

University of Groningen

Black-tailed Godwits (*Limosa limosa*) in southern Iberia, habitat description and finding colour marked birds from 1 – 26 February 2023

Hooijmeijer, Jos; Piersma, Theunis; Hotting, Maarten ; Tijssen, Wim; de Vries, Jacob Jan; Jager, Kees de; Brandhorst, Willem ; Jong, Jan de; Zijlstra, Bert; van Eerden, Arne

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Publisher's PDF, also known as Version of record

Publication date:
2023

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Hooijmeijer, J., Piersma, T., Hotting, M., Tijssen, W., de Vries, J. J., Jager, K. D., Brandhorst, W., Jong, J. D., Zijlstra, B., & van Eerden, A. (2023). *Black-tailed Godwits (Limosa limosa) in southern Iberia, habitat description and finding colour marked birds from 1 – 26 February 2023: Portugal (Sado, Tejo & Algarve), Spain (Doñana & Extremadura)*. University of Groningen.

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Black-tailed Godwits (*Limosa limosa*) in southern Iberia, habitat description and finding colour marked birds from 1 – 26 February 2023

Portugal (Sado, Tejo & Algarve), Spain (Doñana & Extremadura)



Expedition report, University of Groningen & Global Flyway Network, The Netherlands

Authors:

Jos Hooijmeijer (ed.; j.c.hooijmeijer@rug.nl)

Jacob Jan de Vries

Wim Tijssen

Maarten Hotting

Willem Brandhorst

Bert Zijlstra

Arne van Eerden

Jan de Jong

Kees de Jager

Theunis Piersma

October 2023

University of Groningen, FSE, BirdEyes & GELIFES, Conservation Ecology Group
P.O. Box 11103, 9700 CC Groningen, The Netherlands

Acknowledgements

Miguel Medialdea, Quality and Environment Manager Veta la Palma, sustainable aquaculture. Thanks for arranging our admission to Veta la Palma and information about this great place.

Arturo Esteban Pineda and Afonso Rocha, and other colleagues from the University of Extremadura. Thanks for all your resightings that contributed to the success of this trip, your help in localizing the birds in Extremadura and your good company.

Thanks to **Rui Alves** of the Companhia das Lezírias, **Rui Paixão** of Associação de Beneficiários da Lezíria Grande de Vila Franca de Xira for help with logistics and information.

These colour ring reading trips would not be possible without the help of all co-authors, colleagues but mainly volunteers that spent their (free) time or even their holidays scanning godwit legs: many thanks for that! Especially **Astrid Kant** and **Ronald Messemaker** made a major contribution again next to our permanent teams.

Last but not least, all the people and organizations that gave us their hospitality to be as a guest in their areas. We are very pleased that we could make use of this. Hope to see you all again next year!

Contents

Chapter 1. in this report is based on and partly identical to previous reports about searching and finding Black-tailed Godwits in Spain that can be found on:

<https://www.globalflywaynetwork.org/publications>

0. Summary

1. Black-tailed Godwit Habitat and Demographic Studies Backgrounds

2. Birds and habitat, daily overviews 1 – 26 February 2023

Appendix A: sites visited

Appendix B: Godwit locations in Southern Iberia

© Photographs by the authors

0. Summary

In this expedition from 1 to 26 February 2023 we visited the most important areas for Black-tailed Godwits in southern Spain and Portugal during northward migration. Our aim was to resight individual colour marked birds, describe the habitats godwits used and to gain information on threats and opportunities by field observations and meetings with local experts. In this report we present a daily overview of our findings with photos, locations we visited, numbers present and the first conclusions and recommendations. More reports from expeditions to Iberia and West Africa in previous years can be downloaded at: <https://www.globalflywaynetwork.org/publications>

Tejo and Sado

It had rained a lot in December but it had been almost dry since early January; neither did it rain substantially during our stay in February 2023. As a result, the number of wet, recently ploughed fields was limited but not as bad as last winter.

In previous years the Giganta/ Ponta da Erva and Cardal fields were the most productive ones to find godwits. But this year not many fields were ploughed, near the river Soraia the fields were even dry and on the few fields that held water, the water level was too high to read rings. This area did not have a night time roost this year either. The maximum number of birds we scored here was 10.000 but most of the time less. We saw hardly any ploughing here during our stay.

The best opportunities were in the first half of February north of the N10 at Cara Larga where the roost was (max. 25.000 in the first week) and later also at Benavente (max. 8500 around the 20th), Samora Correia (8000) and the Belmonte ricefields (4500) from the second week on. Here they found ploughed fields with an ideal water depth for foraging and ring reading(!). The Sado seemed to have revived as an important staging site for godwits, especially near Comporta where a fairly constant 7000-8500 godwits gathered on recently ploughed wet fields. Near Carregado, Alcochete, Zambujal and at Samouco salt pans the fields were unsuitable and (almost) no birds to be found.

The highest numbers were scored immediately already at the start in the first week of February, ~35.000 in the Tejo and 7000 in the Sado. In the Sado the numbers remained level but in the Tejo they started to decrease to ~25.000 by half February and by the end of our fieldwork, most birds seemed to have left. So in general the total numbers were not as high as in previous years (>50.000); perhaps due to early departures because of the very mild temperatures further up north and favourable wind conditions? We concluded the same last year so there might be trend that less birds use the Tejo as a staging site or they move on faster than they did before.

We noticed no hunting by humans or other major disturbances this year. Raptors were few, except in the Belmonte ricefields where Marsh harriers constantly made the godwits fly up. The total area of rice seemed to have remained the same, very unlike the situation in Doñana and Extremadura (see below).

Doñana

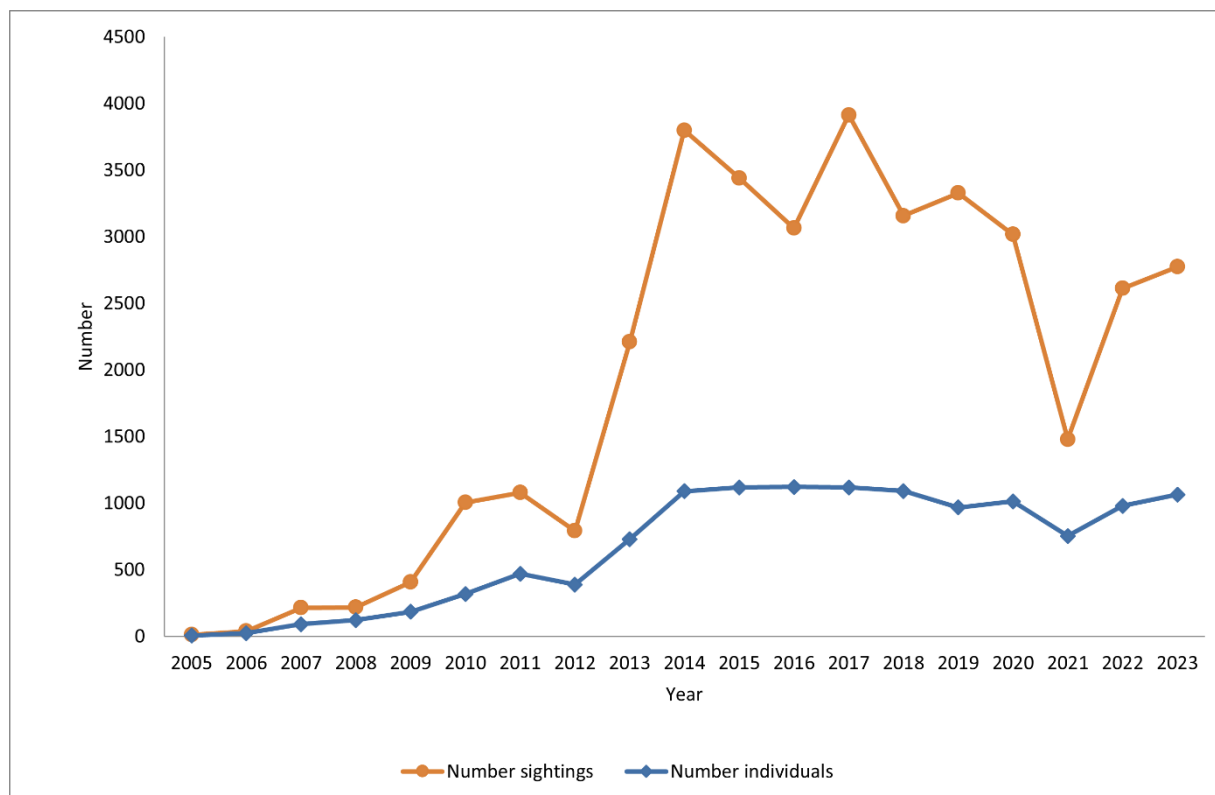
The situation in Doñana is pretty dreadful. The continuing drought has an effect on the number of suitable rice fields and this area is rapidly losing its importance for godwits. In the first week of February, we counted only ~1500 birds. Stronghold of the past, ecological aquaculture plant Veta la Palma was good for 500, the old tributary of the Guadalquivir River, NP Brazo del Este 650 and 400 at the Bonanza and Algaida salt pans. Compared to the ~20.000 in Veta la Palma alone in the same week in 2021, this must be an all time low. At first glance the situation at the Veta la Palma fishponds was not any different with even water in Lucio Cuquero Grande and a mix of shallow and deeper water in the natural fishponds. But outside the fishpond-complex it is striking to see how many ricefields have been abandoned and turned into set aside fields. We know from satellite tagged birds that birds that stay during daytime in the fishponds, frequent the rice fields at night. So perhaps the surroundings simply don't have enough to offer anymore?

Extremadura

The habitat changes we have reported in previous years have continued. Lack of water, labour and EU subsidies are making it less and less attractive to grow rice here and other crops like fruits, olives and cereals are taking over this former important staging site. The traditional core area between Santa Amalia, Hernan Cortes, Medellin and Valdehornillos has now virtually been abandoned with just a few hundred birds (<300). The same is true for Yelbes (0) and further east near Vivares and Palazuelo (40). There is a trend that godwits move further east. Last year's revelation was a relatively large group near Obando; and this year there was again a similar group of maximum 1750 godwits and even a little further east. With such low numbers it is difficult to find them (let alone the night-time roost!); we would be nowhere without tagged birds to show us the way. The godwits might have problems to find suitable habitat because the satellite tagged birds brought us to tiny wet places, hardly more than a puddle. In Extremadura, Peregrine falcons are the most common raptor chasing godwits but successful captures are probably rare.

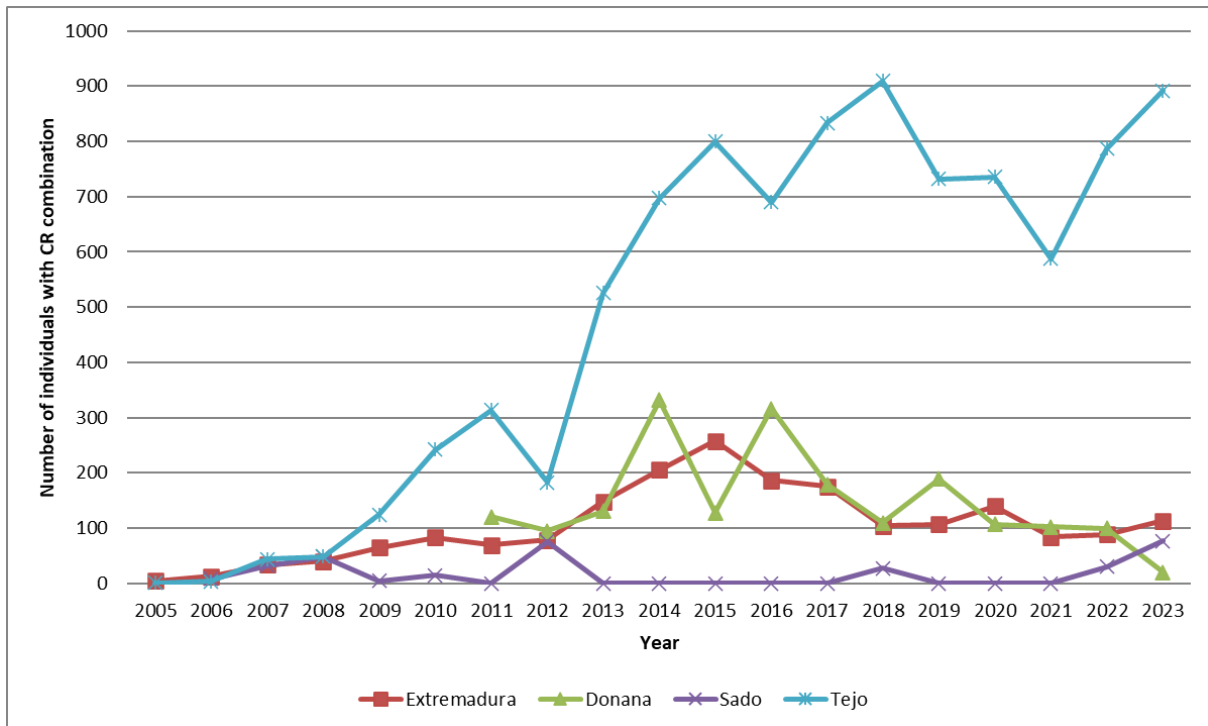
Numbers, individuals and percentage of the population seen

A significant increase of the number of sightings of colour-ringed individuals from our own scheme was achieved between 2012 and 2014, largely due to a combination of an increased sighting effort and a >50% true increase of ringed birds. Despite a fairly constant resighting effort since then, the number of sightings has decreased slowly from about 3.800 to just over 3.000 in 2020. After a dip in the Corona-year 2021, the number increased again in 2022 and 2023 but did not get back at the 2014-2020 level. The number of individuals seen has however remained fairly constant since 2014. This is merely due to our Portuguese and Spanish colleagues who contributed ~500 resightings in both 2022 and 2023, considerably more than in previous years. Without them the number of sightings and individuals would definitely have dropped, no surprise as the number of godwits has declined drastically as described above.



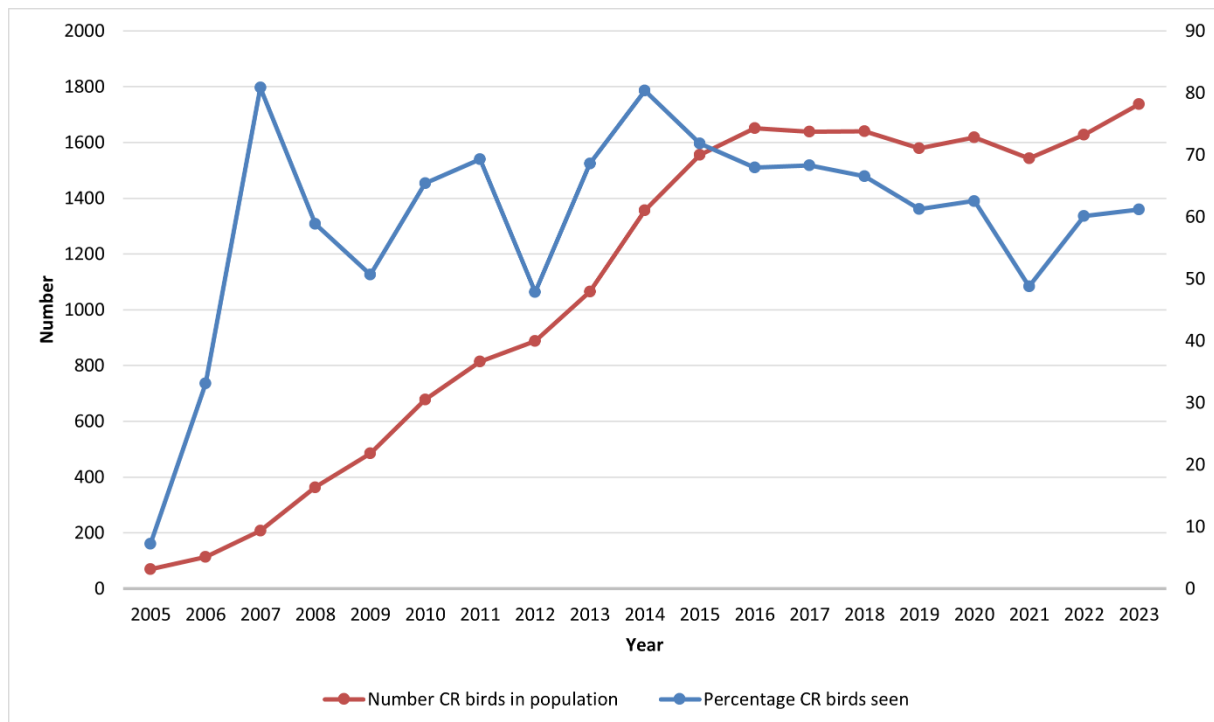
Total number of sightings and observed ringed individuals from the RUG-scheme in Extremadura, Doñana NP, Tejo and Sado in January-February of each year (no code flags).

