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African winter habitats of Black-tailed Godwits breeding in the Dümmer area

Report of an expedition from 9 – 18 December 2018 in the Senegal

NLWKN
Niedersächsischer Landesbetrieb für
Wasserwirtschaft, Küsten- und Naturschutz

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http://www.wiesenvoegel-life.de

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Front page: “Diaba diaba” (the name of *Limosa limosa* in Wolof, the most common native language in Senegal) feeding in the Guembeul reserve

1 Background

The Western-European and continental populations of Black-tailed Godwit *Limosa limosa* have been declining for some decades (Hötker et al. 2007, Roodbergen et al. 2012, Kentie et al. 2016). Because of the strong decline the black-tailed godwit is on the red data list of endangered species in Germany and all relevant federal states like Lower-Saxony (Grüneberg et al. 2015, Krüger & Nipkow 2015). The negative trend is typical for almost all meadow bird species in Germany. On a global scale the black-tailed godwit is listed as a "near-threatened species" (IUCN 2016).

Black-tailed Godwit is one of the focal species for meadow bird conservation within the EU and also in Lower-Saxony, Germany. Despite much effort the population of the species is still declining in Lower-Saxony – as almost everywhere in Europe. The main reasons for the decline at the breeding sites are well known and can be found in intensification of land use especially.

The Federal State of Lower Saxony started the LIFE+ Project "Meadow Birds" in 2011, cofounded by the EU (60%). With additional funding more than 30 million Euros are invested to increase habitat quality in the breeding grounds for stabilization of population and for increasing the fledging success to change the sink areas into source areas. The 12 most important core areas of the state are project sites, holding 60% of Lower Saxony's Godwit population (see http://www.meadowbirds-life.de/en).

One of the most successful meadow bird sites is located in the Dümmer area (5.000 ha), in the South-West of Lower Saxony. By re-establishing and re-wetting meadows the decline of Black-tailed Godwit has stopped and turned over into a growing population. During the last 15 years population has more than tripled. In 2018 140 pairs were counted (Apffelstaedt et al. unpublished). Annual fledging success in mean is sufficient (Belting et al. 1997, Peerenboom et al. 2015).

The monitoring resulted in detailed studies on breeding biology (incl. radio-telemetry of chicks, colour-ringing) and therefore much information is available from this well managed site (Hönisch et al. 2017). This knowledge can be used to improve conservation measures in other sites in Lower-Saxony and Germany.

Compared to good knowledge from the breeding grounds, information about of the German godwits from outside the breeding range is less availabe. Black-tailed Godwit is a migratory species that spends the winter in Southern Europe and Africa (Western Africa south of the Sahel zone). For about seven months a year, the birds stay outside their breeding grounds in Lower-Saxony.

On migration the birds use different staging areas in Western and Southern Europe. Due to land use and climate change, habitats in the wintering grounds and the stop-over-sites are also changing rapidly which can have a high impact on biology, migratory strategy and conservation for the birds.

For conservation issue it is essential to gather more information about the connectivity and about the function of different areas used by Black-tailed Godwit throughout their annual cycle.

2 Ring recoveries

Bairlein et al. (2014) listed in their recently published „Atlas des Vogelzuges“ a total of 199 ring recoveries (incl. resightings) of Black-tailed Godwit.

There are just two recoveries from Africa during winter and only very few sightings from the Netherlands after the breeding season (see figures).

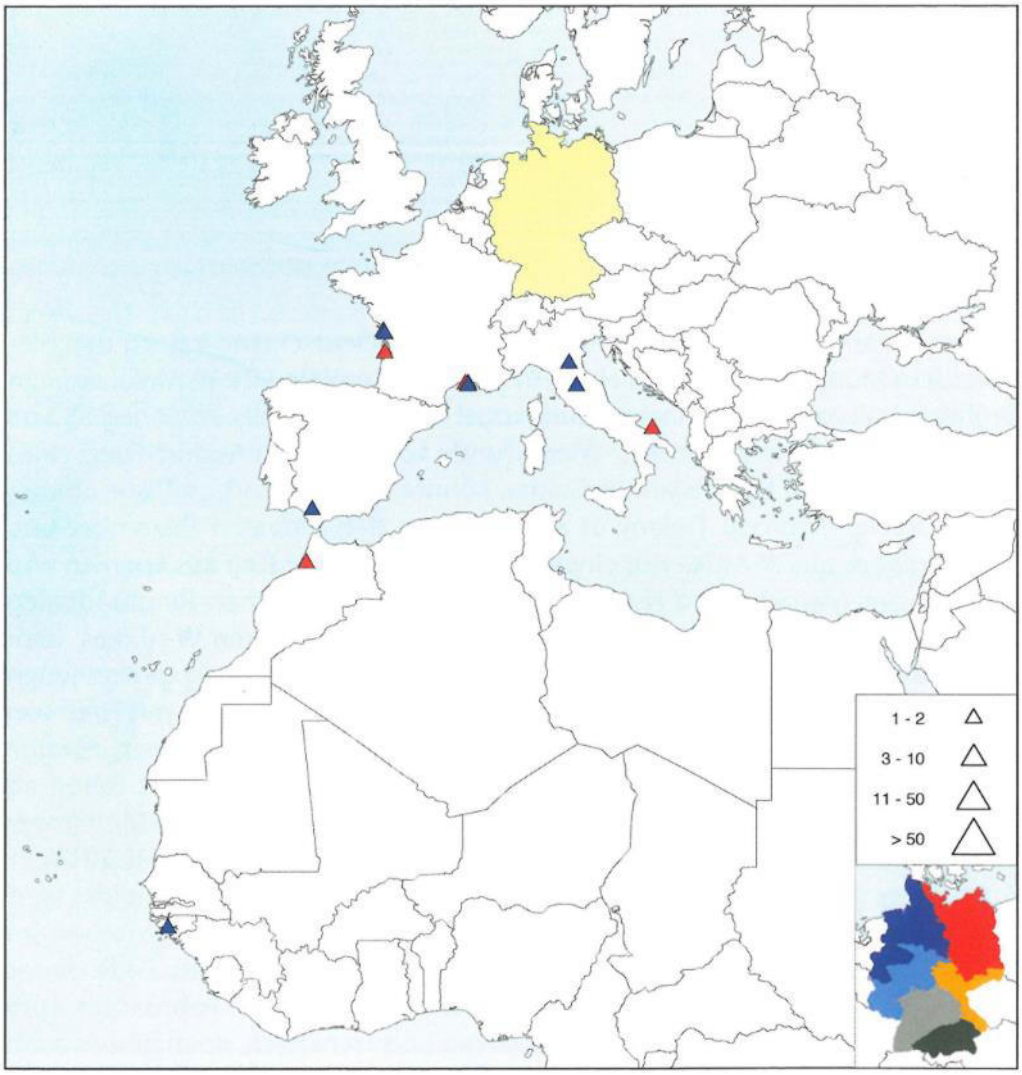


Fig. 1: Presence in winter (December – February) of birds present in Germany during the breeding season; from Bairlein et al. 2014

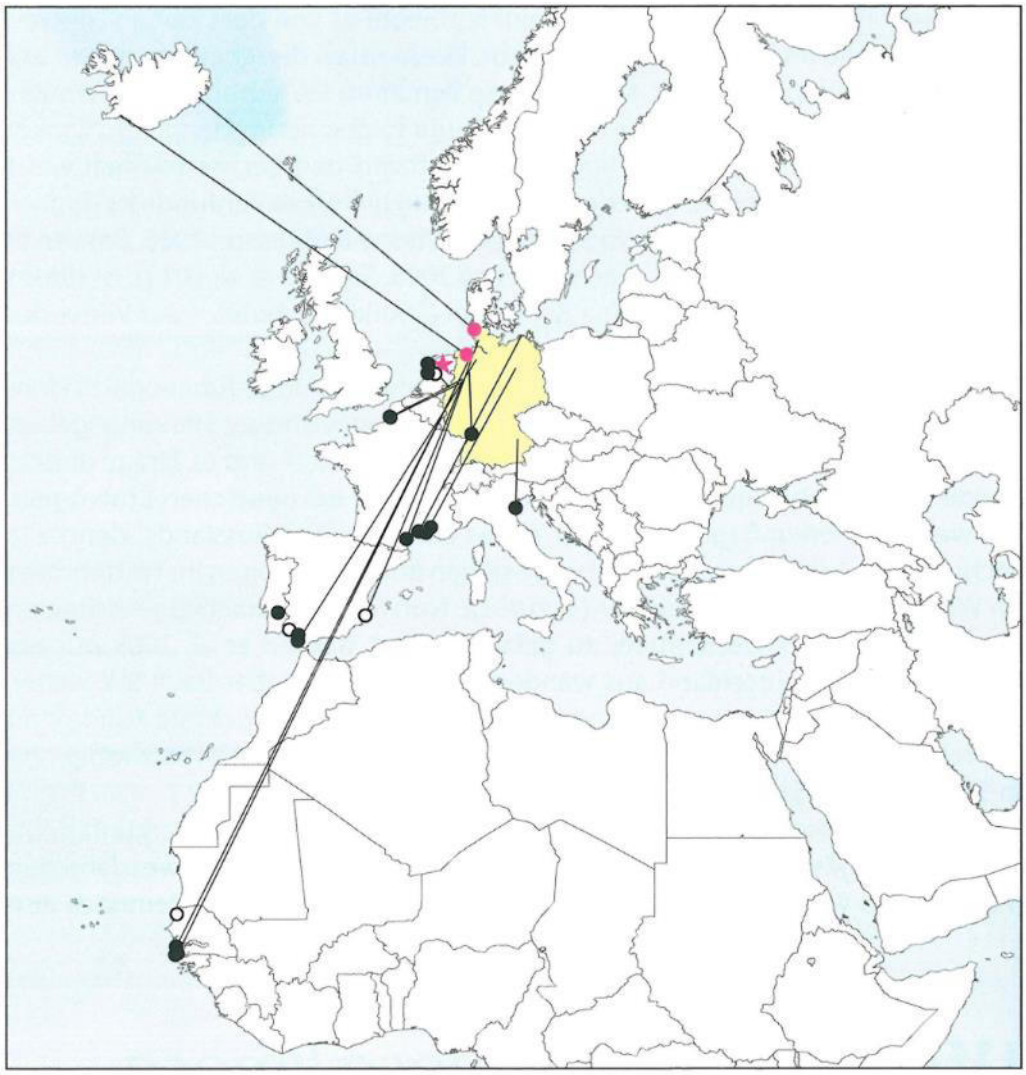


Fig. 2: Autumn migration (July – November) of birds present in Germany during the breeding season; from Bairlein et al. 2014

The results of colour-ringing reveal new information about wintering and staging areas of the Dümmer birds, indicating West-Africa, especially the Senegal as an important wintering area of these birds.

3 GPS satellite tracking technology

With the new small GPS satellite transmitter, it is possible to track birds (with body mass under 300 g) continuously over the year and in all sites during migration and in the wintering grounds. The technology was already tested in the field with different wader species (Chan et al. 2016, Exo et al. 2016, Scarpignato et al. 2016). In Germany the method was used and tested, e.g. with Turtle Dove and Curlew (https://blogs.nabu.de/zugvoegel/; Herzog & Lossow 2018).

In the Netherlands, the Black-tailed Godwits have been tracked with satellite transmitters for some years (Senner et al. 2015, Kentie et al. 2017); scientists of the University of Groningen provide expertise in handling this new method.

In cooperation with the University of Groningen, the first 10 birds were tagged with satellite transmitters in the Dümmer area in spring 2018 (by Mo Verhoeven and Jelle Loonstra, working group of Theunis Piersma). Several more shall be tagged in the following years. Main questions for "following" birds from Lower Saxony are:

- movement and dispersal of birds within and outside the breeding season, especially local dispersal of just fledged juveniles
- returning rates of adults and juveniles
- exchange with other populations in Germany and Europe
- localization of staging and stop-over-sites
- migration routes of Black-tailed Godwits (adult and juveniles)

Besides enhancing knowledge in breeding grounds this information is helpful for analyzing and assessing the ecological conditions and changes of habitats during migration in winter and for achieving benefits in conservation:

- What and where are the bottle-necks for successful migration?
- What are the perspectives for the migrating and wintering birds?
- What can be done outside the breeding range to improve the conservation status?

Out of the 10 tagged birds five were adult and five juvenile birds. Unfortunately, one juvenile bird was predated in the "Ochsenmoor" shortly before fledging. Consequently, nine tagged birds left the Dümmer area after the breeding season 2018.

Soon after departure from the Dümmer area and migration through South-Western Europe, first signals of satellite tagged adult birds we detected from Senegal and Mauretania in July. A few weeks later, the first juvenile birds were located in Western Africa.

