

# DPLR1\1029

Darwin Plus Local - Final Report (1)

Officer: Jessica Magnus

## Section 1 - Darwin Plus Local Project Information (Essential)

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### Project Reference Number

DPL00044

### Q1. Project Title

*No Response*

### Overseas Territory(ies)

Gibraltar

### Lead Organisation or Individual

University of Gibraltar

### Partner Organisation(s)

Save Gibraltar Street Cats (SGSC), The Environment Safety Group, University of Malaga, University of Auckland, Gibraltar Ornithological & Natural History Society, Gibraltar Botanic Gardens

### Value of Darwin Plus Local Grant Award

██████████

### Project Start Date

01 April 2023

### Project End Date

31 March 2024

### Project Leader Name

Prof Julia E. Fa

### Project Website/Twitter/Blog etc.

<https://www.unigib.edu.gi/research-project-evaluating-an-important-biodiversity-area-in-gibraltar-windmill-hill-flats-darwin-plus-local-scheme/> <https://darwinplus.org.uk/project/DPL00044>

## Report Author(s)

Prof Julia E. Fa, Ms Lillianne Hawkins

## Report Date

16 April 2024

## Project Summary

*No Response*

## Project Outcomes

Checked	<b>Biodiversity: improving and conserving biodiversity, and slowing or reversing biodiversity loss and degradation;</b>
Unchecked	<b>Climate Change: responding to, mitigating and adapting to climate change and its effects on the natural environment and local communities;</b>
Unchecked	<b>Environmental quality: improving the condition and protection of the natural environment;</b>
Checked	<b>Capability and capacity building: enhancing the capacity within OTs, including through community engagement and awareness, to support the environment in the short- and long-term.</b>

## Section 2 - Project Outcomes (Essential)

On a scale of 1 (high – outcome substantially exceeded ) to 5 (low – outcome substantially did not meet expectation ), how successful do you think your project has been?

3 - Outcome met expectation

### Project outcomes and justification for rating above

In this project, we conducted a comprehensive assessment of the biodiversity of Windmill Hill Flats (WHF) in Gibraltar, an area of significant conservation value. Our evaluation also focused on understanding the impact of invasive species and human activities on the fauna and flora of the study site. This involved compiling existing data, mapping habitats, recording the abundance of key faunal groups and flora, and monitoring invasive mammals in adjacent areas.

One significant outcome of the project was the first-ever assessment of WHF biodiversity in Gibraltar. We used a "rapid assessment" approach, which aims to quickly gather valuable data on the diversity and abundance of species in the given area involving standardised survey techniques to assess the presence, distribution, and ecological characteristics of flora and fauna. Rapid assessment methodologies are employed in situations where time and resources are limited, allowing for efficient collection of baseline data on biodiversity and identification

of conservation priorities. Despite facing constraints, such as limited time and resources, our adapted rapid assessment methodologies efficiently captured crucial data on the distribution and abundance of flora and fauna, shedding light on the ecological dynamics of the site. Notably, we identified pressing threats, including invasive plants like the Bermuda buttercup (*Oxalis pes-caprae*), which was not as abundant before, and invasive mammals such as feral cats and black rats, underscoring the challenges faced by native species and habitats.

Through outreach initiatives and capacity-building efforts, we actively engaged scientific experts (from universities in Spain, Italy, New Zealand and Gibraltar), site managers (Ministry of Defence, the Gibraltar Government Department of Environment, Sustainability, and Climate Change, DESCCH), and local community groups (notably nature protection groups and a cat protection society) in project activities. This collaborative approach fostered a sense of ownership and commitment to biodiversity conservation in Gibraltar. Extensive discussions during our Community of Practice (CoP) meetings enabled us to understand the state of nature in the area, identify pressures, and propose necessary interventions and conservation activities.


These results will inform the development of a WHF management plan scheduled for completion by the end of 2024. The plan aims to enhance wildlife habitat management objectives and expectations within WHF, focusing on strategies to mitigate threats posed by invasive species and human pressures. It encompasses components such as invasive species management, habitat restoration, monitoring and surveillance, community engagement, and enforcement and compliance.