If we zoom in to the different regions, it becomes clear that this decline is mainly caused by Doñana and Extremadura. This is no surprise as we already counted less birds in these areas in recent years. The numbers in Doñana have dropped to an all time low. The Tejo still by far produces most resightings and those numbers have remained fairly constant despite a probable decline in total numbers. The numbers in the Sado have been low for years but seem to be picking up again recently.



Total number of observed ringed individuals of the RUG scheme in Extremadura, Doñana NP, Sado and Tejo in January-February of each year (no code flags).

Less ringed birds seen could also be a result of less ringed birds in the population but that is not the case. The estimated number of alive ringed individuals has increased recently to >1.700 birds as a result of 3 relatively good reproductive years in a row. So with higher numbers ringed in a shrinking population, one would expect higher ring densities and a higher ring reading efficiency rather than a decrease in numbers seen.



Estimated number of colour ringed birds in the population that are still alive and the observed percentage of those birds in Extremadura, Doñana NP, Sado and Tejo Estuary all together in January-February of each year (no code flags).

With higher numbers ringed in a declining population and a higher resighting effort (by our Iberian colleagues), you would also expect an increase in the resighting percentage of the colour ringed population. However, there is a decreasing trend.

Have we become less efficient in finding them because they forage less (rings are better visible during foraging) or do they forage more in less accessible or unknown places? There is no evidence for that and actually the godwits with transmitters are a tremendous help nowadays to locate them anywhere. Another explanation is an increasing dilution of *limosa's* with *islandica's*. That simply means that you have to check more birds before you encounter a bird from our scheme.

Godwits might also be using other stop-over areas like the Spanish east coast, sites in France or simply move up north faster as the winters in The Netherlands have become milder. Overall maximum numbers have probably declined recently. After the numbers definitely started to drop already some years ago in Extremadura and Doñana, the numbers we encountered in Portugal also seem to have started to drop in recent years. A drop in individuals seen might be partially masked by a higher resighting effort by our Iberian colleagues or a higher turnover rate: we still see them but they stay shorter.

The estimate of the number of ringed birds in the population is based on an annual survival of 85% for adults and 45% for 1st cy birds (>10 d old). More recent estimates suggest that these figures might be too high for recent years which implies that we have probably seen a higher percentage of the ringed population than as suggested above. As you can see in the figure above, we still have resighted 60% of the ringed population which is an excellent score.

1. Black-tailed Godwit Habitat and Demographic Studies

Introduction and backgrounds

The Black-tailed Godwit (*Limosa limosa*; BTG; godwit) is a farmland bird that predominantly breeds in The Netherlands (Verstrael 1987; Thijssse 1904). The current Dutch population is estimated at 25.000 breeding pairs (extrapolated from Kentie et al. 2016) 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, urbanisation and increased predation rates. Intensification and rationalisation of farmland have led to degradation of the breeding habitat, resulting in low reproduction. The 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; Roodbergen et al. 2012). After the breeding season godwits migrate to southern Europe (Spain and Portugal) and West-Africa where they stay for wintering (Márquez-Ferrando et al. 2011; Hooijmeijer et al. 2013), mainly in agricultural areas such as rice fields. Throughout their annual cycle godwits select for farmland with a low to moderate land use intensity which makes them a key species to indicate routes towards sustainable agriculture. The Black-tailed Godwit qualifies since 2006 as “Near Threatened” on the IUCN Red List.

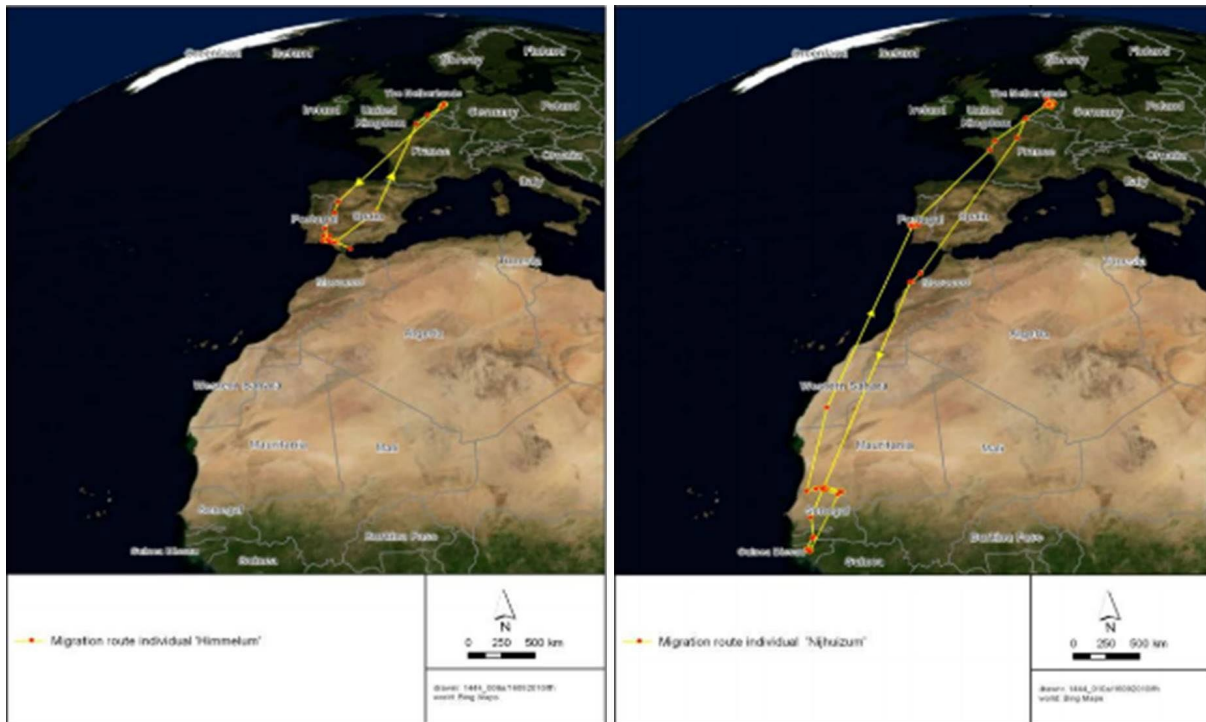
Demographic research Southwest Friesland

To measure the changes in population numbers and unravel the causes, the University of Groningen started in 2004 long-term research in the south-western part of Fryslân, The Netherlands. In 2007 the research area expanded 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. Since 2020, the project has expanded into the Godwit Landscapes Project, still studying the godwit as a main focal species, but in context of the whole food-web of which it is part. Therefore, studies on soil macrofauna, predators, insect availability, vegetation changes and human land use management have been included (Hooijmeijer et al., 2022).

Migration and wintering sites Black-tailed Godwit

In the 1980's most godwits were wintering in rice areas along the West-African coast in Senegal, Gambia, Guinea-Bissau and further. Big numbers of godwits also occurred in the inner Niger delta in Mali (Altenburg & van der Kamp 1985), but they probably predominantly belonged to the eastern European population. Recently, the wintering behaviour has partly changed with an increasing number of godwits deciding to winter in southern Spain and Portugal. In the 1980s during the first counts, only 4% of the NW-European population used this area as a wintering site but recent estimates suggest a big change with up to 23% of the population wintering in Spain, mainly Doñana NP and surroundings. 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. 2014). For godwits, staying in 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. The change in wintering grounds is remarkable and an important reason why we also want to do (demographic) research in West-Africa. We know now that juveniles are more likely to make these kinds of shifts than adults (Verhoeven et al. 2017) and that the genetic component of their individual migration strategy is limited (Loonstra et al. 2023). These aspects can have consequences for changes in migrations patterns and survival rate of both adults and juveniles. Moreover, they can lead to differences in reproductive success, for example due to differences in body condition upon arrival on

the breeding grounds. Both are demographic parameters that can rapidly influence population dynamics.



Two classical migration routes of Black-tailed Godwits based on satellite tracking. 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., 2013).

Habitat study

Anthropogenic alteration of natural wetlands is having a major impact worldwide with consequences (both negative and positive) for migratory species such as continental Black-tailed Godwits. On their migratory route Black-tailed Godwits pass through France and either stage or spend the non-breeding period in southern Spain and Portugal. Many will make the Saharan crossing to overwintering sites in West Africa, namely; the Senegal Delta and coastal region of Senegal, The Gambia, Guinea-Bissau, Guinea, Sierra Leone and central Mali. In all these countries godwits are heavily dependent on man-made habitats like water buffers, fish farms, salt pans and rice fields.

With remote sensing techniques and the locations indicated by godwits with satellite transmitters, we found out that during the non-breeding period Black-tailed Godwits show a preference for stable habitats within a relatively low productivity range (EVI value 0.1-0.2), which are associated with open wetlands, low vegetation cover and shallow surface water (Howison et al., 2019). Additionally, godwits spend much of their time foraging either on the mudflats of saline mangrove wetlands or in wet rice fields, however little is known of the nature of the prey items at different times of the year. However, remote sensing data is difficult to interpret without accurate ground-truthing information. In the past years we conducted surveys categorising and describing habitats, measuring environmental variables such as water salinity and soil penetration pressure, feeding efficiency of the godwits and carefully searching the substrate to establish the identity of godwit prey items.

Expeditions West-Africa and Iberia

In Southern Iberia godwits are largely confined to three major staging areas during northward migration: Doñana NP and Extremadura in Spain and the Tejo and Sado estuaries near Lisbon in Portugal.



Three main areas where many godwits can be observed during January-February; Extremadura (1), Doñana NP (2), Tejo-Sado (3)

Since 2005 we have started working every winter in those regions in close cooperation with local colleagues to study habitat use and collect resightings of individual godwits. Ring resightings in Iberia and West Africa are an important source of data for survival estimations in the different life stages of the godwits:

- If a godwit disperses outside our study area, the chance that it will be resighted elsewhere in The Netherlands is small. Without the resightings in the stopover areas, we would assume that this individual is dead and therefore underestimate annual survival, because in the breeding areas individuals have very different resighting probabilities.
- Secondly, with enough resightings from the Iberian Peninsula and West-Africa we can calculate seasonal survival. In other words, we can calculate in which period of the life cycle mortalities occur more often. Or we can find out if birds that cross the Sahara have a different survival rate than birds that stay the entire winter in southern Europe.
- By measuring the density of individuals with colour rings, we can monitor the population size of the western European part of the Black-tailed Godwit population (Kentie et al. 2016)

We also regularly visit southern Iberia, in particular Doñana in the first 2 weeks of October. The reason for the timing of this fieldwork is that in these two weeks one has the best chance to identify godwits that do not migrate to Africa at all, but stay in Europe for the entire non-breeding season. Based on tracks from geolocators and satellite tagged godwits we know now that godwits start returning from sub-Saharan Africa on a continuous scale between October and March, and that when the first ones are arriving the last ones are still on their way there. Thus, the first half of October is the best period for correct identification of godwits as non-trans-Saharan-migrants; that is: the least chance to misidentify a bird. You could safely say that these birds winter in Europe but a trans-Saharan-migrant is not automatically a bird that winters in Africa!

Until recently, West-Africa was the only area along the migratory flyway from which we didn't have many observations of colour-marked individuals. In the past, only small numbers of colour-ringed birds have been reported, mainly by birdwatchers and, more recently, by local scientists. Therefore, in November 2014 the University of Groningen, in cooperation with Global Flyway Network and financially supported by Birdlife Netherlands, embarked upon their first expedition to the wintering grounds in West-Africa and since then we visited the region 2-3 times per year till 2019. This has yielded a great number of resightings. The most important goal of the first missions 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 and prey choice to collect ground truthing data for spatial analyses combining satellite imagery with GPS-tracking information. In the near future we aim to continue demographic research and set up habitat study and restorations projects in this area in close cooperation with local scientists, volunteers and conservation organisations as part of the EU LIFE-IP Project Grass-Bird-Habitat.

In this expedition from 1 to 26 February 2023 we visited the most important areas for Black-tailed Godwits in southern Spain and Portugal during northward migration. Our aim was to resight individual colour marked birds, describe the habitats godwits used and to gain information on threats and opportunities by field observations and meetings with local experts. In this report we present a daily overview of our findings with photos, locations we visited, numbers present and the first conclusions and recommendations.

Literature

- Groen, N.M., Kentie, R., Goeij, P. de, Verheijen, B., Hooijmeijer, J.C.E.W., Piersma, T.. 2012. A modern landscape ecology of Black-tailed Godwits: habitat selection in Southwest Friesland, The Netherlands. *Ardea* 100:19-28.
- Hooijmeijer, J. C. E. W., Senner, N. R., Tibbitts, T. L., Gill, R. E. Jr, Douglas, D. C., Bruinzeel, L. W., Piersma, T.. 2013. Post- breeding migration of Dutch- breeding black- tailed godwits: Timing, routes, use of stopovers, and nonbreeding destinations. *Ardea* 101, 141–152.
- Hooijmeijer J., E. van der Velde, E. Rakhimberdiev, R. Howison, J. Onrust, R. Fokkema, G. Lagendijk, C. Kraamwinkel, R. Veenstra, L. Barba Escoto, M. Stessens, J-Y Duriaux Chavarria, S. Eren, M. Ligtelijn, T. Craft, R. Venderbos & T. Piersma. 2022. Grutto-Landschap-Project Jaarverslag 2021. Rapport van Conservation Ecology Group, Groningen Institute for Evolutionary Life Sciences (GELIFES), Rijksuniversiteit Groningen.
- Howison, R.A., Hooijmeijer, J.C.E.W. and Piersma, T., (2019) Grutto's als indicator voor veranderingen in landgebruik in de Sahel. *Limosa* 92: 154-163.
- Kentie, R., Senner, N. R., Hooijmeijer, J. C. E. W., Márquez-Ferrando, R., Masero, J. A., Verhoeven, M. A., Piersma, T. 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* 104, 213–225.
- Loonstra, A.H.J., M. A. Verhoeven, C. Both & T. Piersma. 2023. Translocation of shorebird siblings shows intraspecific variation in migration routines to arise after fledging, *Current Biology* 33: 2535-2540.
- Márquez-Ferrando, R. Hooijmeijer, J. Groen, N. Piersma, T. Figuerola, J.. 2011. Could Doñana, SW Spain, be an important wintering area for continental Black-tailed Godwits *Limosa limosa limosa*? *Wader Study Group Bulletin* 118: 82-86.
- Márquez-Ferrando, R., Figuerola, J., Hooijmeijer, J.C.E.W. & Piersma, T. 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.
- Mulder, T. De Grutto in Nederland. 1972. Wetenschappelijke mededelingen van de Koninklijke Nederlandse Natuurhistorische Vereniging. Nr.90. Hoogwoud: KNNV.

- Newton, I. 2004. The recent declines of farmland bird populations in Britain: an appraisal of causal factors and conservation actions. *Ibis* 146: 579-600.
- Roodbergen, M., van der Werf, B. & Hötker, H. 2012. Revealing the contributions of reproduction and survival to the Europe-wide decline in meadow birds: review and meta-analysis. *Journal of Ornithology* 153: 53-74.
- Teunissen, W., Schotman, A., Bruinzeel, L.W., Holt, H. ten., Oosterveld, E., Sierdsma, H., Wymenga, E., Melman, D.,. 2012. Op naar kerngebieden voor weidevogels in Nederland. Feanwâlden: Sovon-rapport 2012/21, A&W rapport-1799, Alterra-rapport 2344.
- Teunissen, W. & Soldaat, L.. 2006. Recente aantalsontwikkeling van weidevogels in Nederland. *De Levende Natuur* 107: 70-74.
- Thijsse, J.P.. 1904. *Het Vogeljaar, Nederlandse vogels in hun leven geschetst*. Amsterdam: W. Versluys.
- Thorup, O. 2006. Breeding waders in Europe2000. International Wader Study Group 14.
- Tscharntke T., Klein A. M., Kruess A., Steffan-Dewenter I., &Thies C.. 2005. Landscape perspectives on agricultural intensification and biodiversity - ecosystem service management. *Ecology Letters* 8: 857-874.
- Verhoeven, M.A., Loonstra, A.H.J., Hooijmeijer, J.C.E.W., Masero, J.A., Piersma, T., Senner, N.R. 2018. Generational shift in spring staging site use by a long-distance migratory bird. *Biology letters* 14: 20170663.
- Verstrael, T.J. 1987. *Weidevogelonderzoek in Nederland*. 's-Gravenhage: Contactcommissie Weidevogelonderzoek.
- Vickery, J.A., Tallowin, J.R., Feber, R.E., Asteraki E.J., Atkinson, P.W., Fuller, R.J., Brown, V.K. 2001. The management of lowland neutral grasslands in Britian: effects of agricultural practices on birds and their food resources. *J. Appl. Ecol.*: 38: 647-664.

