Biodiversity Challenge Funds Projects
Darwin Initiative, Illegal Wildlife Trade Challenge Fund, and Darwin Plus
Half Year Report

Note: If there is any confidential information within the report that you do not wish to be shared on our website, please ensure you clearly highlight this.

Submission Deadline: 31st October 2023

Project reference	28-008
Project title	Restoring the Alaotra Ramsar Watershed - The Breadbasket of Madagascar
Country(ies)/territory(ies)	Madagascar
Lead partner	Durrell Wildlife Conservation Trust
Partner(s)	Alaotra Rano Soa, DREDD, DRAE, Graine de Vie
Project leader	Fidimalala Bruno Ralainasolo
Report date and number	HYR2 2023
Project website/blog/social media	www.durrell.org

Outline progress over the last 6 months (April – Sept) against the agreed project implementation timetable (if your project has started less than 6 months ago, please report on the period since start up to end September).
Although we are not looking for specific reporting against your indicators, please use this opportunity to consider the appropriateness of your M&E systems (are your indicators still relevant, can you report against any Standard Indicators, do your assumptions still hold true?). The guidance can be found on the resources page of the relevant fund website.

Output 1: 12 community nurseries, together producing c.100,000 saplings annually to enable 120Ha reforestation annually within priority zones by project end.
Highlights during the implementation of reforestation activities include the establishment of two community nurseries producing at least 75,000 seedlings. These were used to replace dead plants from the previous year. Y2 had a survival rate of 49% due to prolonged drought and rat invasion. We installed 18km of firebreak around the reforested area, to protect the seedlings from the spread of fires, especially during the dry period from March to October. Eight community surveillance missions or regular patrols were also carried out to identify and mitigate threats to reforested areas. Three fire threats were avoided, and one pastoral livestock activity was prevented.
Output 2: 5km of channels in priority areas are cleared annually of invasive water hyacinth and 75Ha of reed-phragmites are planted by project end, to restore habitat, improve water quality, and increase access to the lake for fishing and ecotourism.
Thirteen hectares of marshland in three localities, namely Vohimenabe, Analanomby and Andrebakely Nord were planted. We also cleared invasive species from 11 hectares of Lake Beanamafaitra in Andilana Sud, with the effective participation of 96 regular participants from the community in this village. We removed the same exotic species from a total of 450m of the canal used by the villagers of Analanomby.

Output 3: Local associations (COBAs) within Alaotra Rano Soa (ARS) are effectively managing 40% of the marsh area with c.300 people representing all 33 associations receiving training by end of project.

The ARS team, in collaboration with the DRPEB and the 4 fishermen's federations, distributed 1,905 cards to 65 fishermen's associations in the 3 ARS zones (Amparafaravola, Tanambe and Ambatondrazaka). To achieve this, 26 awareness-raising missions were carried out by the team, with the aim of convincing fishermen to join a legal structure. The 87 members of the ARS platform were given training in law enforcement. This training was led by the Durrell training team in collaboration with MEDD representatives. Fishing equipment/materials have been purchased but not yet distributed.

Output 4: Approximately 2500 people across 12 villages are supported to derive greater benefits from their agricultural and natural products whilst utilising natural resources more sustainably.

One village (36 beneficiaries divided into 3 FFS groups) was identified for the implementation of the 2023 off-season cultivation activities. In addition, 4 villages were selected for the extension of vermicompost activities. Forty-one FFS groups were evaluated for the 2022-2023 high season campaign in the 12 project villages. The evaluation aims to improve all aspects of the project-beneficiary relationship (seed, inputs, training, etc.). A total of 12 villages (307 beneficiaries in 29 FFS groups) were identified for support for high-season cultivation activities 2023-2024.

Regarding financial empowerment activities, we created 17 new VSLA groups with 256 members (247 are women). Fifteen of these groups (202 members, 144 of them women) received training in financial education.

The Durrell Alaotra team took part in the four-day regional fair in the town of Ambatondrazaka, where all the players operating in the region come together to showcase their expertise in their field. Six beneficiaries of this project took part (2 from groups of women basket-makers, 2 FFS members and 2 from local forestry committees / CFLs). At the beginning of August, one member of the FFS and 1 member of the VSLA FAO Post-capture also took part in the annual Fier-Mada fair in Antananarivo, to exhibit their basketry and agricultural products; to share knowledge and experiences with visitors to our stand; and to create potential partnerships.

