



MITADER

Red List of Threatened Species, Identification and Mapping of Key Biodiversity Areas (KBAs) in Mozambique

REPORT WITH INITIAL RED LIST OF THREATENED SPECIES FOR AMPHIBIANS, REPTILES, FRESHWATER FISH AND LEPIDOPTERA.



March, 2020





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para o Crescimento Económico
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DOCUMENT REGISTRY

DOCUMENT TITLE	RED LIST TRAINING AND WORKSHOPREPORT				
VERSION CONTROL	REFERENCE	VERSION	DATE	PREPARED	APPROVED
	20190905_Red List_Training and Workshop Report	1	05-09-2019	Eleutério Duarte Hermenegildo Matimele	Hugo Costa
	20200310_Report with initial Red List of Threatened Species for Amphibians, Reptiles, Freshwater Fish and Lepidoptera.	2	10-03-2020	Eleutério Duarte Hermenegildo Matimele	Hugo Costa



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I. BACKGROUND

Under the initiative "Red List of Threatened Species, Identification and Mapping of Key Biodiversity Areas (KBAs) in Mozambique", the Wildlife Conservation Society (WCS) Mozambique is working closely with the National Red List Working Group alongside with the National Environmental Directorate (DINAB) which is under the Ministry of Land, Environment, and Rural Development (MITADER). DINAB, among other responsibilities, focus on coordinating and overseeing the implementation of the National Biodiversity Strategy and Action Plan (NBSAP) throughout the country. Funding for the project on Red List and KBAs comes from SPEED + "Supporting the Policy Environment for Economic Development" which is a USAID Program that supports economic and structural policy reforms through technical assistance on four components, including the biodiversity conservation.

The Red Listing (RL) process is an approach developed by the IUCN through which constituencies can evaluate the likelihood of a species going extinct. The IUCN RL comprises a set of five high-level criteria (A – E) which have gone through several improvements to reach international recognition. Therefore, the IUCN RL is regarded the most useful methodology to evaluate the conservation status of biological species across the world. The information resulting from the IUCN RL assessments provides an enormous contribution to enable quick and informed decisions about what species and areas require urgent conservation initiatives. For example, the IUCN RL results can guide development through taking them into consideration during Environmental Impact Assessments. In addition, the IUCN RL results have influence on the establishment of different international agreements including the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which regulates the trade of species. Moreover, the IUCN RL results are used in the process of identifying important biodiversity areas such as KBAs, Important Plant Areas (IPAs), Important Bird Areas (IBAs), Alliances for Zero Extinction (AZEs), among others. Because of these, countries signatories of the UN Convention on Biological Diversity (CBD) including Mozambique have committed to implement the CBD Aichi Target 12. This target states that actions will have been taken towards assessing the conservation status and preventing extinction of known threatened species.

In Mozambique, the first Red Data List was published in 2002 under the "Southern African Botanical Diversity Network (SABONET)" project implemented by the National Agricultural Research Institute (IIAM) in collaboration with other countries in the region. Since then, IIAM has been conducting RL assessments and became part of the Southern Africa Plant Specialist Group under the IUCN Species Survival Commission (SSC). With accumulated experience over the years, IIAM led the establishment of the National Red List working Group across different taxonomic Groups.

Recognizing the importance of the National Red List Working Group and its current activities WCS decided to gather the funds to support this group to undertake global assessment of endemic and near endemic faunal species based on existing data which is available within several Mozambican institutions (Government, Academia and NGOs), for four taxa namely: Reptiles, Amphibians, Freshwater Fish and Lepidoptera, contributing to have a complete global Red List for Mozambican species which in turn served as a critical foundation for the identification of KBAs in the country.

It is expected that the information produced with this project will contribute to support the effective implementation of the National Biodiversity Strategy and Action Plan (NBSAP) required by the Convention of Biological Diversity (CBD), and will assist Mozambique with its engagement with the CBD CoP in October 2020 (where the post-2020 biodiversity targets will be adopted).



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2. OBJECTIVE OF THIS REPORT

This summary is an intermediate product prepared under the Deliverable 2.3.1 and has the main objective of informing on the initial Red List of Threatened Species for Amphibians, Reptiles, Freshwater Fish and Lepidoptera.

3. REPORT STRUCTURE

This report consists of three chapters, the first chapter describes all the work done to collect the information needed for the Assessments, the second chapter describes how the red list assessments were made during the workshop including the preliminary results, and the third chapter describes the review process, submission to IUCN and presents the list of assessed species that have already been published by IUCN.



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4. PREPARATION OF THE RED LIST ASSESSMENTS: DATA GATHERING

Before the workshop, a preparatory phase was required. In order to build skills on data mobilization and application of the IUCN Red List criteria and on the categories to assess species' conservation status, a first refresh/training meeting was held on March 12th. This was conducted by Hermenegildo Matimele and was targeted to the data management assistants of each taxonomic working group. Not only those who were specifically hired by the project but also those that were provided by SECOSUD II.

After that, the starting point was to review taxonomic literature in order to produce a list of species that occur in Mozambique. Thereafter, all species thought to be endemic and near-endemic to Mozambique together with those restricted range were selected. After this process, experts of each taxonomic group were consulted to ensure whether the information gathered was accurate. As a result, a final working list was produced with 75 species, namely: 16 Freshwater Fish, 13 Butterflies, 37 Reptiles, and 9 Amphibian species.

With the priority species list established, from middle March to June 2019 the data management assistants focused on mobilizing relevant data. Given that the goal was to undertake a global Red List assessment, the required information had to be gathered at global scale. During this period, information was compiled about the target species' population size throughout the world; information about species ecology including the extent of suitable habitat, altitude and depth to which these can occur; number of localities of species occurrence worldwide; and information on threats to the species as well as habitat requirements.