More reports from expeditions to Iberia and West Africa in previous years can be downloaded at:
<https://www.globalflywaynetwork.org/publications>

2. Birds and habitat, daily overviews 1 – 26 February 2023

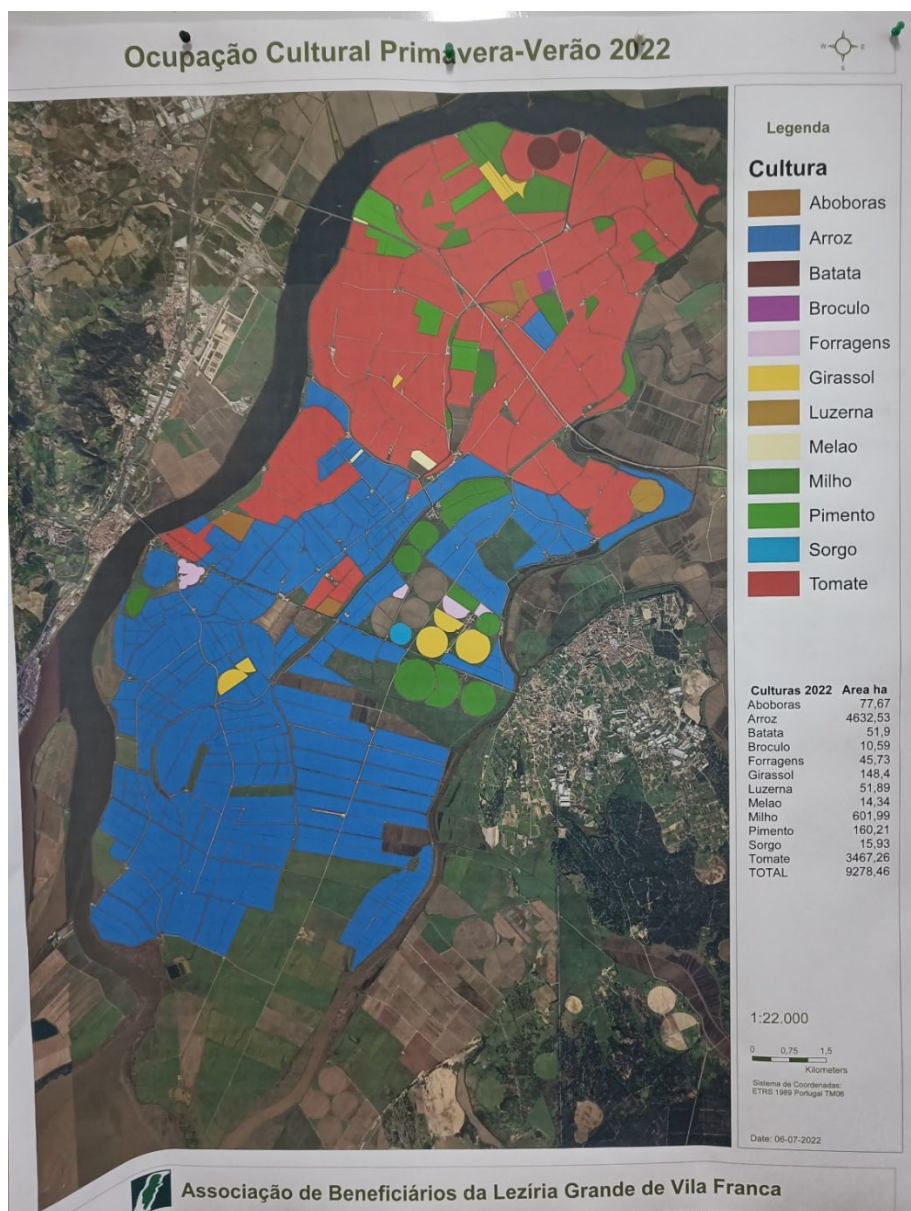
Portugal Team 1: Kees de Jager and Maarten Hotting, 1-10 February

2 February

Sunny day, NE 2 Bft wind, max. 13 C

Total amount of godwits: ~35.000

We arrived yesterday late afternoon and didn't had time to spot our first godwits or to collect the keycard for the Giganta rice fields. So, first thing in the morning was to visit Rui Paixao to get the keycard. We had a quick chat with Rui and he informed us that there was a lot of rain in December. Even that much that some of the rivers in the area flooded. He confirmed as well that most of the godwits seem to be in the northern part of the fields (north of the N10; Appendix A - location 1). Based on the map in his office, the area of rice seems to be the same as last year(s).



Map with the land use within the Vila Franca area

After collecting the keycard, we went back on the same road as we came in as we had spotted already some foraging godwits. Spread over various fields we were able to see around 2500-3000 birds and also the first rings of the trip.



L3BRYL showing its rings (and hardly to see the antenna of the transmitter)

After spending almost the entire morning in the northern part, we went to Vila Franca de Xira for a quick visit to the supermarket to buy lunch. The intention was to drive to the southern tip of the rice fields and have lunch there. Some nice groups of godwits however slowed us down. Most of them were either sleeping or foraging in belly deep water and not many rings to see (but you have to scan them all to find that one bird showing all its rings).

With “some” delay we reached the southern tip to find out that it was high tide and not many birds to see. This gave us the time for lunch, although some butterflies gave some distraction.

With the lunch done, we drove back to check some other parts of the southern fields, but not much ploughing was done here, so no godwits to see.

After a visit to the birds near the Cardal entrance – still in belly deep water, but a few cooperating – we went back to the northern part. In the fading light, we managed to read some more rings and when birds were leaving the fields, we managed to follow them with the binoculars towards their possible night roost.

We decided to quickly check the most likely area of this night roost and found it rather quick (Appendix A - location 2). Around 35.000 birds were present in a few fields. With the light now gone, we headed back to our apartment, concluding a good first day.

3 February

Sunny day, NE 2 Bft wind, max. 17 C

Total amount of godwits: ~25.000

We started at the same place we ended yesterday. Some birds were already flying off the sleeping spot and others were foraging on the nearby fields. These birds gave a nice opportunity to read some rings. Unfortunately, a roadworker decided that it was time to flatten the road next to the fields and most birds flew away to the back.

We tried driving around and were able to spot some more birds, however the light was not optimal and some birds already started to rest again.

Near the Cara Larga entrance some more groups were foraging although most in a bit too deep water for good reading.

Around lunchtime we drove to Porto Alto to buy our field lunch and ate this at Samora Correia. Here we saw some Black-crowned Night Heron resting in a bush along the river. Also a nice Iberian grey shrike showed itself and was even singing. No godwits in the area and the fields didn't look suitable for them either. After our lunch we drove towards the sleeping area of last year, but these fields were not ploughed this year yet.



Iberian grey shrike

After checking this, we went into the southern part of the Giganta rice fields. A pair of Black-winged kites didn't want to cooperate for the photo, a female Hen harrier did it a bit better.

Near the location of yesterday (Appendix A – location 3) we found again some godwits, most (again) in belly deep water. A small group somewhat south of the bigger group (Appendix A – location 4) however produced a lot of rings, including 4 code flags (and 1 that was too dirty to read).

We ended our day again in the northern part with first a nice group foraging before bedtime and at last the roost with now approximately 18.000 birds on that location. Possibly the (almost) full moon gave the other birds enough light to continue foraging?

4 February

Sunny day, NE 2 Bft wind, max. 17 C

Total amount of godwits: ~25.000

We started again at sunrise at the sleeping spot in the northern part of the area. We saw the first birds leaving the area in various directions. Most of the birds of last night however seemed still to be present, part of them foraging close to the road. The sunlight was not super but reading went well for a while.

When we had scanned most of the foraging birds, we decided to drive around the fields to try the other end of the group. However, before we reached them, the birds went all off. Most likely due to gun shots in the distance. As it is Saturday, we already expected some hunting in the area.

We could follow the birds with our binoculars and saw them landing in the direction of the road and little factory. When we arrived there, indeed a nice group was foraging in shallow water. We spent the rest of the morning around this group, ring reading and taking some ring density samples.

After getting our lunch at the supermarket we drove towards Alcochete (Appendix A – location 7) to check the estuary and rice fields there. At the estuary the tide was rising, but some mud flats were still dry and with a lot of birds on them. Only a handful of Black-tailed Godwits however and just 1 bird with readable rings. Maarten however spotted a Pied Avocet of his own project at the “Marker wadden” and was able to read the combination. The rice fields nearby were almost dry and not ploughed. No godwit to be seen.

We decided to go back to the Cara Larga area where the sleeping spot was still empty and the birds still around the factory and the fields on the other side of the road. Most of them however were scattered over various fields and in a bit too deep water, giving us a hard time reading.

As we still “missed” a lot of birds, we went to the southern part (Cardal / Giganta) to check those areas. Here again small groups foraging. Most in deep water or against the sunlight (with no option to go round the field without disturbing them). We estimate ~10.000 in the southern part.

As reading was also tough here, we went back to the northern part to check if the birds would sleep around the factory or move to the old sleeping spot again. It became a bit of both. Most seem to stay around the factory (Appendix A - location 1) and some flew off in the direction of the original sleeping spot.

As we didn't see birds arriving from the southern part, we went back to Cardal again to check if we could find them sleeping over there. Most of the fields where they foraged before were empty, but we couldn't find a large group sleeping. Not more than ~3.000 birds were standing in two different spots. Still work to do to find the others. We closed the day with some owling in the Cardal and Giganta area. We have had better evenings, but still managed to spot both Short-eared and Barn owl.



Black-tailed godwits in late evening light, ready to sleep....

5 February

Sunny day, NE 2 Bft wind, max. 17 C
Total amount of godwits: ~25.000

The start was again at sunrise at the sleeping spot in the northern area. A few thousand birds were present and most were foraging (so rings could be read). After an hour or so most birds flew off again in the direction of the Cara Larga entrance and we followed them.

Here again more birds, but also again in deeper water, making ring reading a bit hard, but with some patience we managed to get a decent number of readings.



G1GCCG, one of the birds cooperating in showing its rings.

Lunch we did at Ponta da Erva with upcoming tide. Unfortunately, the spoonbills (with at least one Dutch transmitter bird amongst them) didn't cooperate and stayed out of reach and full against the sunlight.

After lunch back to godwits. We scanned a series of fields in the southern part to figure out the amount that is foraging (and possible sleeping) on this side of the N10. On various fields we found in total 8.000-10.000 birds. Most of them in too deep water for ring reading.

A small group near the Cardal gate was however foraging on a nice ploughed (and relatively flat) field. Almost all the legs were visible, good reading conditions and good for a large ring density sample.

Around 16.30 the birds flew off without any reason (or we missed a predator) and went back to the fields with high water. We decided to go back to the northern part to check the numbers there.

On various fields nice groups were foraging. The main group was spread over two fields with ~10.000 birds, both feeding and resting. The foraging birds gave us some more ring reading, until the sun went down and the light faded.

To check total numbers in the northern part, we went to the sleeping spot, where we found a group of ~4.000 birds resting in deep water and still ~1.300 birds foraging on a nearby field.

6 February

Sunny day, N 3 Bft wind, max. 17 C

Total amount of godwits: ~25.000

Today we started at the Cara Larga entrance with good number of godwits, but (as expected) in a bit deep water. Despite the water level we managed to get a decent amount of ring readings. Next stop the southern part where we found some godwits at the usual fields. Not many rings and a lot in deep water.

After some more checks in the southern part, we went to Samora Correia to collect the key for the Belmonte rice fields gate. Before heading to Belmonte, we checked some fields near Benavente, where we were lucky to find an open gate. No godwits but a nice group of Eurasian Spoonbills with some rings. As they were resting, a lot of the legs retracted or in to deep water, so there should be more rings to find here

In Belmonte we first had lunch at the edge of the forest area with some new additions to our bird list. At the rice fields (Appendix A – location 6) we were surprised to find a small group (~900 exx) of godwits foraging / resting. They were however a bit skittish and took off before we had the opportunity to scan most of them. We continued to check the other fields, but no more godwits to be found.

Around 15:00 we were back at the sleeping spot in the northern area where we found a very nice group partly sleeping, partly foraging. This on a field with low water level and also not much vegetation, so good ring reading conditions. These birds cooperated very well and even flew closer by after some panic (Marsh Harrier). This group kept us busy for more than an hour, after which we decided to move on.

At the Cara Larga site we bumped into Afonso Rocha who was also monitoring the godwits. We had a quick chat and went back to work afterwards. Also at this site a nice amount of godwits and on some fields good reading conditions. This led to – again – a 100+ day for both of us.

7 February

Sunny day, NE 3 Bft wind, max. 17 C

Total amount of godwits: ~7.000

Today we planned our Sado trip and started from the south. At the rice fields of Comporta (Appendix A – location 8-10) we immediately spotted a (for the Sado) large group of godwits foraging on a very recently ploughed field. The birds showed their legs and ring reading was good (although density not that high).

We spent almost 1,5 hours at this group before moving on and driving to the edge of the rice fields to overlook the Sado estuary. Here we spotted the expected birds like Red-breasted Merganser, Black-necked Grebe and Common Loon. Remarkable were the large number of pintails. We estimated an easy 8.000 birds (most likely some more)!

Driving further along the rice fields, we encountered yet another (smaller) group of godwits and did some more ring reading and sampling. Also some European Spoonbills with rings cooperated and let us read their rings. Lunch was a bit late at the edge of the Sado. Here we were able to read one Lesser Black-backed Gull ring (another was just out of reach). This bird turned out to be ringed on Guernsey.



One of the Spoonbills we could read; LYG/aRYf

After lunch we drove to the northern bank of the Sado and started looking for godwits and other ringed birds from the bridge at Zambujal. Due to the high tide, no birds on the river at the bridge and also the ponds were almost empty. Near Herdade de Gambia we checked some more salt pans / fishponds with no luck. A bit more towards Setubal we were lucky to find an open gate to some salt pans (Appendix A - locations 11-12) and here we spotted around 150 godwits (no rings), some spoonbills (1 ringed) and avocets (also 1 ringed). We ended along the edge of the Sado again, but the tide was still too high and without mudflats, no birds

8 February

Most cloudy with a few drops of rain, NE 4 Bft wind, max. 15 C

Total amount of godwits: ~25.000

We started with a clouded sky and based on the wet road it had rained (a bit) tonight as well. We found the godwits at a slightly different field around the sleeping area as the original field was now drained.

The birds were skittish and reacted both at us as on a Marsh Harrier flying over. A large group – at least a few thousand birds – flew away in an eastern direction, clearly leaving the area. Other birds went down again and gave us the opportunity to read the first rings of the day.

After a while we headed over to the Cara Larga entrance and checked some of the fields there. Again, a nice number of godwits but most of them in deeper water.

In the southern part we found some nice groups foraging on drained fields with little stubbles, giving us good views on their legs. The main group was still foraging in deep water with little opportunity to see their legs.

All the godwits in the morning delayed us (again), so lunchtime was late (14:00) again. Because we saw the birds flying off this morning, we hoped they would have gone towards Belmonte, but that

clearly wasn't the case. Almost no birds at all at Belmonte (except for some gulls). The surrounding woodlands produced a bit more species. Also the area between Belmonte and Samora Correia seems to be empty of godwits (seen from the dike at the NW side of the Belmonte fields. Most likely the birds were at Benavente today (but access there is hard).



No waders at Belmonte, but this Cirl Bunting showed itself nicely.

Back at the sleeping area not many birds around, so we headed to the Cara Larga entrance again. Here some groups that we could observe pretty well, foraging against the strong(er) wind.

At the end the birds seemed to gather in a field with good water – but with opportunities to see legs – and when we stood there with the car even more birds flew in and started to preen and sleep. Most likely to stay there for the night.

Although the birds were scattered around the fields today, we managed to read both 100+ combinations (including non-RUG birds) again.

9 February

Sunny day, NE 4 Bft wind, max. 18 C

Total amount of godwits: ~25.000

We started again at sunrise at the sleeping spot. When we arrived, we just saw ~2.000 birds flying of in the direction of Samora / Benavente. A bit more stayed at the fields but was very skittish and flew away at the least disturbance (either us or a Marsh Harrier). Finally, we found a nice group foraging and were able to read the first rings of the day.

Next stop Cara Larga where the birds were again foraging on various fields with different levels of water (and thus readability). Here we met Mario Huizinga (the creator of the Birdring app) who just arrived in the area. We briefed him with the good locations for godwits and other ringed birds.

After a short visit to the southern part – same situation as before, mostly standing in deep water, some foraging – we went to Porto Alto to shop for our lunch. For lunch we headed towards the north of the Samora Correia rice fields to check if we could find the godwits, we saw flying away this morning. They indeed were foraging in the middle of this area; unreachable for us as this is a private area.

After lunch, back to the southern part to check some more fields in an area we saw ploughing was underway. Unfortunately, no godwits (yet?). At the mean area in the south some birds were now foraging and we managed to read some rings.

We ended our day – and the trip – at the Cara Larga site where the birds were again cooperating and giving us the last rings of the trip.

In the evening the second team arrived and we briefed them about the best spots and handed over the administration.



