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PATROL SERVICES IN PROTECTED AREAS IN MOZAMBIQUE – REPORT #2

Supporting the Policy Enabling Environment for
Development (SPEED)

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SUMMARY

In June 2020, BIOFUND established the *Emergency BIO-Fund* to channel financial resources to public and private sector protected areas in Mozambique and to enable the basic operation of law enforcement activities during the period when there were no tourism revenues due to the COVID-19 pandemic, as well as to provide some replacement revenues to local communities in and around protected areas.

Phase I of the fund was initiated in July 2020¹ initially for private operators (as they depend entirely on tourism revenues) through donations to cover 50% of the salaries of rangers for a period of 3 months. Given the evolution of the pandemic nationally and globally, in September 2020, the BIOFUND Board decided to extend the support to cover 100% of salaries, as well as for operational costs of public and private conservation areas up until the end of June 2021. With a total value of \$2.25 Million (USD), Phase I had initial funding of \$1 Million USD from the BIOFUND Endowment (released in June 2020), \$1 Million USD from the Government of Sweden through the MozBio2/World Bank project, and \$249,000 USD from USAID/SPEED+. With a committed team, internal financial capacity, rapid disbursement mechanisms and new funding partners, BIOFUND managed to timely spread the funding support to many protected areas.

However, because COVID-19 continued to have a negative impact on tourism flows in 2021, in April 2021 the Board of BIOFUND approved the extension of the program until December 2021. During the extension period or Phase 2 (July - December 2021), the European Union provided funding of 750,000 Euros and immediately afterwards, it again had the reinforcement of 249,000 USD from USAID through SPEED+ that were channeled to the Conservation Areas under public and private management. Under the Emergency fund, USAID/SPEED+ Project is therefore contributing with approximately 32% of the total cost of the program for Phase 2 of the fund.

In summary, this project was successful in attracting private sector entities, maintaining employment in remote rural areas in the wildlife economy, and keeping these businesses solvent during an incredibly difficult year in which virtually no normal revenues were possible. This has only been possible with the support and assistance of BIOFUND and partners to make this project a reality to support biodiversity conservation in Mozambique.

Details on project impact and main results are described in the following chapters.

THE EMERGENCY BIO-FUND

The main objective of the Emergency BIO-Fund was to provide financial support to conservation areas managed by public and private entities in Mozambique, allowing basic patrolling and protection activities to be maintained during a period when there were no revenues from tourism due to the COVID-19 pandemic.

This is because BIOFUND was able to quickly spread this support to a large number of private and public conservation areas in the country. The program has shown a great impact on the network of conservation areas, as described below:

¹ <http://www.biofund.org.mz/en/biofund-ensures-that-11-9-million-hectares-of-biodiversity-are-protected-until-june-2021-in-the-countrys-conservation-areas/>

- The fund covered 100% of the rangers' salary costs and operational costs in 13 (thirteen) private conservation areas, 11 (eleven) public conservation areas and 2 (two) community conservation areas;
- The fund reached 63% of the country's conservation area network;
- Disbursed until December 2021, for the conservation areas 2 941 326 USD (two million nine hundred and forty-one thousand three hundred and twenty-six dollars).

The geographic priorities of the Emergency BIO-Fund were set according to the needs of the conservation sector, with beneficiaries operating throughout the country in both terrestrial and marine conservation areas (Figure 1). The program included 26 beneficiaries from public and private conservation areas, of which ten (10) are supported by USAID/SPEED+, with 2 209 300 hectares of the 13 139 211 hectares of the program's total.

