

The Rufford Foundation Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Sara Lopes Pardal
Project title	Assess the threats for wintering Black-tailed Godwits in Guinea-Bissau and promote awareness to resolve the conflict between people and rice feeding godwits
RSG reference	18102-1
Reporting period	20 November 2015 – 22 January 2016
Amount of grant	4616 £ / 6.190,52 EUR
Your email address	uc2002102783@student.uc.pt (alternative email: saralpardal@hotmail.com)
Date of this report	25 August 2016

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Field recognition, bird trapping and sampling			Yes	Four main areas were identified as suitable for this work (Figure 1). 9 black-tailed godwits were captured, plus 131 other waders. All birds were metal ringed and measured, and some species sampled for biological samples (black-tailed godwit, wood sandpiper, whimbrel, ruff, redshank and painted snipe). Biological sampling for stable isotope analysis, avian malaria prevalence and constitutive immunity from godwits was fully achieved. This was one of the largest captures of this species in their west African wintering grounds and included a retrap of a bird ringed in The Netherlands.
Evaluation of hunting related godwit mortality			Yes	30 enquiries were made in 7 different villages. More than 58 persons from three distinct ethnic groups, aged 18 to 87, participated in the enquiries. Black-tailed godwits are occasionally the target of hunters, mainly for food, though the impact they have on the studied areas is negligible. Villages protect their cultures against animal depletion, but mostly against domestic animals.
Godwit abundance, habitat use and behavioural observations			Yes	Instead of transects to estimate abundance, total bird counts were made and registered. Paddies rice abundance was determined by counting rice seeds within 1m ² squares.
Development of local conservation capacity and awareness			Yes	The two major local environmental government institutions cooperated closely with the project (GPC-Gabinete de Planificação Costeira and IBAP-Instituto da Biodiversidade

			<p>e das Áreas Protegidas) and received new equipment. Two technicians accompanied the team for the full expedition period and were trained in new skills. They continued the work after team departure. The team worked closely with local aids and besides several directly targeted awareness actions in schools, the villagers were always involved in the work being made in each village and its objectives explained.</p>
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Figure 1. – Fieldwork sites. Core fieldwork areas were Patche lala, Untché, Cumano and Blom, all within Oio and Biombo regions and surrounding Mansôa river.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

The budget for the project did not anticipate the level of tipping that was necessary to do every daily activity. The Guinea-Bissau society is highly dependent on foreign support and they tend to see any foreigner as a possible income source, even if no service is provided. To provide any minor service, tipping is required and strongly demanded, and any service not tipped is usually refused, creating unavoidable bad-feelings among all involved. Although most of the time the team managed to provide small tips to local helpers, we discouraged tipping when no necessary service was provided. We managed to do so since we were working with local

technicians and we spoke Portuguese, allowing for a larger degree of inclusion and identification with the locals.

Although we did not encounter major problems, the stealing of equipment or even violent crime was a major concern throughout the field expeditions. The team managed to circumvent these problems negotiating with the local head of every village prior to any work, informing them of what we were doing and hiring local guides or people to help us carry the equipment and explore the working sites, or buying local food. Driving at night increased the risks of violence on the road and we were strongly discouraged to do so. The team avoided night travel whenever possible but in spite of all the cares we encountered a road block by criminals that we fortunately could avoid driving around it.

The distance to the working places and bad road conditions, was a major problem and involved driving several hours per day. It was not possible to stay close for long periods in the working areas, since minimum lodging conditions were not available at those sites (e.g. electricity). We could achieve all the objectives proposed recurring to the help of local villagers that would deploy and collect some traps and equipment when the team could not be there, allowing to work in several sites at the same time.

3. Briefly describe the three most important outcomes of your project.

1) The capture of nine Black-tailed godwits was a major outcome of this project. This bird species is extremely difficult to capture and usually requires time consuming efforts and large teams with thorough knowledge of the bird's behaviour and capture sites. Despite the low number of individuals caught, this was (to the best of our knowledge) the largest capture of this species in Guinea-Bissau and possibly the second largest in western Africa, allowing to collect unique biologic samples that will be used to increase the knowledge about the species ecology and contribute to its conservation. Some international teams had previously tried to capture and mark these birds in their African winter quarters with no success. Several colored ringed birds were also visually re-trapped by the team members and also by the newly arrived Dutch team, a few days after capture. The importance of the rice-field paddies for the godwits was evaluated in which food availability seem not be the problem, and will contribute to help decision makers, especially since most work done was always accompanied by technicians of the GPC that have managing and conservation responsibilities in the area.