Copyright Jacob Jan de Vries

Common Snipes (Gallinago gallinago) also like the ricefields

Portugal Team 2: Jacob de Vries en Jan de Jong, 9-17 February

10 February

Sunny day, NE 2-3 Bft wind, max. 18 C

Yesterday evening we arrived late at our basecamp in Salvaterra de Magos and got sufficient information from Maarten en Kees regarding the presence of the godwits at the ricefields in the region. Today we said goodbye to them and we started our first day from our basecamp with a 5 C. temperature. We headed first for Cardal and Giganta ricefields and also some ricefields around Ermida de Nossa Senhora de Alcame and found not too many godwits. So, at last we crossed the N10 to check the ricefields at Cara Larga also near the new pumping station. There we found several thousands of Black-tailed Godwits so we have spent the rest of the day at Cara Larga.



The rice fields at Cara Larga north of the N10 between Vila Franca de Xira and Porto Alto were wet.

11 February

Sunny day, ENE 2-3 Bft wind, max. 15 C

At the beginning of the day, we started also with a low temperature of 5 C and headed to the ricefields of Cara Larga where we found approx. 7500 godwits and started ringreading. After our lunch in the most famous Pastelaria of Porto Alto we went to the ricefields of Cardal but as we did not find too many godwits, we decided to visit the Cara Larga ricefields again and found even more godwits on both sides of the dangerous road Estrada do Camarão and the ricefields near Vacaria das Palmeiras (the farm with the Frisian flag). We noticed more than once that Northern Shovelers (*Spatula clypeata*) were swimming between groups of sleeping or foraging godwits.



Copyright Jacob Jan de Vries

Sleeping godwits in the ricefields near the pumping station of Cara Larga.



Copyright Jacob Jan de Vries

*Water Pipits (*Anthus spinoletta*) also present in the ricefields near the pumping station of Cara Larga.*

12 February

Half-cloudy day, ESE 2-3 Bft wind, max. 15 C

Today we headed for the Sado estuary, so we started early at 7 a.m. and drove first to the small but nice village of Carrasqueira. We also visited the Porto Palafito da Carrasqueira, which is the nearby small harbour to check the waders and spoonbills at the tidal area. We enjoyed our coffee at the village and afterwards we went to ricefields at Comporta, Cambado and Possanco and we were surprised by the presence of thousands of Glossy Ibises, Eurasian Spoonbills, Northern Pintails, Shovelers and ca. 8000 godwits in the ricefields. We explored the whole peninsula even just opposite Setubal to check all the ricefields and dry areas and found e.g one group of courting Flamingos.



Sado estuary with thousands of ducks, spoonbills, ibises and gulls partly foraging on crayfish.

13 February

Half-cloudy day, E 2-4 Bft wind, max. 16 C

We had an early start at Cara Larga again at a temperature of 8 C. Still big groups of resting and foraging godwits are present so ringreading was starting again near the pumping station. Before lunch at Porto Alto, we went to Giganta Ricefields and a big surprise for Jan was the observation of a godwit ringed by him in 2019 at Ameland / The Netherlands. We searched the whole area between Vila Franca de Xira and Porto Alto, south of the road N10 and managed to find some small groups of godwits but not many ringed birds.

More to the east, near the Sorraia river, it was even totally dry. We saw this week 1 ploughing tractor at work at Cardal ricefields which was surrounded by hundreds of gulls foraging on Crayfish. We discovered only a few godwits in between of them.

A Bonelli's Eagle (*Aquila fasciata*) was today hunting on waders near Ermida de Nossa Senhora de Alcame but we did not notice a catch. At last we decided to return to the northside of the N10: Cara Larga and stayed till dark for ringreading.

Overzicht Grutto Waarnemingen				
Observer: Jan F de Jong				
Kleurcode: G1GCCC		Naam Ringer:	Jan F de Jong	
Ringnr: 2515062		Naam 2e Ringer:	Paulus Brouwer	
Datum vangst 17-6-2019		Vangplaats:	Buren, Grie	
Leeftijd (in dagen; 50 = juv.; 99 = ad.): 19		The Netherlands	53.44639 N 5.82000 E	
Waarnemingen van deze vogel:				
Datum	Plaats	Coördinaten	Land	Waarnemer(s)
31-10-2019	Ndioum, Halrar bridge, Lac Diemgologe	16.557081 N 14.660199	Senegal	Jos Hooijmeijer Ruth Howison
13-9-2020	Hollum, Feugelpölle	53.42426 N 5.66259 E	The Netherlands	GertJan Verbeek
4-2-2021	Isla Mayor, Veta la Palma, Lucio del Cuquero Grande	37.012 N -6.241 W	Spain	Pablo Macías Torres
10-7-2021	Ballum, Ameland	53.4422 N 5.6782 E	The Netherlands	Tom Voortman
7-2-2022	Carrasqueira	38.40222 N -8.76028 W	Portugal	Maarten Hotting
9-5-2022	Nes, Noordkeeg, Skorum	53.44639 N 5.74889 E	The Netherlands	Nel Bekema
13-2-2023	Porto Alto, Giganta Ricefields, Giganta	38.879 N -8.975 W	Portugal	Jan F de Jong

Lifehistory of Black-tailed Godwit G1GCCC

14 February

Half-cloudy day, E 2-4 Bft wind, max. 19 C

In the early morning we headed to the ricefields near Vacaria das Palmeiras as the day before we noticed lots of godwits at sunset, approx. 3500 individuals for spending the night. The birds were still present, so ringreading was started and after our coffeebreak at Porto Alto we headed for Belmonte Ricefields where surprisingly about 5000 godwits were foraging and resting. We noticed they were very fidgety because of the nervous flying Northern Lapwings (*Vanellus vanellus*), probably their breeding areas. After a good reading session at Belmonte, we moved to Cara Larga at 16.30 h to check the godwits in the ricefields again where we counted ca. 7500 godwits.



Very old cork oak (Quercus suber) on the path to Belmonte Ricefields

15 February

Half-cloudy day, ESE-ENE 2-3 Bft wind, max. 20 C

Today we decided to explore the northside of the Estuario do Rio Sado as in the past we noticed small groups of godwits overthere. Our first stop was the bridge at Zambujal, but unfortunately we did not see many godwits but good numbers of Spoonbills, Avocets (*Recurvirostra avosetta*) and other waders were seen. We scanned several ricefields also near Gambia but no luck and ended up at Moinho de Mare da Mourisca for our coffeebreak. After the coffeebreak we scanned the tidal area just east of Setubal but still no godwits to be seen. Therefore, we drove to the Salinas do Samouca to find Spoonbills but the water was very low so no Spoonbills and almost no waders to be seen, but 19 unringed godwits were present.

Alcochete was the next destination where we had our lunch in the village at the seaside and afterwards, we met Pete Potts and his wife at the tidal area of Alcochete where we saw 1000+ Avocets, lots of different waders, a few Caspian Terns and also a Dutch satellite-tagged Spoonbill. A few hundred godwits flew to the south. After a long day we ended up at the ricefields of Cara Larga where we did some ringreading.



3 ringreaders : Pete Potts, Jacob de Vries and Jan de Jong (l/r) at Alcochete

16 February

Half-cloudy day, NE 2-3 Bft wind, max. 19 C

Starting very early at the ricefields of Cara Larga for a good ringreading session and at noon we crossed the N10 to check again the Cardal and Giganta Ricefields where we found ca. 3000 godwits in several groups mainly in the western part of the area. We had our lunchbreak at the EVOA visitor centre and made a walk into the parc where we found 4 Purple Swampheens (*Porphyrio porphyrio*). In the afternoon we headed for Belmonte Ricefields, with almost no godwits and we checked the ricefields of Ze do Pinho which gave no godwits either. We decided to check the ricefields at Carregado, north of Vila Franca de Xira but no sign of any godwit. In the late afternoon we went to the ricefields near the pumping station of Cara Larga where we checked a group of 3500 godwits.

MIGRAÇÃO | MIGRATION

É um movimento regular, em que as aves retornam para locais específicos todos os anos, por volta da mesma altura. Envolve uma viagem habitualmente longa, com direções relativamente fixas.

A migration is a regular journey where birds return to specific locations each year, seasonally. Usually involves a long-distance journey with relatively fixed directions.

10 PRINCIPAIS ROTAS MIGRATÓRIAS 10 MAJOR MIGRATION ROUTES



Visitor Centre EVOA with information about local birds and migration.

17 February

Half-cloudy day, NE 2-3 Bft wind, max. 19 C

Today Jan is going home and Arne is arriving so travel time to and from Lisboa for all of us. But first we made a stop at Cardal Ricefields for checking a few groups of godwits, and found indeed some ringed birds. We paid a quick visit to the Mercado Municipal Vila Franca de Xira for buying some nice cheeses.

Portugal Team 3: Arne van Eerden en Jacob de Vries, 17-26 February

18 February

Cloudy, 10°C-21°C, 2/3 Bft NE-ENE

Total amount of godwits: 12.000

With the night's gentle temperatures and NNE winds prevailing, we embarked on our mission to survey the Portuguese godwit populations once again. Guiding Arne into the expedition's rituals, Jacob introduced him this morning to a vital tradition - getting fresh Portuguese breads from the local bakery. On Arne's inaugural day at the field, we started our day at Cara Larga. This is a site quite familiar for hosting great numbers of staging godwits, especially in the last years. The rice fields welcomed us with a gathering of around 5000 godwits. Reading their rings, however, posed a real challenge as some close-by rice fields were drying up rapidly, leading the flocks to move towards more distant and less accessible fields. Our pursuit of reading rings led us to the Cardal rice fields, historically a very important site for staging godwits. Two groups of approximately 3000 each were present. However, our attempts at approaching the group often spurred swift flights. Trying to turn our course we moved on to rice fields of Samora Correia awaited. Here, a tireless flock of about 1000 birds painted the landscape with their persistent foraging. This served as a good opportunity for us to have a nice ring reading session.



Flying godwits, a pleasant sight for the birdwatcher, not so for the ones that need to read their rings.

19 February

Rain from 19:00, 10°C-16°C, 2/3 Bft, ENE to SSE to SSW.

Total amount of godwits: 16.000

It became apparent that the massive flocks of tens of thousands of godwits had largely dispersed, with many individuals already started their northern migration. In the gentle embrace of the

morning, our journey led us to Cara Larga, where 3500 godwits graced the otherwise dull landscape. They were dispersed across different fields, making us drive around the area from field to field. We carefully observed the godwits and read quite some rings. As the clock approached 10:00, our path led us to Cardal. The godwits were elusive at this spot and seemed to have taken flight to different rice fields. A serenade of sharp and scratchy notes from Cetti's warblers echoed through the air. Spurred by their songs, we turned our attention towards the Belmonte rice fields.

Arriving at Belmonte around 11:00 am, we found a flock of 4500 godwits. However, conditions for reading rings were poor - the birds were constantly flushed up by passing Marsh harriers and also seemed wary of our vehicle. Combined with the unfavourable lighting, this resulted in limited ring readings.

We continued on to Samora Correia where we found a large flock of 8000 godwits. Despite the sunny conditions which caused the air near the surface to heat up, we managed to read many rings as the birds were actively foraging close by. At 16:00, with most accessible rings read, we decided to move on once more. Crossing the bridge at Samora Correia again, we spotted around 10 Black-crowned night herons roosting in a tree at the riverside. We finished up the day back at Cara Larga, reading rings on the growing flocks coming in to roost as sunset approached.



Trying to read rings at Cardal

20 February

Overcast, 10°C- 17°C, 2/3 Bft ENE-SSE-SSW

Total amount of godwits: 19.500

After yesterday's success, we returned to the familiar fields of Samora Correia to take advantage of the morning sun's positioning. After a friendly exchange with the gate's guardian (the person who lives near the gate), we ensured no horses wandered astray and escaped. Next, a four-legged sentinel of a different kind, a dog living at the rice fields, was determined to accompany us. He trotted the whole way down to the rice fields alongside us and was seeking attention. Jacob was generous and offered some of his own lunch to this new friend, creating an even closer bond between the two. As the sun ascended behind overcast skies, a great assembly of 6500 godwits awaited us at the field. The reed between the rice field and the road created a natural barrier between us and the godwits and allowed us to come up quite close to them. We spent the whole morning reading rings at this location.



Godwits spent more time in the air than in the rice fields at Belmonte.

Around 13:15, the Animal Tracker app revealed a gathering of satellite tagged individuals in rice fields nestled between Samora Correia and Benavente. We continued our course over sandy roads, guided by the promise of large groups of godwits. Arriving at the spot, a flock roosting near the road's edge greeted us. And when we peeked around the corner, we discovered a vast field teeming with foraging godwits. We counted in total 8500 individuals in these fields. Yet, reading the rings wasn't without its challenges, as some soared beyond the reach of our telescopes. Even though it was difficult to read all the rings, it was still a bountiful spot. We noticed small flocks of godwits take off and soar westwards in the direction of Samora Correia. As we suspected the birds were joining those at Samora Correia, we decided to go there. Our final ring reading session was slightly interrupted when a chattering flock of Yellow-crowned bishops and Scaly-breasted munias played a discordant symphony and we were not sure with the identification of these species. With the sun descending, we bade farewell to the canine companion that followed us the entire way once again and glanced upon a singing Iberian grey shrike. It had been a great day with many ring readings and with discovering the new big group at Benavente gave us new opportunities for the rest of our stay. Around noon, we decided to try our luck in Belmonte again. Thirty minutes later, we arrived at the gate and slowly drove through cork oak fields, spotting Iberian magpies and crested larks heralding spring.

Reaching the rice fields, we cautiously approached a nice flock, but most were roosting and the few foraging remained out of reach given the light conditions. After reading some rings, we went west to another larger group, but they were again easily flushed by our approach and even more by-passing Marsh harriers. In total there were about 4500 godwits present, and again they were difficult to observe closely.



Two little egrets observing the newly found group at Benavente.



The horses and the friendly dog at the rice fields near Samora Correia



The old rice stems added to challenges in Belmonte. The group of godwits is well hidden in this landscape.

21 February

Dense fog in the morning, later on sunny, 10°C-17°C, 1/2 Bft NW-WNW

Total amount of godwits: 3500

Afonso Rocha had contacted us about his team's plan to catch Black-tailed godwits in the Comporta rice fields for an oxidative stress study before and after migration, led by Jorge Gutiérrez. After some unsuccessful attempts in Spain, they aimed to try their luck in Portugal.

In the days prior, we identified promising night roost spots to set the nets. In coordination with Afonso, we chose a location at Cara Larga. Part of the team was already in Portugal, while others drove straight from Extremadura after many sleepless nights.

We started our day with the expedition's main goal - trying to read as many rings as possible. But stepping outside, a dense fog obscured our vision. As every morning, the song of a Black redstart on the roof marked our departure as we slowly drove through the mist towards the Benavente rice fields. Crossing roads through the mist, demanded trust in the driving skills of the fellow participants of the traffic. Slowly approaching the rice fields, the chatter of foraging godwits serenaded us. However, the mist concealed the birds from our vision and only now and then the veil of mist lifted a bit, granting brief glimpses at the group and enabling us to read a few rings before the mist veiled the landscape again. Turning westward, to the rice fields near Samora Correia, the mist seemed to lift and offer clear visuals. Roughly 3500 godwits dotted the fields, though most remained just beyond the reach of our telescopes. A smaller group in the southern basins (which were mostly inhabited by a vast number of Glossy ibises) was more accessible, giving us a chance to read some rings there. We had to pass another dog which was tied by a small leech on a tree. This was definitely not a companion dog, more a ruthless watchdog so we proceeded with caution. Before noon, we revisited Cara Larga, where the situation remained elusive. We sought for color rings amidst the scattered godwits before returning to Samora Correia's northern basins at 14:30. Luckily most godwits were undisturbed by the tailing dog, allowing us to scan many godwit legs in pursuit for color rings. With twilight approaching, we joined the catching team in Samora Correia. Over coffee and Portuguese cake, a strategy to set nets near the main roosting site was made. We moved together to Cara Larga and set out the nets for catching. The Spanish and Portuguese team set up the camp for

that night and we tried to help a bit. The team included Afonso Rocha, Arturo Esteban, Jorge Gutiérrez, José Alves, João Belo, Josh Nightingale and many others. When the nets were put in place, it was time for pizza. As darkness fell, we waited expectantly before checking the nets. Sloshing through the thick mud lit by the lights of the pumping station, it felt as if we had become fellow inhabitants of the rice fields. After retrieving the first godwits from the nets it was time to ring, measure and take blood samples for hormonal analyses. In addition, some larger females were fitted with GPS-tags. By 03:15 we ended our night having caught 20 Black-tailed godwits, 2 Shovelers, and a Lesser black-backed gull - a successful end to a productive day.



One of the many glossy ibises around Samora Correia.



Afonso and Jacob setting up some of the nets.



The lures and playback were set up in front of the nets. Arne with a freshly ringed godwit.

