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Expedition Report Senegal, Casamance 17-28 August 2015

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Black-tailed Godwit Demographic Project

Expedition Report Senegal, Casamance 17-28 August 2015

**Expedition Report University of Groningen and Global Flyway Network,
September 2015**

Jos Hooijmeijer, Haije Valkema, Bob Loos en Theunis Piersma



General

The Black-tailed Godwit (*Limosa limosa*; BTG) is a meadow bird (Verstrael 1987; Thijse 1904). The current Dutch population is estimated at 40.000 breeding pairs and represents an important part of the total continental BTG population *Limosa limosa limosa*. However, the number of breeding pairs have declined rapidly over the last decades, as compared to the 120.000 pairs in the 1960s (Mulder 1972). This is mainly caused by a change in agricultural land use. Intensification and rationalisation have led to degradation of the breeding habitat, resulting in low reproduction. The major cause of the decline is the simple fact that the total population in the Netherlands cannot produce enough chicks for a stable population. (Vickery et al. 2001; Newton 2004; Tscharnke et al. 2005; Teunissen & soldaat 2006). After the breeding season godwits migrate to southern Europe (Spain) and West-Africa where they stay for wintering. (Márquez-Ferrando et al. 2009; Hooijmeijer et al. 2011).

Demographic research Southwest Friesland

To measure the changes in population numbers and the causes, the University of Groningen has started a long-term research since 2004 in the south-western part of Friesland, The Netherlands. Since 2007 the research area has expanded up to 8400 hectares and since 2012 it increased again with another 1600 hectares (Groen et al. 2012). A colour-marked population of godwits was set up to make them individually recognizable. The knowledge that has been collected with this research has been implemented by policy makers and nature conservation organisations.

Migration and wintering sites Black-tailed Godwit

In 1983-1984 the wintering sites of godwits were explored for the first time. At that moment most godwits were wintering in rice areas along the West-African coast in Senegal, Gambia, Guinea-Bissau. Big numbers of godwits also occur in the inner Niger delta in Mali (Altenburg & van der Kamp 1985), but they belong probably to the eastern European population. Only recently, the wintering behaviour has partly changed because an increasing number of godwits decide to winter in South-Spain at National Park Doñana. In the 1980s during the first counts only 4% of the NW-European population