Some of the data was gathered from published information, mainly from Global Biodiversity Information Facility (GBIF) which holds information from the Natural History Museum of Mozambique, Entomothèque of the Ministry of Agriculture and Food Security (MASA) and Mozambican Fisheries Research Institute (IIP), among other sources. Information from international Museums holding collections from Mozambique such as South Africa, Kenya, Zimbabwe, Portugal, and the United Kingdom was also used. After downloaded, this information was assessed, then checked for accuracy and cleaned.

Additional data was provided directly by national and regional specialists who, in turn, contributed with articles and books which contained relevant information for the Red Listing Assessments. Besides that, during this preparatory phase, some of the data management assistants (DMA) were allocated part of their time to the Mozambican institutions holding collections of taxonomic groups of their interest to gather additional information. The herpetofauna DMA was mostly allocated to the Natural History Museum, while the DMAs for Freshwater Fish, and for Lepidoptera / Insects, in addition to the Natural History Museum, had also time allocated to the Fisheries Research Institute (IIP) and the Entomothèque from MASA, respectively

Additional information on the process to compilation all the biodiversity data for Red listing assessments, including additional meetings and training, can be found in the Project [Brief interim report](#).



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5. WORKSHOP TO UNDERTAKEN THE RED LIST ASSESSMENTS

In order to run the assessments, WCS and SPEED+ hosted 4 days (from 18 to 21st June) of red list training and workshop in Maputo at AFECC Gloria Hotel.

In similar manner to the identification of KBAs, conducting red listing assessments requires a good understanding of the Criteria, thresholds and assessment parameters. This is the reason that one day was allocated to focus on training all participants. The training was provided on the first day by Lize von Staden from the South African National Biodiversity Institute (SANBI), the only official IUCN Red Listing trainer in the region at the moment. The following 3 days was allocated to run the red list assessments for Amphibians, Reptiles, Freshwater Fish, and Lepidoptera species (see the workshop agenda in the [Annex I](#)).

This workshop was the pioneer in bringing regional fauna experts to work closely with Mozambican peers on evaluating extinction risk of faunal species. which allowed a greater engagement and exchange of experiences between them.

5.1. WORKSHOP ATTENDEES

A total of 41 participants (list of participants in [Annex 2](#)) from 19 institutions attended the training. These were mainly representatives of academies and research institutions (63%) contributing with 44% of participants from the Government research institutions, Universities and Museum from Mozambique and South Africa ([Figure 1](#)) The foreigner participants had large recognized taxonomical knowledge within their working groups and pursue large experience on conducting assessments using the IUCN Red List criteria. The table below (summarizes the institutions and number of participants that participated in the training. [Figure 2](#) shows some of these workshop participants)

Table 1- List of institutions and number of participants from different sectors in the training

Sector	Number of institutions	Name of institutions	Number of participants
NGO's	3	WCS	9
		IUCN	1
		Birdlife International	1
Academy & Institutions of Research	12	Faculty of Sciences of the University Eduardo Mondlane (UEM)	2
		University of Lúrio	1
		University of Zambeze	1
		Natural History Museum	2
		National Fisheries Research Institute (IIP)	2
		Mozambican Institute for Agriculture Research (IIAM)	1
		University of Gothenburg	1
		Wits University	1
		South African Wildlife College (SAWC)	1
		Port Elizabeth Museum	1
		SANBI	3
Projects	3	SAIAB	2
		SECOSUD II	6
		TIPAs	2
Private sector	1	SPEED+	3
		Enviro-Insight	1
Total	19		41

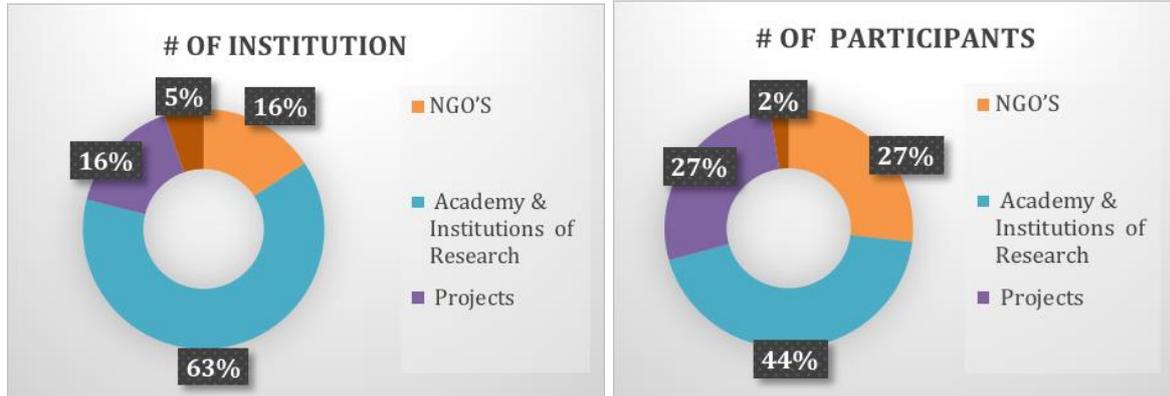


Figure 1 – Percentage of institutions and participants by sector that attended the training.