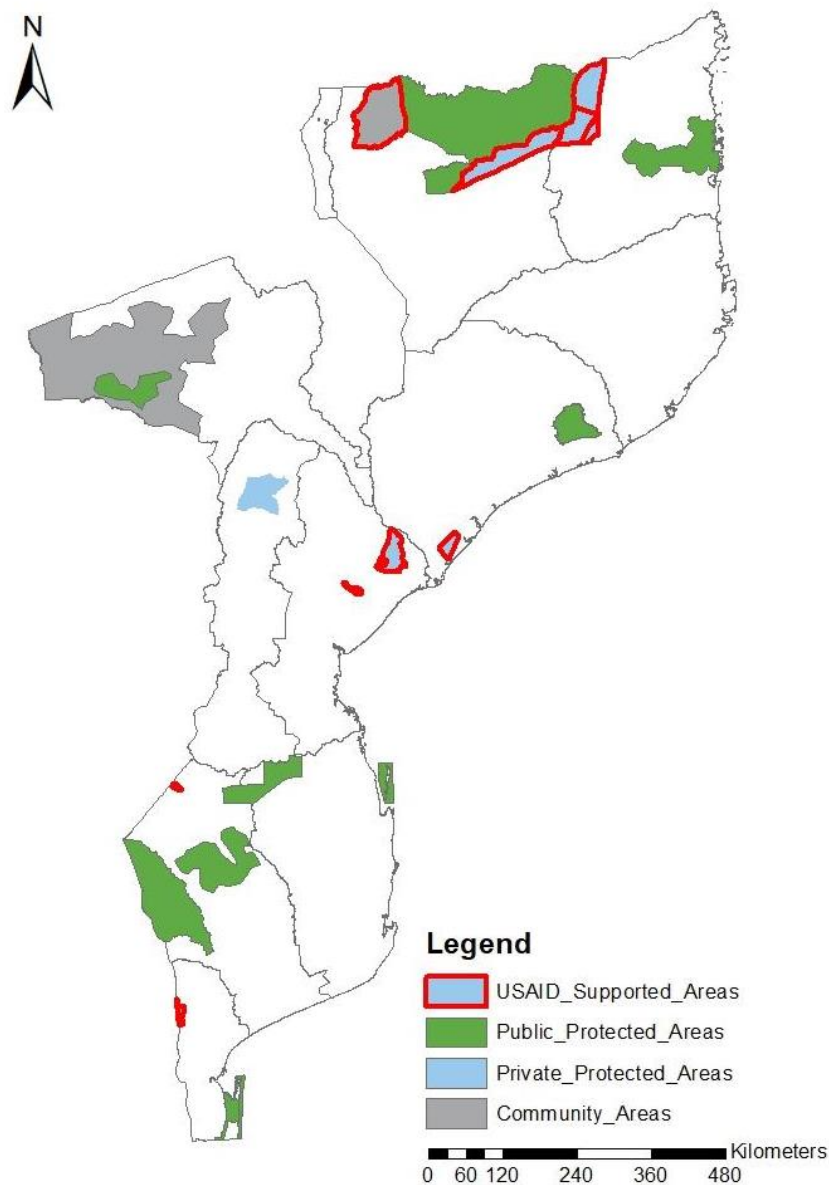


Figure 1. Beneficiaries of the Emergency BIO- Fund, ©BIOFUND, 2022.

Following the *inception report* submitted on August 13, 2021, it was decided that USAID/SPEED+ funds should support the patrolling activities of the following operators: Kambako Safaris Lda (blocks L8, L9 and Coutada Nicage), Luwire - Lugenda Wildlife (block L7 of Niassa Special Reserve), Sabie Game Park, Promotur/ZDS Zambezi Delta Safaris (Coutada Oficial 11), Muthemba Safaris Lda, and Dombawera Mashambanzou & Ngalamo, Mahimba Game Farm, Mozambique Safaris and Chipanje Chetu (Lipilichi). This report principally presents patrolling data and information related to these selected geographical areas, however additional information from other protected areas is available for consultation (Please see appendix 2 and 3).

PATROLLING

The *Emergency BIO-Fund* team during the life of the program extension continued to work closely with the beneficiaries to collect evidence of the patrol work, including submission of the spreadsheet designed by ANAC (see Appendix 1) for enforcement purposes carried out in these conservation areas. In addition, there were photographs and video recordings, including success stories regarding the conservation activities that were carried out in the field.

The number of patrols conducted under the BIOFUND Emergency Fund was 4422 between July to November 2021 in the (10) ten conservation areas corresponding to USAID priority sites, as described in Table 1 below. Given that BIOFUND proposed to deliver to USAID under this contract about 2442 patrols, this report shows that BIOFUND had already exceeded the agreed number of patrols by the end of September 2021.

Table 1. Patrolling report for the period of July – November 2021.

No	Protected Area	Hectares (ha)	No. of employees in law enforcement ³	No. Women Supported	Number of patrols per month ²					
					J'l'21	A'g'21	S'p'21	O't'21	N'v'21	TOTAL
1	Kambako Safaris (Blocos L8, L9 e Coutada Nicage)	504 900	35	2	199	256	297	226	178	1156
2	Muthemba Safaris	10 000	11	1	111	78	53	91	103	436
3	Coutada Oficial 11	192 800	22	0	150	150	150	150	150	750
4	Sabie Game Park	30 000	16	0	65	63	63	63	63	317
5	Dombawera, Mashambanzou e Ngalamo Safaris	30 000	30	0	43	46	46	45	45	225
6	Chipanje Chetu (Lipilichi)	650 000	86	1	13	17	16	16	21	83
7	Mozambique Safaris	302 000	30	0	29	40	32	32	28	161
8	Mahimba Safaris	35 000	25	0	26	31	33	30	30	150
9	Massingir Safaris	10 000	6	0	206	210	240	210	210	1076
10	Luwire – Lugenda Wildlife Reserve	444 600	71	1	24	30	5	4	5	68
Total		2 209 300	332	5	866	921	935	867	833	4 422
Cumulative totals					866	1787	2 722	3 589	4 422	

As a result, in an attempt to harmonize and normalize patrolling efforts, BIOFUND has put together an interpretation of patrol numbers from each of its private sector beneficiaries, which essentially

²Note that information regarding kilometres patrolled is not available for consultation for the majority of the conservation areas operators, so it's not reported here for all our beneficiaries.

³ Includes all workers who benefit from the support (Rangers, guards, drivers, etc.)

translates the generic “One Patrol” into the much more exact metric, “man-hours of patrolling effort”. This has been done using the following logic:

No	Conservation Areas (Private)	Definition of 1 Patrol	Average patrol hours/patrol	Rangers per patrol	Number of rangers per patrol (average)	Man-hours/patrol (average)
1	Kambako Safaris (Blocos L8, L9 e Coutada Nicage)	Corresponds to non-fixed hours patrol, which can vary from 3 to 8 hours day/night	6	normally 4 people are on each patrol	4	24
2	Muthemba Safaris	One round trip to the field for approximately 4 hours	4	normally 5 people are on each patrol	5	20
3	Coutada Oficial II	One round trip to the field for approximately 4 hours	4	normally 6 people are on each patrol	6	24
4	Sabie Game Park	One round trip to the field for approximately 2 hours	2	normally 12 people are on each patrol	12	24
5	Dombawera, Mashambanzou e Ngalamo Safaris	Corresponds to non-fixed hours patrol, which can vary from 3 to 8 hours day/night	6	normally 10 people are on each patrol	10	60
6	Chipanje Chetu (Lipilichi)	Corresponds to multi-day (avg. 5d) patrols and are normally conducted on foot. Aprox 8h/dia	40	normally 11 people are on each patrol	11	440
7	Mozambique Safaris	Corresponds to multi-day (avg 5d) patrols and are normally conducted on foot. Aprox 6h/dia	30	normally 6 people are on each patrol	6	180
8	Mahimba Safaris	Corresponds to non-fixed hours patrol, which can vary from 3 to 8 hours day/night	5	normally 12 people are on each patrol	12	60
9	Massingir Safaris	One round trip to the field for approximately 2 hours	2	normally 3 people are on each patrol	3	6
10	Luwire – Lugenda Wildlife Reserve	Corresponds to multi-day (avg. 5d) patrols and are normally conducted on foot. Aprox 8h/dia	40	normally 12 people are on each patrol	12	480

