lowland wet grassland is an important wetland habitat for breeding waders and managing the remaining grassland resource to benefit waders requires a detailed understanding of breeding wader habitat requirements. We quantify the habitat features which are important in determining breeding and nest site location in Redshank *Tringa totanus* on grazing marshes in east England. We show that many of the features important to Redshank can be easily manipulated through management and we discuss this in relation to improving the management of grassland in the wider countryside.

### **The wetter the better: managing wet grassland to benefit breeding waders**

Mark Smart

*Royal Society for the Protection of Birds, Sunnyside,  
Station Rd, Cantley, Norfolk, NR13 3SH  
mark.smart@rspb.org.uk*

Populations of breeding waders on wet grassland have been in serious decline across Europe due to large-scale drainage of wetlands and agricultural intensification. The Royal Society for the Protection of Birds, Europe's largest conservation charity, has owned Berney Marshes, a wet grassland nature reserve, since 1985. The main aim of the management has been to increase the number of wintering waterfowl and breeding waders on the site. In this presentation I will show how the practical management work at Berney Marshes over the past 20 years has affected breeding wader populations.

### **The LIFE-project Rehabilitation of the Baltic coastal lagoon habitat complex: can loss of breeding habitat explain the dramatic decline of Baltic Dunlin and Ruff in the coastal meadows of Denmark and the Baltic?**

Ole Thorup

*Vester Vedsted Byvej 32, Vester Vedsted, DK-6760  
Ribe, Denmark. olethorup@post.tele.dk*

This project includes the evaluation of habitat management by a specialist team at 55 project and reference sites in Denmark, Estonia, Germany, Lithuania and Sweden in order to improve conditions for Baltic Dunlin, Ruff, Natterjack Toad and Green Toad.

Ruffs have declined dramatically in the Baltic. Field visits during the first project year in Denmark, Estonia and S Sweden revealed that good breeding habitat for Ruff is in short supply in coastal and nearby alluvial meadows. Therefore loss of breeding habitat may well explain the decline of Ruff.

Baltic Dunlins have also declined. Visits to a large number of Dunlin sites showed a more diverse pattern than in Ruff. In the Danish Baltic and in Estonia overgrowing of coastal meadows is widespread. However, in Estonia there were high densities of breeding Dunlins in the fairly limited areas with well-grazed coastal meadows. In contrast Dunlins were absent from apparently similar sites in W Denmark, suggesting that loss of breeding habitat is probably not the main cause of recent declines.

At Tipperne in W Denmark, data on nest and brood survival indicates that predation is not the principal cause of the decline in breeding Dunlins there. In most other sites, little is known about the impact of predation on the eggs and chicks of Ruffs and Dunlins, because it is difficult to find and monitor sufficient nests and broods.

Experience from Tipperne indicates that caution is needed in studies that use indirect methods of measuring predation rates, such as dummy nests, thermologgers or data from other, 'easier' species. The impact of predation seems to differ between meadowbird species depending on the characteristic anti-predator behaviour of each, such as camouflage, aggressiveness and distraction display. Over-estimation of predation rates using thermologger nests can be large, and a control study of natural nests is vital.