Figure 2. – Color marking of Black-tailed godwits (*Limosa limosa limosa*) allows for individual visual identification in the field, once each bird carries a unique combination. Photos by Jaime Ramos.

2) One of the main goals of this project was to characterize the dynamics and interactions of local villages and inhabitants and the bird communities feeding in the rice fields from which both depend. Hunting or culling was likely to happen and could be a major threat factor to species that spend here a substantial part of their life cycle. Since the black-tailed godwits feed mostly on rice during the winter season, an important outcome of this project was the evaluation of the local hunting pressure upon them. According to our enquiries (see appendix S1) and direct observations, godwit hunting is occasional and mostly driven by traditions of some ethnic groups (e.g. Papéis), though currently it is not a major threat to the species. People do hunt them, though some mentioned that they are not the easiest species to hunt and prefer to target larger bird species (e.g. ducks, storks, spoonbills, or jungle fowl relatives). Nevertheless, the strong dependence of godwits on the rice and artisanal management practices, still deserves attention and a continuity of monitoring. The future of these communities and their local livelihoods is closely connected with the health of the local ecosystems and their support capacity for godwits, as well as for other species.



Figure 3. – Enquiries were carried in several villages especially targeting local rice farmers from different ethnic groups, allowing to collect valuable information about

hunting related godwit mortality and current and future rice management practices. Photo by Pedro Geraldés.

3) Raising awareness on local communities about the international importance of their ecosystems and the possible impacts that local actions can have elsewhere, was also an important achievement. Interactive presentations targeting the younger population were made at schools (see appendix S2. and S3.), but the most important actions were the direct exchange of views with local village leaders and inhabitants. During the fieldwork, the local villages around working areas were contacted and the team presented the objectives of the project and explained its importance. Whenever possible, local help was hired to participate in the campaigns and local services were used (food, transport or guides). The response from locals was highly rewarding and most communities were quite surprised when told about the long migrations carried out by this species and of the serious threats that they face in Europe. Most of them recognized this bird as part of their daily routines on the rice cultures and a possible source of income, not only for researchers, but also for birdwatchers or for nature tourism activities in general and were happy to provide services for visitors and add these activities to their livelihoods.



Figure 4. – Involvement of the local community on our daily activities was strong. In schools we told the migration story of the Black-tailed godwits and the threats they find along the flyway and in Guinea-Bissau. Hand-made drawings caught the attention and curiosity of children from all ages, allowing to pass the take-home message: “a good rice-field is the one with godwits around”. Older local workers were also quite curious about the fieldwork activities, quickly approaching the team members that took those opportunities to engage people with details and the importance of our work. Photo by Jaime Ramos.

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

Direct benefits for local communities included hiring of services (guides, food and transport) in small local villages that usually depend solely on subsistence rice crops. Two technicians from the government environmental institutions (GPC and IBAP)

where trained in bird census and handling techniques and some equipment was provided for these institutions (binoculars, photography cameras and field guides) (see photos below and S4 appendix). Ringing and trapping efforts allowed the training of new skills of field guide Hamilton Monteiro and Mohammed Henriques. Other indirect benefits included the actions to raise awareness about the importance of ecosystems not only locally but at a larger scale, for audiences from school children to current and older farmers. These actions were warmly welcome by local communities that recognized that local conflicts between godwits and people were negligible and became aware of the international importance of these bird communities. They also started to realize that birds and nature in a healthy environment can be a source of income in the future (directly and indirectly).



Figure 5. – Technical equipment (binoculars, photography cameras, field bird guides) were given to government environmental institutions for local capacity building. Dr. Joãozinho Sá, director of GPC and heads of Wetlands International in Guinea-Bissau, was pleased with the offer and acknowledges the need for basic technical equipment for the routine surveillance actions of its technicians. Photo by Pedro Geraldés.

5. Are there any plans to continue this work?

We think it is important to continue working with the local communities, involving them in actions that maintain healthy interactions between bird communities and villagers and simultaneously improve their livelihoods. Several ethnic groups exist in Guinea-Bissau and besides the three main ones targeted with this project (Balantas, Papéis and Manjacas), other should be targeted as well since the way people use and exploit the land are deeply rooted to their own cultural traditions that are specific to each group.

