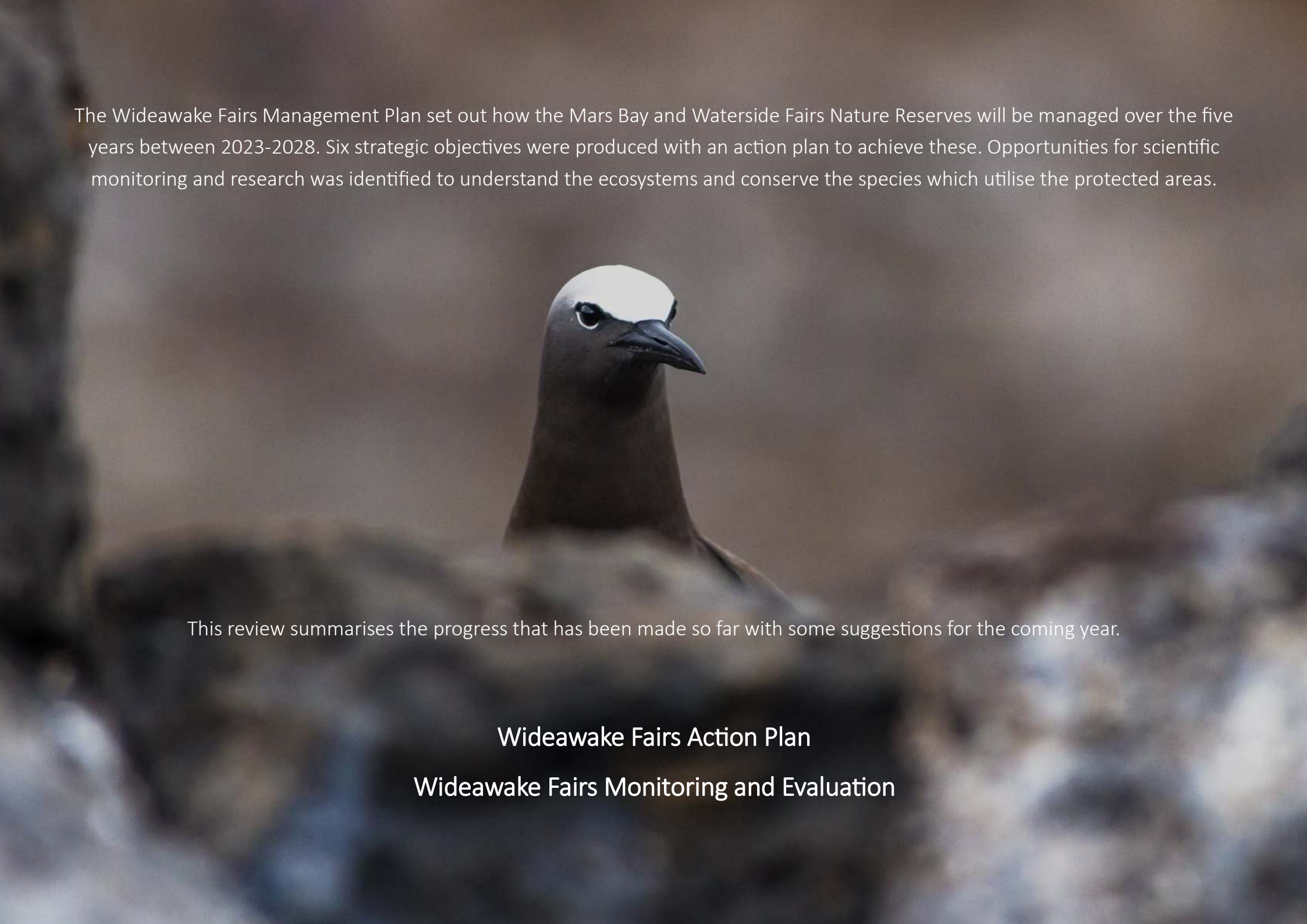


Wideawake Fairs, Ascension Island

Year 1 Annual Review of Management

2023-2024





The Wideawake Fairs Management Plan set out how the Mars Bay and Waterside Fairs Nature Reserves will be managed over the five years between 2023-2028. Six strategic objectives were produced with an action plan to achieve these. Opportunities for scientific monitoring and research was identified to understand the ecosystems and conserve the species which utilise the protected areas.

This review summarises the progress that has been made so far with some suggestions for the coming year.

Wideawake Fairs Action Plan

Wideawake Fairs Monitoring and Evaluation

Wideawake Fairs
Year 1 Action Plan



1. Clearance of invasive flora

Proposed: Removal of key invasive plants from Mars Bay and Waterside Fairs NRs plus 200m buffer zone.

Purpose: Protect the NR and relevant species from the threats of invasive species.

Outcome: No invasive plant species remain on the Nature Reserves or in surrounding buffer zone.

	Description	Target	Year 1 Progress	Year 2 Target												
1a	Monitor the Mars Bay NR for new recruits of Mexican thorn. Visit previously marked trees to check for regrowth. Where necessary, cut and treat with herbicide mix.	100% of NR checked every 3 months. All regrowth treated. Every quarter	<p>Extensive work has been undertaken to remove invasive plants on the Mars Bay NR however regular maintenance is required to ensure these species cannot regain a foothold in the reserve. In 2023/2024 quarterly checks removed several invasive plants from the reserve:</p> <table border="1"> <thead> <tr> <th></th> <th>Small Mesquite</th> <th>Medium Mesquite</th> <th>Large Mesquite</th> <th>Extra large Mesquite</th> <th>Tree tobacco</th> </tr> </thead> <tbody> <tr> <td>Mars Bay NR</td> <td>9</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table>		Small Mesquite	Medium Mesquite	Large Mesquite	Extra large Mesquite	Tree tobacco	Mars Bay NR	9	0	0	0	0	Continue quarterly visits to remove any invasive species growing on the NR
	Small Mesquite	Medium Mesquite	Large Mesquite	Extra large Mesquite	Tree tobacco											
Mars Bay NR	9	0	0	0	0											
1b	Removal of all Mexican thorn, tree tobacco and other invasive plant species from Waterside Fairs NR using best practice mechanical and chemical methods.	No invasive plant species within Waterside Fairs NR by Year 5 Completed by Year 4	<p>The DPLUS134 Project tested best methods to control these species on Ascension. The recommendation was cut stump treated with Turbodor 29 mpa– a Mesquite specific herbicide. Trees were treated as below:</p> <table border="1"> <thead> <tr> <th></th> <th>Small Mesquite</th> <th>Medium Mesquite</th> <th>Large Mesquite</th> <th>Extra large Mesquite</th> <th>Tree tobacco</th> </tr> </thead> <tbody> <tr> <td>Waterside NR</td> <td>34</td> <td>13</td> <td>11</td> <td>3</td> <td>12</td> </tr> </tbody> </table> <p>The DPLUS134 Project also produced a risk assessment for the release of a biocontrol agent – <i>Evippe</i> moth– to assist with managing Mexican thorn. Following a public consultation, <i>Evippe sp. #1</i> was released on Ascension in April 2024. Although not currently released on the Wideawake Fairs, the long-term effects of this biocontrol agent will be advantageous to the NRs.</p>		Small Mesquite	Medium Mesquite	Large Mesquite	Extra large Mesquite	Tree tobacco	Waterside NR	34	13	11	3	12	Remove invasive species growing closest to sooty tern nesting sites and then work outwards towards the NR boundary.
	Small Mesquite	Medium Mesquite	Large Mesquite	Extra large Mesquite	Tree tobacco											
Waterside NR	34	13	11	3	12											