While our project successfully met its expectations, we acknowledge that more data could have been collected with additional visits to the site. Nonetheless, we achieved our objectives in terms of data collection, capacity building, and community engagement. We emphasise the importance of ongoing monitoring and evaluation to monitor WHF biodiversity conservation activities and assess their effectiveness. Future work at the site should explore synergies to improve existing habitats and maximise the overall effectiveness of conservation efforts in WHF, including the further protection of high-profile, high conservation value species.


## Supporting Evidence - file(s) upload

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 [Mar06 Timetable Final Updated JEF](#)


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 [May16 17 Timetable Final - Update](#)


 30/04/2024


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 [Sept25 Time table Final](#)


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 [Map WHF Final](#)


 30/04/2024


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 [CoP2 Presentations PDF](#)

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## Supporting Evidence - links to published document/online materials

In the northern part of the WHF, covering 0.02 km<sup>2</sup> (43% of all open habitats), we monitored plant communities, invertebrates, reptiles, and birds. Due to security restrictions, sampling in other WHF areas was not feasible. Fieldwork and specimen processing amounted to 216 person/hours and 84 person/hours, respectively. Camera trapping, not allowed within the WHF, was undertaken in matorral habitats (source habitats for invasive

mammals) at the study site's periphery. Over 92 days, 32 person/hours were allocated to camera setup, and 115 person/hours to data input.

Invertebrate pitfall trapping yielded 8,469 specimens across eight animal classes, predominantly insects. Direct search and quadrat methods identified 10 land mollusc species. Bird observations, using point counts, detected eight resident species, three migratory, and 13 wintering birds. Notably, the locally abundant Barbary Partridge emerged as a priority species for conservation efforts in the area. Three lizard species and one snake were also recorded.

Plant surveys documented 290 species, highlighting the prevalence of the invasive Bermuda buttercup. This species could be posing a significant threat to the native flora. Camera trapping revealed that black rats were the most common species present, but foxes, cats and native birds were also recorded.

These findings establish crucial baseline data for future conservation efforts, emphasising the necessity of ongoing monitoring and management. A forthcoming special report, due by December 2024, will provide detailed findings and recommendations, aiding stakeholders, policymakers, and conservationists involved in safeguarding Gibraltar's WHF. Please see here for supporting evidence

[https://drive.google.com/drive/folders/1AW1B1JP1a\\_Rxt1hVFnxLsQ\\_jjeRlLtDP?usp=sharing](https://drive.google.com/drive/folders/1AW1B1JP1a_Rxt1hVFnxLsQ_jjeRlLtDP?usp=sharing)

## Project Challenges

The project encountered both anticipated and unexpected challenges during implementation. Some of the anticipated challenges included logistical issues related to data collection and fieldwork. However, a main challenge was related to the changing security status in the WHF. The WHF is a high-profile communications area for the military, whose security status was elevated during the submission of our project to Darwin. As a result, fieldwork was limited to only part of our targeted habitats and permission to access the site was not granted until October 2023, thus limiting our fieldwork to less than six months, and to a restricted number of days per month. The latter challenge was addressed through open discussions with the MOD authorities in Gibraltar, who went out of their way to allow the project to succeed. Through meticulous organisation, involving detailed work plans and timelines, the project, in collaboration with the MOD, was able to accomplish a significant amount of work throughout its duration.

Unexpected challenges also arose, such as inclement weather conditions impacting some fieldwork schedules. There were a few unforeseen issues with the adequacy of some of the equipment used. In response to these challenges, the project team remained flexible and adaptive. They adjusted fieldwork schedules when necessary and promptly troubleshooted technical issues to minimise disruptions to data collection efforts.

Overall, the project team's proactive approach to problem-solving, flexibility, and adaptability enabled them to overcome challenges and continue making progress towards achieving project objectives.