22 February

Cold wind, 11°C-16°C, 2/4 Bft W-NW

Total amount of godwits: 14.000

The next morning, we granted ourselves a bit of extra rest, a well-deserved break after the previous night's endeavours. Once ready, we embarked towards the rice fields near Samora Correia, where a bustling gathering of 6500 godwits awaited our arrival. This time, though, the majority of the group had chosen a new spot - a field with the water level just right for them to wade through, therefore keeping their ring combinations hidden beneath the water's surface.

In the afternoon, we set our course for the rice fields nestled between Samora Correia and Benavente. Earlier that day we had spotted a large group directly next to the main road while driving, but by the time we arrived, most of them had moved on leaving the field empty. We went on to another field further to the east. Here we found some godwits but they were backlit by the sun and too distant. This, in combination with the air turbulence, created quite abstract and unreliable images through our telescopes. We left the group and pressed on, arriving at the main field at

Benavente where we had found the big group in the prior days. Here the conditions proved to be far better and we set ourselves to the task of reading many rings. For a solid three hours, we were scanning godwit legs in search of color rings. In total, our count tallied 7500 individuals at the fields of Benavente. During our ring reading session our view was obstructed by misty clouds floating over the fields. We were being smoked out as a rice field quite close by was being burnt and the wind blew the smoke over us and the godwits we were observing.



On the road towards the group at Benavente these Red-legged partridges need us to slow down frequently



Part of the group foraging at Samora Correia.

23 February

Cold wind, 9°C-13°, 4/6 Bft NO-NNW

Total amount of godwits: 12.000

This morning we headed straight for the Benavente rice fields, where a group of 6500 godwits were present. A brisk cold northerly wind had us bundled up in hats and gloves. Keeping the telescope still enough to read the color rings was a must. After a nice morning we were eager for more color ring readings and we turned our attention back to Cardal. Time seemed to stretch as we dedicated ourselves to read the rings, yet once again, the godwits at this location chose to remain just beyond our reach. We counted around 5500 during our drive through the area, but could read only a handful of color rings. As the day waned, we found ourselves at Cara Larga, where we had more luck and where we wrapped up the day. Here we saw multiple Lesser black-backed gulls dead in the middle of rice fields, which made us think of avian influenza hitting the gull population here. This thought made us question if it posed any risk for godwits foraging around the deceased gull bodies.



A nice group at Benavente with unfavourable wind conditions.

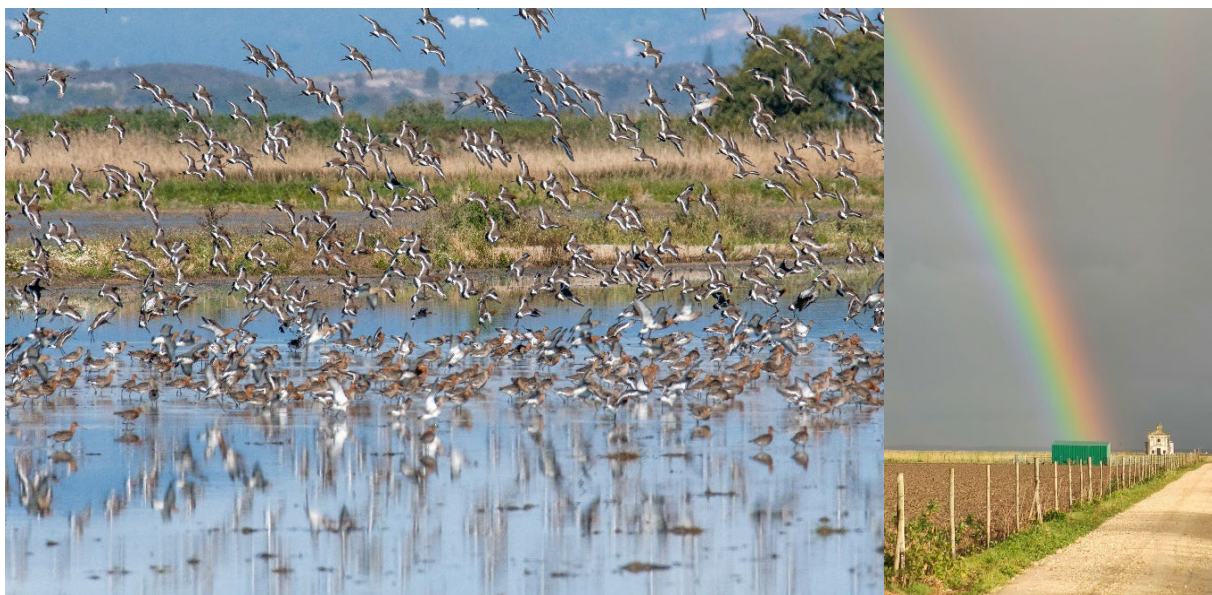
24 February

Sunny start, later on rain, 9°C- 13°C, 1/2 Bft WNW-NW

Total amount of godwits: 9050

Venturing into new territories today within the Sado estuary, we journeyed to Setubal, Zambujal, and Comporta. Despite the lingering chill, the morning wind was gentle, allowing us to shed our hats and even our sweaters. We felt a surprising warmth on our skin, which was in stark contrast to the actual temperature.

In a stroke of luck, we stumbled upon a group of 8500 godwits at the Comporta rice fields around 09:00. We delved into ring reading for a solid 4.5 hours before taking a well-earned break for coffee and lunch at Comporta. Among our encounters was a Redshank with vibrant color rings ringed by Afonso Rocha.



Part of the group at Comporta rice fields on the left and at the right a part of the rainbow at Cardal.

After lunch, our journey led us back northwards reaching the northern stretch of the Sado river. There, near the closed bridge to Zambujal, we finally found our next group of godwits. Not more than two unringed Black-tailed godwits were foraging along the river banks. What can we say, you win some, you lose some. A ringed Greater flamingo and a hunting Black-winged kite lifted the mood at the location however. We wrapped up the day at Cardal, traversing the landscape once again in search of godwits. One group of 550 birds was quite far from us. As we attempted a slippery road to approach them, our pursuit brought a comedic twist as our car's tires gathered mud, sending us sliding dangerously close to the water. Jacob's manoeuvring saved the day eventually and we could retreat from the slippery road to the gravel. Meanwhile, the skies darkened as if they would burst open above us, but the showers mostly went eastwards from us, displaying a radiant rainbow. We ended our expedition day at one of the most prestigious restaurants that can be found in the near vicinity (and which we frequently visited): The BurgerKing.

25 February

Dense fog, 4°C-13°C, 1/2 ZZW-NW

Total amount of godwits: -

The morning greeted us with an impenetrable dense fog, making both driving and spotting godwits a challenge. We started our day near our AirBnB at the Benavente rice fields. Despite our hunch that most of them had moved from the rice field to another adjacent to the main road, the chattering and foraging sounds indicated their presence nearby. However, the mist veiled everything, denying us a clear sight. Sometimes we had the impression that the sun would break through the mist, but the mist was proven to be quite persistent today. Turning to our various weather apps, it became apparent that these conditions seemed to linger on for several hours. But they also showed that these conditions were only present quite locally. A sunny sky beckoned south in Montijo. We made our way to the pier, hoping for godwits foraging along the riverbank during low tide. We found a nice group of godwits eastwards. However, they were not the right species: Bar-tailed godwits, and even worse, none were equipped with color rings. Several spoonbills were foraging in the river, amidst them, two with color rings. We stood here for a while and also observed other species such as Black-necked grebes, Common greenshanks, Dunlins, Red knots, Common sandpipers, Ruddy turnstones, Curlew sandpipers, Little ringed plovers, Common ringed plovers and Little stints.

Our journey continued to the salt pans of Samouca, and with the name of Afonso Rocha as our key, we were granted access to navigate the environment in search of godwits. The landscape was beautiful, though, regrettably, not as abundant in wader species during our visit. Pressing on to Alchochete, we hoped to find our first godwits of the day. We discovered some Black-tailed godwits, many unringed and many seemed to be of Icelandic origin. We could read the rings of one Icelandic godwit, two Spoonbills, a Redshank and a Curlew sandpiper. When looking over the water we saw tremendous amounts of Avocets on the mudflats. An Osprey soared overhead, two Marsh harriers were hunting, and on our road back, a Eurasian hoopoe foraged nearby.

While the persistent mist had intervened with our mission to read Black-tailed godwit rings, the day's bird sightings compensated somewhat for it. As we were departing the next day, we dedicated the afternoon to cleaning the car at Samora Correia.



Dense fog in the morning



The hoopoe at Alcochete

26 February

Departure day, 6°C-16°C, 1/2 W-WNW

Total amount of godwits: 250

Concluding our expedition, the weather offered us clear skies for one last chance of ring reading. With yesterday's misty setback, we set out to visit the Benavente rice fields this morning. Yet, it appeared that most of the godwits had departed. Only a small flock of around 50 birds was roosting there. We read the rings and continued to the Cara Larga rice fields, where the godwit numbers had noticeably decreased as well. By noon, we left the area, heading to Lisbon to return the car and prepare for our flight. After sending in the car, checking in for the flight was a breeze, our luggage posed no issues, and customs passed without a hitch. After boarding the plane, however, things changed. Awaiting take-off for 1.5 hours in stifling heat, someone nearly fainted and had to be evacuated from the airplane. Later on, all passengers had to evacuate the plane. After a two-hour wait, we learned that the plane had mechanical issues wherefore it wouldn't depart that day. Next, we had to retrieve our luggage at the baggage carousel, where we had to wait for hours again without any notions. Without any guidance we had to walk to the other side of the airport to find a small counter where they could give us information about our flight. After waiting a tremendous time before they could talk to us, they again gave no information whatsoever. Jacob had to stand in line for 3 times in total before they could give us any information at all. Four hours later than departure, they offered us their fix: a flight to Barcelona at 21:00 the next day, followed by an early morning connection to Amsterdam. Because Jacob had a tight schedule this option was not possible for us. We went to the hotel and the next morning we called the travel insurance which tried its best. Arne found two available seats online that evening at 18:00 with a direct flight to Amsterdam. We booked the seats and spent a relaxed day in Lisbon near our hotel. When we were checking in once again, we encountered problems with our hand luggage. Arne was not allowed to take any hand luggage with him and Jacob's bag was too heavy. Yet, during our return check-in, new challenges emerged. Arne was not allowed to take any hand luggage with him and Jacob's hand luggage was too big and too heavy. We both had to negotiate for a long time before we secured permission to keep bags stuffed with telescopes, binoculars and cameras with us. The rest of the departure proceeded without incident, and we stepped onto the plane, hoping the plane was correctly repaired. With our trust in the airline somewhat at an all-time low, we were relieved when the plane finally took off, marking the end of this year's fruitful journey observing the Black-tailed godwit population across the Portuguese rice fields.



Cleaning the car and boarding the plane

Spain Team 1 & 2: Wim Tijssen, Willem Brandhorst and Bert Zijlstra, 2-19 February

Planning: First five days in the larger Doñana area (Sevilla), rest of the period in Extremadura (Santa Amalia) depending on godwit numbers; the long term weather forecast for Spain looks very good for fieldwork!

Sevilla

★ Verwijder uit mijn locaties

> Overzicht

> 5-daagse per uur

14-daagse verwachting

> Klimaat

Mijn locaties

> Westerland

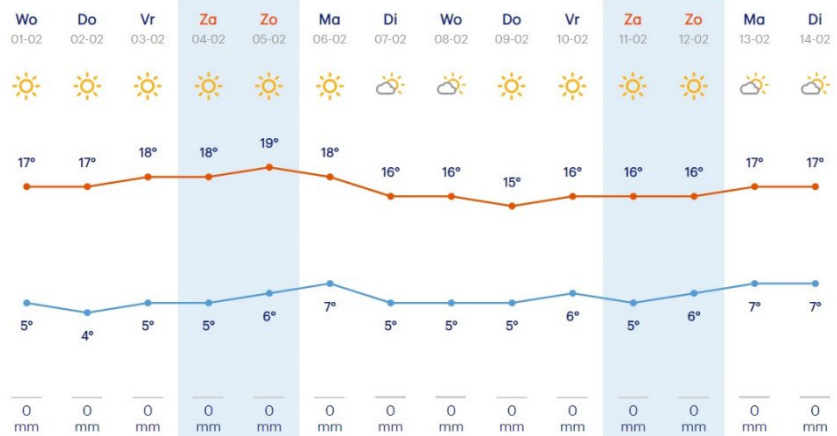
> Sevilla

> Santa Amalia

Uit de buurt



14-daagse verwachting



2 February

Cloudless and sunny, 0 Bft, max. 18 C

Total amount of godwits: 18

After a smooth trip from Schiphol Airport to Seville, and picking up our car for the next 2,5 weeks, we arrived around 2:00 p.m. at our beautiful accommodation in Villamanrique de la Condesa.



To our surprise we got an almost brand-new Hybrid 4-wheel Jeep, which we did not order, but for the same price and the sometimes dirty land roads we felt very lucky.

Villamanrique de la Condesa is a small village, just north of the Parque Nacional de Doñana. We left Schiphol early, so during the afternoon there was time to look for Black-tailed godwits in the immediate area for the first time. We found them at a large pond near El Rocio, a small white village known as a place of pilgrimage. Although there were plenty of waterfowl, we counted only 18 godwits. But this did include one ringed bird from the Workumer Binnenwaard, our first ring reading!



Happy researchers after reading their first ringed godwit under nice circumstances on the first day!

We also picked-up a small flock of Spoonbills, including a ringed bird also from the Global Flyway Network team. A nice start on our first day which supposed to be a travelling day and few time in the field. And with beautiful weather, so happy researchers!



Pilgrimage and “western” village El Rocio at the edge of the Madre de las Marismas del Rocio, as a tributary of the great river Guadalquivir in the SW-part of National Park Cota Doñana, has low numbers of Black-tailed godwits during our research visits in recent years, due to the persistent drought in the area.



Strawberries under plastic tunnels near El Rocio

Both the National Park and the horticultural areas around El Rocio are suffering from the drought this year. Much of the water for agriculture is drawn from the rivers and groundwater layers. Water which, at this time of the year, is used for strawberry cultivation but leading to insufficient water supply for the marshlands and dunes of the National Park. Agriculture, increasing tourism and climate change now deprive godwits and other waterbirds of their natural habitat. Many groundwater pumps are however illegal but there is no sanction despite their effect on this World Heritage Site. On the way to El Rocio we drove over a distance of about 4 kilometers on a road, with long plastic tunnels on either side, in which strawberries were grown.

3 February

Sunny day, NE 2 Bft wind, max. 18 C

Total amount of godwits: 200-300

Today we visited the farming areas and fish pond complex of Veta la Palma, just south of Isla Mayor. We first searched for the transmitter bird Warnserpolder that must have been there recently according to the Global Flyway website with the latest information of them:

<https://www.globalflywaynetwork.org/tracks/species/Limosa%20limosa> .

We could only determine the probable location, a still moist plot with some small puddles. No sign of the bird itself, or from other godwits in this field. The agricultural plots were dry and desolate. Not an area where you expect godwits.

Just before we entered the checkpoint of the complex, we saw two rice fields that were being ploughed at that time. So we had a good hope that these wet fields will hold many foraging godwits in the next days...



Two old rice fields just north of the entrance to the fish ponds were wet and some ploughing was done, but besides a lot of small waders, no godwits to be seen.

At the entrance gate to the fishpond complex, we must first provide extensive identification. That changes when Jos' name comes up. They know this tall Dutchman only too well, and the check turns out to be a lot easier in the next days. After entering the complex, we first looked at two more remote ponds. Lucio de Cuquero Grande and Lucio de Cuquero Chico. Until a few years ago, the first one housed large groups of godwits. Now there were none, although the water level was a little bit low, but at least it contains water... In the other pond there was a group of about 100 birds, unfortunately too far away to read rings. We then mainly examined the eastern half of the complex. In a number of basins the water level was too high for the godwits. So it was a search for the less deep places. Suitable places were found, but without too many godwits, groups of no more than 25 to 50 birds. Some of them were in the swamp area just outside the fence and also with a canal as a barrier, so therefore difficult to control for rings anyway also due to the somewhat higher vegetation.



Willem Brandhorst enjoying the late sun and early moon at fishponds Veta la Palma

On our way back in the late afternoon to the exit we came across two basins in quick succession with some more godwits. There we finally could read a total of 8 birds with rings, including 6 Dutch birds. From the slightly higher path you can easily look into the basins, especially when the sun is at your back... Maybe tomorrow we will come back for a second visit later on during our five days visit to the Doñana area.

4 February

Sunny day, NE 2 Bft wind, max. 19 C

Total amount of godwits: 450-500

First we were in search of the last transmitter point of godwit Finja Marie, so far the only bird on the west side of the Guadalquivir. We found only one wet field that seemed suitable, but no godwit in

sight. We later saw from the transmitter data that Finja Marie had by now left for the rice fields in the Tagus River, near Lisbon. We did find Black Storks and a ringed Great Egret. Despite searching the entire area around Isla Mayor we found no godwits.



