Conservation Needs Assessment Workshop for Threatened South African Amphibian Species

WORKSHOP REPORT

Photo: © Keir Lynch

2025

Conservation Needs Assessment Workshop Report for Threatened South African Amphibian Species

2025

Workshop Design and Facilitation
Rebecca Brunner | Amphibian Ark

Workshop Organizers
Rebecca Brunner | Amphibian Ark
Jeanne Tarrant | Anura Africa/IUCN Amphibian Specialist Group
Joshua Weeber | Endangered Wildlife Trust
Krystal Tolley | South African National Biodiversity Institute
Jennifer Swandby | Re:Wild

Editors
Rebecca Brunner | Amphibian Ark
Luis Carrillo | Amphibian Ark
Jeanne Tarrant | Anura Africa/IUCN Amphibian Specialist Group
Joshua Weeber | Endangered Wildlife Trust

Design and Layout
María Braeuner | Amphibian Ark

Cover Photo
Hyperolius pickersgilli by Keir Lynch | Bionerds/Anura Africa

Back Cover Photo
Breviceps macrops by Keir Lynch | Bionerds/Anura Africa

Recommended citation:
Brunner, R., Carrillo, L., Tarrant, J., and Weeber, J., eds. 2025. Conservation Needs Assessment Workshop Report for Threatened South African Amphibian Species 2024. Amphibian Ark.

Conservation Needs Assessment Workshop Report for Threatened South African Amphibian Species

2025

Participants (in alphabetical order):

Adriaan Jordaan	University of the Western Cape
Adrian Armstrong	Ezemvelo KZN Wildlife
Andrew Turner	Cape Nature
Darren Pietersen	Endangered Wildlife Trust
Fortunate Mafeta Phaka	North-West University
Francois Becker	National Museum of Namibia
James Harvey	Independent (Harvey Ecological)
Jeanne Tarrant	Anura Africa | IUCN Amphibian Specialist Group
Jennifer Swandby	Re:Wild
John Measey	Stellenbosch University
Joshua Weeber	Endangered Wildlife Trust
Keir Lynch	Bioners | Anura Africa
Krystal Tolley	South African National Biodiversity Institute
Louis du Preez	North-West University
Luke Verburgt	Independent (Enviro Insight)
Mohlamatsane Mokhatla	University of Pretoria
Ninda Baptista	CIBIO-InBIO
Oliver Angus	Endangered Wildlife Trust
Rebecca Brunner	Amphibian Ark
Werner Conradie	Port Elizabeth Museum

Acknowledgements

Photos courtesy of: Keir Lynch, Joshua Weeber, Jeanne Tarrant, Bionerds.

Abbreviations

AArk	Amphibian Ark
ASA	Amphibian Survival Alliance
ASG	Amphibian Specialist Group
CNA	Conservation Needs Assessment
CPSG	Conservation Planning Specialist Group
CR	Critically Endangered
DD	Data Deficient
EN	Endangered
IUCN	International Union for the Conservation of Nature
NT	Near Threatened
SOTWA	State of the World's Amphibians
SSC	Species Survival Commission
VU	Vulnerable
WAZA	World Association of Zoos and Aquariums

Table of Contents

Leptopelis natalensis
© Keir Lynch

Executive **Summary**

As of May 2025, there are 137 described species of frogs that occur within South Africa. Including Data Deficient and Near Threatened, 33% of these are considered threatened according to our most recent assessments. 21% fall into the top threat categories (VU, EN, CR).

One of the tools in the species conservation toolbox is the *ex situ* management and breeding of threatened species. This supports the eventual reintroduction into suitable habitats, helping to restore populations in the wild.

The third Global Amphibian Assessment, which kicked off in April 2024 in Cape Town, South Africa, began with a joint assessment of the IUCN Red List Authority and AArk's Conservation Needs Assessments. While this included 10 countries and over 240 species evaluated, in this report, we present only the results from South Africa.

We identified six South African species that need *ex situ* conservation actions, including *ex situ* rescue, biobanking, and applied *ex situ* research.