	Description	Target	Year 1 Progress	Year 2 Target										
1c	Removal of all Mexican thorn in 200m buffer zone around Mars Bay NR boundary using best practice mechanical and chemical methods.	No Mexican thorn plants within Mars Bay NR 200m buffer by Year 5	<p>The DPLUS134 Project tested best methods to control Mexican thorn on Ascension. The recommendation was cut stump treated with Turbodor 29 mpa— a Mesquite specific herbicide. Trees were treated as below:</p> <table border="1"> <thead> <tr> <th></th> <th>Small Mesquite</th> <th>Medium Mesquite</th> <th>Large Mesquite</th> <th>Extra large Mesquite</th> </tr> </thead> <tbody> <tr> <td>Mars Bay NR buffer zone</td> <td>13</td> <td>6</td> <td>1</td> <td>0</td> </tr> </tbody> </table>		Small Mesquite	Medium Mesquite	Large Mesquite	Extra large Mesquite	Mars Bay NR buffer zone	13	6	1	0	Continue to remove trees within a 200m buffer zone of the NR
		Small Mesquite		Medium Mesquite	Large Mesquite	Extra large Mesquite								
Mars Bay NR buffer zone	13	6	1	0										
	Year 2													
1d	Removal of all Mexican thorn, tree tobacco and other invasive species in a 200m buffer zone around Waterside Fairs NR boundary using best practice mechanical and chemical methods.	No invasive plants species within Waterside NR 200m buffer by Year 5	No progress- staff resources focused on other areas of the NRs	Continue to focus on areas which have a higher impact.										
		Year 5												



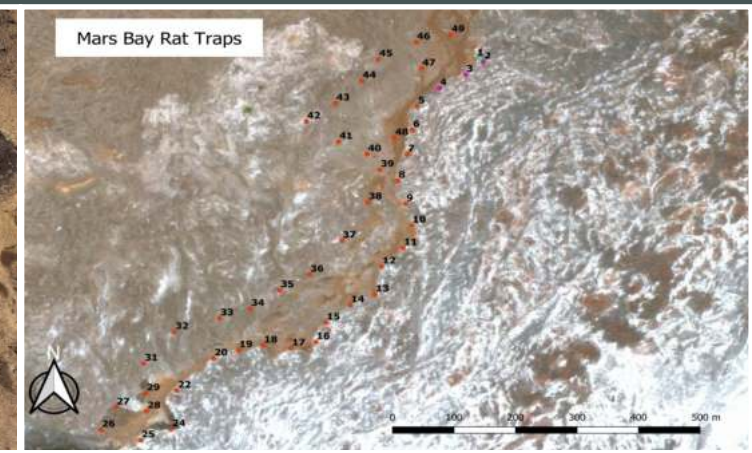
2. Predator control

Proposed: Control the rodent (black rat and house mouse) populations on the Wideawake NRs. Manage domestic cats on island to prevent individuals from turning feral. Manage rabbits so they are unable to graze on Ascension spurge.

Purpose: Protect the Ascension spurge and nesting seabirds from non-native predators.

Outcome: No rodent or rabbit grazing on the Ascension spurge or predation of seabird eggs/chicks. No seabirds killed by cats.

	Description	Target	Year 1 progress	Year 2 target
1	Remove invasive plant species in NRs and surrounding buffer zones, which harbour local rodent populations (see action point 1 for details).	No invasive plant species within NRs and 200m buffer by Year 5	See action point 1 for details	See action point 1 for details
		Completed by Year 5		
2a	Manage the domestic cat population on island to prevent individuals from going feral.	No domestic cats go feral. No feline predation on native wildlife.	In Nov 2023, a domestic cat disappeared from residence in Two Boats Village. Trapping remains ongoing (bottom left).	Continuation of trapping for the missing cat.
		Ongoing	Contact each quarter with cat owners to manage the domestic cat population.	Continue to maintain open communication with cat owners.
2b	Set a network of rodent bait stations around the key seabird colonies on both NRs, only bait in areas where the sooty terns are nesting.	100 rodent bait stations in situ	50 rodent bait stations currently in-situ (bottom right)	Installation of more bait boxes around key seabird colonies .
		Year 1		



