**Algemeen / outreach**

Brochure VBN-WWF Toekomstplannen

Galama2015-SkriezeRapport-RUG-2015.pdf – nog meer Galama?

Noorderbreedte2014-Anderland-Grutto.pdf

Aantal Vogels/Vogels+/Whatsup colums TP

Kening fan ‘e Greide materiaal – of via andere route?

**Artikelen – lijstje**

**----onderaan met Conservation Evidence samentvattingen: Wetenschap voor Weidevogels**

**Grutto - habitat**

Ardea2012-modern-landscape-ecology-black-tailed-godwits-Groen-Kentie-et-al.pdf

?DeLevendeNatuur2015-gruttonesten-in-relatie-tot-wegen-en-het-spoor-Fikenscher-et-alPROOFS.pdf

**Grutto - kuikens**

Vanellus2015-nest-overleving-in0verschillende-biotopen-Kentie.pdf

Ibis2015-Nest predation-Kentie.pdf

JAppliedEcol2013-growth-and-survival-blackwit-chicks-Kentie-et-al.pdf

JAvianBiol2014-dispersal-of-black-tailed-godwits-Kentie-et-al.pdf

WaderStudy2015-Senner et al.

?KenniskringWeidevogels2008-Gruttos-in-ruimte-en-tijd-voortgang-Kentie-et-al.pdf

?KenniskringWeidevogels2009-Gruttos-in-ruimte-en-tijd-def-Kentie-et-al.pdf

KenniskringWeidevogels2013-Grutto-demografie-vanaf-2004-Kentie-et-al.pdf

?LNV-rapport2008-Gruttos\_in\_ruimte\_en\_tijd-Kentie-et-al.pdf

?LNV-rapport2009-Gruttos\_in\_ruimte\_en\_tijd-Kentie-et-al.pdf

LNV-rapport-Kentie-et-al-Gruttos-in ruimte en tijd-final-metappendix.pdf

**Grutto – buiten Nederland**

Valkema-Hooijmeijer2014-Expedition\_Report\_Black-tailed Godwits West-Africa\_2014.pdf

Ardea2015-Hooijmeijer et al.

BiolConserv2014-black-tailed-godwits-in-Donana-MarquezFerrando-et-al.pdf

**Kemphaan - doortrekkers**

BiologicalConservation2012-Verkuil et al. -Ruffs losing a staging area.pdf + BiologicalConservation2012-Verkuil et al.-Graphical abstract.tif

Ardea2016-Schmaltz et al.-Ruffs-Nederlandse samenvatting.doc

**Wetenschap voor Weidevogels**

Samenvattingen en toepassingen van wetenschappelijke artikelen

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Wetenschap voor Weidevogels 1

**Dit artikel beschrijft de moderne landschapsecologie van grutto’s: habitatkeuze in zuidwest Friesland.**

**Published sources details:**

Groen, N. M., R. Kentie, P. de Goeij, B. Verheijen, J. C. E. W. Hooijmeijer, and T. Piersma. 2012. **A modern landscape ecology of Black-tailed Godwits: habitat selection in southwest Friesland, The Netherlands.** Ardea 100:19-28.

**Keywords:** meadowbird, habitat quality, management, soil characteristic, habitat selection, bird conservation

**Background**

For a long time, agricultural areas had considerable ornithological value, an ecological richness which in The Netherlands was epitomised by the term ‘meadow birds’. However, over the last half century, agricultural intensification has negatively affected the quality of meadow bird habitats.

**Results**

Here we provide a quantitative characterization of agricultural habitats and their use by Black-tailed Godwits in south-west Friesland, The Netherlands, in 2009, to provide a yardstick to evaluate further change. We used groundwater level, vegetation typology, relief in the landscape, the occurrence of foot drains, land use and soil characteristics such as textures and peat to describe the landscape that comprised 42 polders covering 8480 ha. We find that much of the habitat variation is explained by a combination of herb richness of the vegetation, the presence or absence of foot drains and groundwater level. The modern agricultural landscape of southwest Friesland consists of 80% of uniform, intensively managed landscape with herb poor meadows and low groundwater levels, the remaining 20% being taken by remnants of the former herb rich meadows. There was a positive relationship between godwit density and herb rich fields with high groundwater levels and the presence of foot drains.