In autumn, eight birds (90% of our tagged, alive birds) were present in Senegal and/or the adjacent parts of Mauretania; one bird already stopped migration in Southern Spain for wintering in Coto Donana NP.

With these highly positive results, we felt we received a clear message to follow the Dümmer birds into their wintering grounds in the Senegal, as our Dutch colleagues regularly do. The University of Groningen has carried out detailed scientific studies in the Senegal for years (Hooijmeijer et al. 2016, 2018).

Satellite tagged “Elia” resting in the Netherlands in August 2018 (Ton Renniers)

Luckily, we could benefit from the experience and from the local contacts of our Dutch colleagues. Many thanks for that, esp. to R. Howison and J. Hooijmeijer! We write this report in a similar structure of the Dutch reports. And special thanks to Idrissa Ndiaye and Saliou Diop; without their help and advice, we would have been lost in West Africa.

4 Aims of the expedition

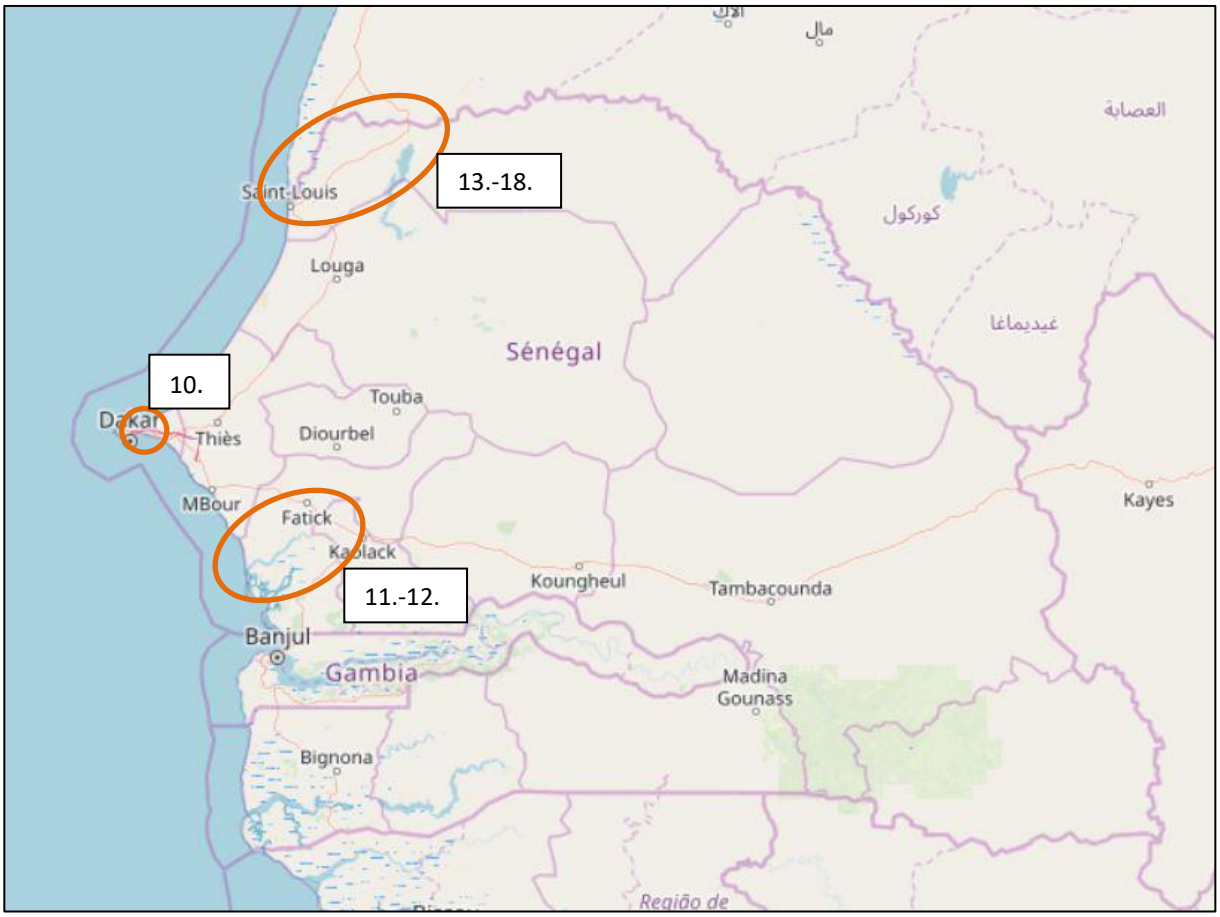
The main aim of the expedition was to get an impression of habitat situation in the Senegal wintering grounds of black-tailed Godwits. Therefore we attempted to:

- Search for and inspect sites/areas in the Senegal that are used by satellite tagged birds from Dümmer since July 2018
- Descript/analyze these habitat types and evaluate (if possible) threats for areas and birds
- Detect possibilities for mitigation of threats in the future
- Count Black-tailed Godwits at feeding and roosting areas
- Control birds for colour-rings (beside the Dümmer project, there are several other colour-ringing projects in Europe that we aim to support)

- Contact to local/regional/national nature conservation institutions (government, national parks etc.) to evaluate whether collaboration in further conservation measures can be reasonable for the future
- The Federal State of Lower Saxony is going to prepare an integrated proposal for conservation of Godwits and other meadow birds towards the EU. We aspire to sort out what could/should be the main focus in Senegal

To sum up, we aim to learn about the situation of our Diaba Diaba and if possible, to contribute a small mosaic to the international network of research and conservation on this endangered species.

5 Expedition programme and results



Areas visited in December 2018 (https://www.openstreetmap.de)

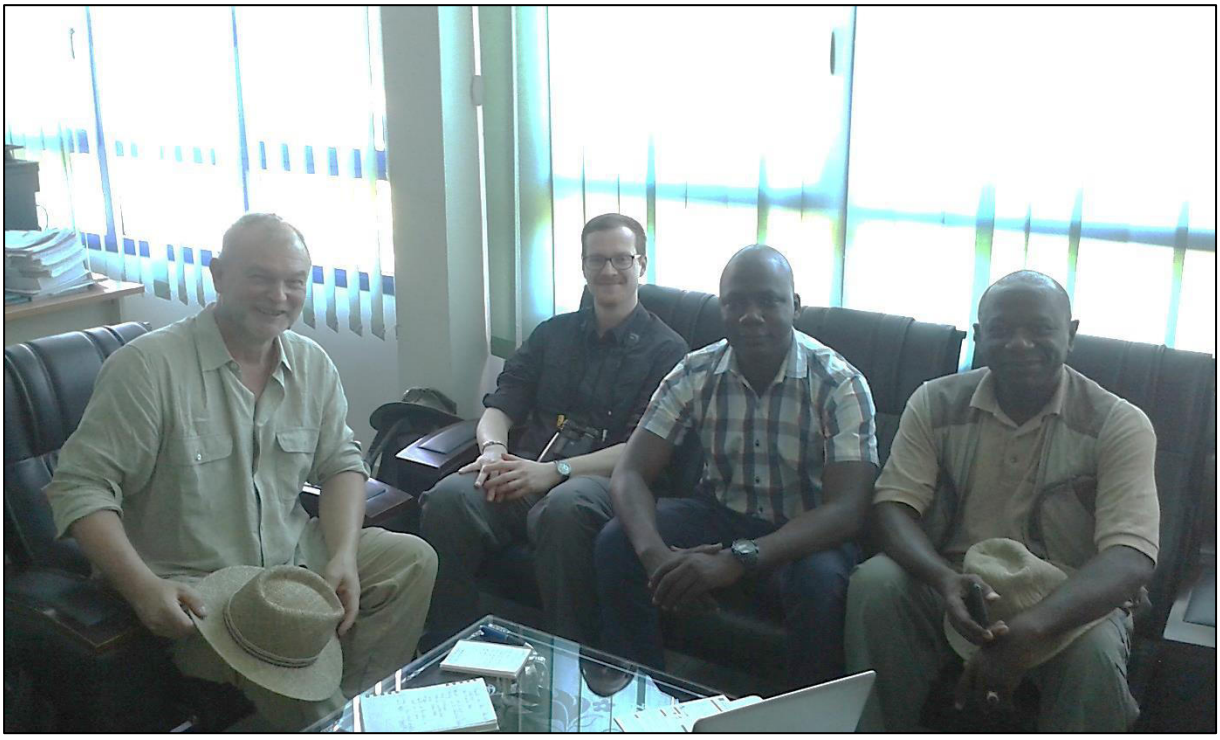
5.1 Daily results - diary

09/10 December 2018

Currently there are no direct flights to Senegal from Germany, so that – like the Godwits – we had to hop step by step. We started a long trip at 07:00 in Lemförde by train to Frankfurt, where we got the flight to Lisboa in time. After arriving in Lisboa about 14:00 we could relax till 20:50 in the airport, when the flight to Dakar took off. We landed in Dakar at 01:00 local time in the night. At the new airport Blaise-Diagne (opened in 2017) we were picked up by Idrissa Ndiaye (ecological consultant) and our driver Saliou Diop and drove to the “Hotel des Amis de la Nature” on the outskirts of Dakar, which we reached about 03:00. The hotel was supported by the “Touristverein Die Naturfreunde”, a German NGO.

10 December

After breakfast Saliou managed well to bring us through much and wild traffic to the Ministry of environment in Dakar, where we met Ibrahima Gueye (Chef division zone humides) who was very interested in our work and future projects. We discussed problems of nature conservation, monitoring and hunting in parts of the country. He told us that for the Senegal government food production has a main priority to supply the strongly rising population. For that it is planned to expand rice cultivation (and other crops) in many areas, esp. along the river Senegal.



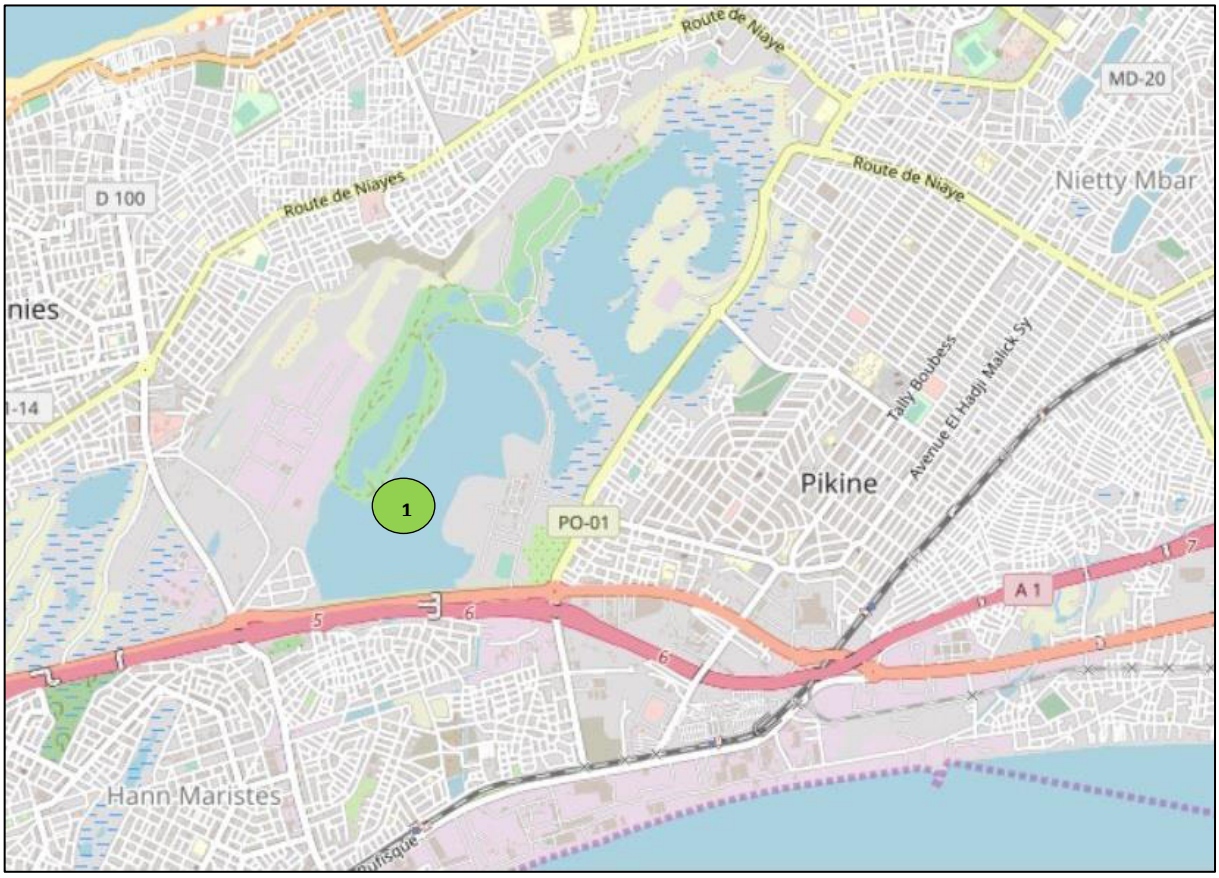
Meeting with Ibrahima Gueye in the Ministry of Environment in Dakar

Because there was some time before we had the next official date in the German embassy in Dakar, we visited the area Dakar “Technopole”. We only observed the southern part of the area and saw first groups of about 300 godwits in total including two colour-ringed birds from other schemes. We saw many other wader and waterbird-species (including 300 shovelers, 150 ringed plovers, 100 curlew sandpipers, 350 stilts, one colour-ringed osprey). We made our first habitat analysis. “Technopole” is a semi-artifical wetland close to the city, surrounded by roads, houses, huts and gardens. Even if it is very busy in the surroundings the habitat seem not to be threatened. It still looks like in the late 1980s when one of us had been there before.