	Description	Target	Year 1 progress	Year 2 target
2c	Rodent bait boxes filled fortnightly to reduce local rodent populations. Use a range of bait types (minimum 100g of each bait) to prevent the evolution of resistant in the local population.	<p>No signs of rodent predation on sooty terns during nesting</p> <p>Ongoing</p>	<p>Bait shortage limited re-fills in seabird sites during much of Y1. Changes in budgets in new FY allowed for baiting in the final quarter of Y1.</p> <p>A feasibility study 'Can Ascension be predator free?' (DPL0037) was conducted in January 2024 by Wildlife Management who provided the AIG Environmental Health department with on-site training and advice as well as formal recommendations on how to control the rodent population and price estimation for a complete eradication of invasive vertebrates. The report was finalised in April 2024 (Bell <i>et al.</i> 2024).</p>	Work with Environmental Health department to maintain suitable bait stocks.
2d	If high predation/grazing on seabirds and/or spurge is observed, increase the number of baited boxes around these areas and fill weekly or more frequently if necessary. Additional bait may be hand strewn around the NRs– particularly around Ascension spurge and seabird	<p>No signs of rodent predation on sooty terns during nesting. No signs of rodent grazing on spurge</p> <p>When required</p>	No signs of rodent predation noted on sooty terns or spurge so no actions taken.	Monitor sooty tern and spurge populations for rodent predation and increase bait distribution as required.
2f	Rabbit proof fencing installed around mature spurge plants to protect from grazing. Regular maintenance of the fence is required.	<p>No evidence of rabbit grazing on protected Ascension spurge plants</p> <p>Year 1</p>	<p>In Sept-Oct 2023, a disease went viral through Ascension's feral rabbits, largely reducing the local population.</p> <p>Fencing around spurge restoration site in position and maintained throughout season.</p> <p>No evidence of rabbit grazing on spurge here.</p>	Maintain rabbit proof fencing.

3. Conservation of the Ascension spurge

Proposed: Protect and maintain population of Ascension spurge on Mars Bay NR.

Purpose: Protect the native fauna of the NRs from the impacts cause by invasive non-native species and climate change.

Outcome: Healthy, self sustaining population of Ascension spurge at Mars Bay.

	Description	Targets	Year 1 progress	Year 2 target
3a	Protect and maintain wild population of Ascension spurge providing fencing and shade to individuals where necessary. Resume restoration work in this site to prevent extinction of the Mars Bay population.	Self-sustaining wild population of Ascension spurge in the Mars Bay NR	Increased rainfall in 2023 caused the Mars Bay seed bank to propagate with a significant increase in the number of plants within the NR	Continuation of population monitoring and intervene as described in other targets where deemed necessary
		Ongoing		
3b	Control pest invertebrates found on Ascension spurge. This involves examining individual plants and treating with a species-specific insecticide. Individual pests may be carefully removed and killed on site. During periods of high mealy bug infestation, station ant bait traps strategically around the Ascension spurge sites.	No plant death caused by invertebrates	Plants were treated ~15 times in Y1 for insect invasions.	Treat wild populations of spurge with insecticide where necessary. Add additional ant-traps around the site when required.
		Ongoing		
3c	Maintain a viable stock of cultivated plants at Kew and on Ascension Island. Each nursery should hold 200 plants, 50 specimens from each sub-population. These will provide a potential source for restoration work.	50 Mars Bay spurge plants held in a nursery on Ascension Island and at Kew Gardens	~50 Mars Bay individuals currently in plant nursery on island. Kew Gardens do not possess any Mars Bay spurge plants but store a live culture of seeds.	Maintain a healthy population of Mars Bay spurge in nursery on island.
		Ongoing		
3d	Maintain a viable, ex-situ seed bank at Kew's Millennium Seed Bank and on Ascension Island. Collect, clean, dry and bank seed from all wild Ascension spurge populations.	Viable seed bank of Mars Bay spurge kept on island and at Kew Gardens	Kew's Millennium Seed Bank and Ascension Islands dry lab storage contains >1,000 viable seed from the Mars Bay spurge population.	Regular collection of fresh seed from the Mars Bay spurge population. Appropriate drying and storage as per protocols.
		Ongoing		

	Description	Targets	Year 1 progress	Year 2 target
3e	In collaboration with Kew gardens, produce a propagation document to develop cultivation techniques for the Ascension spurge.	Propagation document produced by end of Year 1	Ascension spurge propagation document produced by Delphine Cabanis and Catherine Gautier, Natural Conservatory of Brest in collaboration with the AIG Conservation Directorate.	Use propagation document to assist with plant nursery work, maintaining a healthy nursery population.
		Year 1		
3f	Draft a memorandum of understanding with the USAF to mitigate damage during future groundwork in spurge habitat.	MoU created by end of Year 3	No action taken	Implement target when suitable
		Year 3		
3g	Ensure all island organisations are familiar with and adhere to strict biosecurity control measures. All importations should be suitably cleaned and treated to prevent entry of non-native flora and fauna. All non-native species should be destroyed on entry to the island to prevent colonisation.	No new established populations of non-native species	Biosecurity measures being strictly adhered to by all island organisations. Importations are suitably cleaned and treated to reduce entry of non-native flora and fauna.	Maintain close relations with all persons importing goods to island to ensure everyone is familiar with and adheres to biosecurity measures.
		Ongoing		



4. Public engagement

Proposed: Organise public engagement events for school children and islanders.

Purpose: Encourage recreational use of the Nature Reserves. Educate islanders about the importance of the NRs and the species found there.

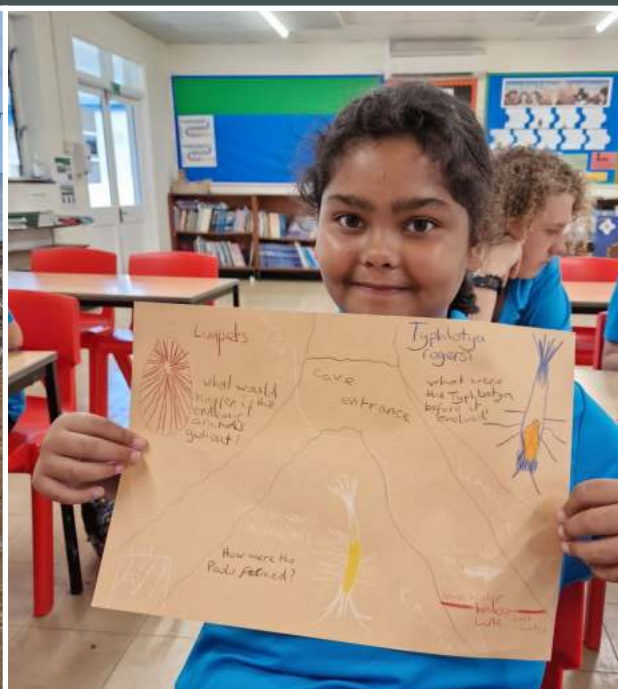
Outcome: Higher engagement between islanders and the Wideawake NRs.