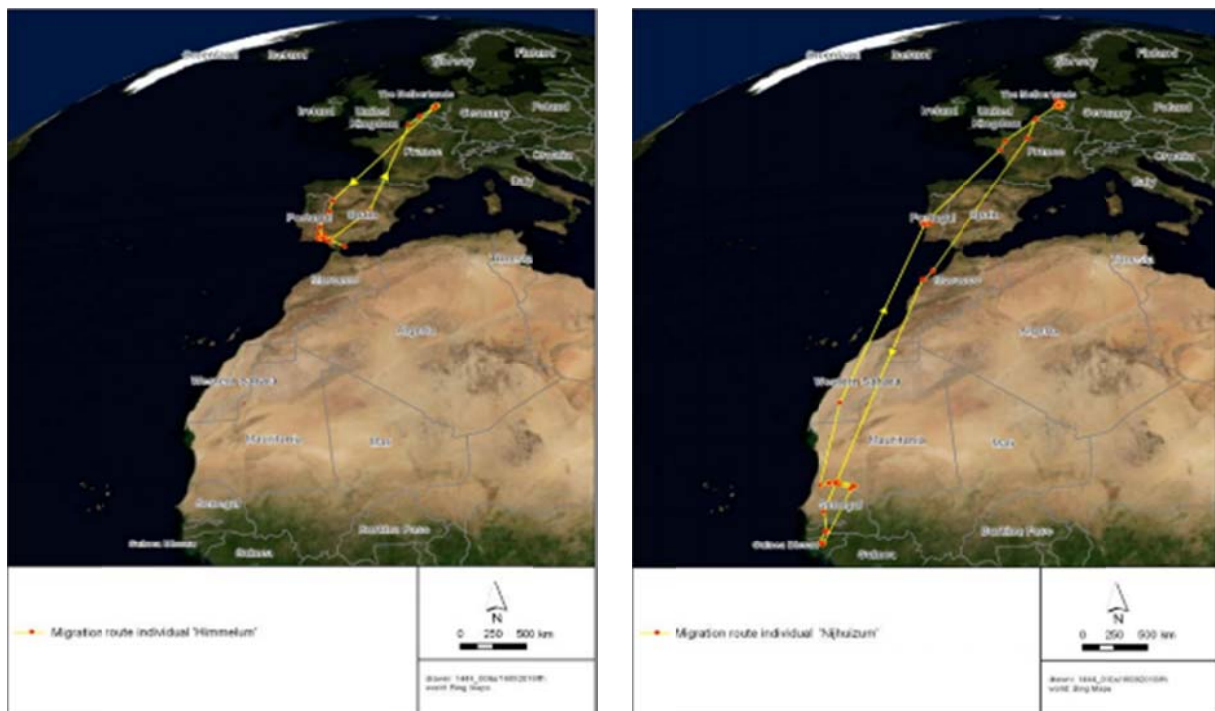


Figure 1. Two migration routes of satellite tagged birds in 2009. The left map shows the route of an Iberian wintering bird. On the right an African wintering bird. Iberian wintering birds save a 6000 km flight and don't need to cross the Sahara twice. (Hooijmeijer et al. 2011).

used this area as a wintering site but recent estimations suggest a big change with up to 23% of the population wintering in Spain. The most important reason for this is probably the creation of new artificial fishponds and rice fields. It is remarkable that this increase is not driven by climatic changes in the Sahel zone of West-Africa (Márquez-Ferrando et al. 2013). For godwits, staying Iberia can be advantageous because they can skip a 3000 kilometre (v.v.) travel over the Sahara, a potentially dangerous migration route and save their fat stores for the next breeding season. **Figure 1**

Conservation

The change in wintering grounds is remarkable and an important reason why we want to do demographic research in West-Africa. This change can have consequences for the survival rate of adults. Moreover this change can lead to differences in reproductive success, for example due to differences in body condition upon arrival on the breeding grounds. Both factors are demographic parameters that can rapidly influence population dynamics. A better understanding of these processes is therefore also important from a conservation point of view. Until now, West-Africa is the only site along the migratory flyway from where we don't receive many observations of colour-marked individuals. Only small numbers of colour-ringed birds have been reported, mainly by birdwatchers and, recently, by local scientists. Unfortunately the numbers of sightings are too small to make demographic comparisons between wintering sites.

Expeditions West-Africa

In November 2014 the University of Groningen, in cooperation with Global Flyway Network and financially supported by Birdlife Netherlands, embarked upon our first expedition to the wintering grounds in West-Africa. We aim to set up a demographic research project in this area. Most important goal of this mission was to get a good overview of the wintering grounds, resighting conditions, local facilities and knowledge and to make a start with setting up a dataset of individually recognizable godwits that winter in West-Africa. Secondly we made a pilot study of habitat choice, prey choice, energetics and time budget. At this moment comparable research is done in NP Doñana (Spain), Extremadura (Spain) and the Tejo/Sado estuaries near Lisbon (Portugal). The last two are used as stop-over sites in February. We aim to continue our research at all these locations to find links between wintering sites, stop-over sites and breeding sites. Research questions we want to get into in the future with our work in West-Africa, Spain, Portugal and the Netherlands are:

1. What is the overall difference in adult mortality between birds wintering in West-Africa and Iberia? And where along the flyway do these differences occur?
2. Can birds change their wintering strategy during their life? And is this age-dependent?
3. Does reproductive success determine where birds winter?
4. Has the wintering strategy consequences for their migration and breeding phenology? And are there consequences for their reproductive success?

In July 2015 we revisited the Djoudj to scan for godwits on their way from the breeding grounds to the wintering quarters further south.

Between 17-28 August 2015 we visited the Casamance, an area in the south of Senegal and well known for its important number of godwits in August and September. In this report we present a daily overview of our findings with photos, locations we visited, numbers present and the first conclusions and recommendations.

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Expedition report, Senegal-Casamance, 17-28 August 2015

Jos Hooijmeijer and Haije Valkema, University of Groningen

People involved:



Khady Gueye



Idrissa Ndiaye



Jos Hooijmeijer



Haije Valkema

17 August; Amsterdam - Dakar

Travelling from Amsterdam to Dakar via Lisbon. Our luggage did not arrive in Dakar but would probably arrive with the next flight on the 18th.