Unfortunately, the lack of protection status on most of the areas where the black-tailed godwit occurs, makes their preservation at this stage still highly dependent on the goodwill of local people, their land-use practices together with their vision to see godwits and other birds as an indicator of ecosystem health and as an asset for their own communities. Land-use changes, rice culture abandonment, human disturbance and lack of government and institutional resources and legislation, makes control of these areas practically inexistent so one of the ways to tackle this

problem is working closely with local farmers, to identify current or future threats to this species and other waterbirds and teach future generations to coexist and respect wildlife.

6. How do you plan to share the results of your work with others?

Publication of four peer-reviewed scientific papers is in preparation (see appendix S5.):

1. Energetic investments on immune defence - Already submitted to a journal and under revision. Includes data from blood samples;
2. Waterbirds avian malaria prevalence on a major wintering tropical area – Paper in preparation. The blood samples collected from several species of waterbirds, will allow evaluation of mosquito-borne pathogen pressures over bird communities. For some avian species it may represent the first available data for their wintering areas;
3. Black-tailed godwit feeding ecology (includes data regarding habitat-use, feeding patterns and stable isotopes) – Paper in preparation that contributes to fulfil the gap information regarding this major wintering area. To the best of our knowledge the most recent published paper is from 1994 and refers to Senegal. The other few information sources for Guinea-Bissau are anecdotal or by-chance observations from different studies and/or do not include detailed feeding ecology data;
4. Social perspectives regarding hunting and interactions with bird communities – Paper in preparation that is highly relevant for identifying specific threats and contribute to government decision making and managing conservation measures.

The data collected in the scope of this grant will be included and properly acknowledged in a PhD thesis submitted to the University of Coimbra (Portugal) and Lund University (Sweden) and presented in scientific conferences.

7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?

The Rufford small grant covered a period of 44 working days (along a 12-week period), from November to January. The main fieldwork mission was accomplished during a 4-week period. After the departure of the main expedition team (on the 16 of December) some time was allowed for the local festivities of Christmas season. In January the enquiries to local farmers and school awareness actions were regained by the local team members and continued until the 22nd of January.

This six weeks of continuous work along the 12-week period, corresponded to the anticipated length of the project.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Equipment	0	0	0	Item not requested to RSGF.
Technical equipment (capacity building for local NGO/organizations)	596	609.91	13.91	+0.3% of initial budget.
International transport	0	0	0	Item not requested to RSGF
Food & Accommodation	1900	1317.93	-582.07	-12.61% of initial budget; This difference was due to rental of private house to diminish costs and allowing for a longer period of fieldwork. The final value includes an amount of 85.81GBP which refers to artisanal local bought products (e.g. rice, chicken, dryfish) and therefore with no invoice.
Local transport	1346	1433.61	87.61	+1.90% of initial budget.
Local salaries & services	544	1065.80	521.80	+11.30% of initial budget; This difference was due to the need to contract a professional drawing artist to produce laminate plates with hand-made drawings for school awareness actions (used locally in every awareness action - the complete sets stood with the local schools, GPC and IBAP for future use). The final value includes an amount of 99.62GBP which refers to tipping for local services (e.g. transport material, bird survey, guard material, information request) and therefore

				with no invoice.
Others	230	294.97	64.97	+1.41% of initial budget.
Contingency (10%)	0	0	0	Item not requested to RSGF.
Total	4616	4722.22	106.22	The difference was supported by own funds.

Notes to the budget 1€= £0.86 1CFA= £0.0013

9. Looking ahead, what do you feel are the important next steps?

Capacity building: Lack of experienced and specialized environmental technicians, is still a major flaw of local organizations. Hamilton Monteiro has considerable knowledge of the bird fauna of the country, being one of the few experienced persons on bird census and surveillance. However, future establishment of ringing and/or tagging projects in Guinea-Bissau and even for the regular monitoring routines, local organizations are still in great need for specialized technicians. In addition to the lack of people, we realized that their daily work is also limited by the bad conditions or lack of proper optical equipment and field guides antiquated or in bad-shape. Therefore, we feel that important next steps should be focused on capacity building of these organizations and training of more people. In addition, we also realized that some local community members had long-lasting work collaborations with Hamilton, providing valuable information regarding bird movements, behaviours or any other activities. These persons were highly interested and collaborative on his (and our work) and greatly improved the communications between team members and local villagers. We think that if they were given access to some optical equipment and field guides or booklets with most important bird and mammal species, they could become important watchful assets not only for widening the surveillance network of several (protected and unprotected) areas, but also allowing a profitable and trustful working relationships with government environmental organizations, NGO's and nature birdwatching tourism.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