The temperature was between 33-35 °C, contrasting to the German winter one day before we had to adapt a bit.

In the German embassy we then met Thomas Wixler (deputy head of mission), who informed us about local organization system in Senegal and work of the embassy. Projects are carried out almost exclusively by GIZ. Actually there are no own projects concerning environmental aspects, but (solar) energy projects are of importance. He explained to us the special relationship in Senegal between state entities and local entities. For any project it is always very important to get public awareness and to convince the local stakeholder. It is always important to get the Mayors on board.

In the afternoon we were driven south to the Sine Saloum Delta area, where we stayed for the next two nights in the “Auberge le Djembe” at Joal Fadiout close to the Atlantic ocean.



Dakar-Technopole, number of habitat description (in circle) (https://www.openstreetmap.de)

Technopole: wetland in Dakar; counting godwits and controlling for rings

11 December

Today we visited several sites in the Sine Saloum delta. In this area our satellite tagged birds Amanda and Fulke stayed for some months (see appendix), but left the area during the last weeks. However, we have come to see the habitats where the birds had been.

First stop was near Mbissel, where last week Idrissa saw about 2.500 godwits, currently there was no bird left. In Palmarin we made a short stop at the office of Abdoulaye Faye, the director Reserve Naturelle Palmarin. In the reserve 330 godwits were feeding in the tidal flats. We were able to control most of them for colour rings and found at least eight ringed birds from different schemes. Some kilometres south of the reserve we found another 20 birds in tidal flats. At Djifère we then had a view from the Saloum delta into the ocean.

To our surprise on the way back to Joal we saw a small group of seven godwits in old small abundant rice fields within the boundaries of Palmarin and close to the road. The old rice fields were flooded (approx. 10-20 cm) and used not only by a big flock of black herons, ruffs and other waterbirds, but also by some domestic pigs (hint for the presence of Christian people). Pig activity in combination with goat grazing are holding this habitat open, so it is very suitable for many waterbirds. None of the birds was shy, obviously they were used to human activities; one bird was colour-ringed. Despite of huge areas in the tidal lagoon this spot represents a totally different habitat-type, which seems not to be uncommon in those regions during and some months after the raining season.

Abandoned rice field; wetland in the outskirts of Palmarin

Sine Saloum Delta: number of habitat description (in circle) (https://www.openstreetmap.de)

In the afternoon it became very hot (36 °C) and we had to decide to find a cooler place in the hotel.

12 December 2018

Leaving our hotel early in the morning we started a trip to other parts of the Saloum Delta more inland esp. to visit habitats near Fatick, where Fulke was located in autumn. We got an impression of mangroves and the attempts for their resettlement in different sites in the delta which is tidally influenced far into inland.

Near Keur Saint Martin we found a 5-10 ha freshwater wetland with a small flock of ruffs south of the road (N 1, west of Diouroup).

The area south of Fatick is widely used for salt extraction. Some weeks ago, the area still was flooded, we currently found only dried-out fields. So it was not surprising that no godwits were present. We made two assessments of habitats, which our bird definitely had used some weeks before. Again, we assessed totally different habitats compared to the types we had visited before.

We met two workers in the salt fields and with Idrisssa`s supportive translation we got an impression of habitats some weeks before and of the hard work in the salt fields.

Much work still is done by hand in these salt fields near Fatick.

In the afternoon we left the Saloum region and travelled via Mbour, Douga and Saint Louis to Djoudj NP which we reached after sunset. We spent the next nights in the Hotel du Djoudj which is close to Poste Campement of the NP.

We were told that the Biological Station Djoudj should be renovated in the near future and is actually not suitable. The building of the Biological Station was financed by the government of Northrhine-Westphalia in the 1990s. One part of the Biological Station is still used for the administration of the NP.

Djoudj – Biological station

13 December

After breakfast we checked a small artificial wetland in the surroundings of the Biological Station. We counted 150 godwits most of them feeding. We found three ringed birds. The just 10 ha area was almost crowded with about 10.000 Whistling Ducks, which used the area as a daily roost; during the night they used to fly into rice fields in the surroundings. The whispering calls of the big flock of birds were characteristic for the next days of our stay in the campement.

On the way to our next destination, the Nadiael rerserve, we crossed the rice fields in the surroundings of Ross Bethio. In this region there are both small privately owned rice fields and big new plantations of some thousand hectares which were farmed by companies using modern technology and machinery. In many regions of Senegal rice is harvested twice a year. Currently the rice harvesting season was almost finished with some fields still holding the crop. It was a big contrast to see that many small fields were cut manually by local farmers while other fields were harvested by huge modern machines.

We made a short stop in the rice fields west of Ross Bethio to check a water reservoir along the river Lampsar, where in tht1980s big numbers of ruffs and some godwits were ringed (OAG Münster 1998). In fact, the water level actually was too high and the lakeside was covered by tamarisk shrubs and reed beds. However, a small flock of 20 godwits was flying around, but we could not control them for rings.

Afterwards we cruized through Ndiael reserve for two hours searching for water or wetlands that can be used by godwits. Nadiael is a flat area of about 46,000 ha that is partly flooded during the raining season. In this area our satellite birds Henricus and Amanda were located untill November.

Searching for water and godwits in Reserve Ndiael

Sometimes we thought to have found shallow water, but these only were “Fata Morgana” effects (local temperature about 32 °C) but the area that we were able to reach was totally dried out, no water, no birds. We estimated that the area had been dry since late November. We saw some caterpillars building dikes. Idrissa told us that it is planned to restore shallow waterbodies at some spots over a longer period by diking. Moreover, this will allow to flood areas with water from Lac de Guiers. Consequently, Ndiael may become an even more important site for godwits in the near future.

After having lunch in a restaurant in Saint Loius we started to search for godwits in the Guembeul reserve and its surroundings. Close to Saint Louis first we found two groups of 165 birds in total feeding in shallow water in a kind of sandpit near N’Diawssire. The site was located close to a road. We could not controll all birds (partly deep water) but read one ringing combination.

Area around Ross Bethio/Ndiael number of habitat description (in circle) (https://www.openstreetmap.de)

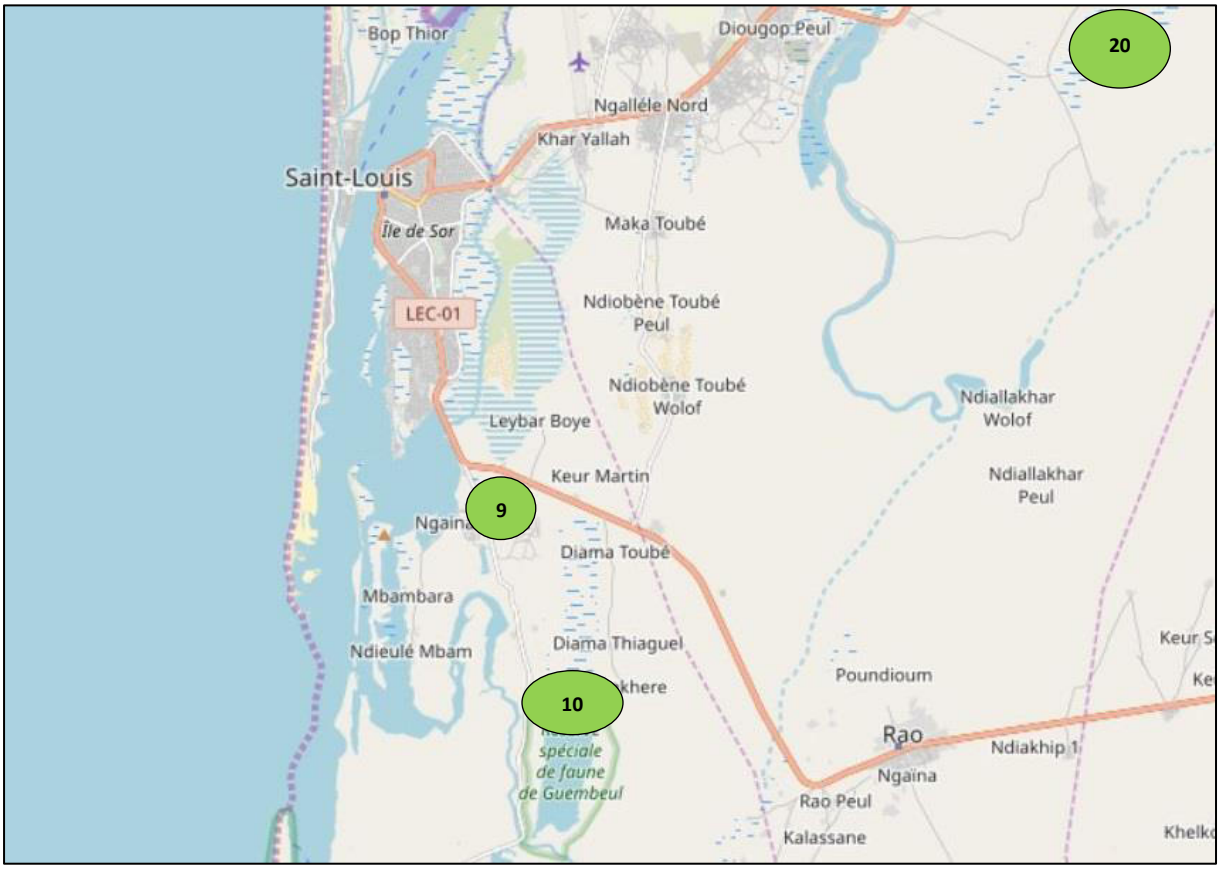
After having contacted Basile Sagna, the vice-director of the Guembuel reserve, we could observe birds in the reserve accompanied by ranger Moussa Mang.

The reserve *“speciale de faune de Guembuel*” is a totally fenced area (some hundred ha) in which some anthilopes and turtles are reintroduced. Several lagoons are linked to the ocean and the Senegal delta and are flooded for several month of the year. The water level is

mainly managed and was also filled with rain during raining season. Parts of the lagoons are falling dry in winter. Therefore, the water is brakish becoming more and more saline in winter. Like in Saloum (but on a smaller scale) salt is digged by local people.

We counted about 720 godwits, almost all feeding at 16:50. Together with Idrissa we read at least 16 colour combinations including one of our “Dümmer” birds, that was ringed as a chick in 2017 (see appendix). Idrissa really is a professional in reading colour-rings, with his patience he never stops before having read all ringed birds!

Guembuel – Djoudj is a 1,5 h drive; so we reached our hotel in the evening.



Area around Saint Louis, number of habitat description (in circle) (https://www.openstreetmap.de)

Guembuel reserve (painting in the Guembeul exhibition)

With Saliou we were glad not just to have a brilliant car driver in the West African traffic chaos but as a car mechanic he also knew how to repair broken breaktubes just on the spot.

14 December

This day, we intended to focus our observations on the Djoudj NP and the local region, including some “extra-birding”. Djoudj NP consists of about 16,000 ha of the Senegal delta close to the border to Mauretania. It is a RAMSAR site and very important for more than 300 African species and more than 100 migratory species. The NP is surrounded by big rice fields.

First, we could overview Lac Khar, where we could observe some thousand waterbirds including many flamingos, pelicans and a small flock of 15 godwits (only seen flying). Here and at the much bigger Grand Lac, we climbed different hides and were impressed by the wide and open landscape. Both lakes cover several thousand ha and can only be reached from a few sites. The water level is managed by the NP and currently seemed to be too high for godwits. The lake shore is mainly covered by vegetation (reeds, shrubs); spreading of Typha is a problem at several lakes. Considering the big area it is possible that somewhere there are shallow water regions left at the lakes.