	Description	Target	Year 1 progress	Year 2 target
4a	Guided walk to Shelly Beach with conservation staff	Minimum of 10 people engaged	11 volunteers attended a guided walk to Shelly Beach on 14.10.23 (right)	Guided walk to Shelly Beach organised for islanders
		Annually		
4b	Litter pick organized on the Mars Bay Nature Reserve to remove legacy refuse	Minimum of 10 people engaged	11 volunteers attended a litter pick of Shelly Beach on 14.10.23 (below) Five abandoned trucks from 1980's removed from NR by US Air Force (overleaf)	Organise litter picks on the Mars Bay NR Work with island partners to remove remaining vehicles
		Annually		





4c	Field trip for Two Boats School children to the NRs	Minimum of 2 year groups engaged	Two classroom lessons on seabirds given to Ascension MPA Youth Committee.	Organise field trip for local young people to the NRs.
		Annually	Field trip for Youth Committee to anchialine pools and additional classroom lesson (below left and centre)	
4d	Volunteer opportunities with AIGCFD within NRs. This is open to islanders as well as RAF volunteer days.	Minimum of 20 people engaged.	Eight volunteers joined AIGCFD to perform seabird research on the Mars Bay NR (below right)	Organise volunteer activities with the NRs
		Annually		
4e	Improved signage on the reserves. Removal of old Ascension Heritage Society signs that are showing signs of wear.	New signage erected in reserve	New signage designed and procured in Y1- awaiting delivery	Erect new signage once received
		Year 1		
4f	Create videos, posters, islander articles and social media posts regarding the reserves and the wildlife found there.	Minimum of 10 items on social media regarding Wideawake NRs	A range of videos, articles and posts were generated for social media each few weeks about the Wideawake NRs. This included publishing about scientific research, peer reviewed manuscripts, NR site visits by youth groups and interest stories about the wildlife of the NRs	Generate regular items of interest on social media regarding the Wideawake NRs
		Annually		



4. Reduce disturbance

Proposed: Reduce the impact of human disturbance on the wildlife of the Wideawake NRs.

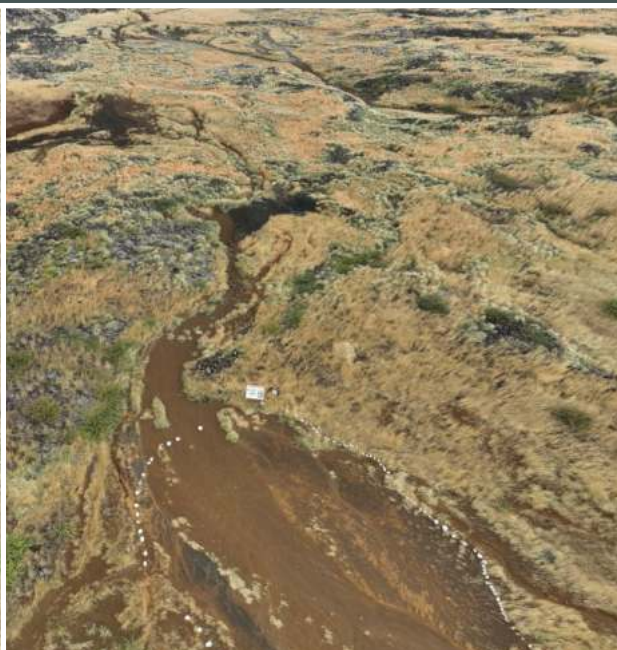
Purpose: Protect the wildlife of the Wideawake NRs and allow these species to thrive.

Outcome: No signs of human disturbance on the wildlife.

	Description	Target	Year 1 progress	Year 2 target
5a.	During periods when sooty terns are nesting, monitor the Shelly Beach access path. If birds nest on the Shelly Beach path or in areas which make it difficult for members of the public to walk around, an application to close parts of the NR may be made to the Administrator.	No eggs or small chicks recorded as trampled or damaged by disturbance.	Access to Shelly Beach closed on 20 February 2024 to protect nesting sooty terns. Reopened on 24 May 2024.	Regular monitoring of the Shelly Beach track and closures made when necessary.
	The path and/or other areas of the NR may be closed by the Administrator under section 10 of the National Protected Areas Regulations 2014 to protect the nesting birds. Closures may be temporary until such times that it is safe to re-open to the public. A public notice will be issued and displayed at the main notice boards.	Annually		



5b	Designated parking areas and tracks clearly marked on the NR.	Designated parking site and tracks in place by Year 1. No Ascension	Designated parking area and track clearly marked on Mars Bay NR with white stones (pictured below). Ascension spurge protected.	Maintain markers and monitor for wash-out caused by rainfall.
		Year 1		
5c	Clearly mark walking routes throughout the reserve to reduce visitors becoming lost and walking through nesting seabirds unnecessarily. Encouragement to follow the route in the Letterbox hiking book to reach desired locations.	No signs of disturbance to seabirds (e.g. areas of abandonment).	No markers erected on the NR	Generate new markers to guide reserve visitors.
		Ongoing		
5d	Develop wildlife watching guidelines for visitors to the protected areas to minimise disturbance.	Wildlife watching guidelines created and distributed. Guidelines made available on government	Wildlife Watching guidelines in production	Finalise Wildlife Watching guidelines.
		Year 1		





Wideawake Fairs
Year 1 Monitoring and Evaluation



Monitoring and Evaluation

Monitoring the natural features of the Protected Areas

Five areas were identified for monitoring the health of the natural features of the Wideawake Fairs. These intend to monitor if the reserve biodiversity is declining because the action plan was not completed or if the action plan was sufficient to achieve the Protected Area objectives.

	Monitoring	Details	Related objective	
A	Monitor the distribution of nesting sooty tern populations.	Record locations of nesting sooty terns on a map with a population estimate of sub-colonies. Convert this into QGIS maps		<ul style="list-style-type: none"> Uncover trends in the use of the NRs spatially and through time Identify areas preferred by nesting terns. Determine what makes these areas more suitable.
B	Monitor changes in prey composition and trophic position of sooty terns	Collect regurgitate samples and a minimum of 20 breast feather samples from adult and juvenile sooty terns for stable isotope analysis.		<ul style="list-style-type: none"> Determine if sooty tern diet changes over time and investigate potential causes of this.