**Conclusions**

To protect Black-tailed Godwits, areas should have a herb rich vegetation, contain foot drains and high groundwater tables should be re-established.

**Recommendations**

Habitat quality, rather than nest protection, explains habitat selection by Black-tailed Godwits and should be the guiding in meadowbird management.

Wetenschap voor Weidevogels 2

**Dit artikel beschrijft de wegtrek na het broedseizoen van Nederlandse grutto’s: de timing, de routes, het gebruik van tussenstops en uiteindelijk de winter bestemmingen.**

**2013**

**Published sources details:**

Hooijmeijer, J. C. E. W., N. R. Senner, T. L. Tibbitts, R. E. Gill, Jr., D. C. Douglas, L. W. Bruinzeel, E. Wymenga, and T. Piersma. 2013. **Post-breeding migration of Dutch-breeding Black-tailed Godwits: timing, routes, use of stopovers, and nonbreeding destinations.** Ardea 101:141-152.

**Keywords:** Black-tailed Godwits, *Limosa limosa limosa*, long-distance migration, non-breeding sites, flyway management

**Background**

Conservation of long-distance migratory shorebirds is complex because these species use habitats spread across continents and hemispheres, making identification of critical habitats and potential bottlenecks in the annual cycle especially difficult. The population of Black-tailed Godwits that breeds in Western Europe has declined precipitously over the past few decades.

**Results**

To better understand the migratory timing, use of stopover and nonbreeding sites, and the potential impact of breeding success on these parameters, we attached 15 Argos satellite transmitters and 10 geolocation tracking devices to adult godwits nearing completion of incubation at breeding sites in southwest Friesland, The Netherlands during the spring of 2009. We successfully tracked 16 adult godwits for their entire southward migration and two others for part of it. Three migration patterns and four regions of use were apparent. Most godwits left their breeding sites and proceeded south directly to stopover sites in the Mediterranean — e.g., Spain, Portugal, and Morocco — before flying on to non-breeding sites in West Africa. Other individuals spent the entire nonbreeding season in the Mediterranean. A third pattern included a few individuals that flew nonstop from their Dutch breeding sites to nonbreeding sites in West Africa.

**Conclusions**

Tracking data from this study will be immediately useful for conservation efforts focused on preserving the dispersed network of sites used by godwits during their southward migration.

**Recommendations**

Future studies should focus on tracking individuals across multiple years to more fully document the existence of these diverse migration patterns and their connection to reproductive effort.

Wetenschap voor Weidevogels 3

**Dit artikel beschrijft....**

**2013**

**Published sources details:**

Kentie, R., J. C. E. W. Hooijmeijer, K. B. Trimbos, N. M. Groen, and T. Piersma. 2013. **Intensified agricultural use of grasslands reduces growth and survival of precocial shorebird chicks.** Journal of Applied Ecology 50:243-251.

**Keywords:** agricultural intensification, black-tailed godwit, farmland, habitat management, *Limosa limosa limosa*, wet grassland

**Background**

On-going intensification of agricultural grasslands across Europe cause populations of specialized farmland birds to decline. In The Netherlands the bird community typical of dairy farmland is indicated by the term ‘meadow birds’. Despite all efforts with agri-environmental schemes, one of the key species in this community, the black-tailed godwit (*Limosa limosa limosa*), has now been in decline for several decades. It has been shown repeatedly that this decline is caused by lack of recruitment, but the underlying chain of causation has remained understudied.

**Results**

Here we compare chick growth and apparent survival rates of chicks of black-tailed godwits hatched on herb-rich meadows with high water tables, often managed in traditional ways for meadow birds, with chicks born in herb-poor, well-drained grassland monocultures that are managed for maximal dairy production. Chicks born on grassland monocultures showed lower growth rates than chicks born on herb-rich meadows. Godwits born on grassland monocultures and recaptured before fledging were on average 20% lighter at fledging and had ~3% smaller bills than chicks born on herb-rich meadows. Survival during the first year of life of godwits hatched in herb-rich meadows was 0.13, which is 3.25 times higher than that of chicks born on grassland monocultures.

**Conclusions** That chicks born on modern grassland monocultures had lower growth and survival rates, indicate that these chicks suffer a higher risk of starvation and/or predation. The findings imply that the most often applied agri-environmental schemes (payments per clutch found and postponed mowing), also widely implemented in our study area, are not effective.