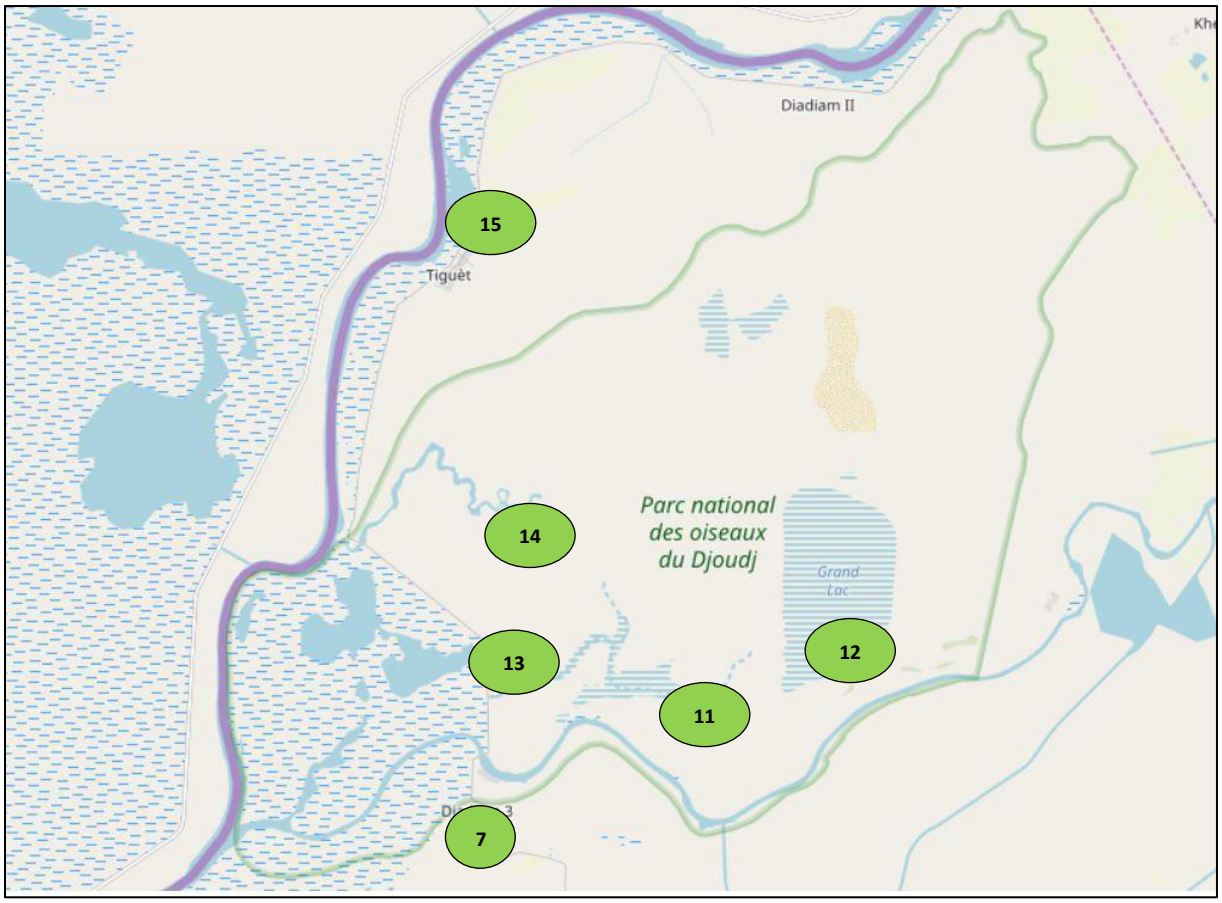
Driving through the savannah between the lakes, we observed some Arabian Bustards, Crowned Cranes and other species as well as plenty of warthogs.

Later in the morning, we found a group of 235 mostly feeding odwits at “Marigot du Khar”; we could not control all birds but read one combination. At Lac Tantale, we saw 20 more godwits flying.

At noon (30 °C), we had a break at the former “Poste Gainthe” (ranger station and camp site of several bird ringers in the 1980s); the ranger station has been abandoned for some years now. However, it is a wonderful place: in the surrounded green swamps we saw hundreds of Night Heron and other waterbirds. A flock of about 250 godwits was landing in the swamp, unreachable for us…

In the afternoon, we made a stop at “Marigot du Khar” swamps again to have a second chance at reading colour ringes; now we counted about 145 birds.

In the afternoon, we searched the rice fields further north at Tiguet and Debi for godwits; some fields are still keeping shallow water. We found a group of about 90 godwits including at least three ringed birds and a stallite-tagged godwit from the Netherlands.



Djoudj National Park and surroundings: number of habitat description (in circle) (https://www.openstreetmap.de)

15 December

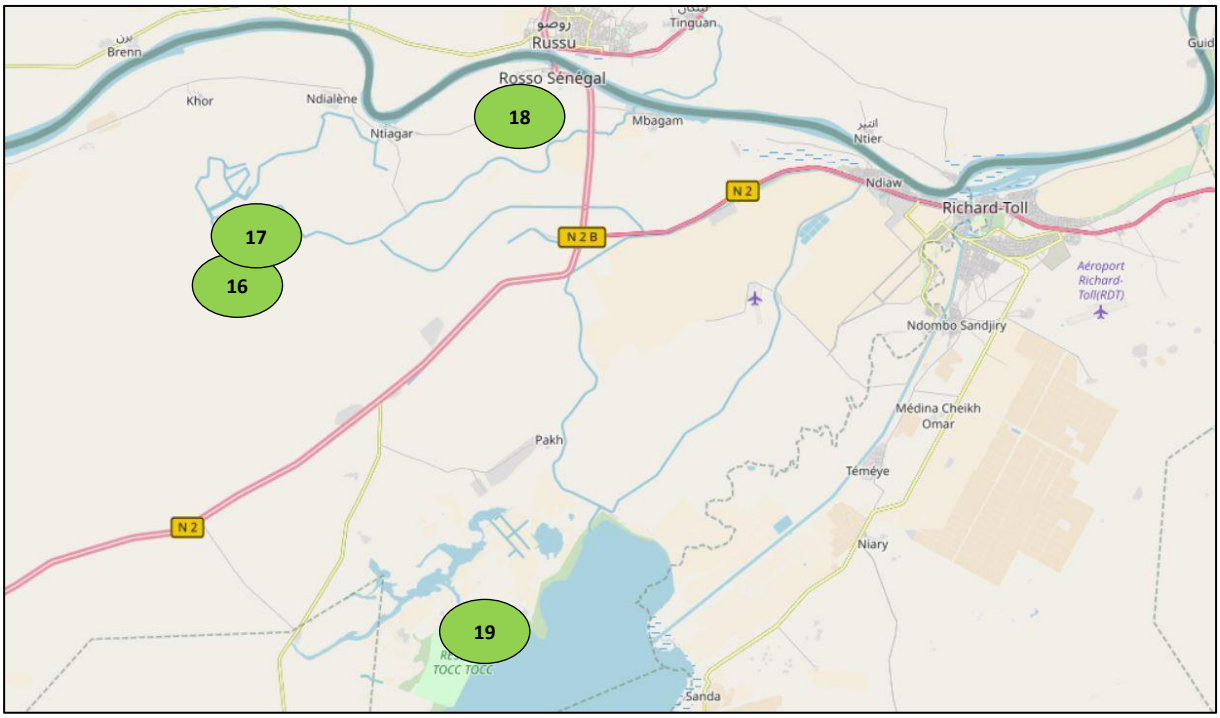
Unfortunately, there was no internet access for us in the area. Therefore, we could only receive little information from our satellite tagged birds from home more or less by chance via mobile phone. Our latest information was that Henricus, Amanda and Elia were located in the region between Djoudj and Richard Toll yesterday.

This day, we decided to find the places from where we received the latest locations of our satellite birds (two signals were pretty exact, one had a less accuracy). We used a mobile phone to navigate to the locations.

After some time searching for the right way and passing some rice fields changing with savannah, we first reached the place where “Amanda” was located the day before. There we found two wetlands (old abandoned rice fields) of about 5 and 30 ha near the small village “Diawel”. We counted about 400 Shoveler, 500 Little Stints, some hundred Ruffs and five Godwits, none of them were ringed!

We switched to find the location where a signal from “Elia” had been sent yesterday. Once again, we were successful in finding a small wetland some 2-3 km southwest of Rosso, holding 70 European Spoonbill (at least three ringed birds), other waterbirds, but no godwits!

The wetland must have dried out last week, only 1 ha of shallow water was left. Again, we did not only have the feeling to be one day too late, we actually were!



Rosso – Richard Toll region; number of habitat description (in circle) (https://www.openstreetmap.de)

On the way back to Djoudj, we saw three godwits close to the N2 in small wetlands and in the rice field south of Djoudj, we observed big flocks of Ruffs (about 10,000 birds) flying between rice fields and their roost in a swamp.

In the late afternoon we counted Godwits near the Biological station and read one ringed bird (we had seen already before).

16 December

Because we did not want to give up to see one of our satellite birds, we decided to find the location where our last option “Henricus” had been located two days before. We could combine a trip in the area around Richard Toll with a visit of the Tocc-Tocc-Reserve which is in the northwestern corner of the Lac de Guiers.

In the morning, we first visited Tocc-Tocc. Parts of the reserve are shallow freshwater flats just behind the dike of the Lac de Guiers. We estimated the flooded area of about 200 ha (water level from 0-30 cm). Perfect for Godwits and we counted about 780 Godwits, most of them far away or feeding deep in water. We read three ringing combinations and were surprised that one bird already showed signs of breeding plumage.

Around noon, we interrupted the visit in Tocc Tocc for a detour to Richard Toll, our last hope to find “Henricus”. We crossed tremendous huge fields of sugarcane which is processed in a factory in Richard Toll. Lost in the high and dense jungle of sugarcanes without internet or mobile access, there did not seem to be any real option to find any place with suitable “Henricus habitats”, much less to find the bird itself. However, orientation in Senegal can be very easy, you just have to ask a local sugarcane worker: “Are there any open places around with shallow water to find the “Diaba diaba” and he tells you: “Yes, very easy to find, I just come with you and will show them to you!” We were lead close to the Senegal River and found the place where “Henricus” was located two days before but we did not find any godwit.

For farewell, the local worker took out his mobile and asked politely, “Est-ce que je peux prendre un photo avec vous?” (may I am aloud to take a picture of you?).

After being photographed, we went back to Tocc Tocc to control the birds there for colour-rings again. Now, we checked the place from a more western point and in a well light position. We counted at least 940 godwits and read some new ringed ones including another colour-ringed bird from our study site Dümmer, it was ringed as a chick in 2017 (appendix). While in the morning almost all birds were feeding there, now a high portion of about 80 % was sleeping/resting.

Late in the afternoon birds were disturbed by shooting. The surrounding of Tocc Tocc is used as a ricefield. Local farmers tried to chase away weaver birds from their fields, often they do so by chasing the flocks, obviously sometimes also with guns. As a result of the disturbance big groups of godwit left the site flying far north.

Being back at campsite late in the evening, we had internet access again and received the message about the accurate position of “Henricus” during our field visit, sent to us by our colleague Christiane in Germany – it had been in a pond only 100 meters away from the place where we were standing. We could not expect its presence, it was hidden behind the high sugarcanes. We had to realize again – as well as so often in life - it is important to be at the right place at the right time. Or, to say it in other words, modern technique does not help when it is not available.

Later in the evening we experienced a power failure in the NP campsite after having had no running water the day before.

17 December

After breakfast we made a fast control of godwits near the Biological station; in the present group of 42 birds one was ringed.

That day, we decided to search in the region around Saint Louis for godwits again. We started with the N`Diawdoune wetlands, some km east of Saint Louis. It is a natural freshwater wetland mainly fed by rain. We spent two hours in this amazing spot and counted 108 godwits but did not find ringing combinations.

After lunch in our favourite, traditional senegalesian restaurant in Saint Louis, we drove to Guembeul and counted 205 Godwits on route at the sandpit near N'Diawssire including some ringed birds.

Early in the evening, we met Malle Gueye, director of Djoudj NP in a hotel lounge in Saint Louis where he participated in an IUCN meeting on Biosphere Reserves together with colleagues from Mauretania. We told him about our project and discussed possibilities of future co-operations. Not really by chance there we met Ibrahima Gueye (Ministry of environment) again who also joint the IUCN meeting.

Back in Djoudj long after sunset, we were happy to have electricity and water supply working again.

18 December

After breakfast we met with Ndiapaly Gueye, director of Biological Staion Djoudj. We learned that Idrissa is one of the very few in the region who can read colour rings and therefore, his wish is to train his staff in counting birds, monitoring and of course colour ring sighting. His staff is involved in census work. They also need support for habitat management in the NP.

The rice fields just south of Djoudj NP are managed by CASL, a modern rice company (http://www.casl-senegal.com). We were lucky that we could talk to Abdoulaye Diop and Aisssamby Dieme (two managers of CASL) during a stop on the way back to Dakar.