18 August; Dakar

We had to wait the whole day for our luggage. We changed our euro's for CFA's and had a good talk with Mr. Sylla, the former head of the Senegalese National Parks, whom we met before on previous expeditions. He is in the board of the NCD, Nature Communautés Développement, a NGO that tries to involve more Senegalese people into nature conservation by organizing counts, monitoring habitat quality and setting up a project on "ornithotourism" to train local birders to become professional tourist guides for foreign birders. We met the director, Adrien Coly, in his office and discussed how we could set up a monitoring project for black-tailed godwits (hereafter "godwits"). At this moment there are only 2 persons of the NCD that have the skills to read colour rings. Khady Gueye is already an expert since she is doing a PhD on godwit migration. Idrissa Ndiaye does not have her skills yet but is learning fast. Both are joining us on this expedition. They could help setting up several teams of volunteers to cover the most important godwit sites (regions: Djoudj, Dakar, Palmarin, Sine Saloum and Casamance). Our role could be to support their fieldwork and perhaps help to train volunteers. Lecturing in a course on ornithology at St Louis University, where Adrien Coly is a lecturer, can be another way to cooperate. If there are more local people with good ring-reading skills in Senegal, it might be more efficient and sustainable to let them do the godwit monitoring instead of flying in experts from The Netherlands. In the evening we picked up our luggage at the airport.

19 August; Dakar - Bignona

Travelling from Dakar to Bignona, Casamance. This is a 10-14 hrs drive on partly very bad roads and a troublesome crossing of the River Gambia at Farafenni. Idrissa met us at Keur Ayip on the north bank and "arranged" with local police, customs and ferry officers to get us across without much trouble. Amazing to see the landscape changing from Sahel-type to more equatorial atmospheres. One big difference with previous expeditions is that the landscape is completely green now but that means we sometimes have to deal with showers and thunderstorms. We see the first rice fields in the Casamance. They are less open than usual and surrounded by trees. Idrissa explains that this is mandatory to prevent godwits from picking up new sown rice. We see dense seedbeds of rice close to the houses and the small rice plants are brought to the rice fields later when they are big enough. In this way people try to prevent godwits from damaging their crops.

20 August; Dianki ricefields

Today we wanted to make an early start but unfortunately we had to wait for a new battery because our car would not start anymore. But at 10:30 we departed. We ended up in the rice fields near Dianki. Rice fields have a different structure from what we have seen in other places. They consist of a patchwork of small ricefields of about 50 to 100 m² separated by low dams (**Figure 2**). Godwits had a strong preference for freshly ploughed fields or fields where the dams were recently restored. We could not figure out what they were foraging on. It could be that they pick grains from last year's crop that become available after turning the mud or putting it on the dikes. Or they might pick up invertebrates. The dense



Figure 1. Different crops of pictures made from flying godwits. A lot of godwits started to moult the last primaries and the first secondary's

structure of the dams and the wild rice in the adjacent unploughed fields makes ring reading far from easy. But still we managed to get the first 10 sightings of this expedition. Four of them were seen on previous expeditions to West Africa, mainly from Guinea Bissau which suggests a high repeatability for wintering on the same continent. Also a transmitter bird was observed in the rice fields (Yelbes). We also tried to make some pictures to score wing moult. Our first impression is that some birds are still moulting p7-p9 and the first secondaries (**Figure 1**). A few birds really seemed to have lost one third or more of their secondaries and we found several secondaries in the field. The ring density was quite high: we found 10 colour ringed individuals and saw in total about 250 birds.



Figure 2. Unploughed ricefields in the Casamance. The size of each field is between 50-100 square meters. In August wild grass species grow in the fields, after ploughing rice can be planted or sown.

21 August; Dianki ricefields

In the morning we went to the rice fields of Dianki again. Our goal was to find new birds with color rings. First we spent some time reading color rings in the tannes (open spaces in the mangroves next to the rice fields) where 80 birds were resting. It was easy to observe godwits at this place, they were well visible and we could approach them easily. The only disadvantage was that a lot of birds were resting on one leg or sitting on the ground. Afterwards we went to the rice fields to continue our work. By the beginning of the afternoon we had read 6 combinations. In total we estimated the number of birds around 250-300 in the whole area. In the rice fields it is hard to read rings due to high grass vegetation. The original plan was to visit the rice fields of Tionk Essil in the afternoon. At this place there are two small islands (and tannes) with rice fields. Godwits had been observed by local farmers in the last days. Unfortunately they told us that we need to spend a full day to reach the area and do our work there. We decided that we could not visit the area. For that reason we checked rice fields next to the road back to Bignona via Tendouck, Elana, Diatok and Niamone. We asked some locals if they saw godwits, but no one of them had observed them recently. We did not find any godwits. We called it a day at 19.00. Jos had to skip this day and spent his time at the toilet.