It is clear from this table that there is a massive difference between the different areas. Using this method, we are then able to translate the patrolling efforts counted in number of patrols into the more precise measurement of man-hours of patrolling effort. This gives us the following table:

Table 2. Estimated Man-hours of Patrols in USAID Priority Areas

No	Conservation Areas	No Rangers (Total)	Hectares (ha)	Total Number of Patrols	Total Man-hours of patrolling
1	Kambako Safaris (Blocos L8, L9 e Coutada Nicage)	18	504 900	1156	13872
2	Muthemba Safaris	11	10 000	436	5232
3	Coutada Oficial II	19	192 800	750	9000
4	Sabie Game Park	15	30 000	317	3804
5	Dombawera, Mashambanzou e Ngalamo Safaris	20	30 000	225	5625
6	Chipanje Chetu (Lipilichi)	48	650 000	83	23240
7	Mozambique Safaris	25	302 000	161	14490
8	Mahimba Safaris	12	35 000	150	2250
9	Massingir Safaris	5	10 000	1076	8608
10	Luwire – Lugenda Wildlife Reserve	59	444 600	68	16320
	TOTAL	232	2 209 300	4 422	201,084

This method reduces the problem of comparison between the different areas and allows us to do further analysis.

Conservation Areas	No Rangers (Total)	Hectares (ha)	Average age of rangers	TOTAL Patrol Hours	Avg km2/ranger	Avg hrs/ranger/month
Kambako Safaris (Blocos L8, L9 e Coutada Nicage)	18	504,900	40	27744	281	308
Muthemba Safaris	11	10,000	46	8720	9	159
Coutada Oficial II	19	192,800	37	18000	101	189
Sabie Game Park	15	30,000	42	7608	20	101
Dombawera, Mashambanzou e Ngalamo Safaris	20	30,000	43	13500	15	135
Chipanje Chetu (Lipilichi)	48	650,000	43	36520	135	152
Mozambique Safaris	25	302,000	33	28980	121	232
Mahimba Safaris	12	35,000	39	9000	29	150
Massingir Safaris	5	10,000	41	6456	20	258
Luwire – Lugenda Wildlife Reserve	59	444,600	38	40800	75	138

SMART

It is important to highlight that in some of these conservation areas such as Chipanje Chetu (Lipilichi), Luwire - Lugenda Wildlife Reserve, the law enforcement missions are also registered by SMART (Spatial Monitoring and Reporting Tool). This system allows tracking and monitoring of the rangers in terms of hours, kilometers traveled, and the days patrolled, facilitating quality control of the data collected during patrols, which includes geographic coordinates, photographs, and time indication of arrests or incidents. In addition, the devices illustrate the area covered during patrols and the areas that were.

As an example, looking the following Luwire map and table for September 2021. This information is extracted from their SMART (Spatial Monitoring and Reporting Tool) system - Figure 2.

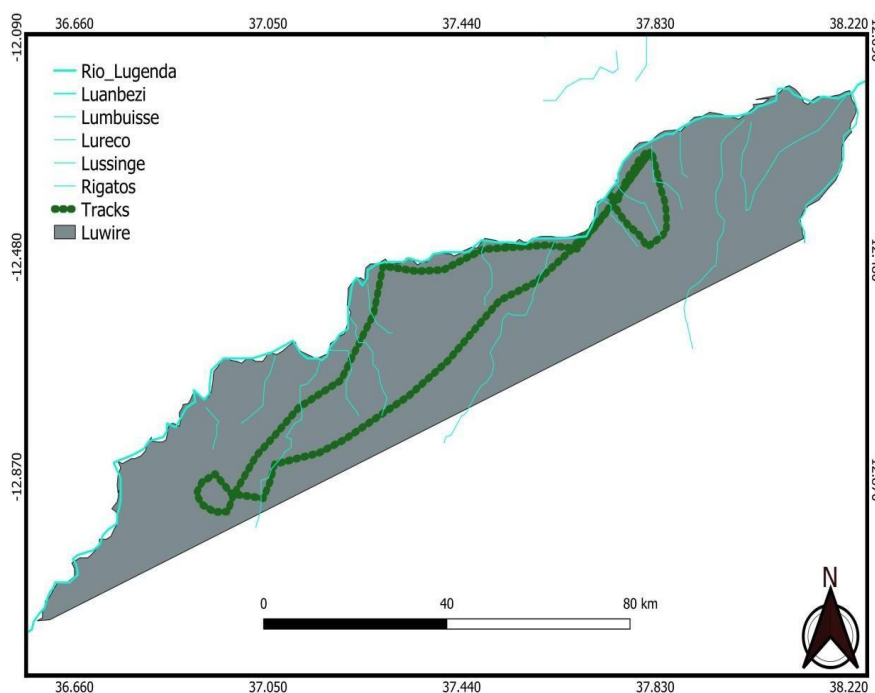


Figure 2. Luwire SMART map from 1st of September – 30 of September 2021

Figure 2 displays the locations visited by the rangers during September and the spot demarcation done by SMART, specifically along the Lugenda River, Luanbezi, Lumbuisse, Lureco, Lussinge, Rigatos. Below are the results of the enforcement effort by the rangers (see Table 3 and 4).