Meeting with CASL (campagnie agricole de Saint Louis Senegal)

Their company cultivates rice fields of about 3,000 ha and is employing 150 permanent workers and 100 part-time employees. We learned a lot about rice cultivation with the use of pesticides especially to depress grass and insects and using huge amounts of fertilizer. The average production is about 5 to rice/ha. In fact, water supply and increasing salinity is no

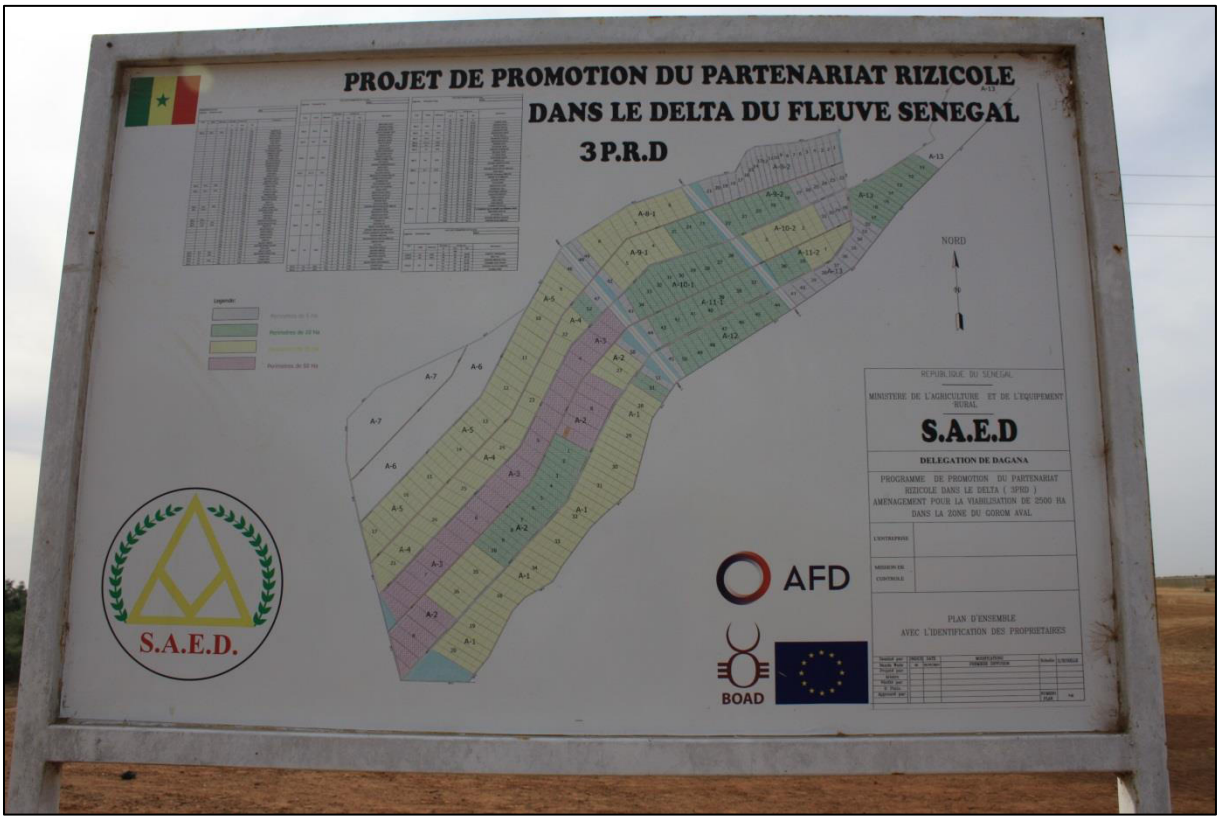
problem. The canal system of their rice fields is 174 km long. Per ha the need of water is about 11,000 m^3 per crop season. Two crop seasons are possible in this area.

We were told that godwits seem to be no problem for them but weavers that in mean take away 20 % of the crop. This is an important problem, esp. because the company still lacks the zone of a profitable business. It starts at 6.5 to/ha.

Of course it is clear that one of the main problems in Senegal is to improve the food production as fast as the population increase, resulting in enhanced cultivation of new fields (not only rice and sugarcane also maize and other fruits).

Already in the German Embassy, we were introduced to the importance of the national program “Pour un Senegal autosuffisant en riz” and that this counts as a high national priority.

We were told about ambitious efforts to enlarge rice production in the Senegal. During our stay, we saw several projects, partly co-funded by the EU; many European companies are involved (e.g. from our German home region, Fa. Claas). However, for wintering waders these plans do not necessarily worsen the habitat conditions. We discussed possibilities of water management for birds and had the impression that they are sensible to new ideas.



Another new rice project in the Ross Bethio area is already in construction (2,500 ha)

Because of the shortage of time, we could not dive as deep into the rice farming subject as we would have liked to: But we got a good overview of the situation.

After one week in wetlands and the savannah our car (4x4 Mitsubishi) had to be cleaned at petrol station in Saint Louis.

With some birding stops and a coffee break in Thies, we drove back to Dakar International airport and arrived there around 19:00. We prepared for take-off flying home at 22:30, we emptied our shoes of thorns, insects and unexpected amounts of Sahel soil and came back via Madrid arriving home in Germany at noon on 19 December. After having spent time in a sunny environment with bright people in that lovely country, at home we had to realize the contrast to a grey atmosphere all around, even before Christmas and we were impressed by the masses of Savannah dust we brought home in our suitcases.

5.2 Summary of results and conclusions

Although we did not see any of our satellite tagged birds, it was a successful expedition. The cooperation with our guide and local authorities was very good, we always experienced a warm welcome; many thanks to all of them, especially Idrissa and Saliou!

It was very dry and hot but conditions for logistic and field work were good. The timing of our expedition could have been better but for practical reasons we had no other options this year. The raining season ends in September and therefore more and more wetlands dry out until December. Therefore, some Godwits have to change sites several times or even start migration back to Spain already; two satellite tagged Dümmer birds had already migrated back to Spain in November/early December. Two birds mowed more than 1,300 km east to the Inner Niger Delta in Mali.

However we received a good impression of habitat conditions of Godwits after the raining season and shortly before most of them start migration back to Europe.

We counted more than 3,400 Godwits at about 20 different places (Tab. 1). Although there is an exchange of birds between local sites, we do not think that we counted many birds twice. Probably in some areas (like Djoudj and surrounding rice fields and wetlands) we assumed to spot many more bird present than we actually saw. It was not possible to reach all wetlands in that area. Often, we only saw flying groups (e.g. Poste Gainthe) and could only estimate the numbers.

We read combinations of about 40 colour-ringed birds and after all, we saw two colour ringed birds from our Dümmer project!

At most sites the birds were feeding in shallow water during day indicating that they had started pre-migratory fattening. We did not take mud samples or analyzed intake rate but our impression was that they fed well.

Although we could not see them vis-à-vis, we were able to visit the (former) staging areas of five satellite tagged Dümmer birds (50% of tagged birds). There we made some basic habitat assessments at 20 sites with totally different habitats including salt water lagoons, brackish and fresh water wetlands both of natural and artificial structure (Tab. 2).

Water supply in natural wetlands is more or less fluctuating concerning to rainfall in the Senegal. Currently the situation is much better than in the 1980s when the region experienced a long drought period for years (Zwarts et al. 2009). On the other hand, many

wetlands are artificial or depend on large-scale water management mainly for agriculture (rice field, sugarcane and others) but also in some nature conservation areas (Djoudj NP, Guembeul, Sine Saloum).

At almost all places, we found no really important direct threats to habitats or birds. We did not find hunting on Godwits which seems to be problem in the Casamance (Ndiaye 2016).

We learned a lot about rice cultivation and plans to enlarge the production. For wintering waders like godwits that does not necessarily worsen the habitat condition. It is even possible that there are options for co-operations with rice companies to perform a water management suitable as well for rice production and birds!

We talked with many people about godwits and conservation issues and got the impression that they are open for an exchange of experience and new co-operations to support godwits and other waders!

On the other hand, we have to take into account the long-term effects of rapidly changing landuse due to human population growth in Senegal:

- Concerning the national program, in the future there will be a tremendous increase in areas of rice farming and mechanized utilization.
- Weavers (millions of them) are definitely a problem in rice production. Recently, as we could see, the permanent chasing of these birds are effecting Godwits and other waders as well, although it is unknown how big this impact is in reality. This problem has to be solved in the future in a reasonable way.
- Local famers with their traditional hand working practices will never be able to cope with the market in the future. The only choice in having a beneficial farming system in the world market will be made by big companies.
- In traditional rice farming before harvest water is let out, and as we found, it is drained into the lower parts of old abandoned fields. There it can stand shallow for weeks; probably these parts are sustainable habitats for Godwits for a long while. It is not proven but we assume that these structures are essential for godwits on the landscape level.
- New modern rice farms have a doubled canal system where water is pumped in or out by electrical pumps, flat flooded retention sites do not seem to be necessary anymore.
- Studies about the influence of pesticides towards waterbirds show an impact on these and other species (e.g. Fasola & Ruiz 1996, Parssons et al. 2010). Nothing is known about the influence on godwits yet. Nevertheless, it is very likely that this could cause severe problems to the individuals (carry over effects) or even on a population level. Attention should be drawn towards this issue.
- There is a need of concepts about how to combine new modern rice production with wader bird conservation yet. It is very likely that with good planning both issues could be combined without huge limiting in farming profit. Such concepts should be improved and be tested out on spot in the field concerning their efficiency.
- Hunting seems to be no problem at all in the areas where we were. But it is a problem in the south of Senegal, in the Casamance (Ndiaye 2016). It is unclear how relevant it is on population scale yet. Currently, in the poor countryside people now have no money for guns and munition. But according to an increasing income and a change to

industrial organized rice farming, this situation could change very soon. This issue has to be analyzed in more detail.

- Not knowing any estimation about the amount of rice farming in the future and not having made an estimation about the total water supply of river Senegal, it is clear that this is a limiting factor. Accordingly, a yearly supply of 11,000 qbm of water per ha and season and a tremendous increase of rice farming area in future – there will be a threshold. Likely, this could lead to a lack of water in the natural and seminatural floodplains along river Senegal. In the long run, this will likely lead to a loss of natural godwit habitats. This aspect should be analyzed and solutions should be evaluated.
- Water management in several natural and seminatural areas could be optimized for Godwit and other waders.
- Godwit monitoring needs to be improved.

We were amazed at how many local people in Senegal knew the bird “Diaba diaba”, it seemed to be everybody. Asking the same question in Germany – either in big cities in the countryside, in small villages or in new industrially organized agricultural plants, we are afraid the answer would be “almost nobody”. And therefore – not right now, but at some point of time in the future “Diaba diaba” may not exist anymore. Unless we start new initiatives!

The “Diaba diaba” team: Saliou Diop, Johannes Melter, Idrissa Ndiaye, Christopher Marlow, Heinrich Belting (from left to right)

6 Literature

Bairlein, F., J. Dierschke, V. Dierschke, V. Salewski, O. Geiter, K. Hüppop, U. Köppen & W. Fiedler (2014): Atlas des Vogelzuges. Ringfunde deutscher Brut- und Gastvögel. Aula Verlag, Wiebelsheim.

Belting, H., F. Körner, U. Marxmeier & C. Möller (1997): Wiesenvogelschutz am Dümmer und die Entwicklung der Brutbestände sowie der Bruterfolge von wiesenbrütenden Limikolen. Vogelkdl. Ber. Niedersachs. 29: 37-50.

Exo, K.-M., F. Hillig, V. Dierschke, A. Kondratyev, H. Kruckenberg, J. Stahl, P. Südbeck & F. Bairlein (2016): Aktuelle Fragen des Vogelschutzes im Wattenmeer und auf der offenen See. Natur und Landschaft 91 (6) 253-261.

Fasola, M. & X. Ruiz (1996): The value of rice fields as substitutes for natural wetlands for waterbirds in the mediterranen region. Colonial Waterbirds 19 (spec. publ. 1): 122-128

Grüneberg, C., H.-G. Bauer, H. Haupt, O. Hüppop, T. Ryslavy & P. Südbeck (2015): Rote Liste der Brutvögel Deutschlands. 5. Fassung, 30. November 2015. Ber. Vogelschutz 52: 19-67.

Herzog, F. & G. v. Lossow (2018): Auf den Spuren des Großen Brachvogels. Falke 65: 16-19.

Hooijmeijer, J., R. Howison & T. Piersma (2016): Describing habitat and finding colour rings of Black-tailed Godwits (*Limosa limosa*) between Casamance and Djoudj, Senegal, from 28 November – 11 December 2016. Groningen

Hooijmeijer, J., R. Howison, I. Ndiaye & T. Piersma (2018): Describing habitat and finding colour rings of Black-tailed Godwits (*Limosa limosa*) in the Casamance, Senegal, from 27 August – 6 September 2018. Groningen

Hönisch, B., J. Melter & N. Raude (2017). Uferschnepfenküken-Telemetrie am Dümmer (V39). Report EU-Life project.