22 August; Fintiok ricefields

At 9.30 we left Bignona towards the rice fields of Fintiok on the borders of the Casamance river. Due to problems with the battery again we arrived 1,5 hours later than scheduled. In this area mainly women are working on the rice fields and they manage their rice fields excellently. It was great to see how they ploughed while they sang. These women work in a women's company that works for other land owners in return for money. In this place godwits cause important damage to the rice fields during the seeding period of rice, a complaint we hear almost everywhere during this trip. This is caused by the fact that they arrive earlier since the 90s (further details and pictures about rice farming in **Appendix I**) For that reason the local people have seed beds near the village or in the forests where godwits cannot damage the rice plants. The seedlings are taken from there to the rice fields. But there is not enough space there to supply plants for the whole rice field complex which forces them to also make seed beds in open space where the grains are readily taken. The godwits sometimes completely destroy the seedbeds or freshly planted fields multiple times resulting in loss of seedlings and income. In the past the rice was sown directly in the rice fields but the godwits arrived only in the beginning of August and by that time most seedlings were high enough and could not be eaten or trampled anymore. But this implies that in the past not only the birds with breeding success stayed longer in Europe but also the failed breeders. Otherwise in those days when the population was 75% bigger than it is now, the failed breeders could have caused the same trouble. It simply means that both successful and failed breeders leave Europe soon after the breeding season nowadays whereas they stayed in wet meadows in Europe in the past. That is not a surprise: there are hardly wet meadows left and by the end of June intense "common practice" dairy grassland has become completely unsuitable for them to fatten up or moult. This is something we witness in our study area every year and we have seen this change even over the past 12 years of our study. So intense farming in The Netherlands causes not only great problems to godwits but also to the rice farmers in the Casamance! About the godwits: we saw 500 godwits in total. Most of them were resting and foraging a part of the day on the tannes. It was easy to approach them at short distances and to read colour rings. The tibia and the tarsus were completely visible. The only disadvantage for CR-reading was that birds stayed on one leg or sat on the ground. The rest of the day godwits spent time to forage in the rice fields. They preferred ploughed fields and seedbeds. We read in total 12 combinations on the tannes.

23 August; Tionk Essil ricefields

In the morning we headed for the village of Tionk Essil. West of this village are several major ricefields deep in the mangroves. At least two transmitter birds were recorded in this area in the past few weeks. It was a long and intensive walk through mud and water but in the distance we could see flocks of godwits in the air so we had high hopes. By the time we reached the first group the sky became overcast and a heavy rain- and thunderstorm developed rapidly. The first bird we saw was a bird with a satellite transmitter which turned out to be "Gerkeskleaster"! It was in good health and we estimated that in total least 500 birds were present in this area. However, we had no chance to confirm this because it started to rain heavily. We waited for 1,5 hours in the pouring rain but it kept on raining and we were getting quite cold. We decided to return to the car and to give up for today. In the late afternoon we checked the Marigot de Baila and found a distant group of 60 birds but way too far out to read colour rings: the end of a rather disappointing day!

24 August; Fintiok & Koubanao ricefields



Figure 3 Godwits foraging on 'tannes'. This place is a part of the mangrove next to the rice fields. Godwits use it to rest and forage during day time and probably also during night time.

Today we completely made up for the bad result we had yesterday. In total we saw 34 ring combinations! This was accomplished in the rice fields of Fintiok and Koubanao on the borders of the Casamance river. Since this is a very big area, we decided to split up in two teams and this turned out to be very successful. A lot of people were working in the rice fields today since it was a nice day without thunderstorms (during daytime!). This forced the godwits out in to the tannes where

we could observe them easily (**Figure 3**). We counted around 1000 birds and the ring density was high. In general the birds seem to be in pretty good conditions with a fat score close to 3 on a 1-5 scale. We can imagine that the germinating rice must be an excellent diet for them. People start to recognize us by now and everywhere we come, we are accompanied by the word Loeloem which means “white man” in Djola.