The media was invited to this event; Mozambican Television (TVM) covered the first day of workshop and, therefore, the Red list Workshop was broadcast on the main news of this TV channel, focusing on the importance of this work for the Mozambique government



Figure 2 -Some of Workshop Participants, represented by different institutions from Mozambique and South Africa

5.2. OPENING SESSION

The Red Listing workshop was officially opened by the SPEED+ Biodiversity Portfolio Manager, Afonso Madope. Immediately after, WCS’s project manager Hugo Costa gave an overview of the initiative “Red List of Threatened Species, identification and mapping of Key Biodiversity Areas (KBAs) in Mozambique”. Hugo Costa’s presentation focused on the project’s main objectives, the structure and the approach taken to achieve the expected outcome. Therefore, this presentation also highlighted the workflow for the remaining months of the project’s implementation. Then, Hermenegildo Matimele, the technical coordinator of the project provided relevant information about the Red Listing workshop (see the Figure 3). Hermenegildo Matimele highlighted that the workshop intended to build capacity and establish a bridge between Mozambican Biologists with foreigner peers working on the four taxonomic groups including Freshwater Fish, Butterflies, Reptiles and Amphibians. In addition, it was pointed out that this workshop opens the doors for Mozambican biologists working on fauna to be part of the regional Species Working Groups under the IUCN Species Survival Commissions



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following the example of the Plant experts which are already part of the Southern African Plant Specialist Group



Figure 3: Opening session: on the left the SPEED + Biodiversity Portfolio Manager, Afonso Madope; on the middle, the WCS project manager Hugo Costa, on the right, the technical coordinator of the project, Hermenegildo Matimele.

5.3. TRAINING ON RED LIST ASSESSMENTS

Lize von Staden conducted training on the first day. Before the training all the support material was distributed for each participant. Several presentations were made, including a brief introduction to the IUCN Red List, focusing on how the risk of extinction is estimated and how the criteria were developed. Were also presented the value of the Red Lists, focusing on their importance as a catalyst for species conservation action (awareness, decision-making and funding), their importance for Identification of important areas for conservation (e.g. KBAs, protected area expansion), their importance for International conventions and national legislation (e.g. CITES) and Measuring trends in the threat status of biodiversity -Convention on Biological Diversity ([find the presentation Here](#)), after that, a presentation on Key terms and concepts of the red listing was also made: Mature Individuals, Population size, Subpopulation, Location, Extent of Occurrence (EOO), Area of Occupancy (AOO), Extreme Fluctuations, Continuing Decline, Reduction, etc. ([find the presentation Here](#)), followed by a presentation on The IUCN Red List Categories /Data quality and dealing with data uncertainty ([find the presentation Here](#)).

After a break several detailed presentation on the IUCN Red List Criteria were made: Criteria A for Past, present or future population reduction ([find the presentation Here](#)), Criteria B for restricted geographic range, fragmentation, continuing decline or extreme fluctuations ([find the presentation Here](#)), Criteria C for small population size and continuing decline, Criteria D for very small or restricted population, and finally Criteria E based on a quantitative analysis showing a probability of extinction in the wild is at least ([find the presentation Here](#)). Thereafter, trainees were organized in small groups to apply the criteria on given exercises. Finally, an presentation was made, on walk-through of the red List assessment focusing on what makes a good assessment and how can Red List Assessors ensure assessments are rigorous and defensible.



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Figure 4 - On the top Lize Von Staden conducting the Red list training, bottom left some of the data management assistants being trained on red list application. Bottom right, the Project technical coordinator and the Project Manager following the training.

5.4. RED LIST ASSESSMENTS FOR HERPETOFAUNA, FRESHWATER FISH, AND BUTTERFLIES

The following three days, participants were divided into four main taxonomic working groups (Freshwater Fish, Reptiles, Amphibians, and butterflies) based on the individual expertise and interest. Because there is a high overlap between experts in Reptiles and Amphibians, these two were put together to form one working group. In total 3 groups were formed; Table 2 shows how the working groups were organized.

Table 2- Organization of working groups according to the taxonomic group. Including names, institution and working country of the Assessors

Taxonomic Group	# of participants	Name of participant	Institution of affiliation	Working country
Amphibians and Reptiles	10	Kristall Tolley	SANBI/IUCN	South Africa
		Harith Farooq	University of Lúrio / Gothenburg	Mozambique
		Werner Conradie	Port Elizabeth Museum	South Africa
		Luke Verbergt	Enviro-Insight	South Africa
		Graham Alexander	Wits University	South Africa
		Avelino Miguel	University of zambeze-	Mozambique
		Acacio Chechene	WCS-Mozambique	Mozambique
		Celso Sardinha	SECOSUD II	Mozambique
		Gerson Tomo	SECOSUD II	Mozambique
		Edna Monjovo	SECOSUD II	Mozambique
Freshwater Fish	12	Albert Chakona	SAIAB	South Africa
		Roger Bills	SAIAB	South Africa
		Erica Tovela	Natural History Museum - Maputo	Mozambique



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		Raquel Raiva	WCS-Mozambique	Mozambique
		Domitilla Raimondo	SANBI/IUCN	South Africa
		Vanessa Muianga	Natural History Museum - Maputo	Mozambique
		Graça Jaime	University of Lúrio	Mozambique
		Ivan Nerantzoulis	Eduardo Mondlane University	Mozambique
		Eleutério Duarte	WCS-Mozambique	Mozambique
		Francisco Zinave	IIP	Mozambique
		Naseeba Sidat	WCS-Mozambique	Mozambique
		Jorge Siteo	WCS-Mozambique	Mozambique
Butterflies	9	Alan Gardiner	SAWC	South Africa
		Bernardo Muatinte	Eduardo Mondlane University	Mozambique
		Joelma Souane	WCS-Mozambique	Mozambique
		Hermenegildo Matimele	IIAM/WCS	Mozambique
		Domingos Sandramo	SECOSUD II	Mozambique
		Lize von Staden	SANBI/IUCN	South Africa
		Simeon Bezeng	Birdlife International	South Africa
		Luca Malatesta	SECOSUD II	Mozambique
		Armando Sambo	WCS-Mozambique	Mozambique
Joaquim Campira	SECOSUD II	Mozambique		

Assessments were carried out for a total of 67 species across the four taxonomic groups. These are species that have sufficient baseline information to allow reasonably accurate assessment. All species were evaluated against the five quantitative criteria of the IUCN Red List including: A – declining population; B – geographical range size, fragmentation, decline or fluctuation; C – small population size, and fragmentation; D – very small population or very restricted distribution; E – quantitative analysis of extinction risk. Most distribution data were obtained from GIBIF. With support from GIS experts, such as Luca Malatesta, as well as using the online Geographical Conservation Assessment Tool (GeoCAT) (<http://geocat.kew.org>) relevant parameters for the assessment were calculated. These are the Extent of Occurrence (EOO) and the Area of Occupancy (AOO). Moreover, the number of subpopulations and number of localities were derived from these calculations. In addition, the Amphibian and Reptile groups employed the species distribution models to assist determining a likelihood distribution of the species.