A. Monitor the distribution of nesting sooty tern populations.

The AIG Conservation team perform weekly monitoring of the nesting sooty tern population, recording the nesting sites and producing estimations for the sub-colonies. This was deemed to be an ineffective method of monitoring the tern population and thus a new method was employed in Y1Q4 using an Unmanned Aerial Vehicle (UAV) to collect high-resolution images of nesting birds.




AIG Conservation are working with partners at Oxford Brookes University as part of the DPLUS174: A cross-UKOT camera network to enhance marine predator conservation project. Together, it is hoped to generate accurate population counts for the NR through an Artificially Intelligent computer programme . The programme is in development but will provide an accurate census of the nesting birds each week. Over time, a trend will be established and allow a better understanding of the health of the Ascension sooty tern

population. The data will also be provided to island stakeholders to provide evidence on the nesting locations of the birds which nest close to the Airfield.

B. Monitor changes in prey composition and trophic position of sooty terns.

There are concerns that the Ascension sooty tern diet has changed over the last 100 years with a study published in 2019 by Reynolds et al. suggested that the birds have grown more reliant on nutrient-poor squid.

When handling sooty terns, five breast feathers are removed for stable isotope analysis. A minimum of 20 samples are collected annually to contribute to a long-term dataset on seabird diet. There is almost 10 years worth of samples which will now be analysed and written into a scientific manuscript in the forthcoming year.

	Monitoring	Details	Related objective	
C	Monitor the seabird populations of the Wideawake NRs.	Annual population census of brown noddies and tropicbirds nesting on the nature reserves		<ul style="list-style-type: none"> Establish a baseline population for noddies and tropicbirds in the NR. Annual census will determine trends in the population.
D	Monitor the wild Ascension spurge population	Carry out bi-annual census– once in the warm and once in the wet season to determine annual trends– recording the location of mature and seedling plants.		<ul style="list-style-type: none"> Understand trends in the size and distribution of the wild Ascension spurge population
E	Monitor soil moisture levels	Record the soil moisture levels at a range of depths from surface roots down to tap root (2m). Loggers deployed in areas which are irrigated regularly and in areas which are not watered. Loggers also deployed at other island locations as potential Ascension spurge restoration sites. This		<ul style="list-style-type: none"> Determine the appropriateness of the NR for a long-term sustainable Ascension spurge population. Look for alternative locations on island which may be more suitable for the Ascension spurge to thrive.

C. Monitor the seabird populations of the Wideawake NRS

A number of brown noddies and tropicbirds nest on the NRs. AIG Conservation are working to establish a baseline population for these species for the reserve. This may be possible using the UAV for noddies however additional work may be require to identify tropicbird nests. The ambition is to incorporate this new monitoring in the 2024-2025 breeding season as part of an island-wide census.

D. Monitor the wild Ascension spurge population

The Ascension spurge is thriving around Mars Bay due to the absence of rabbits, and an increase in rainfall in 2023 causing the suitable conditions for the seed bank to regenerate. Much of the population is on the outskirts of the NR however a bi-annual census is

conducted to understand the local Ascension spurge population (mapped overleaf). The number of Ascension spurge growing with the NR are:

	Mature	Seedlings
Sept 2023	122	47
March 2024	189	11

E. Monitor soil moisture levels

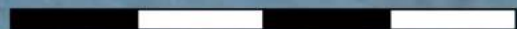
The soil moisture levels are collected around a number of sites on island to assess the suitability of translocating Mars Bay spurge to sites which are more climatically suitable. This is an ongoing legacy from the DPLUS113 project.