The Rufford Foundation logo was used on the laminate hand-made drawings for school awareness actions to illustrate the life and migration story of the Godwits. On each school two laminate plaques were left (one with the full migration story of the godwits – see appendix S2; and another with the typical African bird species seen on the rice-fields – see appendix S3). The same copies, as well as the complete story telling sets, were given to each institution (IBAP and GPC) to be used in future awareness activities. All the binoculars, cameras and field bird guides offered to IBAP and GPC were identified with The Rufford Foundation logo. The four scientific papers resulting from this expedition will acknowledge the RSGF support, as will the PhD thesis of the team leader (to be finished in 2017) and resulting scientific conference presentations (copies will be sent to the RSGF as soon as they are available).

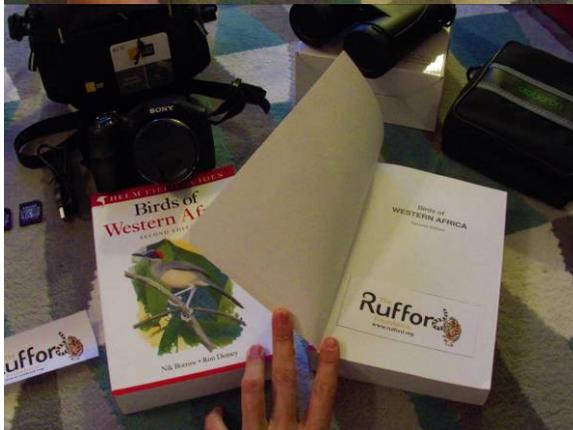


Figure 6. - The Rufford foundation logo was widespread on the material used during project development. Photos by Jaime Ramos and Sara Pardal.

11. Any other comments?

I, in name of all the team members, acknowledge the crucial financial support of The Rufford Foundation for the development of this project in Guinea-Bissau, contributing for the conservation of this Near-threatened bird species.

Appendix Index

S1. Enquiries used to evaluate hunting related godwit mortality and rice management practices (portuguese only);

S2. and S3. Plates with hand-made drawings used for awareness and education actions in local schools; Complete storyline of the Black-tailed godwit journey and typical african bird species often seen in rice-fields. Take-home message: "a good rice-field is the one with godwits around and that return year after year".

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S4. IBAP certificate for the delivery of technical equipment to the organization (portuguese only);

S5. Scientific reports produced or currently in preparation under the RSGF grant;

S6. Project pictures.

Questionário nas Bolanhas da Guiné-Bissau

O questionário inicia-se indicando/apontando no Guia das Aves a espécie de ave em que pretendemos focar as perguntas. Também poderemos usar fotografias para que a identificação se faça com mais clareza. O Guia das Aves servirá também de auxílio para identificar outros potenciais alvos de caça nas zonas de estudo. Assinalar sempre local e datas das entrevistas e se o entrevistado é homem ou mulher.

1. Conhece e sabe identificar Maçaricos-de-bico-direito?

- a. Sim
- b. Não
- c. Não sabe/ Não responde.

2. Quando costumam chegar os bandos de Maçarico-de-bico-direito aos arrozais?

- a. Resposta.
- b. Não sabe/ Não responde.

3. Acha que têm chegado:

- a. Mais cedo.
- b. Mesma altura.
- c. Mais tarde.
- d. Não sabe/ Não responde.

4. Qual é a altura do ano em que vê mais aves nas bolanhas?

- a. Resposta.
- b. Não sabe/ Não responde.

5. Nos últimos 15 anos acha que os números de aves têm:

- a. Aumentado.
- b. Diminuído.
- c. Permanecido estáveis.
- b. Não sabe/ Não responde.

6. E quando é que as aves se vão embora?

- a. Resposta.
- b. Não sabe/ Não responde.

7. Depois de chegarem ficam sempre nas bolanhas ou desaparecem algum tempo?

- a. Sim, permanecem sempre.
- b. Desaparecem algum tempo

7.2 Quando regressam? E em que fase da cultura do arroz?

- c. Não sabe/ Não responde.

9. O que acha que comem?

- a. Plantas.
- b. Insectos.
- c. Arroz.
- d. Outros.
- e. Não sabe/ não responde.

11. Quando fazem o corte de arroz, tentam guardar os molhos o mais cedo possível?

- a. Sim.
- b. Não.
- c. Não sabe/ Não responde.

12. Se sim, porque razão o fazem?

a. Resposta.