Sprinkler systems in the field and lots of drainage pipes, seems to be working contrasting...?

Then on to the newly plowed wet rice field from yesterday. But here only one lonely godwit... Perhaps we will have better luck at the Veta la Palma fishing pond complex. At the entrance we are already recognized as the Dutch birders and allowed to pass through without further inspection. The North end of Veta la Palma is nowadays a desolate large-scale agricultural area. With, on the one hand, the possibility of large-scale irrigation with gigantic sprinkler systems, with, on the other hand, the possibility of depth drainage. An agricultural area where biodiversity seems to be hard to find. The Lucio del Cuquero Grande water reservoir contained mostly Flamingos. In Lucio Chico, the smaller reservoir next to it, held at least a bit more than 100 godwits. These were unfortunately too far away and the sunny weather even made it almost impossible to read any rings. On to the fishing ponds. Meanwhile, the sun provided a comfortable temperature. That higher temperature however causes vibrating air, which makes reading color rings more difficult. Nevertheless, in one of the first ponds we had a group of about 215 Black-tailed godwits with a number of ringed birds. Among them a Spanish transmitter bird, ringed in 2022 by the crew of the Spanish/Portuguese research team from the University of the Extremadura in the area we were going to visit in a few days. We then searched mostly the western half of the huge fish farm complex. Although we had some tricky moments on the small dikes in that area, we succeeded. The dry circumstances helped us in being too afraid for slippery tracks on the paths on the dikes of the fishponds. Again, only small groups of Black-tailed godwits of no more than 25.



Lucio del Cuquero Grande – low water table and only Flamingo's



'Blocked' road by only white birds: Spoonbills, Great white-, and Little egret



Along the way a large group of Spoonbills stood in the middle of the dikes along the fishponds. We did not want to disturb them too much, so it took a while before we could pass them, off course not without ring reading 4 Dutch and 1 Danish bird! We ended the day at our most important two ponds with more than 200 godwits under very good circumstances, no wind and the sun behind us. So at the end of the day, we managed to read both a lime and green code flag. Something that we did not manage earlier that day at the same place because of the warm air.

5 February

Sunny day, NE 2 Bft wind, max. 19 C

Total amount of godwits: 600-650

Target today the was Brazo del Este, an area near the little village of Pinzón. The area around Pinzón was almost identical to the agricultural area around Isla Mayor. Large bare, dry plains where there is little to experience. Certainly not an area where you expect godwits.

This area is described on the website with tourist information about Andalusia as a Natural Park, 17 kilometers south of Seville, where the main channel of the Guadalquivir forks off. The Natural Park is the result of modifications that man has been making to gain cropland along one of the oldest branches of the river Guadalquivir, that runs through the marshes. Despite a large amount of human intervention, which started at the beginning of the last century, it has become an exceptionally important wetland for birds.

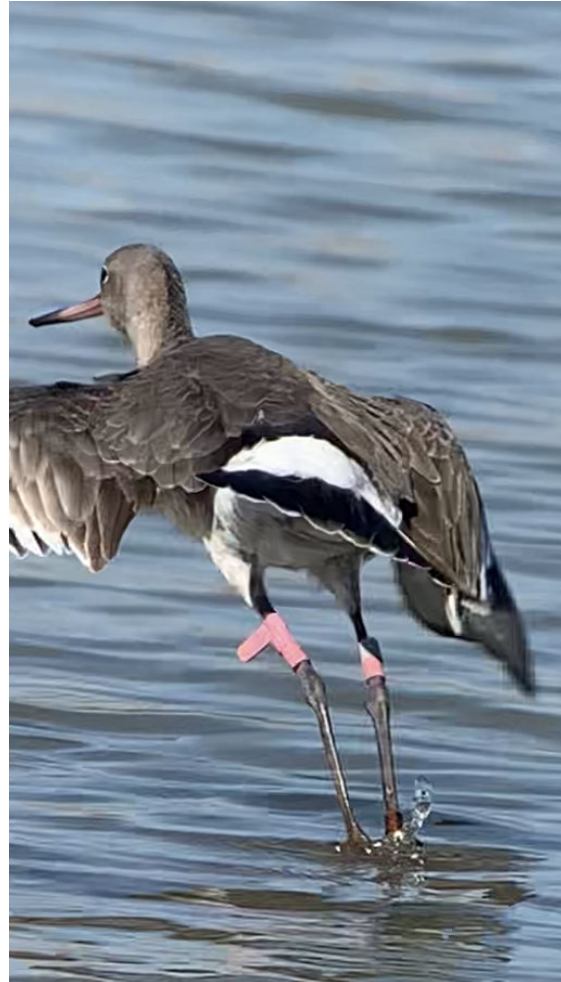


A part of the 1,600 White storks in early morning in Brazo del Este, must be a good sleeping place!

When entering the Brazo del Este we were greeted with the sound of Spanish castanets, coming from more than 1,600 White storks! After warming up, they left later in the day in different directions to forage. The largest group of godwits consisted of about 150 birds. At the beginning of the morning the birds are resting in the wider part of the river. Later in the morning they left for the side arms to forage. They often stood up to their bellies in the water looking for food. To get to the bottom they often stood upside down, or as the English say 'up-end-feeding'.



Purple swamphen at Brazo del Este



C1CCPC ringed 2013 in Koudum

Then ring reading became a challenge. Also because the birds often stood on one leg. We found something for that. While one is filming the godwit, the other researcher gets out for a so-called sanitary stop. Walks back and forth a bit, often causing the godwit to lower the other leg as well... Success assured. This method has been successful for C1CCPC.

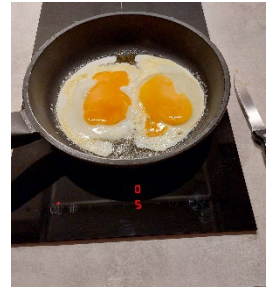
In the afternoon we checked the area around Finca Casudis, which is located along the river Guadalquivir in the more or less northern part. Large groups of godwits were still seen there in the autumn, but now it was empty. At the end of the afternoon, we went looking for transmitter birds Patrick and Estevao that had just sent there last transmitter points more south of the Brazo del Este. We found both locations. Unfortunately, no sign of those transmitter birds at this place. But we got an impression of where the birds have stayed. In a place where we don't really expect them because of the drought, there is suddenly a spot with some cows and horses with a puddle of water. Now 11 godwits were foraging there.

6 February

Sunny day, NE 2 Bft wind, max. 17 C

Total amount of godwits: 175 (Brazo del Este) + 400 (Bonanza salt pans)

Up very early this morning related to a visit to the distant Salinas de Bonanza. Finally, we started with a good breakfast... after sorting out, with lots of help from our B&B-hostess, how the induction cooking plates are working, so we left with a decent full breakfast for a long day in the field.



The Bonanza salt pans are located in an area southeast of the Guadalquivir estuary. It's a well-known spot for waders, gulls, terns and flamingos in the province of Cadiz. Especially the shallow open water in some parts of the area, have a great attraction for waders. According to the available data, two GPS-transmitter birds were staying here during the last few days. On our way south, we also visited the Brazo del Este again. We managed to read some (new) birds there as well. In total we picked up 175 birds, but we did not cover the whole area, according to our presumed long drive to the south.

Before we continued our way to these salt pans, we saw on the Animal Tracker-App that transmitter bird Estevão had visited a place we were going to pass that morning. It seemed a place in the middle of nowhere, with no good feeding circumstances for waders, but we would investigate it anyway. The spot turned out to be an artificial water reservoir, where Estevao presumably spent the night. And immediately had left the reservoir, because only a few ducks and some avocets were standing on the bank, while the reservoir itself seemed to be too deep for foraging waders.



By 3 p.m. we arrived at Trebujena, a village on the east side of the Guadalquivir. Virtually at the same level as the fishpond complex on the west side of the river. So, for godwits, a small effort to just cross. Right at the entrance to the Esteros del Guadalquivir Nature Reserve, we found a nice elevation on a plateau so we could see the pond in front of it. Result: 133 black-tailed godwits, including a ringed one. Then through the estuary to the Bonanza salt pans. Through the salt marshes it was quite tricky at times because of the deep dried-up tracks. Along the way several small groups of Black-tailed godwits in places where you would not immediately expect them: small pools between plenty of low vegetation in the estuary.

Willem took the opportunity to stand on the information-desk, so he was able to read the ring of a godwit foraging in deep water.

Finally at the end of the day we arrived at the salt pans which are still in active use. Around them is plenty of open and shallow water in the natural estuary, where we found a group of 215 black-tailed godwits. With the setting sun we managed to read several rings.

At the end of the day, we arrived at an observation point in the salt pans. Wim remembered that he had gone straight here last year with Siebe Bonthuis. That turned out to be an almost impassable path. So now we chose the option to go left at this point.

A path that very quickly turned out to be a very narrow track over a dike. Salt water on both sides and no way to turn around. Fortunately, the path was dry. Eventually we came to a fence...

And what we already feared... a gate closed with a big lock. We breathed a sigh of relief when we saw that staff was still working in the salt factory. And one of them knew where the key to the gate was stored. So, we were able to properly end our visit to Salinas de Bonanza with a setting sun. All in all a productive day, we managed to read quite a few rings, including a good portion of code flags. For Wim an exciting rendezvous and again a narrow escape from the always tricky Bonanza salt pans...!



The always exciting and tricky area of the Bonanza salt pans near Trebujena!

7 February

Sunny day, NE 3 Bft wind, max. 17 C

Total amount of godwits: 325 (Veta la Palma) + 100 (Santa Amalia)

Change of address. Today was mainly a travel day. From our accommodation in Villamanrique de la Condesa we moved to Santa Amalia, a small village in the Spanish province of Badajoz. But not before we first went to the fish ponds of Veta la Palma. You never knew if new godwits had arrived. We have only viewed a very small part of the ponds; there were about 325 godwits in total. In addition to previously read rings, including a Spanish transmitter bird, there were also 3 new ring combinations for us.



Willem: "We have the same hair colour, that will be it for the fox..."

After the ring reading at the fish ponds, while enjoying a cup of coffee in the Spanish sun, a Red fox came to take a look. Around the fish ponds we have seen more foxes. Just like a Wild boar, an Otter and deer, so plenty of more nature to see here!

Then the journey really went to Santa Amalia, a trip of about 3 hours through a completely different landscape. There was even some light rain during the ride. The people in Spain will be very happy with that was immediately our thought, because it has been very dry with since December almost no rain.

The landscape along the way was mostly hilly, until we got close to our destination. Although the area is on the edge of the Extremadura, it mainly consists of agriculture. Olive trees, grapes, tomatoes and rice. There is hardly any place left where no products are grown. According to Wim, who saw plenty of wet rice fields here a few years ago and encountered up to 5000 godwits, the area has changed a lot. Many companies have chosen to grow other products. Certainly not in favor of the Black-tailed godwits who benefit from wet, freshly ploughed rice fields.

Yet when we entered Santa Amalia we saw a group of about 100 godwits behind the tomato factory. That gave good hope for tomorrow, especially because there has been contact with Spanish researcher Arturo Esteban from the university of Extremadura, who has seen several small groups in recent days. We will see...

8 February

Sunny day, NE 3 Bft wind, max. 15 C

Total amount of godwits: 200(Santa Amalia) + 900(Obando rice fields)

We started the day differently than previous days. It rained a bit last night, the wind picked up considerably and the temperature dropped. A lot less pleasant as in Doñana, in other words. From our accommodation in Santa Amalia we drove a few minutes to our first spot, that we discovered yesterday on our arrival: a few wet plots, which can be reached via a small road next to the tomato factory. Our Spanish friend and researcher Arturo Esteban Pineda, who works for the University of Badajoz, is waiting for us. He already counted the godwits and comes to 141.



Different clothes are needed in the Extremadura. Cold start – note the text on the hat!!

Then we searched the area around Medellin, Hernan Cortes and Santa Amalia. Areas where large flocks of Black-tailed godwits used to be in the past. But those days seem to be over. The area is changing rapidly. Farmers have switched to other crops, especially fruit trees, olives and winter wheat. One farmer told us that all of this had to do with the availability of water. Or rather the lack of... As a result, the godwits seem to be moving more eastwards, where still some traditional rice fields remain. Such an area was discovered last year together by Wim Tijssen with Marycha Franken near Obando. And yes, again we found a group of over 900 birds there. They were just ploughing some rice fields, which means food for godwits. Behind a wall of the more or less abandoned farm, in the lee and with a pleasant sun, it was nice birding and reading lots of rings.



Changing landscape around Santa Amalia with different crops, kind of winter wheat and olive trees



Finally a bigger group of godwits in the Obando rice fields in the eastern part of Extremadura

9 February

Sunny day, NE 2 Bft wind, max. 17 C

Total amount of godwits: 130(Santa Amalia) 1.630(Obando rice fields)

Again, a fresh start of the day. But the Spanish sun made the visit to the first group of godwits at the tomato factory in Santa Amalia a lot more pleasant. Today we counted 131. There were again two code flags in between, which were equally brotherly (or sisterly) next to each other. The first was a quick read. But the second was trickier. Very discolored, so that became difficult. But with our extensive reading experience, it finally worked out.

One of the birds was really a boss and chased the other godwits away the moment they found something to eat. Definitely a bird with special behavior. It backed up short distances with its beak lowered, shortly after the moment food had been ingested. We had never seen that before.

The rest of the morning and the beginning of the afternoon we searched the wider area for submerged rice fields. Nice event when a group of about 20 Blue Magpie passed by during lunch. But rice fields appear to be less and less. Occasionally we found a small group of 40 Black-tailed godwits in the area near Palazuelo, although here too we saw the environment changing with more and more new olive plantations.



Will the rice silos near Palazuelo become unused due to the changing land use?

We also visited the area north of Madrigalejo, where a small rice field complex is located in an area with a huge number of solar panels. Last year we did find small groups of godwits here. But this time we only scored a few ruffs

We ended the ride at the rice paddy complex near Obando, where the group of 900 birds stood yesterday. That group turned out to have grown to 1630 godwits! Again many color rings, but sometimes very difficult to read... Those birds walk in the muddy rice fields and when the wet mud dries on the rings, it makes it almost impossible to read them properly. Then you have to wait for the moment when they take a bath and the rings become clean again. So a long breath and patience. Especially for the muddy and dirty code flags, which are hard to read. But with a group of more than 1,600 godwits supplemented with all kinds of other types of waders, Cranes and a group of Corn buntings, it was a nice stay.



Code flags 1L65NB and 1L95NB

10 February

Sunny day, NE 3/4 Bft wind, max. 15 C

Total amount of godwits: 250(Santa Amalia) + 1.200(Obando)

This morning Patrick showed us the way. Patrick is a transmitter godwit from a German project who showed a transmitter point just south of Santa Amalia. On the map this didn't seem to be a suitable point right away, but we checked anyway. And YES, this was a good decision because we never would have found this small water reservoir from the normal roads, and with our 4-wheel drive car it was a piece of cake! An attacking Mars harrier helped us also to get the precise location when the flock of

godwits went down again. The reward was a group of 250 godwits including several new rings, but sadly no transmitter bird Patrick. We also informed our colleague Arturo off course, to join us at the newly discovered research place, thanks to Patrick!



Because of the strong cold wind, the open tailgate of the car gave us some shelter!

While waiting for a phone-call from Bert Zijlstra, who would join Wim for the rest of the period and was on his way from Seville, Willem and Wim checked a number of spots in the area around Santa Amalia. Willem would bring back the rental car from Bert to Seville in the next morning and would go 'back to the office' in the Netherlands, while Bert would join Wim the rest of the godwit-research-trip in the Spain-team. Although we searched lots of places where in the past godwits were present, we had no results. Only a few dry rice stubble fields.



In fact, the river Burdalo was almost completely dry...

In the afternoon, we went now with the three of us in the direction of the favourite Obando rice fields in the east. But not in a direct way, also to give Bert an idea of the area on his first trip to the Extremadura. We also passed along the small group near the village of Palazuelo from yesterday again. But the group of almost 40 godwits contained the same ringed bird. So we were heading again to the big group in the far east, just north of the village of Obando. Once again there was a group of some 1.200 Black-tailed godwits. Nice big group for Bert to start with. In the evening we ended the day with Arturo in a restaurant in Santa Amalia to celebrate the last evening for Willem in Spain.



Willem saw one of his own ringed breeding godwits in his research area in the province of South-Holland, so what a great end to his first 10 days godwit research in Spain!



A nice start for Bert Zijlstra(r-back), a final Spanish beer for Willem Brandhorst (l-back) with Wim Tijssen (l-front) and Arturo Esteban Pineda taken a 'group-selfie' after a successful godwit field-day!