Tabela 3. Scout Patrol Effort by foot and vehicle

Patrol Type	Nr of Patrols	Nr of Days	Nr of Nights	Km	Nr of Active Patrol Hours	Nr of scouts
Patrol Effort by foot	4	26	22	313.2	1571.25	26
Patrol Effort by vehicle	1	1	0	121.5	28.35	6

Tabela 4. Patrols by individual Scout in Luwira

Names	Nr of Patrols	Nr of Days	Nr of Nights	Km	Nr of Active Patrol Hours
Abdul Amimo Sekeni	2	16	14	311.2	601.17
Abondio Natukumane	2	16	14	311.2	601.17
Agostinho Issa Buanahere	1	10	9	247.32	373.41
Alberto Suber Staube Napua	1	10	9	247.32	373.41
Benjamim Iassine Ntila	1	10	9	247.32	373.41
Carlindo Agostinho	1	10	9	247.32	373.41
Calisto António	1	10	9	247.32	373.41
Celiano Francisco Sardinha	2	16	14	311.2	601.17
Cesário Rachide Muachali	2	16	14	311.2	601.17
Fábio Joaquim	1	10	9	247.32	373.41
Francisco Salmo	1	10	9	247.32	373.41
Fernando Boaventura Sila	1	10	9	247.32	373.41
Fortunado Júlio	1	10	9	247.32	373.41
Gabriel Daniel	1	10	9	247.32	373.41
João Alfredo Quifaro	2	16	14	311.2	601.17
Luís Robate Alberto	2	20	18	313.2	601.17
Mendes Ferrao	2	20	18	313.2	601.17
Miguel Inacio Miguel	2	16	14	311.2	601.17
Mounise Pauline	2	16	14	311.2	601.17
Mustafa Weremo	1	10	9	247.32	373.41
Neves Antonio Linge	1	10	9	247.32	373.41
Patrício Paulo Botomane	1	10	9	247.32	373.41
Pedro Ndala Mussa	1	10	9	247.32	373.41
Tome Saraiva Carlos	1	10	9	247.32	373.41
Victor Murani Tomo	2	20	18	313.2	601.17
TOTAL	35	322	287	6,827.80	11,612.85

As presented in Table 3 and 4 above, we can see that although Luwira reports only 5 patrols in September 2021, it represents over 11,000 man-hours of effort. During a field visit in June 2021, our team found that enforcement is done mostly on foot, and/or using vehicles and motorcycles and

rangers, following specific missions outlined by the enforcement leader based at Luwire camp. This is actually considerably higher than we are calculating, due to the fact that SMART registers time out of basecamp, and therefore counts 24hrs per day, whereas in our calculations we prefer to count only the time they are patrolling, that is, 8hrs per day.

The positive enforcement results can be explained by the fact that they use the SMART tool for enforcement planning and monitoring based on cross-referencing terrain and satellite data and are also engaged on an ongoing basis with training the rangers with techniques to combat poaching and wildlife conflict zones.

AGE

This table 5 gives the age range of the workers, note only that the workers in the USAID priority areas are shown. Roughly two-thirds of those receiving support in USAID areas are between the ages of 27 and 46.

Class	Age range of workers	Number of people
1	[17-26]	31
2	[27-36]	92
3	[37-46]	136
4	[47-56]	50
5	[57-66]	14
6	[67-76]	9
TOTAL		332

Table 5. Age Range in Priority Areas for USAID

The age of the rangers is one of the factors that is noted as an influence on their ability to undertake long patrol trips in the field. As an example, in Dombawera, Mashambanzou and Ngalamo Safaris the average age of the 30 existing rangers is 43 years, the same number of rangers is seen in Mozambique Safaris with an average age of 33 years (Table 6). The results of the enforcement and patrolling of these areas, show that the patrolling effort is higher for the Mozambique Safaris with rangers of lower age compared to the Dombawera, Mashambanzou and Ngalamo safaris.

Table 6. Estimated Man/ hours/Patrols and Average Age of rangers in USAID Priority Areas

No	Conservation Areas	No Rangers (Total)	Hectares (ha)	Average age of rangers	TOTAL Man hours of patrolling
1	Kambako Safaris (Blocos L8, L9 e Coutada Nicage)	18	504 900	40	13872
2	Muthemba Safaris	11	10 000	46	5232
3	Coutada Oficial II	19	192 800	37	9000
4	Sabie Game Park	15	30 000	42	3804
5	Dombawera, Mashambanzou e Ngalamo Safaris	20	30 000	43	5625
6	Chipanje Chetu (Lipilichi)	48	650 000	43	23240
7	Safaris de Moçambique	25	302 000	33	14490
8	Mahimba Safaris	12	35 000	39	2250
9	Massingir Safaris	5	10 000	41	8608
10	Luwire – Lugenda Wildlife Reserve	59	444 600	38	16320

In talking to some operators, they said that the older rangers are usually people who have experience in the job and many of them have had opportunities to perform their duties in other conservation areas and the fact that they have participated in several poacher capture operations has fortified their ability to work autonomously and create initiatives in some ambush actions, in addition to having maturity and the role of mentor for the younger rangers. On the other hand, managers say that younger rangers have better physical ability to perform large operations in difficult conditions and that they therefore favor having these on their work teams.

PATROLS RESULTS

Beneficiaries of the *Emergency BIO-Fund* have also reported very good results from anti-poaching operations including operation to collect traps from poachers, apprehensions, follow up of processes to the court in most of the cases in collaboration with local authorities and local communities (Table 7).