Ascension spurge distribution September 2023

Mars Bay Nature Reserve



0 25 50 75 100 m



Ascension spurge distribution March 2024

Mars Bay Nature Reserve



0 25 50 75 100 m



Wideawake Fairs
Year 1 Research



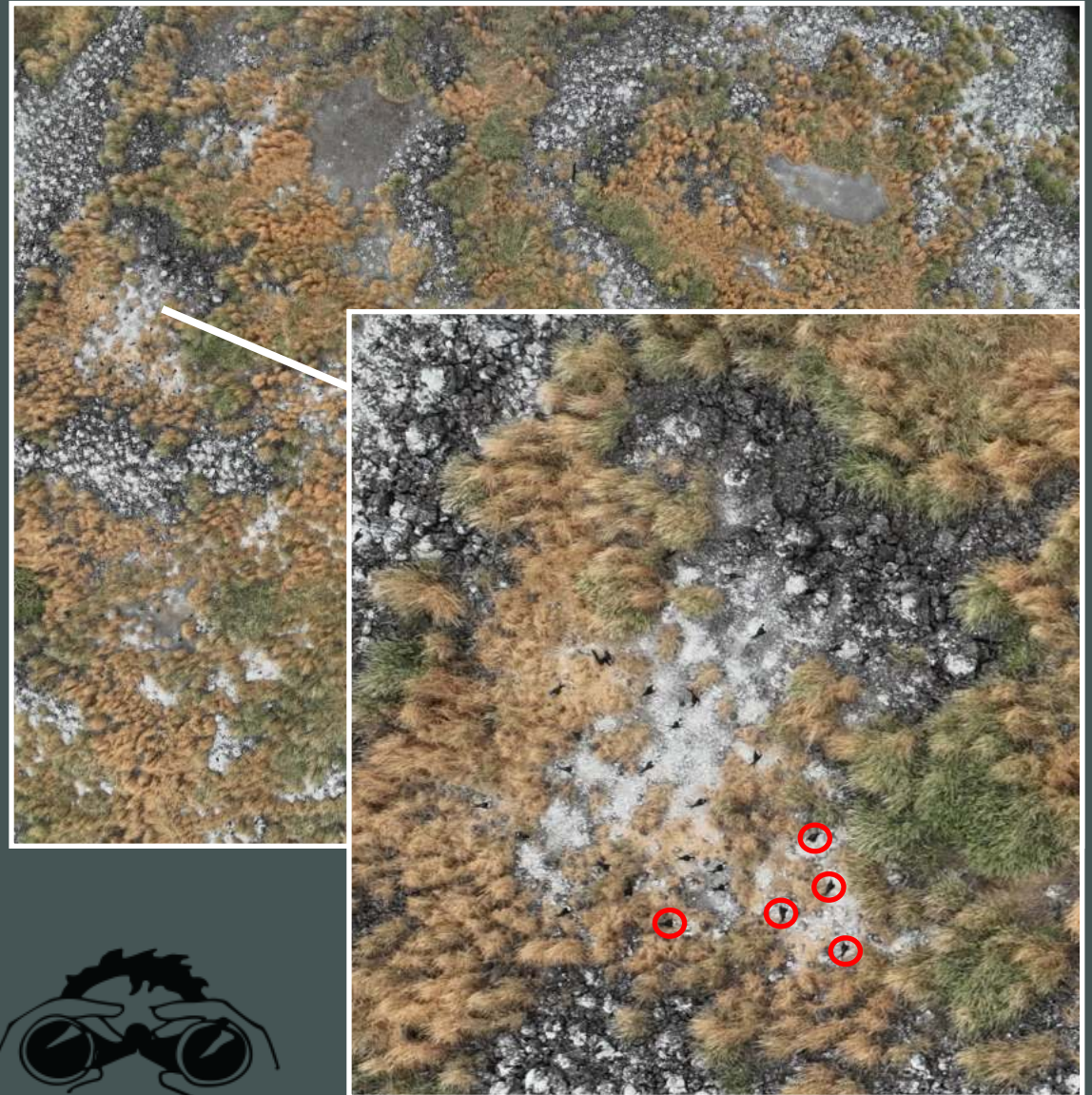
Research

Knowledge gaps prevent the effective management of the Wideawake Fairs NRS. The Management Plan specifically highlighted 16 research opportunities to allow AIG Conservation scientists to understand more about the species of these protected areas and inform conservation management. Some of the research suggested was undertaken in 2023/2024 and the results are described.

A. Determine the population size of the sooty terns nesting on the NRs

After five years of negotiations, AIGCFD are now permitted to fly an Unmanned Aerial Vehicle (UAV) around Mars Bay NR. Unfortunately the Waterside Fairs NR is not an option because it falls within the red flight zone of the airfield.

In the last quarter of Y1, images were collected across the Mars Bay NR (right). These images are shared with project partners at Oxford Brookes University as part of the DPLUS174: A cross-UKOT camera network to enhance marine predator conservation project. This 3 year project aims to develop an Artificially Intelligent programme to produce population counts and to utilise citizen science to help with the modelling. The programme is in development and this method will eventually form the main population monitoring of this species. These surveys will be conducted weekly during nesting periods to generate a regular population census. Annual trends can then be generated and long-term trends identified for the first time for this species.



B. Methods for the control of the invasive flora of the NRs.

The DPLUS134 Project tested and discovered the best methods for controlling invasive species such as Mexican thorn and tree tobacco. The recommendation from this project was cut stump treated with Turbodor 29 mpa– a Mesquite specific herbicide which also works well on tobacco and guava. The results from this project have been published and the methods adopted for all invasive species control.

C. Determine the impacts of pollution on Ascension's seabirds of the NRs

Freshly dead seabirds were dissected to collect stomach samples for plastic analysis (bottom left and right). This was part of DPLUS176. Samples are with project partners at CEFAS in the UK for analysis and will be published as a scientific research manuscript once appropriate.

Feather samples were sent to the University of La Rochelle for mercury contamination analysis. The study by Cusset *et al.* was published in 2023, showing an increase in the mercury accumulation in Ascension's sooty terns over the last 100 years (infographic right).

D. Determine the dispersal of Ascension's seabirds outside of the breeding season

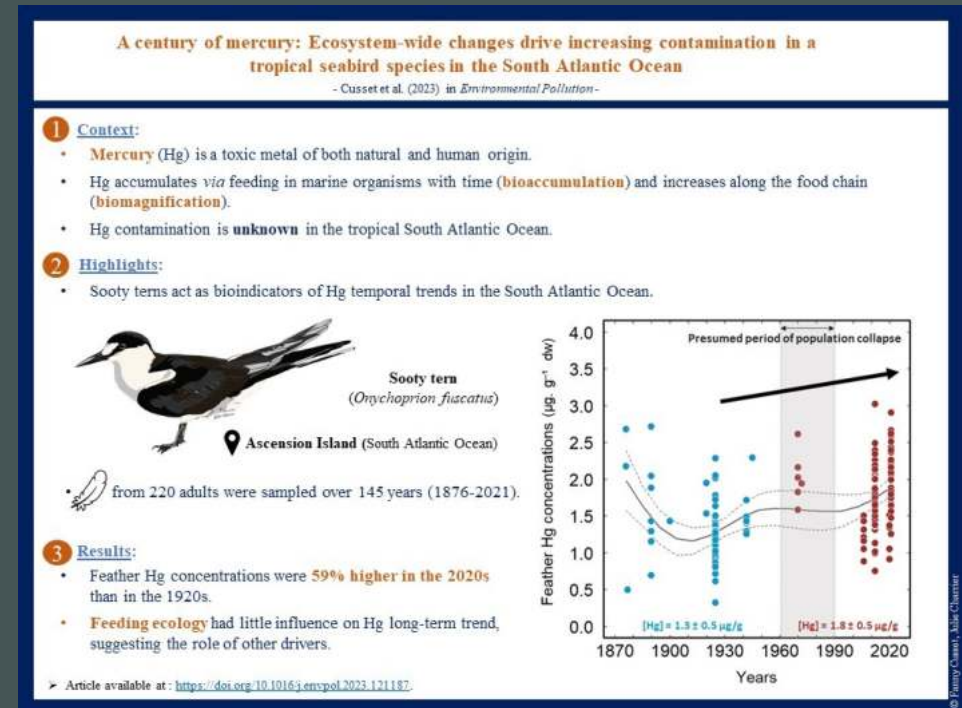
AIGCFD continue to try source satellite tags suitable for use on sooty terns.

E. Estimate rodent population on the NRs

A feasibility study 'Can Ascension be predator free?' (DPL0037) was conducted in January 2024 and a report drafted (Bell *et al.* 2024). The project could not estimate rodent populations however provided the AIG Environmental Health department with on-site training and advice as well as formal recommendations on how to control the rodent population and price estimations for a complete eradication of invasive vertebrates.