25 August; Ouonk & Colobane ricefields

We made an early start at 7 and headed for the most eastern village on the north bank of the Casamance: Ouonk. The rice fields looked pretty similar as the adjacent ones in Koubanao and Fintiok and other places we visited this week: lots of activity of farmers in the seedbeds and about 10% of the fields had been cleaned or ploughed. Less than 5% was already planted but the fields we saw had often suffered from trampling by godwits. Farmers told us that some parcels had already been replanted for the 3rd time this year! The Ouonk fields held no godwits and we focused now on the tannes south of Tobor along the road to Ziguinchor. At least 4 transmitter godwits had visited this area recently but we found no birds. They could easily have been overlooked in this big mudflat and mangrove complex. However, it is perhaps more likely that this area is used as a roost. The next stop was at the Colobane ricefields, directly west of Ziguinchor. We immediately found a dense flock of about 200 birds and saw the first rings. But we only saw yellow rings and flags! The seepage water in this area contains a lot of iron which lies as a film on top of the water. This stains the rings (and birds!) enormously and all colours seem to be orange/ yellow from a distance. Only when they are actively foraging and go through deeper water, it is possible to see the true colours but as soon they dry up, it is almost impossible to identify them correctly. We never witnessed such staining before but still managed to read 4 ring combinations. As soon as we left the rice fields we had to bring Haije to the hospital for kidney malfunctioning and we arrived late in the evening in Bignona.

26 August; Colobane ricefields



Figure 4 Foraging godwits in ploughed rice field at Colobane.

In the morning we visited the Colobane ricefields again and saw many rings. Most birds were actively foraging which gave less problems with identifying the ring colours than yesterday. The birds were also strikingly tame as everywhere in the Casamance so far. This has to do with the ban on shooting godwits and even on possessing a gun, due to the independency revolts in the past. This gave us the possibility to read

even the most badly stained rings and 3 codeflags (**Figure 4**)! We found at least 500 birds in this area but it is hard to estimate this correctly due to high vegetation and small groups switching between flocks all of the time. In total we noted 8 ring combinations. In the afternoon we escorted Haije to the airport to spare him the bouncing trip by car to Dakar tomorrow.

27 and 28 August; Bignona - Amsterdam

Travelling from Bignona to Dakar and flying home via Lisbon early on the 28th.

Conclusions

The Casamance is a good area to find colour ringed godwits. But is it as good as we had hoped it would be? The answer to that can only be no. As everywhere in West-Africa the limited flock sizes and the infrastructure in the rice fields are the limiting factor to find many rings in a short period of time and this is only partly compensated by the easiness to read rings in the adjacent tannes in this area. In August you should be happy with an average of about 10 ring combinations per day. To be exact: we saw 73 ring combinations (63 individual combinations) of the University of Groningen scheme in the past 8 days of field work and 4 days of prescreening by Idrissa Ndiaye. The link with Guinea Bissau is obvious in the resighting histories: many birds were seen in this country later in winter after they have left the Casamance.

The weather in this of time of the year is definitely something to consider. It is hot and humid and although most of the time thunderstorms develop only in the late afternoon, they sometimes surprise you earlier during the day. Travelling on the main roads was no problem but a 4x4 is mandatory on the secondary roads like the one between Tobor and Koubanao. We never encountered any problems with local people during field work or in the villages and cities. On the contrary, people were very interested and within no time the whole region knew there were loeloem in the ricefields. People know very well what godwits are because of the damage they cause to seedbeds and newly planted fields. We were often asked how they should solve this increasing problem and we told them it is our fault: we should keep them longer in The Netherlands to raise their chicks, fatten up and moult!

In general, we recommend this area as a place for resighting black-tailed godwits but we should consider if training and contracting local people for a longer period isn't a far more sustainable solution instead of sending out 2 toubabs for a few weeks. With Khady Gueye we already have an expert ring reader and Idrissa Ndiaye is making large steps in becoming one.

Appendix I Rice field management Casamance

1. Maintenance and ploughing



Maintenance of the dykes and constructing the plant beds is work for the men (above). But before that, ploughing to get rid of wild grasses is done by women; they work together in a long, singing ploughing line.

2. Seedbed rice farming



Local rice farmers have changed their management since the 90s, in response to the increasing level of damage caused by godwits (and ducks): they eat the germinating rice seeds and damage the crops by trampling seedlings. To prevent this, farmers grow rice near villages and between trees where godwits don't dare to come. When the rice seedlings are large enough, they transport them to the rice fields where are planted manually.

3. Rice planting



Women transport rice plants to the field and plant them one by one in a new seed bed. Another method to protect rice is to cover the kernels with nets, as shown on the second picture.