Hötker, H., H. Jeromin & J. Melter (2007): Entwicklung der Brutbestände der Wiesen-Limikolen in Deutschland – Ergebnisse eines neuen Ansatzes im Monitoring mittelhäufiger Brutvogelarten. Vogelwelt 128: 49-65.

IUCN (2017): The IUCN Red List of Threatened Species. Version 2017-3.

Kentie, R., N. R. Senner, J.C.E.W: Hooijmeijer, R. Marquez-Ferrando, J. Figuerola, J. A. Masero, M.A. Verhoeven & T. Piersma (2016): Estimating the size of the Dutch breeding population of Continental Black-tailed Godwits from 2007-2015 using resighting data from spring staging sites. Ardea 114: 213-225.

Kentie, R., R. Marquez-Ferrando, J. Figuerola, L. Gangoso, J.C.E.W: Hooijmeijer, A.H.J. Loonstra, F. Robin, M. Sarasa, N. Senner, H. Valkema, M.A. Verhoeven & T. Piersma (2017): Does wintering north or south of the Sahara correlate with timing and breeding performance in black-tailed godwits? Ecology and Evolution, 2017: 1-9.

Krüger, T. & M. Nipkow (2015): Rote Liste der in Niedersachsen und Bremen gefährdeten Brutvögel. Informationsdienst Naturschutz Niedersachsen 4.

Loonstra, A.H.J., M. Verhoeven & T. Piersma (2018): Sex-specific growth in chicks of the sexually dimorphic Black-tailed Godwit. Ibis 160: 89-100.

Ndiaye, I. (2016): Fieldwork report on Black-tailed Godwit in Casamance, Senegal. August 28 th – September 28 th.

OAG Münster (1998): Mass of Ruffs *Philomachus pugnax* wintering in West Africa. International Wader Studies 10: 435-440.

Parsons, K, P. Mineau & R. B. Renfrew (2010): Effects of pestizides use in rice fields on birds. Waterbirds 33 (spec. publ. 1): 193-218.

Peerenboom, C., H. Belting & J. Ludwig (2015): Zum Bruterfolg der Uferschnepfe *Limosa limosa* 2012-2014 in Niedersachsen: erste Zwischenergebnisse aus dem LIFE-Projekt "Wiesenvogelschutz in Niedersachsen". Vogelkundliche Berichte aus Niedersachsen 44: 235-243.

Roodbergen, M., B. van d. Werf & H. Hötker (2012): Revealing the contributions of reproduction and survival to the Europe-wide decline in meadow birds: review and meta-analysis. J. Ornithol. 153: 53-74.

Scarpignato, A.L., A.-L. Harrsion, D. J. Newstead, L. J. Niles, R. R. Porter, M. v.d. Tillaart & P.P. Marra (2016): Field-testing a new miniaturized GPS-Argos satellite transmitter (3,5 g) on migratory shorebirds. Wader Study 123: 240-246.

Senner, N.R., M.A. Verhoeven, J.M. Abad-Gomez, J.S. Gutierrrez, J.C.E.W: Hooijmeijer, A.H.J. Loonstra, R. Kentie, J.A. Masero, T.L. Tibbitts & T. Piersma (2015): When Sibiria came to the Netherlands: the response of continental black-tailed godwits to a rare spring weather event. Journal Animal Ecology 84: 1164-1176.

Zwarts, L., R. G. Bijlsma, J. v. d. Kamp & Eddy Wymenga (2009): Living on the edge. Wetlands and birds in a changing Sahel. KNNV Publishing, Zeist.

www.wiesenvoegel-life.de

http://volg.keningfanegreide.nl/

https://blogs.nabu.de/zugvoegel

ANNEX

Tab. 1: Counting data of Black-tailed godwit (December 2018)

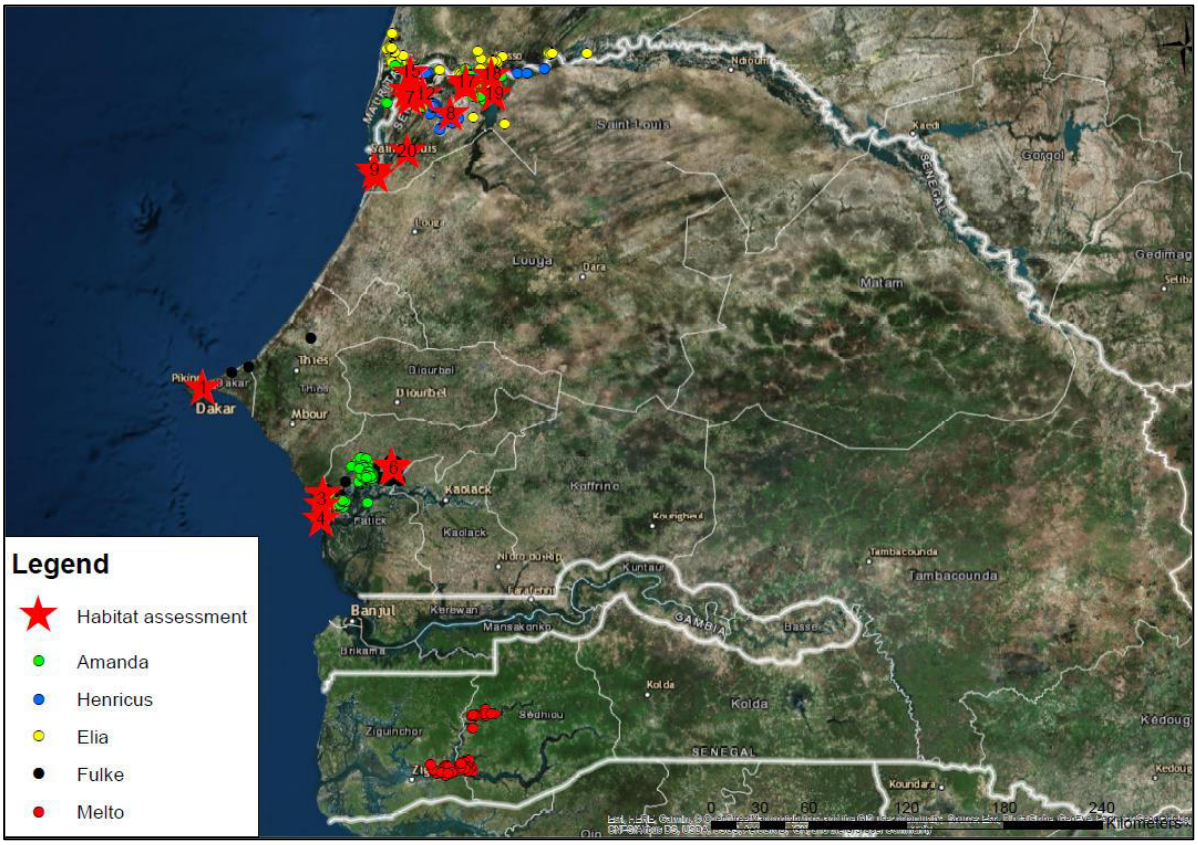
site/area	10.12.	11.12.	12.12.	13.12.	14.12.	15.12.	16.12.	17.12.	18.12.	max.
Dakar-Technopole	300									300
Mbissel										0
Reserve Naturelle Palmarin		330								330
Palmarin (S)		7								7
Palmarin (2 km S)		20								20
Djoudj -Biological Station				150		37		42		150
Water reservoir, Ross Bethio				20						20
Reserve Ndiael				-						0
Sandpit N'Diawssire				165				205		205
Guembeul reserve				720				0		720
Djoudj - Lac du Khar					15					15
Djoudj - Marigot du Khar					235					235
Djoudj -Lac Tantale					20					20
Djoudj - Gainthe					250					250
Tiguet-Debi ricefields					90					90
Diawel I						5				5
S Rosso						3				3
Tocc Tocc							940			940
N'Diawdoune								108		108
								Sum		3418