During the Assessments the experts removed the dubious points /coordinates, taking into account the habitat changes and points / coordinates outside the species range, probably due to misidentification of the species. Another relevant information for assessments is about threat. This type of information was gathered from expert’s knowledge resulting from observations on the ground during expeditions. In addition, threat information was gathered from Districts development plans, and wide range of literature. For each species, all information was completed or updated on the [IUCN Species Information Service \(SIS\)](#) which is the online central database used by IUCN to store and manage species accounts and assessments for publication on The IUCN Red List. According to the updated information the IUCN status or category of each specie was determined (CR, EN, VU, NT, LC, DD)



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Figure 5- Different working groups during the Red list Assessments: A- The Herpetofauna Working Group; B- The Freshwater fish Working Group; C- The Butterflies Working Group

5.5. WORKSHOP RESULTS

5.5.1. APPLYING THE IUCN RED LIST CRITERIA TO ASSESSING SPECIES CONSERVATION STATUS

From the total of 75 species of different taxonomic groups listed for the workshop, 67 were assessed, and of those, 35 (representing 52 %), fell into the extinction threat categories (Critically Endangered – CR, Endangered – EN and Vulnerable – VU). Of those, the majority was included on Endangered category (EN), with 26.87%, followed by Vulnerable, with 14.93%, and Critically Endangered with 10.45%. 8 species, namely 4 amphibians and 4 reptiles were not assessed in the workshop, some of them had already been assessed in the past, and because their scenarios did not change significantly, the specialists decided to keep the previous assessments, other species were not assessed, due to the needing of an taxonomic review.



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The Table below (Table 3) summarizes the assessments results of the different taxonomic groups. Figure 6 shows the percentages of species in the threatened categories (CR, EN and VU) resulting from all 67 species assessed.

Table 3- Summary of the Assessments results from different taxonomic groups showing their respective categories

Group	Total of species listed	IUCN Categories						Total of not assessed Species	Total of Threatened (CR, EN, VU)	Total of species assessed
		CR	EN	VU	NT	LC	DD			
Amphibians	9	0	4	0	0	1	0	4	4	5
Reptiles	37	6	6	4	3	8	6	4	16	33
Freshwater fish	16	1	2	3	1	8	1	0	6	16
Butterflies	13	0	6	3	0	1	3	0	9	13
Grand Total	75	7	18	10	4	18	10	8	35	67

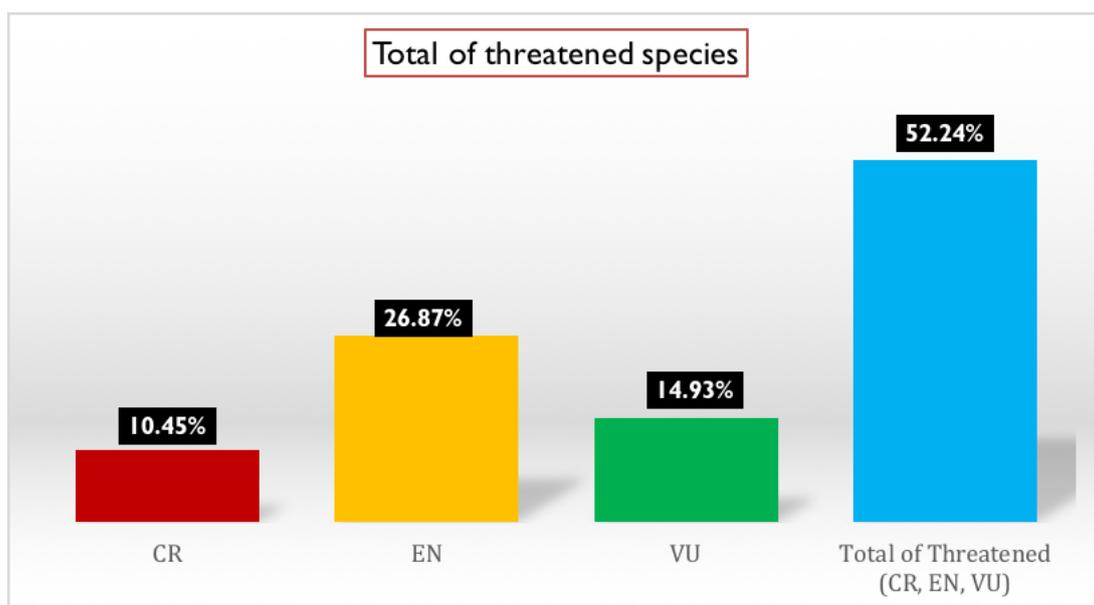


Figure 6- Percentage balance of species in IUCN threatened categories (CR, EN, VU)



5.5.2. HERPETOFAUNA WORKING GROUP

Herpetofauna working group assessed a total of 38 species, of which 5 are amphibians (See

Table 4) and 33 are reptiles (see Table 5). Of the 5 amphibian species assessed, 80% were classified as Endangered (EN). Of the 33 reptile species assessed, 48% were considered threatened with extinction, of which 18% fell into CR category, 18% into EN category and 12% into VU category (See Figure 7).