## Lessons Learned

What worked well:

- Detailed planning: Comprehensive work plans, timelines, and communication strategies ensured smooth project implementation.
- Effective communication: Regular communication among team members, stakeholders, and collaborators facilitated coordination and problem-solving.
- Flexibility: The project team adapted quickly to unforeseen challenges, adjusting schedules and methodologies as needed to maintain momentum.
- Capacity building: Providing training opportunities enhanced local expertise, contributing to sustainable project outcomes.

What did not work well:

- External disruptions: Changes in start dates and access frequency due to security concerns and inclement

weather posed challenges to data collection.

- Technical challenges: Equipment selected for reptile sampling proved ineffective, requiring adjustments in sampling techniques.
- Limited community engagement: Efforts to reach the broader community included a newspaper article and television interviews at the project's outset, and a note in the Gibraltar Ornithological & Natural History Society's 'Nature News' magazine.

If done again:

- Continuous liaison: Maintain ongoing communication with authorities to promptly address changes in security circumstances and obtain necessary permissions.
- Stakeholder involvement: Engage with the MOD directly from the project planning phase and involve them as a project partner.
- Enhanced community engagement: Explore additional methods such as community forums and targeted communication campaigns to increase stakeholder participation.

Recommendations:

- Thorough planning: Develop detailed work plans, budgets, and communication strategies for project success.
- Flexibility: Anticipate and plan for unforeseen challenges, adapting project design as needed.
- Collaboration: Partner with local entities to leverage expertise and ensure long-term project success and sustainability.

## Section 3 - Project Finance (Essential)

### Project Expenditure

Project Spend (indicative) since last Annual Report	2023/24 Grant (£)	2023/24 Total actual Darwin Plus Costs (£)	Variance %	Comments (please explain significant variances)
<b>Staff Costs</b>	██████████	██████████	█	<i>No Response</i>
<b>Consultancy Costs</b>	██████████	██████████	█	<i>No Response</i>
<b>Overhead Costs</b>	██████████	██████████	█	<i>No Response</i>
<b>Travel and Subsistence</b>	██████████	██████████	█	Overseas visitors unable to attend (see short narrative summary below)
<b>Operating Costs</b>	██████████	██████████	█	Fuel budgeted for field trips was not utilised.
<b>Capital Items</b>	██████████	██████████	█	Camera traps were more expensive than originally budgeted for when the application was written.
<b>Others</b>	£0.00	£0.00	0	<i>No Response</i>

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Total

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## Please provide a short narrative summary on project finances.

In our initial budget we outlined ██████ to spend on travel and accommodation etc for Prof James Russell (New Zealand) to visit Gibraltar, attend a CoP in person and carry out some fieldwork with the team. However, it was not possible for schedules to align. Some of this money has therefore been utilised to cover some additional expenses under staff costs and overhead costs, with the rest remaining unspent.

## Section 4 - Contribution of Project to Darwin Plus Programme Objectives

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Please select up to **one** indicator that applies within **each group/indicator list (A, B, C, D)** and report your results for that indicator in the text box underneath. If you do not have relevant results to report for any of the indicators in a particular group, you can leave them blank.

Please also submit some form of evidence (above) to demonstrate any results you list below, where possible.

### Group A: Capability and Capacity - Core Darwin Plus Standard Indicators (select one)

Unchecked **DPLUS-A01: Number of people from key national and local stakeholder groups completing structured and relevant training.**

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Unchecked **DPLUS-A02: Number of secondments or placements completed by individuals of key local and national stakeholders.**

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Unchecked **DPLUS-A03: Number of local/national organisations with improved capability and capacity as a result of project.**

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Checked **DPLUS-A04: Number of people reporting that they are applying new capabilities (skills and knowledge) 6 (or more) months after training.**

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Unchecked **DPLUS-A05: Number of trainers trained reporting to have delivered further training by the end of the project.**

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### Group A Indicator Results

Our plan to train DESCCH personnel in biodiversity assessment was infeasible due to site restrictions. However, our project assistant, a local resident, was trained in biodiversity assessment methods and data analyses. To further her skills, we applied for a Darwin Plus fellowship for her. This has now been confirmed.