Table 7. Number of traps reported by the Protected Areas

No	Conservation Areas	No. of spring/snare traps (with wire rope, wire, and Nylon cable)
1	Kambako Safaris (Blocos L8, L9 e Nicage da Reserva Especial do Niassa)	1064
2	Muthemba Safaris	30
3	Coutada Oficial II	0 ⁴
4	Sabie Game Park	21
5	Dombawera, Mashambanzou e Ngalamo Safaris	274
6	Chipanje Chetu (Lipilichi)	165
7	Safaris de Moçambique	24
8	Mahimba Safaris	277
9	Massingir Safaris	0
10	Luwire – Lugenda Wildlife Reserve	12
TOTAL		1867

As already mentioned, the *Emergency BIO-Fund* has been an important contribution to support protected areas patrolling work in Mozambique and despite the challenges of lack of personnel and capacity these areas have been very proactive in sharing information from daily patrolling work.

Below are some photographs of the law enforcement and patrol work carried out in these areas:

⁴ Not reported yet



Figure 3. (A) and (B) Dead animals confiscated from poachers, and drying racks destroyed in ©Coutada Oficial 9, 2021



Figure 4. (C) e (D) Buffalo found in trap ©Muthemba Safaris, 2021

During the period Emergency BIO-Fund support, at Dombawera, Mashambanzou and Ngalamo Safaris over 1000 snare traps were deactivated. The managers of this conservation area assume that each trap would easily capture and kill a minimum of 1 animal if left in the wild, which equates to 1000 animals of various ages being killed during the period in question (Figure 5).



Figure 5. Traps found in Dombawera, Mashambanzou and Ngalamo Safaris during the program.
©Grant Taylor, 2021

In Sabie Game Park the *Emergency BIO-Fund* has had multiple benefits as it has helped to keep anti-poaching operations in full force and to keep wildlife protected from any potential risks, especially the white and black rhinos that are constantly threatened by poachers' attempts. Like the other conservation areas supported, the emergency fund helped maintain jobs and income for several families, including local communities, providing them with an alternative means of survival, so that they do not participate in poaching activities.

MONITORING AND COMMUNICATION

Since the creation of the Emergency BIO-Fund the BIOFUND team has developed a variety of communication materials to disseminate the relevance of these protected areas and the materials have been shared on the BIOFUND website⁵ and Facebook account⁶.

⁵ <https://www.biofund.org.mz/projects/bio-fundo-de-emergencia/>

⁶ https://web.facebook.com/pg/Biofund-108658210532828/about/?ref=page_internal

Figure 7. Communication materials produced under the programme, ©BIOFUND, 2021

As a way to ensure greater interaction with the beneficiaries, as well as to learn about the opportunities and challenges that they face in their daily lives in the midst of crisis, the Emergency BIO-Fund team conducted monitoring visits to 12 (twelve) beneficiaries including: Sabie Game Park, Mágoè National Park, Tchuma Tchato, Massingir Safaris, Muthemba Safaris, Luwire (Block L7 of REN), Niassa Special Reserve, Banhine National Park, Zinave, Pomene National Reserve, Marromeu and Coutada II (Table 8) where it proceeded to collect current data on management of the areas, administrative and financial capacity among other aspects.

The monitoring visits provide an excellent opportunity to understand the local dynamics in each area, the conservation work, and community engagement activities. BIOFUND collects financial information and documents the results of these visits for internal purposes, but the team also explores the opportunity to collect audio-visual materials, including photographs and videos of wildlife, rangers, managers, and local communities.

Date	Topic/Purpose	Type of consultation (e.g., meeting, workshop)
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29-07-20	BIOFUND launch of the Emergency BIO-Fund at BIOFUND office in collaboration with AMOS (Coutada 11) and ANAC	Press conference
09-09-20	Monitoring visit to Sabie Game Park – Maputo province	Field visit and meetings
28/09/20 – 03/10/20	Monitoring visit to Mágoè National Park, Tchuma Tchato Community Conservation Area and Safaris of Mozambique – Tete province	Field visit and meetings
16-10-20	Meeting with Jumbo Moore from KAMBAKO Safaris at BIOFUND office	Work meeting
17-10-20	Meeting with Derek Littleton from Luwire at BIOFUND office	Work meeting
11-11-20	Meeting with Grant Taylor at BIOFUND office	Work meeting
27-11-20	Meeting with Levy Muthemba from Muthemba Safaris	Work meeting
03-12-20	19° Session of Board of Directors of BIOFUND	BIOFUND members meeting
07/12/20 – 11/12/20	Monitoring visit to Massingir Safaris and Muthemba Safaris – Gaza province	Field visit and meetings
29-04-21	21° Session of Board of Directors of BIOFUND	BIOFUND members meeting
18/06 - 26/06/2021	Monitoring visit to Luwire – Lugenda Wildlife Reserve - Niassa	Field visit and meetings
27/07 - 03/08/2021	Participation of the International Day of the Guardians of Wildlife in the Niassa Special Reserve -Niassa	Press conference and field visit
10/10 - 17/10/2021	Monitoring visit to Banhine National Park, Zinave National Park and Pomene National Reserve – Gaza, Inhambane	Field visit and meetings
15/11 - 19/11/2021	Monitoring visit to Coutada 11 - Marrromeu, Sofala	Field visit and meetings

Table 8. List of monitoring visits and meetings with relevant stakeholders



Figure 8. (G) Monitoring visit to Zinave National Park; (H), (I), (K) (L), (M), (N) Monitoring visit to Luwire, (J) Visit to CII, ©BIOFUND,2021

In July 2021, BIOFUND participated in the celebration of the International Day of the Forest and Wildlife Rangers and disseminated the results and impacts of the program at an exhibition in Mbatamila, headquarters of the Niassa Special Reserve (REN) (see Figure 9). This exhibition had the special participation of the President of the Republic, the Minister of Land and Environment, the Governor and the Secretary of State of Niassa, the Director General of the National Administration of Conservation Areas (ANAC), the Chairman of the Board of Directors of BIOFUND, representative of the Mozambican Association of Safari Operators (AMOS) and other individuals from the conservation sector. At the international level, the event was attended by the Minister of Devolution and Arid and Semi-Arid Lands of the Republic of Kenya, representing the President of the Republic of Kenya, Uhuru Kenyatta.