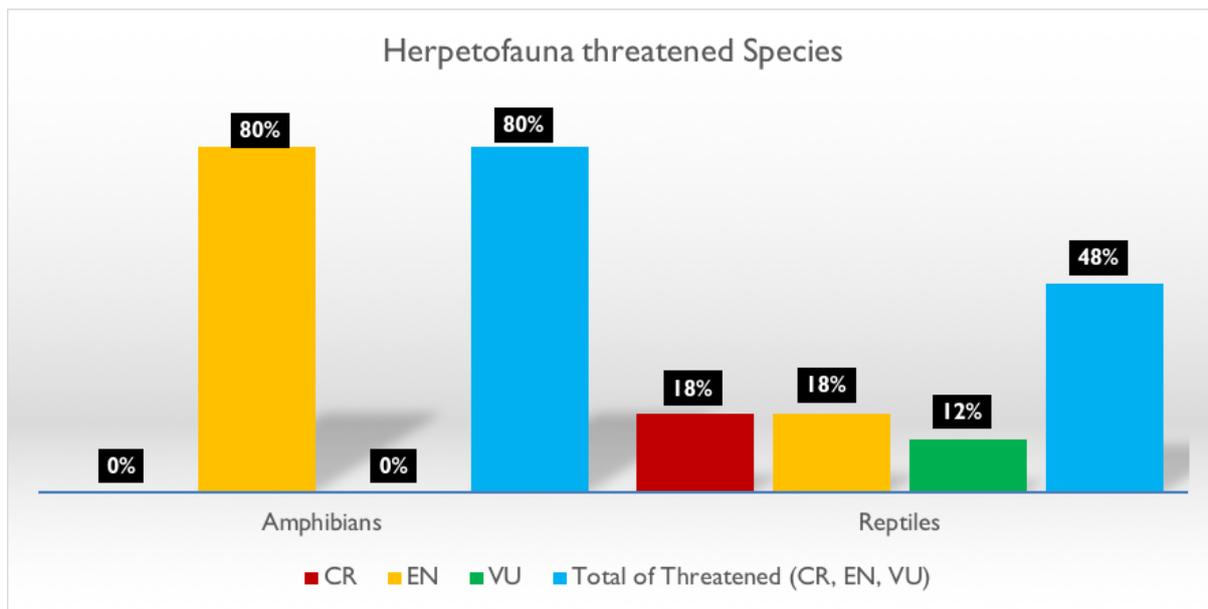


Figure 7- percentage of Herpetofauna species in threatened categories (CR, EN and VU)

Table 4- List of Assessed amphibian species, including their category, and the criteria applied

#	Species	IUCN Red list status 2019	Criteria
1	<i>Nothophryne baylissi</i>	EN	B1ab(i,iii)
2	<i>Nothophryne inagoensis</i>	EN	B1ab(i,iii)
3	<i>Nothophryne ribauensis</i>	EN	B1ab(i,iii)
4	<i>Nothophryne unilurio</i>	EN	B1ab(i,ii,iii)
5	<i>Hyperolius stictus</i>	LC	
Species not assessed in the workshop			
6	<i>Leptopelis broadleyi</i>	Not Assessed	
7	<i>Mertensophryne anotis</i>	Last assessments EN 2016)	
8	<i>Poyntonophrynus beiranus</i>	Last assessments LC 2013	
9	<i>Ptychadena boettgeri</i>	Last assessments DD 2016	



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Table 5- List of Assessed Reptiles species, including their category, and the criteria applied

#	Species	IUCN Red list status 2019	Criteria
1	<i>Nadzikambia inago</i>	CR	B1ab(i,ii,iii,v)
2	<i>Nadzikambia namuli</i>	CR	B1ab(i,ii,iii,v)
3	<i>Nadzikambia ribaue</i>	CR	B1ab(i,ii,iii,v)
4	<i>Lygodactylus inago</i>	CR	B1ab(i,iii)
5	<i>Rhampholeon bruessoworum</i>	CR	B1ab(i,ii,iii,v)+2ab(i,ii,iii,v)
6	<i>Rhampholeon namuli</i>	CR	B1ab(i,ii,iii,v)
7	<i>Atheris mabuensis</i>	EN	B1ab(iii)+2ab(iii)
8	<i>Dipsadoboa montisilva</i>	EN	B1ab(i,ii,iii)
9	<i>Lygodactylus regulus</i>	EN	B1ab(i,iii)
10	<i>Lygodactylus ribaue</i>	EN	B1ab(i,ii,iii)+2ab(i,ii,iii)
11	<i>Rhampholeon gorongosae</i>	EN	B1ab(i,ii,iii,v)+2ab(i,ii,iii,v)
12	<i>Rhampholeon tilburyi</i>	EN	B1ab(i,ii,iii)+2ab(i,ii,iii)
13	<i>Lygodactylus chiperone</i>	VU	D2
14	<i>Nadzikambia chiperone</i>	VU	D2
15	<i>Rhampholeon nebulauctor</i>	VU	D2
16	<i>Scelotes duttoni</i>	VU	D2
17	<i>Lygodactylus mabu</i>	NT	B1b(iii)
18	<i>Nadzikambia baylissi</i>	NT	B1b(i, iii)
19	<i>Rhampholeon maspictus</i>	NT	B1b(i, iii)
20	<i>Acontias aurantiacus</i>	LC	
21	<i>Afroedura gorongosa</i>	LC	
22	<i>Cordylus meculae</i>	LC	
23	<i>Lygosoma lanceolatum</i>	LC	
24	<i>Platysaurus maculatus</i>	LC	
25	<i>Scelotes insularis</i>	LC	
26	<i>Scolecoseps broadleyi</i>	LC	
27	<i>Smaug mossambicus</i>	LC	
28	<i>Aparallactus nigriceps</i>	DD	
29	<i>Cryptoblepharus ahli</i>	DD	
30	<i>Leptotyphlops pungwensis</i>	DD	
31	<i>Proscelotes aenea</i>	DD	
32	<i>Scolecoseps boulengeri</i>	DD	
33	<i>Zygaspis maraisi</i>	DD	
Species not assessed in the workshop			
34	<i>Chirindia langi</i>	Last assessments LC 2017	
35	<i>Smaug warreni</i>	Last assessments LC 2017	
36	<i>Lycophdion nanus</i>	Not Assessed	
37	<i>Trachylepis casuarinae</i>	Not Assessed	



5.5.3. FRESHWATER FISH WORKING GROUP

The Freshwater Fish working Group assessed 16 species (Table 6), of which 38% were considered threatened with extinction: 6% fell into CR category, 13% into EN category and 19% into VU category, See Figure 8.