**Recommendations**

Instead, conservation efforts should focus on the provenance of herb-rich meadows with high water tables that are managed in ways that somehow reflect traditional intensities of usage.

Wetenschap voor Weidevogels 4

**Dit artikel beschrijft**

**2014**

**Published sources details:**

Marquez-Ferrando, R., J. Figuerola, J. C. E. W. Hooijmeijer, and T. Piersma. 2014. **Recently created man-made habitats in Doñana provide alternative wintering space for the threatened Continental European black-tailed godwit population.** Biological Conservation 171:127-135.

**Keywords:** land-use changes, Black-tailed Godwits, non-breeding season, artificial wetlands, extensive fish farming, rice fields

**Background**

Over the last decades the Continental European population of black-tailed godwits, *Limosa limosa limosa*, has shown steep declines as a consequence of agricultural intensification on the breeding grounds. Although numbers have also declined in their traditional wintering areas in West-Africa, in the Doñana wetlands of southwestern Spain high nonbreeding numbers have persisted.

**Results**

Here we provide a long-term (35 year, 1977-2011) analysis of godwit numbers in Doñana. In fact, from the mid 1990s there has been a steep increase in numbers so that the fraction of godwits along this flyway that winters in Doñana increased from 4% in the late 1980s to 23% in 2011. These changes were not correlated with climatic conditions in Spain, nor in Sahel, but they were associated with changes in habitat availability - mainly an increase in man-made artificial wetlands. Commercial fish-farms and rice fields provide alternative habitats to the original seasonal marshlands for daytime roosting (mainly in the fish ponds) or nocturnal foraging (probably rice fields in addition to fish ponds).

**Conclusions**

For migrating waterbirds, degradations of natural wetlands can thus be compensated by man-made alternative habitats.

**Recommendations**

As the availability especially of such man-made areas is highly sensitive to short-term political/economic driven decision-making, they should be given greater consideration in global conservation plans.

Wetenschap voor Weidevogels 5

**Dit artikel beschrijft.....**

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**2012**

**Published sources details:**

Verkuil, Y. I., N. Karlionova, E. Rakhimberdiev, J. Jukema, J. J. Wijmenga, J. C. E. W. Hooijmeijer, P. Pinchuk, E. Wymenga, A. J. Baker, and T. Piersma. 2012. **Losing a staging area: Eastward redistribution of Afro-Eurasian ruffs is associated with deteriorating fuelling conditions along the western flyway.** Biological Conservation 149:51-59.

**Keywords:** carry-over effect, migration, population decline, stopover ecology, Friesland, Pripyat

**Background**

The fuelling performance of long-distance migrants at staging areas indicates local conditions and determines the viability of migration routes. Ruffs (*Philomachus pugnax*) are shorebirds of inland freshwater wetlands that migrate from the sub-Saharan wintering grounds, via Europe, to the northern Eurasian breeding grounds.

**Results**

Here we present a first case study where long-term fuelling performance was documented along two migration routes with differential population trends. Assessments from 2001 to 2008 of fuelling during northward migration at the major western and eastern staging site revealed that daily mass gain rates steeply declined in the grasslands for dairy production in Friesland, The Netherlands, and remained constant in the Pripyat floodplains in Belarus, 1500 km further east. Migrants in Friesland decreased from 2001 to 2010 by 66%, amounting to a loss of 21,000 individuals. In the same period numbers in Pripyat increased by 12,000. Ruffs ringed in Friesland, in subsequent springs were seen at increasingly eastern sites.

**Conclusions**

Our results corroborate evidence for an eastward redistribution of Arctic breeding ruffs and suggest that the decreasing fuelling rates in the westernmost staging area contribute to this redistribution. Responses occur within a single generation.

**Recommendations**

The hypothesis that the choice of route during northward migration may be driven by fuelling rates can now be tested by creating greater areas of wet grasslands in Friesland. When local staging conditions improve we predict that ruffs will make the reverse shift.

Wetenschap voor Weidevogels 6

**Dit artikel beschrijft....**

**2014**

**Published sources details:** Kentie, R., C. Both, J. C. E. W. Hooijmeijer and T. Piersma (2014). **Age-dependent dispersal and habitat choice in black-tailed godwits *Limosa limosa limosa* across a mozaic of traditional and modern grassland habitats.** Journal of Avian Biology 45: 396-405.