At this event, among other highlights, the results of the Emergency BIO-Fund were very visible, and several of the beneficiaries of the program were among the 5 Rangers of the Year, selected due to their role and bravery in daily activities.



Figure 9. (O), (P),(Q) and (S) BIOFUND Participation in the International Day for Wildlife Guardians in the Niassa Special Reserve -Niassa

CHALLENGES AND OPPORTUNITIES

- This fund made an extremely valuable contribution to protected area operators who were facing a severe crisis to maintain a minimum patrolling activity during the extreme events of the COVID-19 pandemic (when there was no revenue from tourism), with this support the operators of these areas created a good relationship with BIOFUND ensuring access to support to improve tools and monitoring conservation activities.

- The emergency fund helped maintain the employment of rangers and support staff in the conservation areas, providing an extremely valuable social contribution to the local communities.
- The emergency fund has shown that community involvement brings positive results as it provides a connection to the conservation areas. Many operators, through the operational costs paid by the program, have chosen to involve community members in the rehabilitation of access roads through cash for work, which has conditioned a reduction in the number of poaching cases and community members have become informants of incidents for these areas. For this reason, we believe that funding this component is crucial to achieving conservation gains and improving livelihoods.
- Collecting patrol data and reporting it in a harmonized way across the conservation sector at the national level remains a major challenge for operators and BIOFUND, however, our team has continued to work on training operators and harmonizing this information for internal monitoring and donor purposes. For this reason, BIOFUND has decided to systematically put all monitoring and patrolling data submitted by conservation areas under the Emergency BIO-Fund into PHC (software used for project management) so that it can serve as a basis for other projects and/or purposes.
- *Emergency BIO-Fund* proved its worth and was able to fill a key niche in helping the tourism and conservation sector survive the pandemic. However, the pandemic has not yet come to an end due to the emergence of new variants and travel bans in some countries, the pandemic has encouraged some of the operators to look for other alternative sources such as carbon credit programs, local tourism, etc. BIOFUND is playing a helpful intermediary role in this process;
- On a more strategic level, in terms of supporting the biodiversity conservation sector in the future, BIOFUND has also become significantly more involved with the private sector operators, and have also provided a much deeper understanding of the private sector role to the Foundation. As a result, we will continue to work to develop more programs in this area. The partnerships developed in the emergency have already resulted in a number of young Mozambican professionals being placed in the private protected areas as interns under BIOFUND's PLCM Program, as well as providing the impetus to initiate a larger role for BIOFUND in mobilizing impact investments in the conservation sector;
- We strongly suggest that it would be very important for USAID to continue to play a key role in working with private sector conservation areas. This is a niche that many, if not most, other development partners have not been involved in, as they prefer to work through non-profits. USAID has always been a strong supporter of the private sector, and we reaffirm the importance of that sector for biodiversity. The private sector manages over 60% of the area that is formally protected in Mozambique, and if they are not adequately encouraged to continue to do so, then an enormous amount of biodiversity loss will be at risk in the country.
- A strategic approach that was focused on the private sector could also be addressed then in a long-term systematic matter, which is exactly what the conservation sector requires. Biodiversity is a long-term intervention, and it is best served by working with a long-term institution, rather than short term ad hoc project management units.

FINANCIAL NOTE

As mentioned above, the current contract only covers the period July - December 2021. Therefore, the total number of patrols performed under this contract is a cumulative number of 4422 patrols between July and end of November 2021 for designated USAID priority areas (December numbers are still incomplete from many areas and so have not been included in this report).

Under the contract, with a value of 81.9 USD per patrol, the total value of services provided during this period is \$200,000 since BIOFUND proposed to deliver to USAID about 2442 patrols under this contract, this report shows that BIOFUND has already exceeded the agreed number of patrols by November 2021. To date, we have only submitted invoices covering \$25,000.

Table 9. Contract Summary

Item Number	Item Name	Description/Specifications	Quantity	Unit Price	Total Price
1	Inception Report	Outlines the approach, work plan, tasks (# of patrols, landscapes, km coverage, etc.), deliverables, chronogram, and M&E method – include a geographic priority setting and a screening rationale for the beneficiaries (private, public, or both).	1	\$25,000	\$25,000
2	Activity Report: Private Areas All Geographies	Field patrols fulfilled will be captured in an Activity Report documenting patrol services in each geography, including M&E data (map, incident report, etc. as outlined in SOW) and brief situational overview for each geography; payment tied to the actual number of patrols completed, up to the maximum proposed.	Maximum estimated # of patrols 7500 For USAID 2442 patrols	\$81.89	\$200,000
3	Exit Report	Exit Report that consolidates all activity deliverables and provides reflection and recommendations for how USAID can continue support CWT in private reserves.	1	\$24,000	\$24,000
4	VAT	PUBLIC BENEFIT ENTITY	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
GRAND TOTAL IN MZN.					MZN 14,940,000
GRAND TOTAL IN UNITED STATES DOLLARS					\$249,000

Appendix I: BIOFUND Monitoring and Table and List Of Protected Areas Supported By The Emergency Fund. Note: USAID Priority Sites Are Included