F. Assess impact of myna birds on seabird populations

The DPL0037 identified myna birds as a highly invasive species, negatively impacting the sooty tern population. A full eradication feasibility study was undertaken and the report noted that previous works on myna bird control on Ascension showed a bait aversion. With this in mind, a cost estimation of £4million was calculated to control the population of 1,150 birds though would require trials to determine a suitable method of eradication.



G. Predict the impact of climate change on the Ascension spurge

The DPLUS113 project assessed climatic requirements of the Ascension spurge with a two year study of soil moisture monitoring to understand the hydrological constraints on the survival of this species. The detailed relationship between soil moisture and precipitation was identified as an essential part of predicting responses of Ascension spurge to future climate change.

The project trialed assisted migration of Ascension spurge plants to new sites on island which have a better climate for the species. These sites were installed with irrigation systems to assist with plant establishment and have had varying success. Maintaining these trial sites remains ongoing.

H. Assess the potential of biocontrols

The DPL0038 Project: Can biocontrol halt the tsunami of non-native species on Ascension? sought to produce a list of the most damaging pest species on Ascension and to investigate any potential biocontrol agents which may be applicable. A shortlist of 10 targets for biocontrol was identified in November 2023 which included species with promising agents and some which required some further research.

CABI compiled species assessments detailing potential biocontrol options. It was determined that suitable biocontrol agents were not readily available for many of the target species on Ascension. The species assessments however are a useful resource for AIG Conservation as we develop an Invasive Species Action Plan.

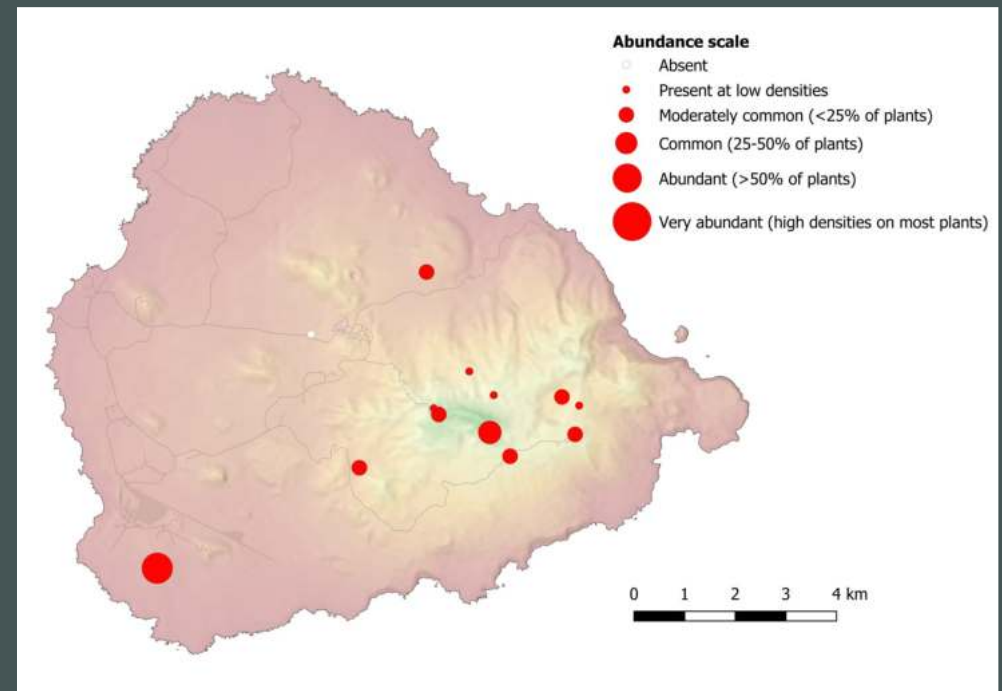
The project assessed the success of previously introduced biocontrol agents for *Lantana camara* with two deliberately released agents still present but only *Teleonemia scrupulosa* still widespread (see right), particularly around the Wideawake Fairs.

I. Assess the potential of biocontrol agents for Mexican thorn

The DPLUS134 Project produced a risk assessment on the release of a biocontrol agent– *Evippe* moth– to assist with managing Mexican thorn. Following a public consultation, *Evippe* sp. #1 was released on Ascension in April 2024. Although not currently released on the Wideawake Fairs NRs, the long-term effects of this biocontrol agent will be advantageous to the reserve, preventing the continued spread of Mexican thorn.

J. Determine the environmental conditions of the anchialine pools

The DPL00013 aimed to discover the environmental conditions of the anchialine pools at Shelly Beach, Mars Bay NR. The report showed that inundation was found to occur occasionally but did not appear to be a significant threat to the anchialine biodiversity. There was no spatial redundancy within the two distinct groups of pools with all connected at high tide.

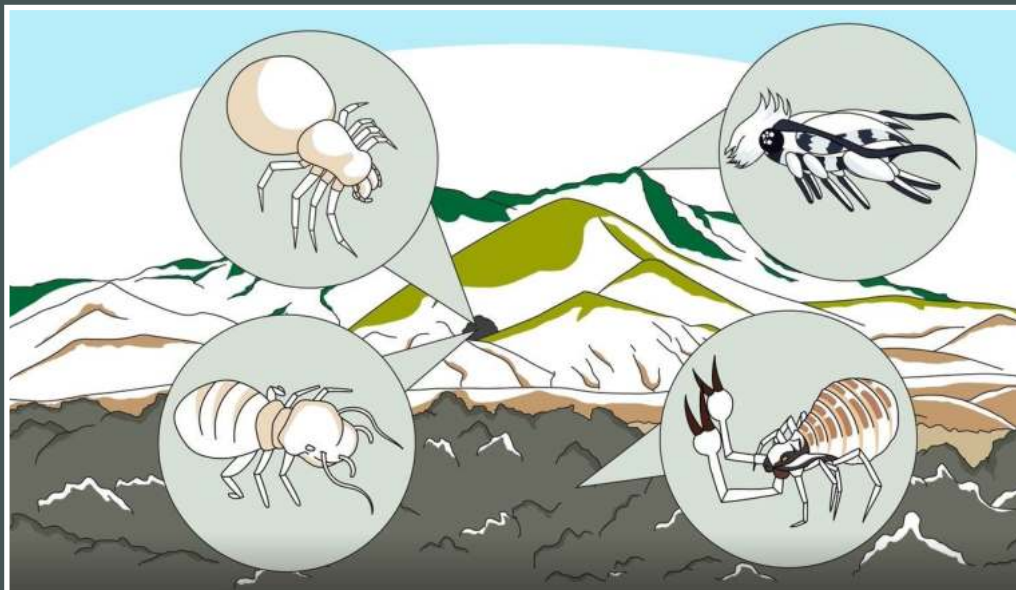


K. Baseline survey of invertebrates in the NRs

An extensive baseline survey was conducted to identify the invertebrates found on the Wideawake Fairs NR. A database with all the species collected was generated as an output from DPLUS135: From Pseudoscorpions to crickets: securing Ascension Island's unique invertebrates.