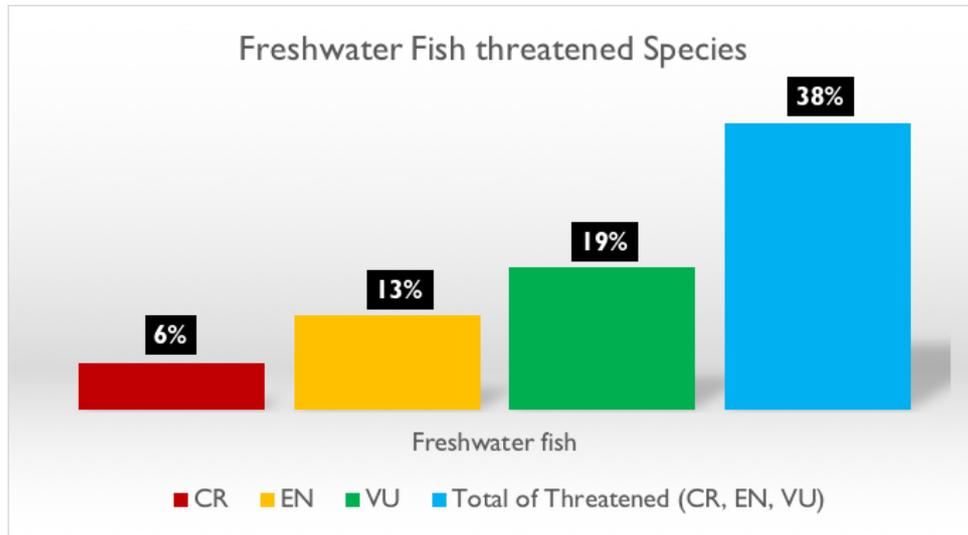


Figure 8- percentage of Freshwater fish species in threatened categories (CR, EN and VU)

Table 6- List of Assessed Freshwater fish species, including their category, and the criteria applied

#	Species	IUCN_Red list status	Criteria
1	<i>Oreochromis mortimeri</i>	CR	A2(a,b,e)+3(c,e)+4(a,c,e)
2	<i>Chetia brevis</i>	EN	A4ace; B1ab(iii,v)+2ab(iii,v)
3	<i>Serranochromis meridianus</i>	EN	A2ace; B1ab(ii,iii,v)+2ab(ii,iii,v)
4	<i>Labeo ruddi</i>	VU	B2ab(I,II,III,IV,V)
5	<i>Chetia brevicauda</i>	VU	D2
6	<i>Silhouettea sibayi</i>	VU	B1ab(iii)+2ab(iii)
7	<i>Amphilius laticaudatus</i>	NT	B1ab(II,III,IV)+2ab(II,III,IV)
8	<i>Protopterus amphibius</i>	LC	
9	<i>Kneria auriculata</i>	LC	
10	<i>Parakneria mossambica</i>	LC	
11	<i>Enteromius manicensis</i>	LC	
12	<i>Labeobarbus pungweensis</i>	LC	
13	<i>Synodontis nebulosus</i>	LC	
14	<i>Micropanchax myaposae</i>	LC	
15	<i>Oreochromis rovumae</i>	LC	
16	<i>Chrysichthys hildaie</i>	DD	



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5.5.4. BUTTERFLIES/LEPIDOPTERA WORKING GROUP

The Butterflies working group assessed 13 species (Table 7 **Error! Reference source not found.**), of which 69% were considered threatened with extinction, of which, 46% fell into EN category and 23% fell into VU category. See Figure 9

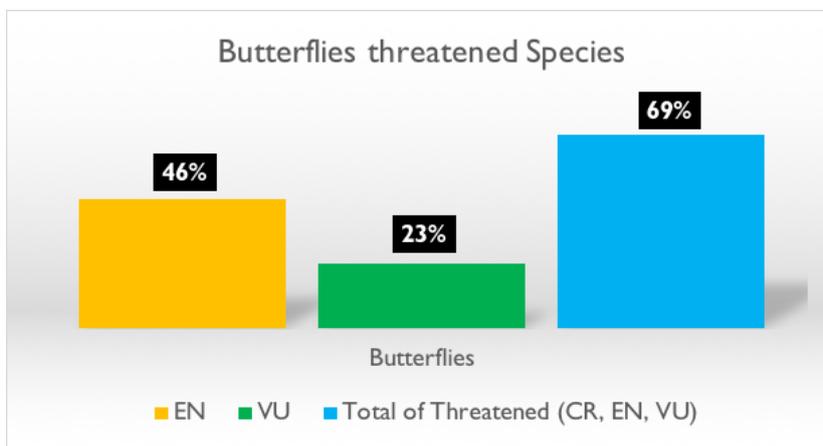


Figure 9 -Percentage of Butterflies species in threatened categories (CR, EN and VU)

Table 7- List of Assessed Butterflies species, including their category, and the criteria applied