## Group B: Policies, Practices and Management- Core Darwin Plus Standard Indicators (select one)

Checked	<b>DPLUS-B01: Number of new/improved habitat management plans available and endorsed.</b>
Unchecked	<b>DPLUS-B02: Number of new/improved species management plans available and endorsed.</b>
Unchecked	<b>DPLUS-B03: Number of new/improved community management plans available and endorsed.</b>
Unchecked	<b>DPLUS-B04: Number of new/improved sustainable enterprises/ community benefits management plans available and endorsed.</b>
Unchecked	<b>DPLUS-B05: Number of people with increased participation in local communities / local management organisations (i.e., participation in Governance/citizen engagement).</b>
Unchecked	<b>DPLUS-B06: Number of Local Stakeholders and Local Communities (people) with strengthened (recognised/clarified) tenure and/or rights.</b>

## Group B Indicator Results

A biodiversity report and management plan will be completed by the end of 2024. This publication will report on findings and propose conservation measures within the WHF, ensuring the alignment of military exercises with biodiversity protection efforts. Team members will contribute their time to finalise these outputs, post-project completion.

## Group C: Evidence and Best Practices - Core Darwin Plus Standard Indicators (select one)

Checked	<b>DPLUS-C01: Number of best practice guides and knowledge products published and endorsed.</b>
Unchecked	<b>DPLUS-C02: Number of new conservation or species stock assessments published.</b>
Unchecked	<b>DPLUS-C03: New assessments of habitat conservation action needs published.</b>
Unchecked	<b>DPLUS-C04: New assessments of community use of biodiversity resources published.</b>
Unchecked	<b>DPLUS-C05: Number of projects contributing data, insights, and case studies to national Multilateral Environmental Agreements (MEAs) related reporting processes and calls for evidence.</b>

## Group C Indicator Results

The primary deliverable and key outcome of our Darwin project is the Biodiversity Report and Management Plan, to be published by the close of 2024. This comprehensive report will serve as a pivotal resource, offering invaluable guidance to stakeholders involved in the conservation and management of the WHF's rich biodiversity.

## Group D: Sustainable Benefits to People, Biodiversity and Climate - Core Darwin Plus Standard Indicators (select one)

Checked **DPLUS-D01 Hectares of habitat under sustainable management practices.**

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Unchecked **DPLUS-D02: Number of people whose disaster/climate resilience has been improved.**

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Unchecked **DPLUS-D03: Number of policies with biodiversity provisions that have been enacted or amended.**

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## Group D Indicator Results

As a result of our Darwin project, we are confident that the habitat in WHF, although relatively small in size, will be effectively protected and its biodiversity significantly enhanced, making a meaningful contribution to Gibraltar's overall ecological well-being.

## Section 5 - Project Partnerships, Wider Impacts and Contributions

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### Project Partnerships

i) The project involved multiple formal partners, each with specific roles and responsibilities throughout the project lifecycle. The University of Gibraltar acted as the lead institution, providing technical expertise in biodiversity assessment and project coordination. The Gibraltar Botanic Gardens (GBG) played a crucial role in providing logistical support and contributing to data collection and analysis. The DESCCH of the Government of Gibraltar provided institutional support and guidance on conservation policies and regulations. Local NGOs and community groups, such as environmental organisations and schools, were also formal partners, contributing to outreach activities, stakeholder engagement, and capacity building efforts.

ii) The Government of Gibraltar, through the DESCCH, actively participated in the project by providing institutional support and guidance on conservation policies and regulations. Government representatives took part in project planning meetings, provided input on project design and implementation, and worked closely with project partners to ensure alignment with government priorities and objectives.

iii) The partnership among the University of Gibraltar, University of Malaga, GBG, DESCCH, and local NGOs facilitated successful project implementation and achieved notable accomplishments. Regular communication and collaboration among partners enabled effective decision-making, problem-solving, and resource-sharing throughout the project. Lessons learned from previous collaborations influenced partnership dynamics, contributing to improved coordination and synergy among partners. The strengths of the partnership included complementary expertise, shared objectives, and mutual respect for each other's roles and contributions. Challenges, such as limited resources and logistical complexities, were addressed through proactive communication, flexibility, and adaptive management strategies.