11 February

Sunny day, NE 2 Bft wind, max. 15 C

Total amount of godwits: 220 (Santa Amalia) 1030 near Obando rice fields

First we waved Willem Brandhorst goodbye early in the morning. First thing this morning was to scan the Santa Amalia area. We searched several nearby rice fields and found a total of 60 godwits in the western part, which had not been visited so far by the first team. Behind the now familiar field behind the tomato factory, we counted 161 birds.

We didn't only count birds...

Hunting is a regular 'sport' in Spain, so we found quite a lot of empty cartridge cases.



Later in the day we headed in the direction of Obando. On our way we never drove through the same areas. But during our almost one-hour drive to the main godwit fields NW of Obando we didn't see new groups of godwits, besides two birds near Vegas Altas. On 'our' ploughed rice fields in the Obando area, we counted 1030 birds. They were joined by lots of Cranes in the field, which made it more difficult to get close to the birds. But from the car with a screen-window-mount and with some negotiating with the car due to the wind and visibility in the right direction we made the best of it. And on wet fields with hard wind the muddy rings are difficult to read because especially the lower rings are always covered in mud.



Cranes and godwits, a typical view in the Obando rice field complex

12 February

Cloudy day, E 2 Bft wind, max. 15 C

Total amount of godwits: 210 (Santa Amalia) + 600 (Obando area)

Another cold start of the day with 5 degrees, cloudy and a cold eastern wind. First to the tomato factory, where there were 150 birds. We then looked at the area between Santa Amalia and Yelbes. In previous years there were still plenty of Black-tailed godwits here in these rice fields. That has now changed tremendously. They have been replaced by olive plantations and broad beans.



Black-tailed godwits seem to have left here definitely in the area around Yelbes

At the 'hidden' water basin near Santa Amalia where we were 3 days ago searching for transmitter godwit Patrick, we now found 60 Black-tailed godwits and 6 Redshanks. All without rings. After a Peregrine falcon chased the lot, the basin was empty. And it was Sunday, so we took some 'free-birding-time' which resulted in two new species for Bert, so called 'lifers' in birdwatching jargon. So time for a cortado at the local café of Villar de Rena on our way to the regular eastern part of the huge area with rice-field complexes.

Meanwhile, we received a WhatsApp message from Spanish researcher Jorge Gutiérrez from the University of Badajoz that transmitter bird Patrick had given a new transmitter point in the far eastern part of our survey area. Even further east than the rice fields near Obando. A previously unknown spot, so we went quickly over there. Upon arrival, we just saw a group of 15 black-tailed godwits fly away, perching in a rice stubble field a little further away. And YES, there is finally Patrick live!



Finally found "Patrick", who showed us the way to new places; opportunity for a 'snicker-moment'

The reasons for a snicker moment were set by Siebe Bonthuis, after a top day reading rings near Isla Mayor, about 5 years ago, between 25,000 black-tailed godwits and a lovely sun. But... you have to deserve it, and this was a very good reason! Also in the area of Navalvillar de Pela, where Patrick was discovered, olive groves are advancing at the expense of wet rice fields. We checked some other fields in this new area for us, but no signs of any godwits and also no suitable fields, so we were very lucky to find such a small flock in a huge area.

We noticed also in the area of Navalvillar de Pela that the environment is changing rapidly

Quickly back to Obando to read some more rings in the last light of the day. Upon arrival there were still about 600 birds. After comparing of the scored rings to the previous days, we had some new ringed birds. And after a while Patrick was also seen again, so he flew with us!



13 February

Sunny day, E 2/3 Bft wind, 4C in the morning, max. 20 C in the afternoon
Total amount of godwits: 1.640

First we had a check of the Animal Tracker App; hopefully more transmitter birds were willing to visit Extremadura, which was not the case... but some birds in Morocco maybe would arrive soon we hoped! The other advantage of looking regularly at the App, or the Global Flyway website, is that they show the movements of the transmitter godwits, which can be helpful in finding new roosts or foraging area's.



This morning we started where we had stopped in the early evening yesterday: the rice fields near Obando. The group now consisted of 1.380 birds. Among them walked transmitter bird Woudburen. Despite its limp leg on the left, the bird was running in full foraging mode. Fattening up for the journey to come.

The mild weather is putting some godwits in such a spring mood that a "grutto-grutto-grutto"-sound is cautiously audible. Which moment was suddenly disturbed by the hard sound of a gas canon, put somewhere near bushes further away, to frighten birds. When a fighter jet from the Spanish army also flew over, all godwits and cranes left the field in a hurry...



Scarry moments for cranes and godwits; a gas canon and a starfighter causing lots of panic!

We followed the birds and found them back southwards in the rice field complex near the old abandoned farm. And under perfect circumstances we read lots of rings and during the afternoon, a few more birds kept arriving, so in the end the counter stood still at 1.640!

Together with Arturo, we looked at the end of the day at a roosting place which was previously discovered by the Spanish researchers in the neighbourhood of the village of Madrigalejo. As the last birds arrived at dusk, it appeared that at least 1.345 Black-tailed godwits were spending the night here. Possibly this would be the site of an attempt to catch some birds next Wednesday night. And to put on some of the transmitters, brought by Bert from Holland. Luckily, we found a supermarket in Madrigalejo which was still open at 19.45, because we had to drive 45 minutes back to Santa Amalia. In Spain you don't have to worry about getting no food in the evening, because the restaurants actually only open at 9 p.m., and until 23.30 the Spanish people order food, a time most people in The Netherlands go to bed...



So we were absolutely not too late in our local restaurant in Santa Amalia for a beer and good food...

14 February

Sunny day, E 2 Bft wind, max. 15 C

Total amount of godwits: 250 (Santa Amalia) + 1.750 (Obando area)

The tour behind the tomato factory in Santa Amalia was starting to become a habit. This morning 250 birds. Arturo read off a Finnish bird shortly after we left for Obando, via Vegas Altas. Accompanied along the way by numerous Hoopoes and Crested larks. Birds that are still common here.

In the fields near Obando, the godwits were mostly in the rice fields around the old farmhouse. This morning the numbers there had dropped significantly. A group of over 450 birds standing just a little further away was startled by a Marsh harrier. Some distance away they perched again. We headed in this direction and came to a wet rice paddy, which was so well hidden that it was not visible from the main trail. Keeping track of birds in the sky always pays off!

Further on in the same area we discovered yesterday's group of birds, over 1300 birds. But just as we got there and settled in, the Peregrine falcon passed by.

Twice the falcon made an attempt to grab a godwit, to no avail.

Panic among the birds continued, so reading was made difficult by birds constantly flying up. At the end of the afternoon, Jorge Gutiérrez came to visit us. Together we inspected the roost, and thus intended trapping site. Tonight, more than 1100 birds came to spend the night here. This looks promising for a catching attempt...



In the evening, during dinner at our local café in Santa Amalia, the transmitters Bert brought with him from the University of Groningen were officially handed over.

15 February

Sunny day, E 2 Bft wind, max. 18 C

Total amount of godwits: 186 (Santa Amalia) + 1000 (Obando)

After the regular 186 birds in the field behind the tomato factory close to Santa Amalia, we went in search of Dutch transmitter bird Woudburen.

According to the records on the Animal Tracker App, it spent the night on a possible new roost. Unfortunately no birds at all at this place.

The only very small wet place in this area, close to Navalvillar de Pela, where Woudburen must have passed the night.



By driving around in this area we saw that the river Gargaligas has almost dried up, and that the river is not more than a ditch... They even changed the course of the river a bit, to get more water?



The river Gargaligas is not more than a small ditch due to the dryness in the area

So on to the Obando area again! And yes, there we find both the transmitter birds Patrick and Woudburen in the regular rice fields. In addition, a ringed bird from a Finnish ringing project. At the end of the afternoon, we moved to a possible roost near Vegas Altas. There we found 2 birds with colour rings in a small group of 11 godwits. But they did not stay there and left in the direction of Madrigalejo. Possibly to the roost where the Spanish research team will make a catching attempt later on in the evening.

When everything was set up and ready, with tents and other equipment's and so on for handling birds, it had become sufficiently dark, so the first inspection of the mist nets followed. Unfortunately, we did not catch any godwits on this first attempt. We caught the wrong species... 3 Common snipes and 1 Dunlin. After checking for rings, they were released. The second attempt delivered nothing,

unfortunately. Despite the fact that more than 1000 black-tailed godwits had been roosting here the past few nights, they were not there at that moment...

Bert's wish was that that a transmitter he brought along, would be returning on the back of a Black-tailed godwit to Friesland. And who knows, it might end up on nature island "De Gouden Boaiem" where he makes an inventory of meadow birds and reads color rings on the puddle every spring; but he had to wait for it at that moment.

16 February

Sunny day, E 2 Bft wind, max. 18 C

Total amount of godwits: 250 (Santa Amalia) + 1000 (Obando-area)

Due to last night's catching attempt, today's day started a little later. First the Santa Amalia area would be explored. An area where water is scarce for farmers. So scarce that the government in this area takes care of distribution. Compared to more than 10 years ago, now only about 10% of the rice fields remain we were told by local people. Where godwits in the past found a laid table in the form of fallen rice between the remnants of ploughing, there is now plenty of winter wheat and barley. Unfortunately, not suitable as food for godwits. In the end, we encountered about 250 birds on a few fields close to each other at the usual spots behind the tomato factory.



Bert Zijlstra investigates the special 'old' irrigating system in Extremadura

The afternoon would end, as usual, at the rice fields in Obando. Again the Peregrine falcon was active. But sometimes this also helped to move the godwits and Ruffs on the field to better parts of the rice field where ring reading was easier, because legs were not always well visible. In a part of rice-field-complex the farmer started to burn the stubbles of the rice and other vegetation on the edges.

At the end of the day, we made a decision to split up in different teams through the area, to have a good impression in which direction the godwits would leave for the night roost. Portuguese researcher Afonso Rocha and Arturo Esteban would cover the roosts near Madrigalejo, while Bert and Wim would cover the Obando rice field area. The goal was to visualize a possible new roost. In one of the rice fields we covered, a group of over 1000 godwits stayed for a long time. Nevertheless, they still appeared to leave in the dark? Fingers crossed for a new catching attempt next evening. We ended up with the four of us in the carnival festival from Madrigalejo to get some late food and pleasure...



17 February

Sunny day, E 2 /3 Bft wind, max. 19 C

Total amount of godwits: 154 (Santa Amalia) + 1000 (Obando)

The days were quite intensive and long. In bed before midnight had only been successful once and up early in the morning again. It was especially chilly at the beginning of the week and when reading rings with the telescope on the window tripod for a while, you were in a lot of draft and you therefore catch a cold. We first left for the tomato fields behind the tomato factory, where we also found a new metal ring. Reading was not easy, but Wim tried. Fortunately, like every day, the farmer came to his vegetable garden on his bicycle so that the birds were driven towards us (photo). It's not easy, but Wim took his time, but hell, then a tractor came along so that the birds walked away from us again. The code flags were sometimes difficult or even impossible to read and Wim read the metal ring after a long time. Tribute and a Snicker-moment well deserved for Wim; there were 154 godwits.



Challenge for a ringreader: a metal ring with 7 digits, so the bird has to be close AND turn around...



Setting up mist nets in wet rice field with Afonso(l), Arturo(m) and Bert. In the background smoking stubble rice fields, which maybe would cause a failure in catching...?

In the early afternoon we were heading for the rice fields in Obando to read some more rings, and then got everything ready for a final catching attempt that evening. Around the old farm, the ploughed rice fields dried up quickly, so godwits were no longer to be found there. Those had moved to some still wet fields at the back of the rice field complex. There were now about 1000 birds. We also saw that in some nearby fields the old stubble is being set on fire by the farmer...

By late afternoon and in the early evening, however, the godwits were leaving to the west. Possibly to other roosts? That evening again no Black-tailed godwits were caught unfortunately. It is possible that still burning and smouldering rice stubble was to blame, but that will remain a guess... When clearing the mist nets, we found out that two were badly damaged, presumably caused by one or more cranes... As little consolation, we joined Afonso and Arturo in the late evening to the carnival happenings of Santa Amalia. At least we did the best we could to catch some godwits.

18 February: Last day in the field!

Sunny day, E 2 /3 Bft wind, max. 19 C

Total amount of godwits: 170(Santa Amalia) + 940(Obando)

After a short night we paid our last visit to the tomato factory. Some 170 birds with a number of previously read rings, so no new arrivals. According to the latest information, transmitter bird Woudburen would have gone further east. On site this turned out to be a tiny puddle of water, where there were no more birds. Near this spot the rivers Gargaligas and Cubilar are flowing, but it's hard to call them rivers. A very small stream through a riverbed filled with trees and marsh plants.



The Spanish and European government are improving the water system here, tells a big sign.

We also took a look at the old discovery spot of transmitter bird Patrick, with again 13 birds in the wet stubble field and a ringed Spanish godwit that we had not seen yet. The Lapwings were already courting here, and Bert's Frisian blood started to flow quickly when he thought to see a lapwing sitting on the nest. He went into the field to find Spain's 1st lapwing egg...



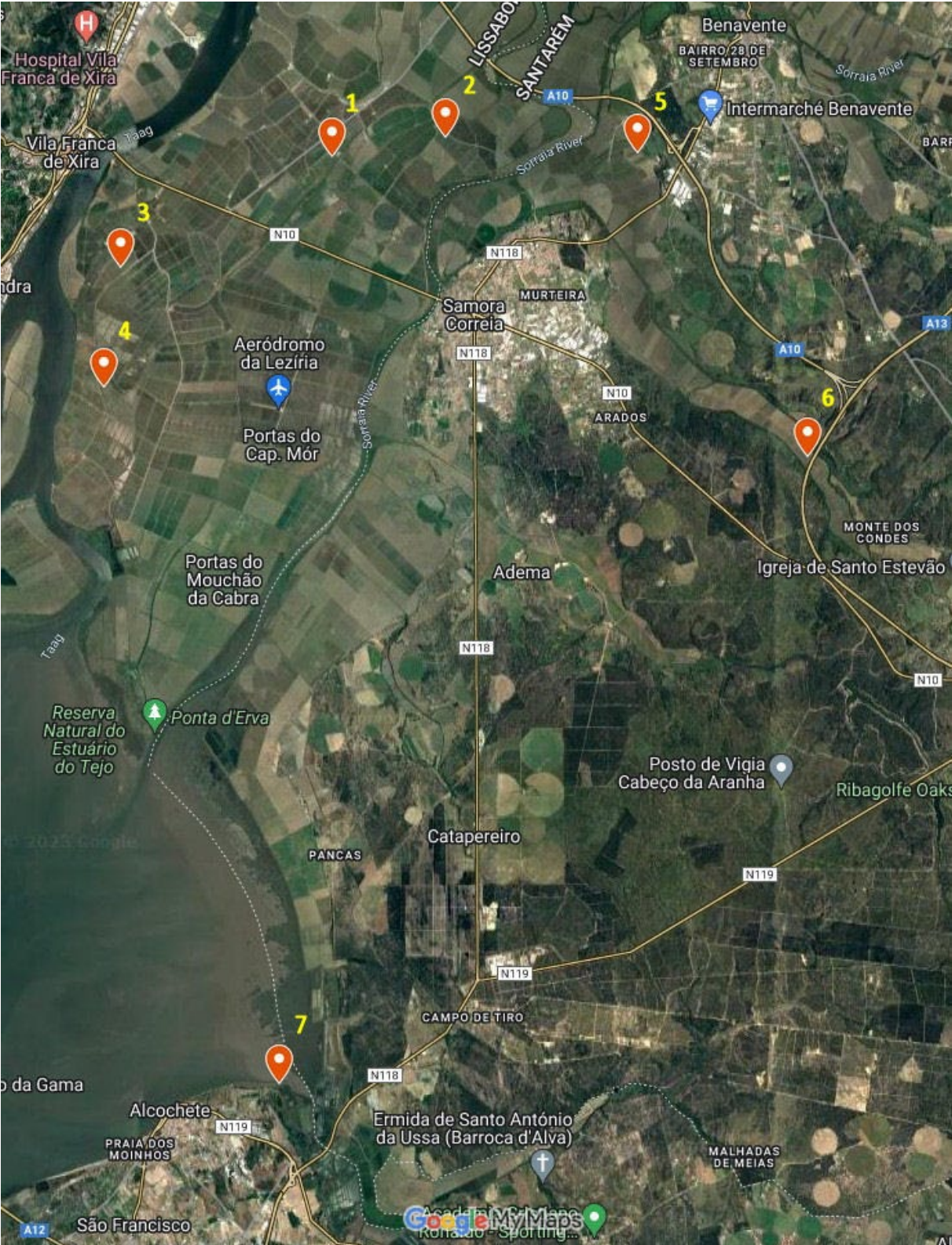
No finding of the first lapwing egg by Bert on the 18th of February!

In the rice field complex of Obando, the farmer was already working the rice fields around the farm with a cultivator. Accompanied by over 100 cattle egrets. Yet on a wet stubble field there were still 940 godwits, searching for old rice grains. We managed to read several new ring codes. Among them again a Finnish godwit and a ringed Ruff from a Dutch project of the University of Groningen. So, a very nice end to our last day in the Spanish rice fields and remaining suffering wetlands!