#	Species	IUCN Red list status	Criteria
1	<i>Acraea dondoensis</i>	EN	B2ab(iii, iv)
2	<i>Cymothoe baylissi</i>	EN	B1 ab (iii)+2ab(iii)
3	<i>Graphium junodi</i>	EN	B1 ab(i,ii,iii,iv,v)c(i,iv)+2ab(i,ii,iii,iv,v)c(i,iv)
4	<i>Iolaus malaikae</i>	EN	B1 ab(iii)
5	<i>Lepidochrysops delicata</i>	EN	B1 ab(i,ii,iii,v)+2ab(i,ii,iii,v)
6	<i>Lepidochrysops intermedia</i>	EN	B1 ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)
7	<i>Alaena lamborni</i>	VU	B1 ab (iii)+2ab(iii)
8	<i>Pentila swinnertoni</i>	VU	D2
9	<i>Baliochila woodi</i>	VU	B2ab(iii)
10	<i>Euthecta cooksoni</i>	LC	
11	<i>Teriomima williami</i>	DD	
12	<i>Cephetola australis</i>	DD	
13	<i>Coliades lorenzo</i>	DD	



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6. REVIEW, SUBMISSION AND PUBLICATION OF THE RED LIST ASSESSMENT RESULTS

REVIEW AND SUBMISSION OF THE RED LIST ASSESSMENT RESULTS

In the weeks after the red listing workshop, each taxonomic group had to review all the text filled out during the workshop on the online Species Information Service (SIS), which is the platform made available by IUCN to run the assessments. In addition, it included the finalization of all relevant maps, (Range, EOO, AOO) of the species assessed. This was required to ensure the consistency and accuracy of the information before submitting it to IUCN for an independent peer-review. The reviewer is an expert who did not participate in the red listing process but he or she has knowledge about the studied species, the area where they come from and most importantly, has acknowledged experience in applying the Red List criteria.

The Herpetofauna working group was the only group which was able to finish the review on time to submit it to IUCN before the submission window closed. In total 38 species (33 Reptiles and 5 Amphibians) were submitted. The conservation status of some of these species was changed by IUCN during its peer-review.

PUBLICATION OF HERPETOFAUNA SPECIES ASSESSED IN THE WORKSHOP

In December 2019, IUCN published the updated global red list status for several species of the world. From the 38 herpetofauna species submitted by the project, 28 were formally assigned a threat category by IUCN. However, 12 of the reptile species submitted to IUCN are still pending on the publishing because they are new species to science and are still pending their scientific description. [Table 8](#) summarizes the number of herpetofauna species submitted by the project team and published by IUCN and [Table 9](#) shows the list of these species.

Table 8- Summary of numbers of Herp species submitted and published

SUMMARY	Amphibians	Reptiles	Total
Number of Submitted species	5	33	38
Number of Published Species that kept their category during the Review	4	19	23
Number of Published Species that changed their category during the Review	1	4	5
Number of Published Species	5	23	28
Number of Species pending on the publishing	0	10	10



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Table 9- List of herpetofauna species published, click on the species name to see their publication on IUCN

Group		#	Species	IUCN_Red list status 2019	Last Assessments	
Amphibian	Published Species	1	Nothophryne uniluria	CR (classified as EN in the workshop, changed to CR)	19-Jun-19	
		2	Nothophryne baylissi	EN	19-Jun-19	
		3	Nothophryne inagoensis	EN	19-Jun-19	
		4	Nothophryne ribauensis	EN	19-Jun-19	
		5	Hyperolius stictus	LC	19-Jun-19	
Reptiles		6	Rhampholeon bruessoworum	CR	20-Jun-19	
		7	Rhampholeon gorongosae	EN	20-Jun-19	
		8	Rhampholeon tilburyi	EN	21-Jun-19	
		9	Atheris mabuensis	EN	20-Jun-19	
		10	Rhampholeon nebulauctor	VU	21-Jun-19	
		11	Nadzikambia baylissi	NT	20-Jun-19	
		12	Rhampholeon maspictus	NT	20-Jun-19	
		13	Lygodactylus regulus	NT (classified as EN in the workshop, changed to NT)	20-Jun-19	
		14	Dipsadoboa montisilva	NT (classified as EN in the workshop, changed to NT)	19-Jun-19	
		15	Scolecoseps broadleyi	LC (classified as LC in the workshop, changed to NT)	21-Jun-19	
		16	Scelotes duttoni	LC (classified as VU in the workshop, changed to LC)	21-Jun-19	
		17	Acontias aurantiacus	LC	20-Jun-19	
		18	Cordylus meculae	LC	20-Jun-19	
		19	Platysaurus maculatus	LC	20-Jun-19	
		20	Smaug mossambicus	LC	22-Jul-19	
		21	Lygosoma lanceolatum	LC	19-Jul-19	
		22	Scelotes insularis	LC	21-Jun-19	
		23	Afroedura gorongosa	LC	20-Jun-19	
		24	Leptotyphlops pungwensis	DD	20-Jun-19	
		25	Proscelotes aenea	DD	20-Jun-19	
		26	Scolecoseps boulengeri	DD	21-Jun-19	
		27	Zygaspis maraisi	DD	20-Jun-19	
		28	Aparallactus nigriceps	DD	20-Jun-19	
		Not Published Species	29	<i>Nadzikambia chiperone</i>	VU	
			30	<i>Nadzikambia inago</i>	CR	
			31	<i>Nadzikambia namuli</i>	CR	
			32	<i>Nadzikambia ribaue</i>	CR	
			33	<i>Rhampholeon namuli</i>	CR	
			34	<i>Lygodactylus mabu</i>	NT	
			35	<i>Lygodactylus inago</i>	CR	
	36		<i>Lygodactylus chiperone</i>	VU		
	37		<i>Lygodactylus ribaue</i>	EN		
	38		<i>Cryptoblepharus ahli</i>	DD		



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7. FINAL CONSIDERATIONS AND NEXT STEPS

The results of the assessments made by the remaining taxonomic working groups (freshwater fish and Lepidoptera), will be submitted this March, and it is expected that these will be published on IUCN webpage this till June 2020.

Regarding the remaining 10 new reptile species which were not published, the experts are working to come out with their descriptions, which will allow its publication in the near future.