Output 5: Understanding of carbon sequestration capacity of Lake Alaotra's watershed, including lake and marsh, is improved to inform development of external investment opportunities for sustainable habitat restoration.

There are currently two students working on a blue carbon study for Lake Alaotra, who undertook fieldwork in September-October 2023., one from the UK's Institute of Zoology, and one within the ESSA (Ecole Supérieur de Science Agronomique) at the University of Antananarivo. With fieldwork complete, they are currently undergoing data analysis and we should receive the results in 2024.

2. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

The biggest problem we've encountered in the last 6 months is the lack of rainfall in almost all the villages where we've been working. We usually carry out off-season farming activities in 4-5 key villages, but unfortunately this year we are only able to do this work in one village where they have access to irrigation equipment.

The lack of rain is also affecting reforestation and marsh restoration activities. On the reforestation sites, we noted an increase in the percentage of dead plants due to the drought (up to 39% in some sites). In addition, the growth rate of seedlings is also affected by the lack of water. These problems affect the number of seedlings which survive, however, the team has a plan to combat the lack of rainfall: for subsequent planting we will soak seedlings before the

rainy season, beginning planting very early, at the very beginning of the rainy season (and ideally without waiting for the official reforestation date, which delays the timeline by weeks) and use an irrigation system in the driest month, only for native species and fruit trees.

To combat poor soil quality, the team decided to continue using fertilisers (organic fertiliser in the form of zebu manure) to improve soil quality and increase the survival rate.

Another factor affecting the survival rate of seedlings is the proliferation of rats (up to 3.4% death rate in some sites). NGO Conservation International (reforestation project in the eastern part of the Lake) have the same problem, which they combat by clearing the areas where the savanna is dense. In order to achieve our objectives, we also plan to implement brush clearing, and increase our nurseries for replanting to ensure the replacement of seedlings eaten by rats. We will make a second evaluation of survival rates and mortality rates at the end of the dry season (month of November).

An extremely dry year has also affected marsh restoration activities. The lack of water is creating more pressure on the marshes by people for agriculture because it's the only place where there's still moisture. Here, the marsh restoration zone and the rice plantation zone are mixed, which generates conflict between VOIs protecting the marshes, and farmers. This problem is exacerbated by a failure in law enforcement, especially in the case of marshland clearance. A large number of reports and complaints from the current 96 CFLs have been drawn up and sent by villagers to the relevant authorities, but given the small number of DREDD OPJs, they are unable to resolve the problems in question in time. In addition, the negative influence caused by corruption and the intervention of politicians aggravates the situation. And finally, the slowness of decision-making and implementation of law enforcement activities has a considerable impact on the environment. However, there have been some arrests made (more details will be provided in AR) and we continue to deploy patrols to the areas most at risk . We may need to support increased numbers of mixed patrols but we will notify BCF if these need to be funded from within the project budget.

3. Have any of these issues been discussed with NIRAS and if so, have changes been made to the original agreement?

Discussed with NIRAS:	No
Formal Change Request submitted:	No
Received confirmation of change acceptance	N/A
Change request reference if known:	

4a. Please confirm your actual spend in this financial year to date (i.e. from 1 April 2023 – 30 September 2023)

Actual spend: ▮▮▮▮

4b. Do you currently expect to have any significant (e.g. more than £5,000) underspend in your budget for this financial year (ending 31 March 2024)?

Yes ☐ **No** ☒ Estimated underspend: £

4c. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a re-budget Change Request as soon as possible. There is no guarantee that Defra will agree a re-budget so please ensure you have enough time to

make appropriate changes if necessary. **Please DO NOT send these in the same email as your report.** **NB: if you expect an underspend, do not claim anything more than you expect to spend this financial year.**

5. Are there any other issues you wish to raise relating to the project or to BCF management, monitoring, or financial procedures?
N/A

If you are a new project and you received feedback comments that requested a response, or if your Annual Report Review asked you to provide a response with your next half year report, please attach your response to this document.

All new projects (excluding Darwin Plus Fellowships and IWT Challenge Fund Evidence projects) should submit their Risk Register with this report if they have not already done so.