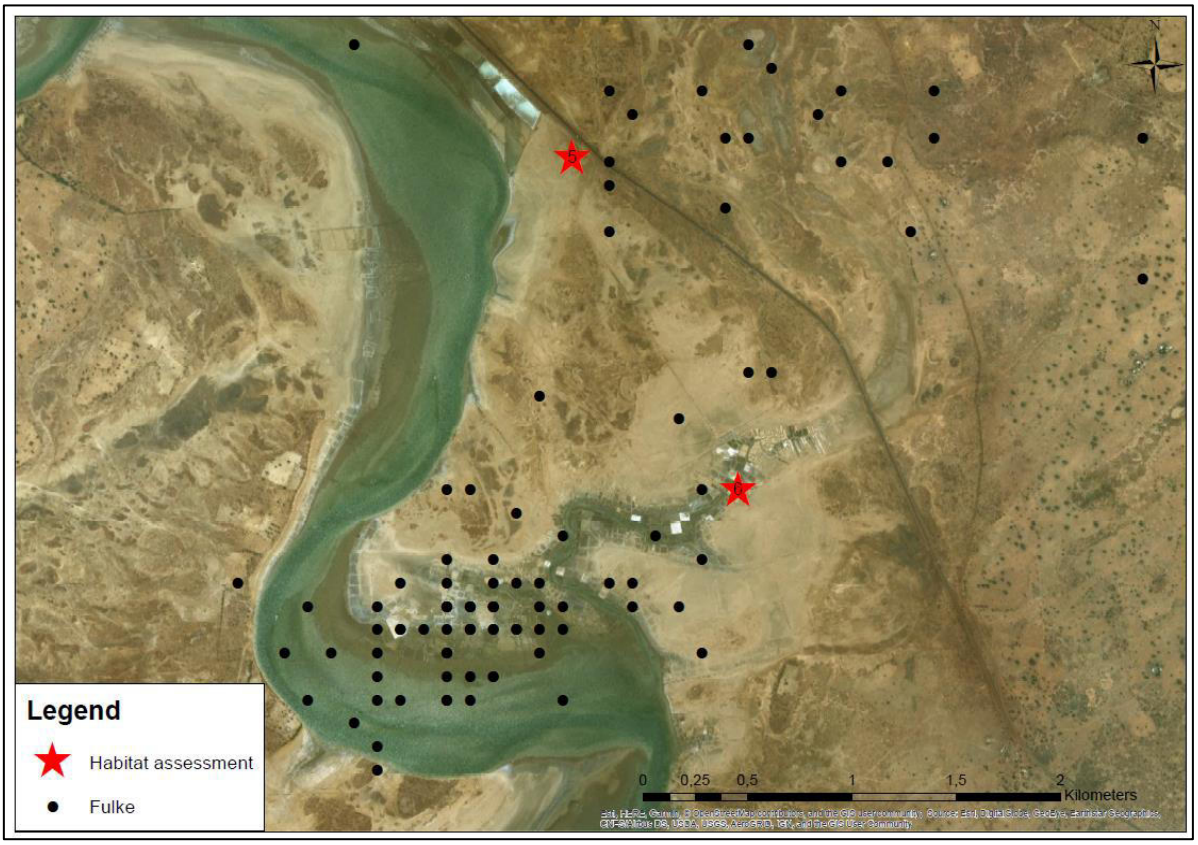
Habitat assessment

site/area	No.	GPS/Lokal.	typ	size (ha)	waterlevel	articifal use	protection	infrastructure	threats	date
Dakar-Technopole	1	14,7509, -17,4160	Lagoon with sand dunes, natural wetland, sandy-muddy soil	50-100	0- 50 cm	fishery, gardening, slums/living in surrounding	no	city, roads, industry aside	disturbance, garbage	10.12.2018
Mbissel	2	14,1646, -16,7527	wetland,mudflats with fresh water/rain water, parts covered by Scirpus	> 100	0 flooded a week ago, now dry	cattle	no	road	-	11.12.2018
Reserve Naturelle Palmarin	3	14,1030, -16,7608	sandy tidal flats	> 200	0-50cm (50% covered by water	-	yes	road	-	11.12.2018
Palmarin	4	14,0202, -16,7650	marsh, old abandoned rice field aside village	1-3	0-10 cm	cattle, goats, pigs	no	road	-	11.12.2018
Fatick 1	5	14,3170, -16,3700	tidal,brackish floodplain with some trees/bushes, aside river, single Eucalyptus trees	> 200	0cm, temporarily flooded, now dry		no		-	12.12.2018
Fatick 2	6	14,3028, -16,3633	like no.5, but totally open, much salt deposit	> 500	0	salt plant	no		disturbance	12.12.2018
Djoudj -Biological Station	7	16,3569, -16,2719	shallow water pond, freswater	- 20	10cm	water management	yes	road aside	-	13.12.2018
Reserve Ndiael	8	16,2705, -16,0468	marshes, surrounded by sand dunes	> 500	0, temporarily flooded, now totally dried out	-	yes	-	-	13.12.2018
Sandpit N'Diawssire	9	15,9542, -164680	sandpit	< 50	0-50	old sandpit	no	road	-	13.12.2018
Guembeul reserve	10	15,9287, -164577	brackish water lagoon, connected with river Senegal; sandy/muddy	> 200	0-30	-	yes		-	13.12.2018
Djoudj - Lac du Khar	11	16,3769, -16,2466	lake	> 1,000	-150	fishing	yes	NP	-	14.12.2018
Djoudj- Grand Lac	12	16,3799, -16,2012	lake	> 4,000	-150	fishing	yes	NP	-	14.12.2018
Djoudj -Lac Tantale	13	16,3994, -16,2797	lake	> 200	-100	water management	yes	NP	-	14.12.2018
Djoudj - Gainth	14	16,4013, -16,2879	swamp, marshes	> 200	0-100	water management	yes	NP	-	14.12.2018
Tiguet-Debi ricefields	15	16,4984, -16,2690	rice field	> 300	0-10	rice fields, villages, powerlines	no		disturbance	14.12.2018
Diawel I	16	16,4249, -15,9602	marshes with shallow water, few tamarisk bushes	ca. 4	0-10	suurounding: rice fields	no		-	15.12.2018
Diawel II	17	16,4448, -15,9626	marches with shallow water, few tamarisk bushes (15% covered by water)	> 30	0-20	suurounding: rice fields	no		-	15.12.2018
SW Rosso	18	16,4831, -15,8199	abandaned rice field, with shallow water, few tamarisk bushes, salt deposit (10% water coverage)	5-10	0-10	suurounding: rice fields	no		very calm	15.12.2018
Tocc Tocc	19	16,3784, -15,8094	shallow water lake, edges dry, lake dries out in January	200	0-30 cm	suurounding: rice fields	yes		disturbance	16.12.2019
N'Diawdoune	20	16,0596, -16,2881	marshes, freshwater wetland, mudflats wirh shallow water (15 ha), high coverage of Scirpus and Sedges (in Sept. 50 ha covered by water	50	0-20 cm	cattle and goats	no	road, electric powerline	garbage	17.12.2018

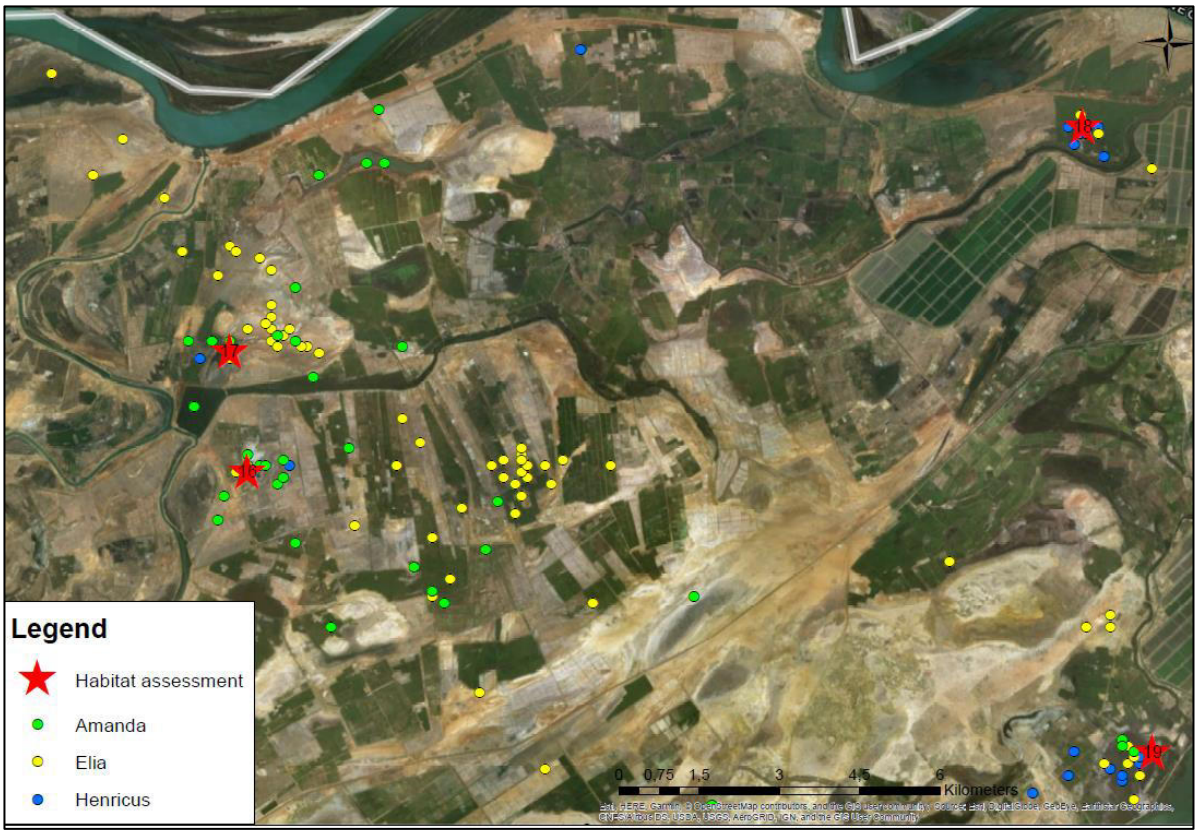
Tab. 2: Habitat descriptions

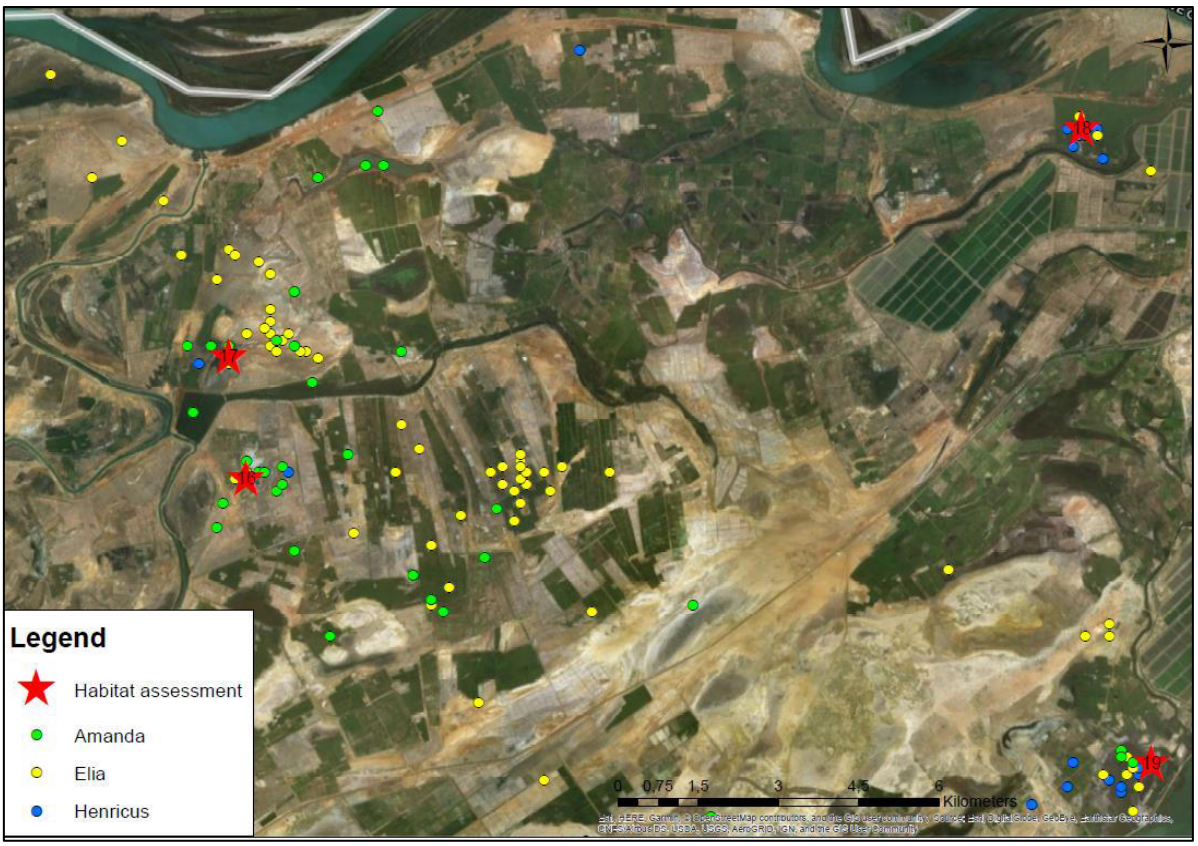
Locations of the satellite tagged Godwits in 2018 and locations of habitat assessment






Legende
Habitat
Amanda
Fulke
0 0.325 0.65 1.3 1.95 2.6
Kilometers


Legend
Habitat assessment
Amanda
Elia
Henricus
0 0.75 1.5 3 4.5 6
Kilometers


Legend
Habitat assessment
Amanda
Elia
Henricus
0 0,75 1,5 3 4,5 6
Kilometers

1 Dakar Technopole

2 Mbissel (Saloum)

3 Palmarin

4 Reserve Palmarin

5 Fatick I

6 Fatick II

7 Djoudj – Biological Station

8 Reserve Ndiael

9 Sandpit N`Diawssire

10 Reserve Guembeul

11 Djoudj - Lac du Khar

11 Djoudj - Grand Lac

13 Djoudj – Lac Tantale, Marigot

14 Djoudj - Gainthe

15 Debi – Tiguet ricefields

16 Diawel I

17 Diawel II

18 SW Rosso

19 Tocc Tocc reserve

20 N'Diawdoune

Contacts/Discussion

During our stay we talked to several people and discussed various issues concerning Godwits and their protection in future; list is chronically ordered:

Ibrahima Gueye	Chef Division Zone Humides, Ministry of environment, Dakar
Thomas Wixler	German embassy, deputy head of mission
Abdoulaye Faye	director of Palmarin reserve
Mamadou Sangare	assistant of Palmarin reserve
Basile Sagna	vice-director of Guembeul reserve
Moussa Nang	guide in Guembeul reserve
Malle Gueye	director of Djoudj NP
Abdou Ndiaye	vice-director of Djoudj NP
Ndiapaly Gueye	director of Biological Station Djoudj
Abdoulaye Diop	CASL, Chef de Ferme
Aissamby Dieme	CASL, Responsible Qualite Securite Environment et Social

Colour ringed birds found in Senegal

WIESENVÖGEL LIFE
Ein LIFE+ Projekt des Landes Niedersachsen

Beringungsdaten	Uferschnepfe	agb,bsg				
Datum	Ring-Nr	Art	Gebiet	Teilgebiet	Alter	Geschlecht
18.05.2017	5358404	Uferschnepfe	Dümmer	Osterfeiner Moor	1	
29.05.2017	5358404	Uferschnepfe	Dümmer	Osterfeiner Moor	12	

Ablesungen

Datum	FR-Kombi.	Teilgebiet	Land	geogr. Breite	geogr. Länge	Ableser	Bedingungen
16.12.2018	agb,bsg	Tocc Tocc, SEN	Senegal	16,3784	-15,8094	H. Belting, C. Marlow	lebend

WIESENVÖGEL LIFE
Ein LIFE+ Projekt des Landes Niedersachsen

Beringungsdaten	Uferschnepfe	arb,bgs				
Datum	Ring-Nr	Art	Gebiet	Teilgebiet	Alter	Geschlecht
15.05.2017	5439916	Uferschnepfe	Dümmer	Ochsenmoor	24	

Ablesungen

Datum	FR-Kombi.	Teilgebiet	Land	geogr. Breite	geogr. Länge	Ableser	Bedingungen
23.05.2017	arb,bgs	Ochsenmoor	Deutschland	52.47584	8.32086	J. Melter	lebend
08.06.2018	arb,bgs	Ochsenmoor	Deutschland	52.47584	8.32086	J. Melter	lebend
07.10.2018	arb,bgs	Gandiol	Senegal	15.88831	-16,48581	Bram Piot	lebend
13.12.2018	arb,bgs	Reserve Guembeul, SEN	Senegal	15.9287	-16.4577	H. Belting, J. Melter	lebend