All this work undertaken to run the red list assessment for these 67 species represent a great achievement in capacity building, rising the profile of Mozambicans particularly experts and institutions. In addition, this result is a major step forward in filling knowledge gaps on the conservation status of endemic and near-endemic species to Mozambique. These results also allowed the project team to identify Key Biodiversity Areas in Mozambique, which are sites that contribute significantly for the global persistence of biodiversity.

Moreover, it is a great contribution of Mozambique under the country's commitment in implementing the CBD Aichi Target 12, which highlights the need of taking actions in assessing conservation status and preventing extinction of known threatened species. Therefore, the results of the red list workshop, including those already published, bring challenges to the Mozambicans, requiring a thorough thinking mainly from decision makers and conservation entities. Out of the 67 species assessed, 47% are likely to go extinct unless initiatives and activities on the ground are put in place to revert this trend. The threat of major concern is habitat loss due to various reasons including human settlement, shifting subsistence farming, charcoal production, deforestation, industrial development, among other causes. With the ongoing rapid habitat loss together with climate change, it is required that the allocation of land for different uses is carefully planned to ensure that biodiversity can persist alongside with rapid growing human population. Therefore, embedding these results in national, provincial and district planning exercises is essential, as well as in the current and future legal framework.

The one of the big step will be to use this Red List Assessment to produce a proposal of list of protected species for the country according to the conservation law (Law 16/2014, revised and republished by Law 5/2017).



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8. LIMITATIONS AND PROPOSED SOLUTIONS FOR FUTURE

Red Listing assessments rely on relevant data including species distribution abundance, and population size and habitat quality. During the assessments, it was evident that this information is currently limited. Therefore, there is an urgent need to enhance the knowledge in Mozambique through gathering more up to date baseline information on species occurrence, population data and document threats that are likely to impact the species persistence. This can be possible through implementing collaborative initiatives in the region or among institutions in the country. Given that expertise within the Mozambican institutions is still low, particularly in terms of taxonomy and use of Red Listing criteria, collaboration with regional institutions is key. It gives opportunity to the country to consolidate knowledge, while building a team of Mozambicans who can assist decision making process with respect to biodiversity matters.

With the IUCN procedures requiring that all assessed species go through a peer reviewing process before being considered for publication, it becomes prominent that the number of experts in the region is very limited across different taxonomic groups, with particular emphasis to invertebrates. This is even more difficult because a reviewer has to be an expert who did not participate on the Red Listing assessment. This limitation, may well be addressed through strengthening collaboration with relevant institutions worldwide giving opportunity to international experts to work in Mozambique with Mozambicans.

Most of the Red Listing data is filled in into the Species Information Service (SIS). This is an online tool developed by the IUCN through which assessment information have to be provided. Therefore, it requires internet availability to be able to use it. However, internet access in the hotel AFECC Gloria Hotel where the red list workshop took place, was not stable. For that reason, it is highly recommended to make sure that next similar activities are organized in venue that can provide good WiFi access.



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ANNEX I: AGENDA

Time	Content	Leader
First Day (18 June)		
8.00	Arrival of participants	
8.30-8.40	Welcome remarks	SPEED+
8.40 – 8.50	Opening of training	Govt representative
8.50 – 9.00	Introduction to the workshop and the week’s work flow	Hugo Costa and Hermenegildo Matimele
9.00 – 11.00	The IUCN’s Red List overview of Criteria and Categories	Lize Von Staden
11.00-11.20	Coffee break	All Participants
11.20 – 12.30	Regional and Global assessments	Lize
12.30 – 13.00	Practical exercises applying global criteria	All Participants
13.00 – 14.00	Lunch break	All Participants
14.00 – 14.40	Practical exercises applying global criteria	All Participants
14.40 – 15.30	Feedback and question session	All Participants
Second Day (19 June)		
8.30 – 9.00	Recap session Divide groups into specific taxonomic groups	Lize and Hermenegildo
9.00 – 11.00	Red Listing sessions (Lepidoptera, Freshwater Fish, Reptiles and Amphibians)	Lize, Domitilla, Krystal, Werner, Roger, Alan
11.00- 11.20	Coffee break	All Participants
11.20 – 13.00	Red Listing sessions (Lepidoptera, Freshwater Fish, Reptiles and Amphibians)	Lize, Domitilla, Krystal, Werner, Roger, Alan
13.00 – 14.00	Lunch break	All Participants
14.00 – 15.30	Red Listing sessions (Lepidoptera, Freshwater Fish, Reptiles and Amphibians)	Lize, Domitilla, Krystal, Werner, Roger, Alan
Third day (20 June)		
8.30 – 11.00	Red Listing sessions (Lepidoptera, Freshwater Fish, Reptiles and Amphibians)	Lize, Domitilla, Krystal, Werner, Roger, Alan
11.00 – 11.20	Coffee break	All Participants
11.20 -13.00	Red Listing sessions (Lepidoptera, Freshwater Fish, Reptiles and Amphibians)	Lize, Domitilla, Krystal, Werner, Roger, Alan
13.00 – 14.00	Lunch break	All Participants
14.00 – 15.30	Red Listing sessions (Lepidoptera, Freshwater Fish, Reptiles and Amphibians)	Lize, Domitilla, Krystal, Werner, Roger, Alan
Fourth day (21 June)		
8.30 – 11.00	Red Listing sessions (Lepidoptera, Freshwater Fish, Reptiles and Amphibians)	Lize, Domitilla, Krystal, Werner, Roger, Alan
11.00 – 11.20	Coffee break	All Participants
11.20 -13.00	Red Listing sessions (Lepidoptera, Freshwater Fish, Reptiles and Amphibians)	Lize, Domitilla, Krystal, Werner, Roger, Alan
13.00 – 14.00	Lunch break	All Participants
14.00 – 14.30	Workshop wrap up and Closing remarks	Hermenegildo, Hugo



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ANNEX 2: LIST OF PARTICIPANTS

#	Names of participants	Institution	Email- Address
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