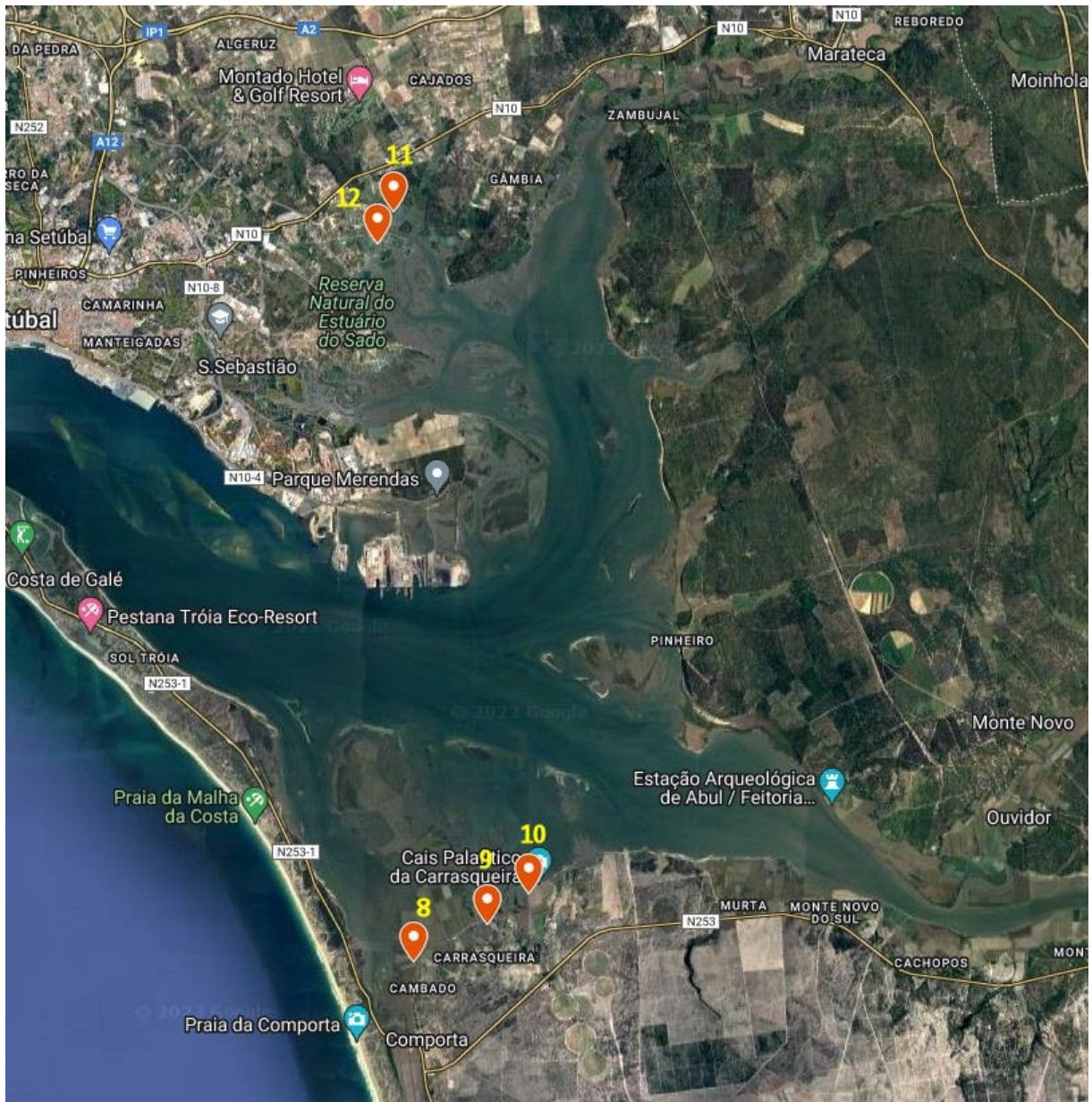
This concluded the Spanish teams' journey in search of the godwits in Southern Spain 2023. A trip that showed, once again, how the former godwit areas around the Doñana and Extremadura are rapidly changing. Groups of godwits still resided scattered through the areas but numbers are declining fast.

Based on the low API scores (Abdominal Profile Index) we measured, the question arises whether there is still enough food available to fatten up in a short time for the journey to the breeding grounds. We shall see!

Appendix A: Locations visited (see text)



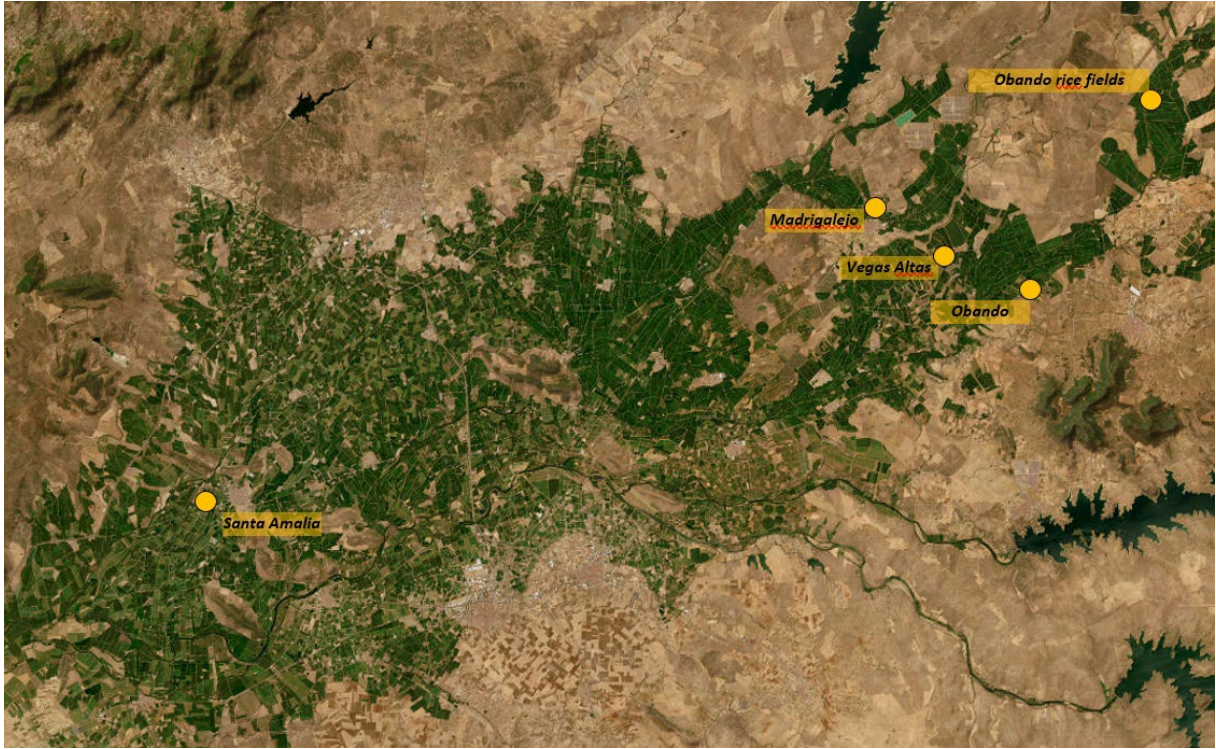
Godwit locations in the Vila Franca de Xira and Samora Correia area



Godwit locations in the Sado area



Godwit locations in the Doñana area



Locations of godwits in Extremadura

Appendix B: Godwit locations in S Iberia

ID	Region	Location	Latitude	Longitude
26	Extremadura	Hernan Cortes	39.03333	-5.93333
33	Tejo	Samouco, Samouco saltpans	38.73472	-9.00361
37	Algarve	Tavira, Ria Formosa NP, Tavira saltpans	37.10833	-7.63611
40	Algarve	Castro Marim, Cerro do Bufo	37.2	-7.45
46	Extremadura	Santa Amalia	39.00389	-5.98611
56	Extremadura	Valdehornillos	39.05028	-5.97583
57	Tejo	Samora Correia, Samora Correia ricefields	38.94194	-8.88528
58	Sado	Montevil, Cachopos	38.4	-8.60806
59	Sado	Carrasqueira	38.40222	-8.76028
60	Sado	Comporta	38.40417	-8.70972
61	Sado	Monte Novo da Palma, Rib. De S. Martinho	38.42944	-8.64278
77	Extremadura	Don Benito	38.98333	-5.88333
103	Algarve	Ludo, Ludo salt pans	37.03056	-8.00028
104	Sado	Zambujal	38.57306	-8.73472
105	Sado	Palma, bridge over Rib. de Sao Martinho	38.47222	-8.585
106	Sado	Alcacer do Sal	38.365	-8.50389
107	Tejo	Santo Estevão, Paul de Belmonte	38.85556	-8.745
108	Algarve	Vila Real de Santo António, Esteiro da Carrasqueira	37.18917	-7.46417
110	Sado	Marateca	38.58444	-8.675
111	Tejo	Benavente	38.98389	-8.81167
112	Extremadura	Yelbes	38.96944	-6.00167
174	Tejo	Vila Franca de Xira	38.83861	-8.96028
182	Extremadura	Palazuelo	39.11583	-5.73778
183	Extremadura	Ruecas	39.04528	-5.875
192	Tejo	Porto Alto, Giganta ricefields, Ponta da Erva	38.91667	-8.93333
194	Doñana	Puebla del Rio, Dehesa de Abajo	37.20139	-6.18028
196	Extremadura	Guadiana del Caudillo	38.93333	-6.68333
199	Doñana	Trebujena, Donana NP, El Codo de la Esparraguera	36.9	-6.28333
200	Doñana	El Rocio, Cota Donana, Lucio de las Gangas	37.07611	-6.38583
203	Tejo	Alhos Vedros, Alhos Vedros saltpans	38.65	-9.01667
204	Algarve	Olhão, Fuseta saltpans	37.05	-7.73333
211	Algarve	Faro, airport saltpans	37	-7.96667
221	Sado	Hortas West	38.76111	-8.93417
221	Tejo	Hortas West	38.76111	-8.93417
222	Extremadura	Conquista del Guadiana	39.05611	-6.0575
223	Extremadura	Medellín	38.98861	-5.96056
224	Tejo	Alcochete, Alcochete saltpans	38.74694	-8.92583
256	Algarve	Olhão, Olhão saltpans	37.01667	-7.85
268	Algarve	Tavira, East of Tavira saltpans	37.11667	-7.61667
278	Algarve	Tavira, West of Tavira saltpans	37.1	-7.63333
284	Doñana	Matalascañas, Laguna del Zahillo, Parque Natural de Doñana	36.98778	-6.50722
285	Doñana	Isla Mayor, Entremuros (Parque Natural de Doñana)	37.08611	-6.26028
286	Doñana	El Rocio, Marismas de El Rocio (Parque Nacional de Doñana)	37.12833	-6.50528

296	Algarve	Castro Marim, Natural Reserve saltpans	37.21667	-7.41667
297	Algarve	Bias, Bias saltpans	37.03333	-7.75
307	Tejo	Samorra Correia, Belmonte ricefields	38.91667	-8.83333
310	Extremadura	Pizarro	39.15139	-5.80528
315	Extremadura	Vivares	39.08333	-5.88722
382	Tejo	Alcochete, Pata salt pans	38.73222	-8.98861
383	Tejo	Alcochete, Almada salt pans	38.74194	-8.9825
384	Tejo	Alcochete, Restinga salt pans	38.73167	-9.00917
385	Tejo	Alcochete, Vasa Sacos	38.83333	-8.95
386	Tejo	Benavente, Paul de Trejoito	39.01917	-8.72222
387	Tejo	Alcochete, Barroca d'Alva	38.73056	-8.9
388	Tejo	Porto Alto, Ze do Pinho	38.96222	-8.89167
435	Doñana	Sanlúcar de Barrameda, Salinas de Bonanza, PN de Doñana	36.86667	-6.33333
452	Algarve	Santa Lucia, Santa Lucia saltpans	37.11139	-7.645
473	Tejo	Alcochete, Hortas	38.76306	-8.93694
475	Doñana	Isla Mayor, Veta la Palma	36.97083	-6.235
476	Sado	Monte Novo do Sul	38.40889	-8.68111
516	Algarve	Faro, Salgados de Faro	37.01889	-7.89472
529	Algarve	Armação de Pêra, Lagoa dos Salgados	37.1	-8.33333
552	Sado	Pontes, Pinheiro Torto saltpans	38.54889	-8.7925
559	Extremadura	Gargáligas	39.06556	-5.645
560	Extremadura	Zurbarán	39.0575	-5.71528
590	Doñana	Isla Mayor, Veta la Palma, rice fields	37.03556	-6.195
591	Doñana	Puebla del Río, Isla Mínima, rice fields	37.14278	-6.12417
594	Doñana	Isla Mayor, rice fields	37.13944	-6.18944
598	Tejo	Porto Alto, Cara Larga	38.96167	-8.92056
599	Tejo	Porto Alto, Toneca	38.95361	-8.93639
600	Tejo	Porto Alto, Ruivo	38.96667	-8.90194
601	Tejo	Granho, Foros de Benfica, Paul da Casa do Cadaval	39.10639	-8.6475
626	Doñana	Matalascañas, Laguna de Santa Olalla	36.98389	-6.46694
655	Tejo	Lisbon, Sacavém, Vasco da Gama bridge	38.78833	-9.08889
680	Sado	Setúbal, Salinas da Bonita	38.51667	-8.8
692	Doñana	La Puebla del Rio, Paraje Natural Brazo del Este	37.13333	-6.03333
713	Doñana	El Rocio, Lucio de Mari Lopez	37.04833	-6.30472
719	Extremadura	Puebla de Alcollarín	39.11667	-5.78333
720	Algarve	Lagoa, incl. Alagoas Brancas	37.13333	-8.45
721	Extremadura	Campo Lugar	39.2	-5.76667
724	Extremadura	Almoharin	39.15	-6.03333
725	Extremadura	Casar de Miajadas	39.13333	-5.85
742	Extremadura	Miajadas	39.14056	-5.89333
863	Extremadura	Valverde de Mérida	38.9	-6.16667
894	Doñana	Trebujena, Algaida Saltpans	36.88722	6.32944
932	Doñana	Matalascanas, Donana NP	36.93333	-6.45
945	Tejo	Porto Alto, Evoa	38.85	-8.96667
1032	Tejo	Alcochete, Murraça (sapal) salt pans	38.74184	-8.99042
1089	Algarve	Olhão, Ilha do Lebre	37.01	-7.86

1130	Extremadura	Galisteo	40.03	-6.28
1138	Extremadura	La Albuera, Laguna de la Albuera	38.686	-6.74567
1147	Doñana	Isla Mayor, Arrozales next to Brazo de la Torre	37.194	-6.186
1148	Doñana	Aznalcázar, Caracoles	37.3	-6.25
1296	Tejo	Porto Alto, Paul das Lavouras ricefields	38.866396	-8.8468
1307	Doñana	Las Cabezas de San Juan, Guadalquivir marshes	37.0569	-6.0833
1308	Doñana	Los Palacios y Villafranca, Isla Menor, Brazo del Este	37.103	-6.039
1337	Extremadura	Navalvillar de la Pela	39.09	-5.47
1338	Doñana	Isla Mayor, Lucio del Cuquero Grande, Veta la Palma	37.012	-6.241
1430	Sado	Bairro da Bonita, Salinas do Pinheiro Torto	38.549469	-8.79327
1434	Tejo	Lisbon, Parque Tejo	38.782691	-9.0913
1439	Algarve	Quarteira, Praia do Almargem	37.06	-8.08
1447	Extremadura	Hernan Cortes - Santa Amalia	39.03	-5.959
1448	Extremadura	Hernan Cortes - Medellín	39.006	-5.943
1449	Extremadura	Casa del Cuadradillo	39.057	-6.056
1450	Extremadura	Alonso de Ojeda	39.103	-5.956
1451	Extremadura	Santa Amalia, Tomato Factory	39.004	-6.013
1452	Extremadura	Santa Amalia - Valdehornillos	39.037	-5.993
1453	Tejo	Vila Franca de Xira, Giganta ricefields	38.938	-8.968
1454	Tejo	Porto Alto, Giganta ricefields, Ponta da Erva, East	38.910421	-8.920
1455	Tejo	Samorra Correia, Belmonte ricefields, Southeast	38.893934	-8.79492
1456	Tejo	Porto Alto, Giganta ricefields, Cardal	38.921737	-8.977
1460	Tejo	Benavente, Vale de Frades salt pans	38.78	-8.923
1564	Sado	Grândola	38.22	-8.47
1579	Sado	Montijo	38.698	-8.965
1609	Tejo	Carregado, ricefields	39.029416	-8.941