12.1 Se é por causa de animais, qual o animal que o preocupa mais?

b. Não sabe/ Não responde.

13. Que tipo de campos os Maçaricos-de-bico-direito gostam mais?

- a. Com muita água.
- c. Pouca água.
- d. Com muita vegetação.
- e. Com pouca vegetação.
- d. Abandonados.
- f. Não sabe/ Não responde.

14. Para além dos Maçaricos-de-bico-direito, vê outras espécies de aves/animais nos campos de arroz?

- a. Resposta.
- b. Não sabe/ Não responde.

15. Como protegem os campos de arroz contra os animais?

- a. Resposta.
- b. Não sabe/ Não responde.

16. Sabe se a espécie é caçada?

- a. Sim.
- b. Não.
- c. Não sabe/ Não responde.

17. Se sim, quantos indivíduos são abatidos aqui na tabanca ou tabancas vizinhas?

- a. Resposta.
- b. Não sabe/ Não responde.

18. Quem os caça?

- a. Pessoas locais.
- b. Pessoas de fora.
- c. Não sabe/ Não responde.

19. Quantos caçadores existem aqui na tabanca?

- a. Resposta.
- b. Não sabe/ Não responde.

20. Se os caçam, porque motivos o fazem?

- a. Para comer.
- b. Para proteger culturas de arroz.
- c. Para vender.
- d. Não sabe/ Não responde.

21. A caça é recente ou algo que sempre aconteceu no passado?

- a. Recente.
- b. Sempre houve.
- c. Não sabe/ Não responde.

22. Que outras espécies de aves são abatidas?

- a. Patos, gansos.
- b. Garças.
- c. Outros (tentar saber que outros mais especificamente).
- d. Não sabe/ Não responde.

23. É fácil/barato arranjar armas e munições?

- a. Sim.
- b. Não.
- c. Não sabe/ Não responde.

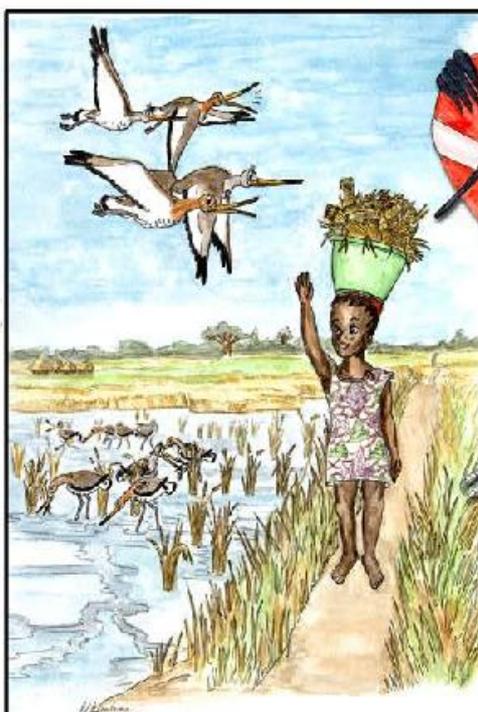
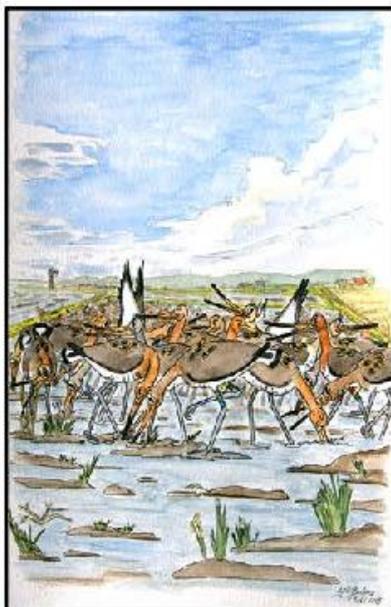
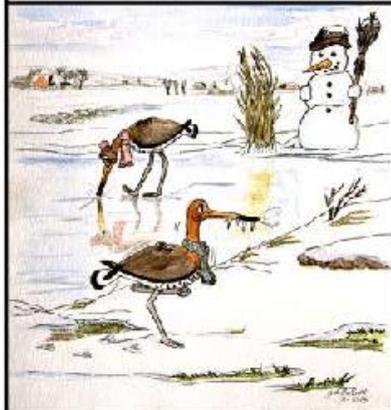
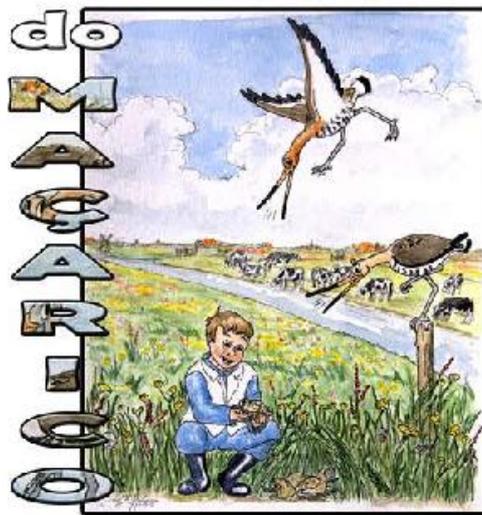
24. Se fosse mais barato/fácil caçar Maçaricos-de-bico-direito, fá-lo-ia?