**Keywords:** black-tailed godwits, dispersal, grassland, monocultures

**Background**

Whether to disperse, and where to, are two of the most prominent decisions in an individual’s life, with major consequences for reproductive success. We studied natal and breeding dispersal in the mono-gamous black-tailed godwit *Limosa limosa limosa* in the Netherlands, where they breed in agricultural grasslands. The majority of these grasslands recently changed from wet herb-rich meadows into well-drained grassland monocultures, on which godwits have a lower reproductive success. Here we examine habitat selection with a multistate mark–recapture analysis. Habitat transition probabilities between meadows and monocultures were estimated on the basis of 1810 marked chicks and 531 adults during seven years in a 8500 ha study area. Young and adult godwits may differ in habitat selection because: 1) adults may have gained experience from previous nest success where to settle, 2) younger individuals may find it harder to compete for the best territories.

**Results**

Both young and adults black-tailed godwits moved at a higher rate from the predominant monocultures to meadows than the other way around, thus actively selecting the habitat with better quality. However, dispersal distance of adults was not affected by previous nest success. The average dispersal distance from place of birth of godwits breeding for the first time was ten times larger than that of adult godwits. Godwits breeding in their second calendar year arrived and laid at similar dates and were equally able to select territories in areas with high breeding densities.. Birds sometimes moved from meadows to monocultures.

**Conclusions**

Occasional dispersal from meadows to monocultures explains why even after 30 years of land-use intensification, godwits still occur in low-quality habitat although in monocultures reproduction is insufficient to maintain constant populations. The adjustment to changing habitat conditions at the population level appears to be a slow process.

**Recommendations – contribution to Wetenschap voor Weidevogels**

It should be realised that monoculture grassland in the vicinity of meadow bird reserves with high habitat quality may act as a sink. In the settlement phase it might be difficult for godwits to tell meadows and monocultures apart, as their most obvious distinction, herb-richness, will be most pronounced in May. This implies that larger and continuous extents of high quality habitat, due to their relatively smaller edge, will be the most productive in terms of young meadow birds.

Wetenschap voor Weidevogels 7

**Dit artikel beschrijft....**

**2015**

**Published sources details:** Kentie, R., C. Both, J. C. E. W. Hooijmeijer and T. Piersma (2015). **Management of modern agricultural landscapes increases nest predation rates in Black-tailed Godwits *Limosa limosa*.** Ibis 157: 614-625.

**Keywords:** agricultural intensification, facilitation, grassland management, mowing, nest survival, predation, shorebird

**Background**

Effective conservation of endangered species requires a solid understanding of the demographic causes of population change. Bird populations breeding on agricultural grasslands have declined because their preferred habitat of herb-rich meadows has been replaced by grassland monocultures. The timing of agricultural activities in these monocultural grasslands is critical, as they often coincide with the nesting phase of breeding birds. Here, we aim to identify the effect of habitat management and targeted nest protection on nest survival of Black-tailed Godwits *Limosa limosa* in the Netherlands, a population that has shown a 70% reduction in breeding population size since the 1970s. To protect nests in monocultures from destruction, farmers are paid to either delay mowing or leave a patch of unmown grass around the nest, a patch which in practice varied in size. In herb-rich meadows, which are typically managed for bird conservation purposes, mowing occurs after hatching.

**Results**

Nest survival declined as the season advanced, more steeply on monocultures than on meadows. Targeted nest protection was only partially successful, as nest predation was considerably higher on mown grassland monocultures with small unmown patches around the nest than in mown mono-cultures with large unmown patches and in unmown fields. Increased predator densities over the years have been suggested as an important cause of the trend towards lower nest survival, but here we show that nest survival was higher on herb-rich meadows than on monocultures, and similar to the 1980s.

**Conclusions**

Increased predator densities are an increased threat during the egg stage only if habitat quality is low. High-quality habitat in the form of herb-rich meadows therefore provides a degree of protection against predators.

**Recommendations – contribution to Wetenschap voor Weidevogels**

In black-godwits nest loss to predation appears conditional on habitat management, to which the timing of mowing contributes in grassland monocultures. As only few nests hatch even when spared by leaving a small unmown patch, and as chicks from such nests have a lower survival probability than chicks hatched on herb-rich meadows, conservation money seems better spent enabling farmers to maintain wet herb-rich meadows that are mown late, than management measures just to product clutches. As degradation of breeding habitat also plays a role in the decline of other grassland bird populations, such a change of management practices would help the meadow-bird community at large.