Bird list

Grebes	Little Grebe	*Tachybaptus ruficollis*
Pelicans	Great white Pelican	*Pelecanus onocrotalus*
	Pink-backed pelican	*Pelecanus rufescens*
Cormorants	White breasted Cormorant	*Phalacrocorax lucidus*
	Long tailed Cormorant	*Microcarbo africanus*
	Great Cormorant	*Phalacrocorax carbo*
Darter	African Darter	*Anhinga rufa*
Herons and Egrets	Squacco Heron	*Ardeola ralloides*
	Cattle Egret	*Bubulcus ibis*
	Little Egret	*Egretta garzetta*
	Great Egret	*Ardea alba*
	Intermediate Egret	*Ardea intermedia*
	Grey Heron	*Ardea cinerea*
	Black Heron	*Egretta ardesiaca*
	Western Reef Egret	*Egretta gularis*
	Purple Heron	*Ardea purpurea*
	Black crowned Night Heron	*Nycticorax nycticorax*
	Black headed Heron	*Ardea melanocephala*
Storks, Spoonbills, Crane and Flamingos	White Stork	*Ciconia ciconia*
	Black Stork	*Ciconia nigra*
	Yellow-billed Stork	*Mycteria ibis*
	African Spoonbill	*Platalea alba*
	Eurasian Spoonbill	*Platalea leucorodia*
	Black crowned Crane	*Balearica pavonina*
	Lesser Flamingo	*Phoeniconaias minor*
	Greater Flamingo	*Phoenicopterus roseus*
Ducks, Geese and Ibises	Northern Shoveler	*Anas clypeata*
	African Sacred Ibis	*Threskiornis aethiopicus*
	Fulvous Whistling Duck	*Dendrocygna bicolor*
	White faced Whistling Duck	*Dendrocygna viduata*
	Knob billed Duck	*Sarkidiornis melanotos*
	Spur winged Goose	*Plectropterus gambensis*
	Glossy Ibis	*Plegadis falcinellus*
	Garganey	*Spatula querquedula*
	Egyptian Goose	*Alopochen aegyptiaca*
	Northern Pintail	*Anas acuta*
Osprey, Vultures and Crows	Osprey	*Pandion haliaetus*
	Hooded Vulture	*Necrosyrtes monachus*
	White backed Vulture	*Gyps africanus*
	Griffon Vulture	*Gyps fulvus*

	African Rüppell's Vulture	*Gyps rueppelli*
	Pied Crow	*Corvus albus*
Eagles and Kites	African fish Eagle	*Haliaeetus vocifer*
	Short toed Snake Eagle	*Circaetus gallicus*
	Black Kite	*(Milvus migrans*
	Yellow-billed Kite	*Milvus aegyptius*
Harriers and Falcons	Montagu's Harrier	*Circus pygargus*
	Western Marsh Harrier	*Circus aeruginosus*
	Common Cestrel	*Falco tinnunculus*
	Grey Cestrel	*Falco ardosiaceus*
Francolins and Sandgrouse	Double-spurred Francolin	*Pternistis bicalcaratus*
	Chestnut-bellied Sandgrouse	*Pterocles exustus*
Crakes, Snipes and Jacana	Black Crake	*Amaurornis flavirostra*
	Common Snipe	*Gallinago gallinago*
	African Jacana	*Actophilornis africanus*
	Purple Swamphen	*Porphyrio porphyrio*
	Common Moorhen	*Gallinula chloropus*
Bustards, Pratincola and Thick-Knee	Arabian Bustard	*Ardeotis arabs*
	Collared Pratincole	*Glareola pratincola*
	Senegal Thick-Knee	*Burhinus senegalensis*
Waders	Eurasian Oystercatcher	*Haematopus ostralegus*
	Pied Avocet	*Recurvirostra avosetta*
	Black-winged Stilt	*Himantopus himantopus*
	Common ringed Plover	*Charadrius hiaticula*
	Kitlitz Plover	*Kitlitz Plover*
	Spur winged Lapwing	*Spur winged Lapwing*
	Culew Sandpiper	*Culew Sandpiper*
	Dunlin	*Calidris alpina*
	Little Stint	*Calidris minuta*
	Ruff	*Philomachus pugnax*
	Black taild Godwit	*Limosa limosa*
	Bar tailed Godwit	*Limosa lapponica*
	Common Greenshank	*Tringa nebularia*
	Wood Sandpiper	*Tringa glareola*
	Grey Plover	*Pluvialis squatarola*
	Common Sandpiper	*Actitis hypoleucos*
	Whimbrel	*Numenius phaeopus*
	Eurasian Curlew	*Numenius arquata*
	Marsh Sandpiper	*Tringa stagnatilis*
	Sanderling	*Calidris alba*
	Ruddy Turnstone	*Arenaria interpres*
	Kentish Plover	*Charadrius alexandrinus*

	Common Redshank	*Tringa totanus*
	Spotted Redshank	*Tringa erythropus*
Gulls	Audouins Gull	*Ichthyaetus audouinii*
	Great Black-backed Gull	*Larus marinus*
	Slender billed Gull	*Chroicocephalus genei*
	Grey headed Gull	*Chroicocephalus cirrocephalus*
	Black headed Gull	*Chroicocephalus ridibundus*
Terns	Caspian Tern	*Hydroprogne caspia*
	Sandwich Tern	*Thalasseus sandvicensis*
	Gull billed Tern	*Gelochelidon nilotica*
	Wiskered Tern	*Chlidonias hybrida*
	Little Tern	*Sternula albifrons*
Doves	Namaquan Dove	*Oena capensis*
	Laughing Dove	*Spilopelia senegalensis*
	Red eyed Dove	*Streptopelia semitorquata*
	Speckeled Pigeon	*Columba guinea*
	European Turtle Dove	*Streptopelia turtur*
	African Mowning Dove	*Streptopelia decipiens*
	Vinaceous Dove	*Streptopelia vinacea*
Cuckoos	Senegal Coucal	*Centropus senegalensis*
Owls	Northern White-faced Owl	*Ptilopsis leucotis*
	Barn Owl	*Tyto alba*
Swifts and Mousebirds	African Palm Swift	*Cypsiurus parvus*
	Blue-naped Mousebird	*Urocolius macrourus*
	Little Swift	*Apus affinis*
Kingfisher and Rollers	Grey-headed Kingfisher	*Halcyon leucocephala*
	Malachite Kingfisher	*Corythornis cristatus*
	Pied Kingfisher	*Ceryle rudis*
	European Roller	*Coracias garrulus*
	Abyssian Roller	*Coracias abyssinicus*
Bee-eaters	Little Bee-eater	*Merops pusillus*
	Blue cheeked Bee-eater	*Merops persicus*
Hornbills	Western Red-billed Hornbill	*Tockus kempi*
	African Grey Hornbill	*Lophoceros nasutus*
Woodpeckers	Grey Woodpecker	*Dendropicos goertae*
Larks	Crested Lark	*Galerida cristata*
	Chestnut-backed Sparrowlark	*Eremopterix leucotis*
	Black-crowned Sparrowlark	*Eremopterix nigriceps*
Swallows and Martins	Red chested Swallow	*Hirundo lucida*
	Common Hoese Martin	*Delichon urbicum*
	Common Sand Martin	*Riparia riparia*

Wagtails	Yellow Wagatil	*Motacilla flava*
	White Wagtail	*Motacilla alba*
Bulbuls	Common Bulbul	*Pycnonotus barbatus*
Chats and Robins	African Stonechat	*Saxicola torquatus*
	Rufous Scrub Robin	*Cercotrichas galactotes*
Warblers	Subalpine Warbler	*Sylvia cantillans*
	Common Whitethroat	*Sylvia communis*
	Sedge Warbler	*Acrocephalus schoenobaenus*
	Willow Warbler	*Phylloscopus trochilus*
	European Reed Warbler	*Acrocephalus scirpaceus*
Cisticolas and Prinias	Winding Cisticola	*Cisticola marginatus*
	Zitting Cisticola	*Cisticola juncidis*
	River Prinia	*Prinia fluviatilis*
Flycatcher	Senegal Batis	*Batis senegalensis*
Sunbirds	Beautiful Sunbird	*Cinnyris pulchellus*
Shrikes	Southern Grey Shrik	*Lanius meridionalis*
	Woodchat Shrike	*Lanius senator*
	Yellow-crowned Gonolek	*Laniarius barbarus*
Starlings	Purple Glossy Starling	*Lamprotornis purpureus*
	Bronze-tailed Glossy Starling	*Lamprotornis chalcurus*
	Long-tailed Glossy Starling	*Lamprotornis caudatus*
	Chestnut-bellied Starling	*Lamprotornis pulcher*
Sparrows, Finches, Weavers ans Bishops and others	House Sparrow	*Passer domesticus*
	Village Indigobird	*Vidua chalybeata*
	Red-billed Firefinch	*Lagonosticta senegala*
	Black-headed Weaver	*Ploceus melanocephalus*
	Sudan Golden Sparrow	*Passer luteus*
	Red-billed Quela	*Quelea quelea*
	Northern Red Bishop	*Euplectes franciscanus*

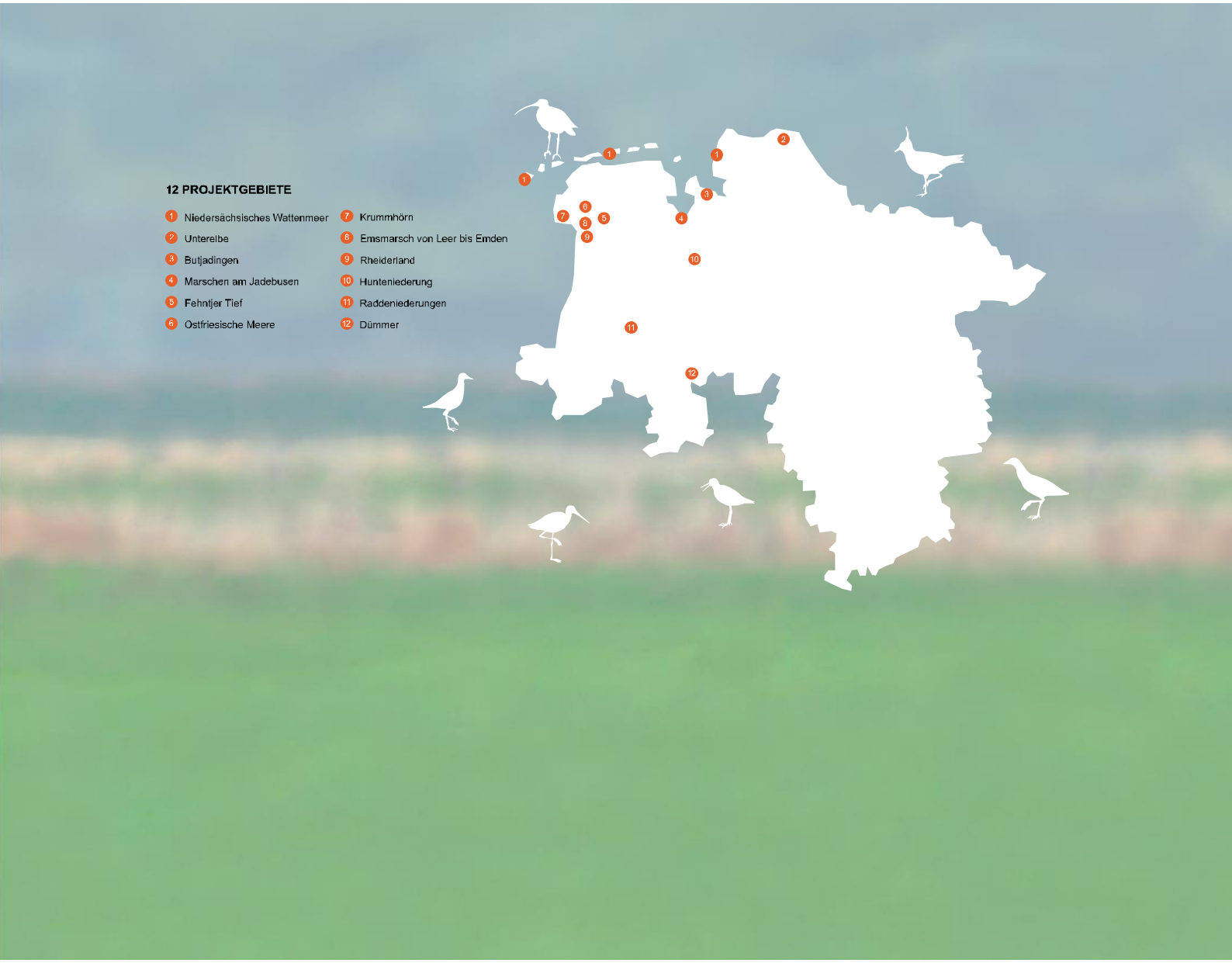
Durch das LIFE+ Projekt „Wiesenvögel“ werden bedeutsame Anteile der Populationen der Wiesenvögel in Deutschland und Europa gesichert – ein Baustein für den Erhalt europäischen Naturerbes für künftige Generationen!

Träger des Projektes: Land Niedersachsen, Ministerium für Umwelt, Energie und Klimaschutz

Management: Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz (NLWKN) – Staatliche Vogelschutzwarte

Projektlaufzeit: 01.11.2011-31.10.2020

www.wiesenvoegel-life.de



Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz

Nationalpark Wattenmeer Niedersachsen

BEF Germany

Natuurmonumenten