### Wider Impacts and Decision Making



The project has had a significant impact on decision-making at both local and regional levels, by promoting the inclusion of environmental issues in decision-making processes. One noteworthy outcome is the integration of project findings and recommendations into conservation policies and management strategies. The data collected on flora and fauna abundance, invasive species distribution, and habitat status has provided decision-makers with valuable insights into the ecological importance of the study area and the challenges it faces. This information advocates for more robust conservation measures, such as the renewal of management plans for the site.

In addition, the project's outreach and capacity-building activities have increased awareness about environmental issues among stakeholders, policymakers, and the public. Through community meetings, public lectures, and media coverage, the project has effectively disseminated information on the significance of biodiversity conservation in Gibraltar and the need for sustainable management practices. This heightened awareness has led to a greater understanding of the value of natural habitats and the imperative to protect them for future generations.

Furthermore, the project's collaboration with government agencies, local NGOs, and community groups has fostered partnerships and facilitated dialogue on environmental issues. By involving stakeholders in all processes related to the project, it has built trust and consensus among diverse groups. This collaborative approach has facilitated the integration of environmental considerations into broader policy discussions and decision-making forums.

## Sustainability and Legacy

There are several continuing benefits resulting from the project that contribute to its sustainability and legacy, after this funding ceases. The newly acquired skills and knowledge will enable these individuals to continue monitoring and managing biodiversity in the study area and beyond, ensuring the sustainability of conservation efforts. Moreover, the community outreach initiatives have raised awareness about environmental issues among local residents. This heightened understanding will lead to continued community appreciation and involvement in conservation activities in Gibraltar and increase support for environmental initiatives in the future. Importantly, the review and proposed updates to the management plan for the study area, which will be published at the end of the year, will guide future conservation efforts and habitat management objectives. By incorporating the project's findings and recommendations, the updated management plan will provide a framework for ongoing conservation actions, ensuring the continued protection of biodiversity in the MHF. Partnerships forged during the project, including collaborations with government agencies, NGOs, and local stakeholders, are likely to endure beyond the project's closure. These partnerships have strengthened networks and facilitated information sharing, creating a foundation for future collaborative conservation projects. Darwin project staff may transition to other projects within the University of Gibraltar or partnering institutions, maintaining expertise and momentum. Alternatively, integration into relevant government agencies would ensure sustainability by leveraging established frameworks. Lastly, continuing monitoring and research independently or collaboratively would preserve the project's legacy, contributing to ongoing ecosystem understanding and management.

## Section 6 - Communications & Publicity

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### Exceptional Outcomes and Achievements

Our project represents a major achievement as it is the first baseline study on diverse taxa conducted within a habitat in Gibraltar. Through rigorous ecological assessments and comprehensive data collection, we have gained a solid understanding of the local ecosystem, which will serve as a foundation for future conservation efforts. Our study offers valuable and new insights into the biodiversity, ecological dynamics, and environmental health of Gibraltar's habitat. It will serve as a crucial reference point for ongoing monitoring and management

programmes. Our findings not only contribute to the scientific knowledge base, but also inform evidence-based decision-making and policy development that will protect Gibraltar's natural heritage for future generations. The project represents a significant milestone in the study and conservation of Gibraltar's biodiversity. The comprehensive baseline study conducted on diverse taxa within the Windmill Hill Flat area offers invaluable insights into its ecological dynamics and biodiversity, setting a crucial foundation for future conservation endeavours.

Through rigorous ecological assessments and thorough data collection, we have achieved a greater understanding of the local ecosystem. The ground-breaking study not only expands the scientific knowledge base but also holds profound implications for evidence-based decision-making and policy development aimed at safeguarding Gibraltar's natural heritage.

The findings from the project serve as a cornerstone for ongoing monitoring and management programmes, ensuring that conservation efforts are informed by robust scientific evidence. By shedding light on the intricate interactions between various species and their environment, facilitating a deeper comprehension of the habitat's ecological health and resilience.