The study showed that the coastline just to the east of the Waterside Fairs NR was critically important habitat for the endemic scaly crickets with the Fairs showing degraded habitat caused by invasive invertebrates. The higher rodent population within the NR (supported by the sooty terns and invasive plants) further exacerbates the predation pressure on the crickets. Consequently a new NR was created which links the Waterside Fairs in the West to Letterbox NR on the East, following the Southern coast.

To increase awareness of Ascension's invertebrates, an animated video was developed as part of this project. This was shared via social media and will be shown in the waiting lounge at the airhead .



L. Assess the conservation status of the invertebrates found in the anchialine pools.

The status of the invertebrates found in the anchialine pools was assessed and the two species of crustacean were recognized by the International Union for Conservation of Nature (IUCN) as Critically Endangered.

The other three invertebrate species recorded in the pools could not be assessed as they required scientific description which was not possible in the time frame of this project however are being described by the Natural History Museum. Once taxonomic description is completed, the IUCN assessment can be made. As part of the DPL00013 project, new signage describing the anchialine invertebrate species was generated.



M. Identify breeding behaviour and resource/microclimate requirements of *Discophallus* crickets

The DPL0040 project– Ascension Scaly Crickets: Urgent Conservation of a Unique Endemic Genus performed lab trials to understand the temperature, breeding behaviour and diet preferences of the Ascension scaly crickets. The study by Weng *et al.* 2024 found that invasive vegetation on Ascension increases the microclimate temperature to above the preferred temperature of the scaly cricket and identified other areas of conservation concerns including competition from other non-native invertebrates.

N. Identify competitive and predatory threats to *Discophallus* crickets

The DPL0040 project– Ascension Scaly Crickets: Urgent Conservation of a Unique Endemic Genus performed a number of trials to understand the potential threats to the endemic *Discophallus* crickets.

The study by Weng *et al.* 2024 found a higher concentration of scaly crickets in native habitat compared to degraded habitat where invasive vegetation was altering the microclimate temperature.

The endemic *Discophallus* cricket is relatively abundant along the southern coast of Ascension, particularly around the eastern edge of the Waterside NR. Unfortunately rats are abundant in the Waterside Fairs NR, with high populations supported by the seabird and invasive species found here. The study noted a high predation risk by rats in native habitat.

The *Discophallus* crickets are also being out-competed by introduced American crickets, further fragmenting their populations in marginal habitats.

The results from this project indicated that invasive species removal in key sites will greatly impact the population of this endemic cricket (right) however this genus should be regarded as highly threatened.



O. Pseudoscorpion taxonomy

A taxonomy assessment conducted on the pseudoscorpions of Ascension by Sherwood *et al.* 2024 revealed six endemic species, all of which are recognized as being endangered given their habitat restrictions. A new species, *Garypus ellickae*, was described by this study found along the Pillar Bay coastline. This species was not found on the Waterside NR however a government review in 2023 created a new protected area which joins the eastern edge of the Waterside NR to the western edge of the Letterbox NR to incorporate this pseudoscorpion habitat.

P. Tolerance range of inshore marine species

A study by de Mora *et al.* in 2024 modelled the potential impact of climate change on the Ascension Island Marine Protected Area. The study found the MPA region will become warmer, more saline, more acidic and less productive. These changes are likely to negatively impact the ability of the MPA to provide ecosystem services such as healthy ecosystems and healthy fish stocks.

References

- Bell, E.A., Marshall, E.S. and Titterton, L.J. (2024) *A feasibility Study for the Eradication of Invasive Species on Ascension Island, United Kingdom Overseas Territory*. Unpublished Wildlife Management International Technical Report to the Ascension Island Government.
- Chin, W. Y., Wilkins, V. and Sharp, A. (2024) Invasive vegetation encroachment modulates dual threats faced by island-endemic scaly crickets. *Biological Invasions*. <https://doi.org/10.1007/s10530-024-03355-w>
- Cusset F, Reynolds SJ, Carravieri A, Amouroux D, Asensio O, Dickey RC, Fort J, Hughes BJ, Paiva VH, Ramos JA, Shearer L, Tessier E, Wearn CP, Chereil Y, Bustamante P. (2023) *A century of mercury: Ecosystem-wide changes drive increasing contamination of a tropical seabird species in the South Atlantic Ocean*. *Environmental Pollution*. Apr 15;323:121187. doi: 10.1016/j.envpol.2023.121187
- de Mora, L., Galli, G., Artioli, Y., Broszeit, S., Garrard, S. L., Baum, D., et al (2024) Impacts of climate change on the Ascension Island Marine Protected Area and its ecosystem services. *Journal of Geophysical Research: Biogeosciences*, 129, e2023JG007395
- Reynolds, S.J., Hughes, J.B., Wearn, C.P., Dickey, R.C., Brown, J., Weber, N.L., Weber, S.B., Paiva, V.H. and Ramos, J. A (2019) *Long-term dietary shift and population decline of a pelagic seabird— A health check on the tropical Atlantic?* *Global Change Biology*; 1-12
- Sherwood, D., Grignet, V., Harvey, M.S., Sharp, A., Wilkins, V., Ashmole, M. and Ashmole, P. (2024) *David and Goliath: on the pseudoscorpions of Ascension Island, including the world's largest Garypus titanius Beier, 1961, and a new, minute, Neocheiridium Beier, 1932 (Arachnida: Pseudoscorpiones)*. *Natura Somogyienis* 42: 131-150

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