- a. Sim.
- b. Não.
- b. Não sabe/ Não responde.

25. Por último, se lhe dessem oportunidade de trabalhar noutra tipo de sementeira/cultura fá-lo-ia?

- a. Sim.
- b. Não.
- b. Não sabe/ Não responde.

A Viagem



Autoria: Suzu Pissal (MARE - Univ. Coimbra)

Ilustração: Vibrant Galois

Concepção gráfica: Fato Grafiteiros

Financiada por: The Rufford Foundation







Instituto da Biodiversidade e das Áreas Protegidas

NOTA DE ENTREGA

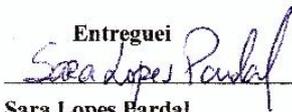
No quadro do projecto de investigação intitulado “*Assess the threats for wintering Black-tailed Godwits in Guinea-Bissau and promote awareness to resolve the conflict between people and rice feeding godwits*”, implementado pelo Centro de Ciências do Mar e do Ambiente (MARE) de Portugal, foram doados materiais de campo ao Instituto da Biodiversidade e das Áreas Protegidas (IBAP) da República da Guiné-Bissau, financiados pela Rufford Foundation:

- Um (1) Guia de Aves (Guia de campo das aves de Portugal e da Europa: *Assirio & Alvim*);
- Um (1) Guia Birds of Western Africa (2ª Edição: *Nik Borrow & Ron Demey*);
- Um (1) binoculo da marca Bushnell
- Uma camara digital DSC-H200 Sony

Recebi


Aissa Regalla de Barros
Coordenadora de Seguimento da Biodiversidade
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Entreguei


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1. Abstract of submitted paper.

Evidence for pathogen-mediated regulation of baseline constitutive immunity across the flyway for two shorebird subspecies

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Abstract

Immune system investment is known to vary seasonally and differs among species and life-histories, but the drivers of that variation are poorly understood. To address the effects of environmental pathogen-pressure on the immune system, we assessed the investment on baseline constitutive immunity components along the flyway of two black-tailed godwit subspecies: nominate (*Limosa limosa limosa*) and Icelandic (*L. l. islandica*). Both subspecies vary on breeding and wintering areas and habitat-use, but are genetically similar. Levels of haptoglobin, complement-mediated lysis and natural antibodies were analysed together with leukocyte profiles, and overall were not significantly different between subspecies. However, when contextualized with habitat, latitude and periods of high-energetic demands, differences on baseline immunity become apparent. During breeding, birds occupying parasite free areas like the subarctic, significantly downregulated baseline immunity features when compared to their temperate conspecifics. In winter, differences become less obvious, most likely because is a less energetic and nutritional demanding season. Along the flyway of nominate godwits, latitudinal effects on heterophil and lymphocyte levels were recorded, along with shifts on inflammatory responses. During migration, birds downregulated expensive inflammatory components, while in winter these mediators increased along with the phagocytic cell activity, an important strategy during periods of high pathogenic pressure. Habitat-related differences were also seen, with freshwater individuals upregulating phagocytic activity and inflammation mediators. We conclude that maintenance of constitutive immunity is mainly driven by seasonal factors in response to habitat-related pathogen pressure variation, and that trade-offs between immune function and competing physiological components become apparent during energetically demanding periods.

2. Waterbirds avian malaria prevalence on a major wintering tropical area.

In preparation

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3. Wintering feeding ecology of Black-tailed godwits in Guinea-Bissau.

In preparation

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⁵GPC - Gabinete de Planificação Costeira, Bissau, Guiné-Bissau

4. Local hunting perspectives of a near-threatened long-distance wader migrant, the Black-tailed godwit on one major wintering area

In preparation

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