Wetenschap voor Weidevogels 8

**Dit artikel beschrijft....**

**2015**

**Published sources details:** Senner, N. R., Verhoeven, M. A., Hooijmeijer, J. C. E. W. & Piersma, T. (2015). **Just when you thought you knew it all: new evidence for flexible breeding patterns in Continental Black-tailed Godwits**. Wader Study 122: 18-24.

**Keywords:** agri-environment schemes, meadowbird conservation, global climate change, inter-annual variation, adaptive management

**Background**

Global climate change is rapidly altering the phenology and behaviour of species,

leading to the occurrence of new and extreme trait values, especially among long-distance migratory birds. While infrequently published, the documentation and regular revision of the known spectrum of these trait values can be valuable for identifying the selective pressures acting on a population and influencing best management and conservation practices. Here we argue that the previously

documented spectrum of reproductive behaviours in the rapidly declining Continental Black-tailed Godwit *Limosa limosa limosa* is in need of revision.

**Results**

Our data show that new extreme values for a number of reproductive traits occurred

during the 2014 breeding season and that by almost every metric, 2014 had the

longest laying period on record for the population: bird re-nested more often – both after predation, and after nests had been damaged by agriculture. They extended their breeding season to a record 57 days. One pair even started a nest on 4 June – the latest nest initiation date on record.

**Conclusions**

These findings suggest that godwit reproductive biology may be more flexible than previously thought and that this flexibility should be reflected by changes in European meadowbird policies. When godwits breed later in the season, mowing practices will more strongly affect a significant proportion of the population in our study area on a regular basis, and potentially positive adjustments to climate change might be strongly selected against.

**Recommendations – contribution to Wetenschap voor Weidevogels**

Dutch meadowbird policies assume that the godwit breeding season will be largely complete by 15 June, with the result that farmers receiving agri-environmental

subsidies can begin mowing at this time (Netherlands Ministry of Agriculture, Nature and Food Quality 2010). Our observations suggest that such policies in fact are likely to have negative impacts on godwit reproductive success.

Wetenschap voor Weidevogels 9

**Dit artikel beschrijft...**

**2014**

**Published sources details:** Trimbos, K. B., C. Doorenweerd, K. Kraaijeveld, C. J. M. Musters, N. M. Groen, P. de Knijff, T. Piersma and G. R. de Snoo (2014**). Patterns in nuclear and mitochondrial DNA reveal historical and recent isolation in the Black-tailed Godwit (*Limosa limosa*).** PLoS ONE 9 (1): 1-12 (e83949).

**Keywords:**

**Background**

On the basis of morphological differences, three subspecies of Black-tailed Godwit (*Limosa limosa*) have been recognized (*L. l. limosa*, *L. l. islandica* and *L. l. melanuroides*). In previous studies mitochondrial DNA (mtDNA) sequence data showed minimal genetic divergence between the three subspecies and an absence of sub-structuring within *limosa*. Here, population genetic structure and phylogeographic patterns have been analyzed using COI, HVR1 and HVR2 mtDNA

sequence data as well as 12 microsatellite loci (nuDNA).

**Results**

The nuDNA data suggest genetic differentiation between *limosa* from Sweden and The Netherlands, between *limosa* and *islandica*, but not between *limosa* and *melanuroides*. However, the mtDNA data were not consistent with the nuDNA pattern. mtDNA did support a split between *melanuroides* and *limosa*/*islandica* and also demonstrated two *limosa* haplotype clusters that were not geographically isolated.

**Conclusions**

The three traditional subspecies indeed represent three genetic units. This genetic structure can be explained by a scenario of isolation of *melanuroides* from *limosa* in Beringia during the Last Glacial Maximum. During the Pleistocene separation of *islandica* from *limosa* occurred, followed by colonization of Iceland by the *islandica* during the Holocene. Within *limosa* founder events, followed by population expansion, took place during the Holocene.

**Recommendations – contribution to Wetenschap voor Weidevogels**

The recent colonisations and expanding non-equilibrium populations, likely human induced, are an important characteristic of black-tailed godwits. The possibility of further expansions and ongoing gene flow between units should be considered as conservation goals, which has consequences for international agreements.