ANAC on the other hand collects a much more detailed set of data as follows:

Table 10. ANAC law enforcement Indicators

Indicador/mês			
Recursos	Actividade fiscalização	Material confiscado	Observações (animais vivos)
No. Fiscais (total)	Patrulhas a pé (no)	Armadilhas de mola	Tartarugas Marinhas
No. Fiscais efectivos (Médio)	Patrulha de carro	Armadilhas de laço	Golfinhos
No. Fiscais Comunitários	Patrulha motorizada	Armas (total)	Dugongo
No. Fiscais Marinheiros	Patrulha Mista	Arma Ak47	Cudos
No. Guardas	Distância percorrida (km)	Semi-automática	Oribis
Postos fixos de fiscalização	Patrulha aérea (h)	Arma .458	Búfalos
Viaturas 4x4 operacionais	Patrulha de Barco (h)	Arma .375	Elefante
Quadriciclos operacionais	Patrulha de bicicleta (km)	Calibre 12	Rinoceronte
Barcos operacionais	Dias de Patrulha	Munições apreendidas	Leão
Motorizadas operacionais	Horas Homem Patrulha	Armas Brancas (Lanças/mombas e catanas	Leopardo
Tractores	Horas Homem Postos Fiscalização	Picaretas e pás	Pangolim
Armas operacionais (total)	Homens Dia (em patrulha)	Machado	Jiboia
Armas AK47	Horas de patrulha	Moto-serras	Facocero
Armas .375	Emboscadas (no)	Bacias de mineração	Outros
Armas .458	Fiscais envolvidos	Baldes Mineração	
Armas 30.06	Fiscais comunitários envolvidos	Geradores	
Armas Cal 12	Controlo de estrada (no)	Viaturas	
Armas 7.65	Infracções Registadas (autos de notícia)	Tractores	
Armas.223	Autos de Notícia	Motorizadas	
Armas 7.65	Multas aplicadas	Bicicletas	
Conflito Homem/Fauna Bravia	Multas pagas	Barcos	
Incidentes de conflito reportados	Valor das multas (x1000)	Canoas	
Incidentes de conflito respondidos	Valor das multas pagas (x1000)	Redes de Caça	
Horas /Homem Conflito HFB	Acampamentos destruídos	Redes de Pesca	
No. Pessoas Feridas	Caçadores ilegais	Rede mosquiteira usada na pesca	
No. Pessoas Mortas	Caçadores nacionais ilegais	Apetrechos de mergulho	
No. Machambas destruídas	Caçadores estrangeiros ilegais	Outros apetrechos de pesca	
Área total afectada	Pescadores ilegais	Corno de rinoceronte (Unidades)	
Quantidade produtos destruídos (kg)	Pescadores ilegais Nacionais	Corno de Rinoceronte (kg)	
Animais mortos	Pescadores ilegais Estrangeiros	Marfim (unidades)	
Animais afugentados	Mergulhadores ilegais	Marfim (kg)	
Animais abatidos	Garimpeiros nacionais ilegais	Dentes de leão e leopardo	
Insumos usados	Garimpeiros estrangeiros ilegais	Unhas de leão e leopardo	
Combustível usado (total)	Madeireiros ilegais Nacionais	Carne (kg)	
Munições usadas	Madeireiros ilegais Estrangeiros	Peixe (Kg)	
Munições usadas AK47	Carcaças de animais	Peles	
Semiautomáticas	Carcaças de elefante	Ossos	

Munições usadas .458	Carcaças de Rinoceronte	Madeira em Toros (no)	
Munições usadas.375	Carcaças de leão e leopardo	Madeira em Tabuas (no)	
Munições usadas 30.06	Carcaça de Tartaruga	Madeira Total (m3)	
Munições usadas 7.65	Carcaça de Dugongo	Dinheiro (x1000)	
Calibre 12	Outra carcaça marinha	Celulares	
Kits de ração	Abutres		
Pilhas para Lanterna (no)	Outros		

Table II. List Of Protected Areas Supported by The Emergency BIO-Fund

	Beneficiários do Programa	Designação	Administrador/Gestor
Sector Público	Parque Nacional de Maputo	Parque Nacional	Miguel Gonçalves
	Parque Nacional do Arquipélago de Bazaruto	Parque Nacional	Armando Nguenha
	Reserva Nacional de Niassa	Reserva Nacional	Simões Augusto Zalembe
	Parque Nacional de Mágoè	Parque Nacional	Raimundo Matusse
	Parque Nacional de Quirimbas	Parque Nacional	Dinis José Macia
	Reserva Nacional de Pomene	Reserva Nacional	Abilio Raimundo Tamele
	Parque Nacional de Banhine	Parque Nacional	Abel Nhabanga
	Parque Nacional de Gilé	Parque Nacional	João Juvêncio Szala
	Parque Nacional de Limpopo	Parque Nacional	Francisco Pariela
	Parque Nacional de Zinave	Parque Nacional	António Abacar
	Tchuma Tchato	Área de Conservação Comunitária	Marcos Meq De Almeida
Sector Privado	Dombawera Safaris	Fazenda do Bravio	Grant Taylor
	Mashambanzou Safaris	Fazenda do Bravio	Grant Taylor
	Mahimba GameFarm	Fazenda do Bravio	Grant Taylor
	Ngalamo Safaris	Fazenda do Bravio	Grant Taylor
	Kambako Safaris Lda (L8&L9 e Nicage)	Blocos da Reserva de Niassa	Jumbo Moore
	Luwire-Lugenda Wildlife Reserve	Bloco da Reserva de Niassa	Derek Littleton
	Sábie Game Park Lda	Fazenda do Bravio	Alexande McDonald
	Coutada Oficial nº 11	Coutada Oficial	Pacheco Faria
	Muthemba Safaris	Fazenda do Bravio	Levy Muthemba
	Ponta Chemucane	Companhia de Turismo de Chemucane	Jonito Timbane
	Safaris de Moçambique	Área de Conservação Comunitária	Simon Rodger
	Coutada Oficial nº 09	Coutada Oficial	Holly Rosier
	Massingir Safaris	Fazenda do Bravio	Scot Lawrence
	Chipanje Chetu (Lipilichi)	Área de Conservação Comunitária	Gary Tullis