Please note: Any underlined **planned modifications to your project schedule/workplan can be discussed in this report but should also be raised with NIRAS through a Change Request. Please DO NOT send these in the same email.**

Please send your **completed report by email** to BCF-Reports@niras.com. The report should be between 2-3 pages maximum. **Please state your project reference number, followed by the specific fund in the header of your email message e.g. Subject: 29-001 Darwin Initiative Half Year Report**

Response to reviewer comments

1. As indicated in AR1, there is very little detailed information on numbers of trees planted and survival rates (against the 100,000 trees/annum target). Although, a coarse resolution map has been produced by the project partners showing the areas planted, it is not possible to verify reforestation success without:

- *High resolution (drone or satellite) spatial imagery (before and after planting)*
- *Data on how many seedlings have been planted at each site and overall;*
- *What proportion of species are exotic and what proportion are native for each site, and;*
- *Comparative survival rates of the species planted at each site.*

Acacia mangium and Melia azedarach should also be monitored for invasiveness. These are exotic agroforestry species, and not ideal for planting in watersheds.

We have set up 30 permanent monitoring plots to study the survival rate of seedlings for each site. In addition, next week, the drone team will join us to make flybys over each reforested area to have an initial situation time T0 and at the end of Y3 for the final time T1. Therefore, currently, we do not have drone imagery pre-planting, however we have the following drone pictures after planting:

A total of 168,346 seedlings were planted over 164ha during Y2, the following table tells us the number of planted seedlings for each site:

	Nom d'espèce	Quantity	Planted (%)	Types
Morarano	*Acacia*	2096	15.78	Exotique
	Eucalyptus citriodora	1200	9.04	Exotique
	Trachylobium verrucosum	3 353	25.25	Native

	Albizia lebbeck	2 741	20.64	Native
	Intsia bijuga	2 789	21.00	Native
	Mespillus germanica	1102	8.30	Fruitier
	TOTAL	13 281		
Vohimenakely	*Acacia*	9 292	27.96	Exotique
	Albizia lebbeck	19 997	60.18	Native
	Trachylobium verrucosum	2 835	8.53	Native
	Intsia bijuga	1106	3.33	Native
	TOTAL	33 230		
Vohimenabe	*Acacia*	16 027	31.97	Exotique
	Eucalyptus citriodora	6 164	12.30	Exotique
	Albizia lebbeck	10 253	20.46	Native
	Trachyllobium verrucosum	6 945	13.86	Native
	Intsia bijuga	4 236	8.45	Native
	Mespillus germanica	3 710	7.40	Fruitier
	Citrus limon	2789	5.56	Fruitier
	TOTAL	50 124		
Vohibola	*Acacia*	19 337	40.88	Exotique
	Eucalyptus citriodora	11 037	23.33	Exotique
	Albizia lebbeck	6 078	12.85	Native
	Trachylobium verrucosum	6 451	13.64	Native
	Intsia bijuga	2 032	4.30	Native
	Mespillus germanica	1 741	3.68	Fruitier
	Citrus limon	624	1.32	Fruitier
	TOTAL	47 300		
Vohitraivo	*Acacia*	12 741	52.19	Exotique
	Eucalyptus citriodora	2 987	12.24	Exotique
	Albizia lebbeck	5 694	23.33	Native
	Trachylobium verrucosum	2 247	9.20	Native
	Intsia bijuga	742	3.04	Native
	TOTAL	**24 411**		

The table below shows the comparison of survival rates of the species planted at each site. The survival rate of the species was remarkable in Vohibola, Vohitraivo and Vohimenakely, because the rainfall in these areas is much higher than in Morarano:

	Morarano (%)	Vohimenakely (%)	Vohimenabe (%)	Vohibola (%)	Vohitraivo (%)
Acacia	70	81	73	87	86
Eucalyptus citriodora	50	None	50	80	50
Trachylobium verrucosum	58	56	41	66	60
Albizia lebbeck	54	56	39	60	60
Intsia bijuga	25	20	15	30	30
Mespillus germanica	10	None	10	10	None
Citrus lemon	None	None	20	12	None

Regarding exotic species, to ensure the sustainability of our reforestation project, we must consider the community's requests for utility species, because we use their land (community or private) for planting. Nevertheless, we will develop strategies to avoid the invasion of these species. No *Melia azedarach* is being planted under this project, but it has been identified in the reforestation plan for the watershed as a priority utility species for community members.