An exceptional outcome of the project is the identification of key areas for conservation intervention based on critical biodiversity hotspots and ecological indicators. This targeted approach enables resource allocation and prioritisation, maximising the effectiveness of conservation initiatives.


The emphasis on community engagement and stakeholder involvement fosters a sense of ownership and responsibility towards Gibraltar's natural resources. By actively involving local communities in conservation activities, the project cultivates a culture of environmental stewardship. The project's achievements not only advance scientific knowledge, but also underscore the importance of collaborative conservation efforts in preserving Gibraltar's unique natural heritage.


## **Photo, video or graphic to be used for publicity and communications.**


**Please upload at least one relevant and engaging image, video or graphic that you consent to be used alongside the above text in Defra, JNCC or NIRAS communications material.**

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 [GeckoDPLR11029](#)


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 [BarbaryPartridge1DPLR11029](#)


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 [FoxCamTrapDPLR11029](#)


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 [AchisBeetleDPLR11029](#)


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 [PitfallTrapping\\_LH\\_RG\\_DPLR11029](#)


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 [BarbaryPartridge2DPLR11029](#)


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 [LeslieFieldworkDPLR11029](#)


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 [SnakeDPLR11029](#)


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 [WallLizardDPLR11029](#)

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## Photo, video, and/or graphic captions and credits.

BarbaryPartridge3DPLR11029.jpg - Image of Barbary partridge - Windmill Hill Flats (Gibraltar) - Aaron Baglietto

GeckoDPLR11029 - Image of Moorish gecko - Windmill Hill Flats (Gibraltar) - Philip Stanley

BarbaryPartridge1DPLR11029.jpg - Image of Barbary partridge - Windmill Hill Flats (Gibraltar) - Aaron Baglietto

FoxCamTrapDPLR11029.JPG - Camera trap image of fox near Windmill Hill Flats - Jacob's Ladder (Gibraltar) - Lillianne Hawkins

AchisBeetleDPLR11029 - Achis acuminata beetle near pitfall - Windmill Hill Flats (Gibraltar) - Philip Stanley

PitfallTrapping\_LH\_RG\_DPLR11029 - Lillianne Hawkins and Rhian Guillem carrying out pitfall trapping - Windmill Hill Flats (Gibraltar) - Philip Stanley

BarbaryPartridge2DPLR11029.jpg - Image of Barbary partridge - Windmill Hill Flats (Gibraltar) - Aaron Baglietto

LeslieFieldworkDPLR11029.jpeg - Leslie Linares carrying out fieldwork - Windmill Hill Flats (Gibraltar) - Philip Stanley

SnakeDPLR11029 - Image of False smooth snake - Windmill Hill Flats (Gibraltar) - Philip Stanley

WallLizardDPLR11029 - Image of Iberian wall lizard - Windmill Hill Flats (Gibraltar) - Philip Stanley

I agree for the Biodiversity Challenge Funds Secretariat, Administrator, and/or JNCC to publish the content of this section.

Yes, I agree for the BCFs Secretariat and/or JNCC to publish the content of this section.

Please list any accounts that you would like tagged in online posts here. This can include project pages, partners' pages or individuals' accounts for any of

the following platforms: LinkedIn, Facebook, Twitter, or Instagram.

The following are the University of Gibraltar socials:

Facebook: University of Gibraltar

Instagram: @uni\_gib

LinkedIn: University of Gibraltar

X (Twitter): @uni\_gib

## Section 7 - Darwin Plus Contacts

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**Please tick here to confirm that you have read and acknowledge the BCF's Privacy Notice on how contact details will be used and stored and that you have sought agreement from anyone that you are sharing personal details with us on their behalf.**

I confirm I have read the Privacy Notice and have consent to share the following contact details

### Project Contact Details

Project Contact Name	Prof Julia E Fa
Role within Darwin Plus Project	Project Leader
Email	[REDACTED]
Phone	[REDACTED]
<b>Do you need further sections to provide additional contact details?</b>	<input checked="" type="radio"/> No

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