⁷ Director Services of Land and Environment Tete

Appendix 2: Standardization of law enforcement and patrol data in Man/Hours/Patrol for private areas

No	Conservation Areas (Private)	Definition of Patrol	Average patrol hours/patrol	Rangers per patrol	Number of rangers per patrol (average)	Man-hours/patrol (average)	Jul-21		Aug-21		Sep-21		Oct-21		Nov-21		Check - Man hours/patrol month ⁸
							Patrols reported	Man/hour patrol/Month	Patrols reported	Man/hour patrol/Month	Patrols reported	Man/hour patrol/Month	Patrols reported	Man/hour patrol/Month	Patrols reported	Man/hour patrol/Month	
1	Kambako Safaris (Blocos L8, L9 e Coutada Nicage)	Corresponds to non-fixed hours patrol, which can vary from 3 to 8 hours day/night	6	normally 4 people are on each patrol	4	24	199	4776	256	6144	297	7128	226	5424	178	4272	27
2	Muthemba Safaris	One round trip to the field for approximately 4 hours	4	normally 5 people are on each patrol	5	20	111	2220	78	1560	53	1060	91	1820	103	2060	23
3	Coutada Oficial II	One round trip to the field for approximately 4 hours	4	normally 6 people are on each patrol	6	24	150	3600	150	3600	150	3600	150	3600	150	3600	32
4	Sabie Game Park	One round trip to the field for approximately 2 hours	2	normally 12 people are on each patrol	12	24	65	1560	63	1512	63	1512	63	1512	63	1512	30
5	Dombawera, Mashambanzoue Ngalamo Safaris	Corresponds to non-fixed hours patrol, which can vary from 3 to 8 hours day/night	6	normally 10 people are on each patrol	10	60	43	2580	46	2760	46	2760	45	2700	45	2700	60
6	Chipanje Chetu (Lipilichi)	Corresponds to multi-day (avg. 5d) patrols and are normally	40	normally 11 people are on	11	440	13	5720	17	7480	16	7040	16	7040	21	9240	240

⁸ Value estimated by the managers at the time of the application

		conducted on foot. Aprox															
		8h/dia		each patrol													
7	Safaris de Moçambique	Corresponds to multi-day (avg 5d) patrols and are normally conducted on foot. Aprox 6h/day	30	normally 6 people are on each patrol	6	180	29	5220	40	7200	32	5760	32	5760	28	5040	210
8	Mahimba Safaris	Corresponds to non-fixed hours patrol, which can vary from 3 to 8 hours day/night	5	normally 12 people are on each patrol	12	60	26	1560	31	1860	33	1980	30	1800	30	1800	60
9	Massingir Safaris	One round trip to the field for approximately 2 hours	2	normally 3 people are on each patrol	3	6	206	1236	210	1260	240	1440	210	1260	210	1260	3
10	Luwire – Lugenda Wildlife Reserve	Corresponds to multi-day (avg. 5d) patrols and are normally conducted on foot. Aprox 8h/day	40	normally 15 people are on each patrol	15	600	24	14400	30	18000	5	3000	4	2400	5	3000	250
11	Coutada Oficial 09	Corresponds to average 5 days patrols and are normally conducted on foot. Aprox 4h/day	20	normally 11 people are on each patrol	11	220	54	11880	50	11000	47	10340	112	24640	56	12320	232

Appendix 3: Patrol data from public managed protected areas. The patrol data presented are for the period July'21 - November'21

No	Protected Areas	Hectares (ha)	No. of employees in law enforcement	Patrol/Month (Average)	Jul'21	Aug'21	Sept'21	Oct'21	Nov'21
1	PN Mágoè	374 500	30	584	511	343	694	720	652
2	Tchuma Tchato (Community Area)	3 252 411	30	182	137	179	197	227	169
3	PNGilé	286 100	54	56	67	41	58	77	36
4	PNQuirimbas	750 000	85	15	19	12	15	13	15
5	PNLimpopo	1 123 300	167	428	425	434	447	425	411
6	PNBanhine	725 000	45	74	74	64	86	75	73
7	PNZinave	400 000	30	136	143	146	144	109	N/D
8	RMPPOURO ⁹	66 991	18	196	201	182	190	192	213
9	PNABazaruto	143 000	28	490	539	503	506	460	442
10	RNPomene	20 000	20	46	74	45	50	31	32
11	REM ¹⁰	104 000	32	380	318	460	253	436	433
12	RNNiassa ¹¹	3 250 500	89	61	89	79	15	N/D	N/D
TOTAL		10 495 802	628	2 648	2 597	2 488	2 655	2 765	2 476
Grand Total Patrols Jul'21 - Nov'21					12 981				

⁹ The total area of the reserve is 67800 hectares but it was subtracted with the dimensions of Ponta Chemucane (beneficiary of the program) to avoid double counting

¹⁰ REM and RMPPO patrolling data are available in isolation, although approved (07/12/2021) this conservation area as Maputo National Park (Decree 100/2021).

¹¹ The area of the reserve is 4 200 000 hectares, however the value of the surrounding blocks has been subtracted to avoid double counting.