According to the table below, the survival rate of exotic and native species varies from site to site, this could be since the soil quality is different. Drought and change in climatic conditions particularly affected native species; at present, soils are poor and rainfall is very low.

	Exotique		Native	
	Morte (%)	Vivante (%)	Morte (%)	Vivante (%)
Vohitraivo	13.75	86.25	39.00	61.00
Vohibola	12.25	87.75	34.00	66.00

Vohimenabe	26.92	73.08	59.92	40.08
Vohimenakely	18.17	81.83	44.00	56.00
Morarano	29.75	70.25	41.75	58.25

2. During Y2, 44 ha of Cyperus madagascariensis and Phragmites communis were planted, exceeding the 25 ha target, and compensating for the underachievement of the 25 ha target in Y1. The AR states that survival rates were high in the majority of villages. However, there are no detailed data on number of plants planted or their survival rates. Although a coarse resolution map is presented showing where the reeds were planted, there is no detailed spatial data showing the planted areas. As with the reforestation target above, it is not possible to verify reforestation success without:

- ***High resolution (drone or satellite) spatial imagery (before and after planting)***
- ***Data on how many plants have been planted at each site and overall;***
- ***Comparative survival rates of the species planted at each site.***

The summary of marsh replanted under the project is below.

Darwin Project year	Amount of marsh replanted (ha)
Y1 (OCT 2021-MARCH2022)	19.35
Y2 (April 2022-March 2023)	43.695
Y3 (April 2023-30 Sep 2023)	13
Total marsh replanted	**76.045**

A summary of the plants survival rates of the 44ha planted by end of Y2 is included below:

Village	Area planted (ha)	Number of plants	Survival rate	Notes
Analanomby	29.56	73,900	High	
Ambohidavakely	3	7,500	Medium	
Vohitsara	7.551	18,878	Very low	Affected by drought: rain delay
Andraba gare	1.168	2,920	High	Planting during the Bandro festival, in the Bandro park
Angoja	2.416	6,040	Low	Affected by fire
TOTAL	**43.695**	**109,238**		

…and 3. Drone imagery (before and after clearing) could be used to verify clearing of water hyacinth.

For the operation to remove invasive alien plants from the lakes, our field assistant only took before and after photos using a digital camera, not a drone. We didn't use a drone because 1. we haven't mastered the mapping function yet, 2. we need two trained people (pilot and co-pilot/observer) to use the drone. 3. the availability of the drone team and the removal of the exotic plants didn't coincide.

However, to make a comparison, we could use Google Earth to capture the photo beforehand, and send the drone team on a mission for the image afterwards. We will investigate this at the end of the project.

It's almost the same problem and method for restoring marshes.

Solution: Strengthen the capacity of the team in the use of drone mapping function. Two team members could assist in the use of the drone during the removal of exotic plants or restoration of marshes, and the drone team could be scheduled to be present during these activities (on mission).

We have drone videos of clearing which we will be happy to share by WeTransfer or similar.

4. A new drone-based thermal imagery methodology for counting gentle lemurs was tested in Y2, and will be fully implemented in Y3. However, it will be difficult to compare this against the 2019 baseline as it will entail use of a different (new) methodology. It is not clear how the two methodologies will be comparable or reconciled?

We cannot compare the two survey types (old and new), as the old methodology did not provide an accurate enough population estimate to be used as a baseline. The drone methodology was designed with the view of obtaining an accurate population estimate for the Alaotran gentle lemur, which had never been done before due to the difficulties in surveying from the ground. Whilst we had planned to be able to undertake a baseline using the drone methodology under this project, the lemurs proved more difficult to study than anticipated due to their cryptic nature in the reedbeds and due to their reaction to the drone, plus the issues in organising drone trials in Madagascar 2020-2022. It is unlikely we will repeat ground counts of the lemurs before project end, but the new methodology will be the methodology we use going forward, so we can send this data post-project, and we will have a more accurate population estimate of the Alaotran gentle lemur , which is critical for conservation of the species.