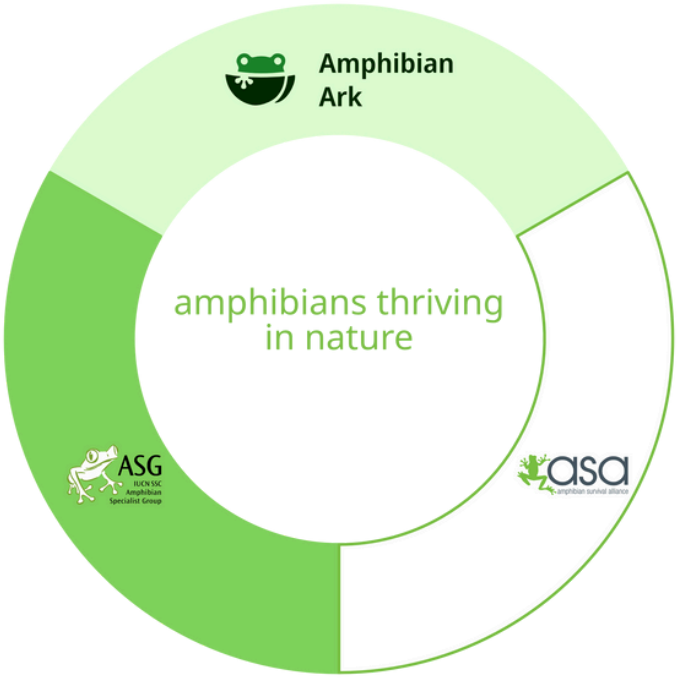
Amphibian Ark

Rescuing amphibians in crisis

Amphibian Ark (AArk) is a non-profit organization founded in 2007 by the IUCN Species Survival Commission's (SSC) specialist groups: the Amphibian Specialist Group (ASG) and the Conservation Planning Specialist Group (CPSG), in partnership with the World Association of Zoos and Aquariums (WAZA).

Our mission is to rescue amphibians in crisis, saving species that cannot currently be safeguarded in nature. At AArk we work to secure a future for those amphibian species likely to become extinct before their natural environment can be made safe for them again. For those species, we help set up *ex situ* assurance programs so that when it is safe to do so, they can be released back into the wild.

We collaborate closely with our sister organizations: the IUCN SSC Amphibian Specialist Group (ASG) and the Amphibian Survival Alliance (ASA). Together, the three organizations aim to amplify amphibian conservation efforts around the world, to achieve our shared vision: amphibians thriving in nature.



Hyperolius pickersgili
© Keir Lynch

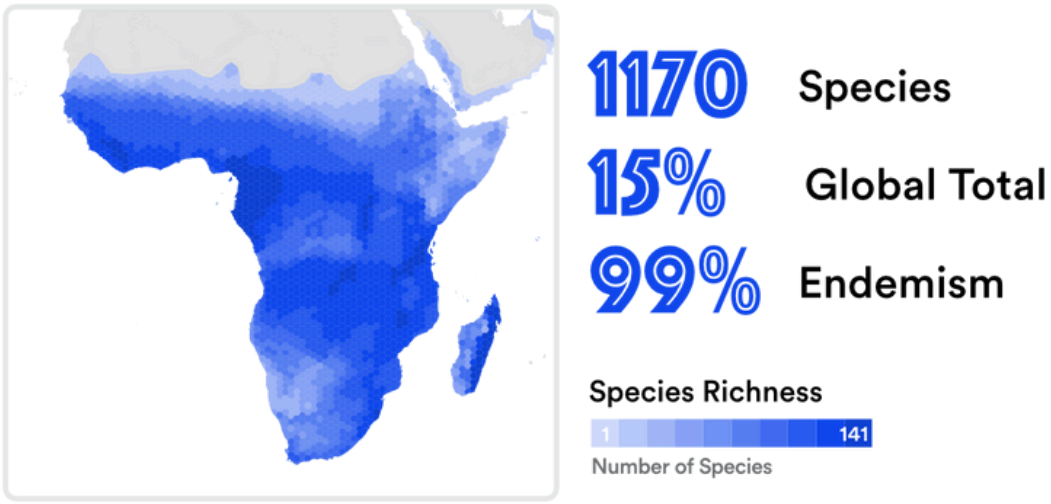
The Conservation Needs Assessment process

The Conservation Needs Assessment (CNA) process developed by AArk uses current knowledge of species in the wild to determine those with the most urgent conservation needs. It provides a basis for the development of holistic conservation action plans that combine *in situ* and *ex situ* actions, as appropriate. These assessments allow us to maximize the impact of limited conservation resources by identifying which measures could best serve those species that require assistance.

Afrixalus knysnae
© Keir Lynch

Amphibian Conservation Overview

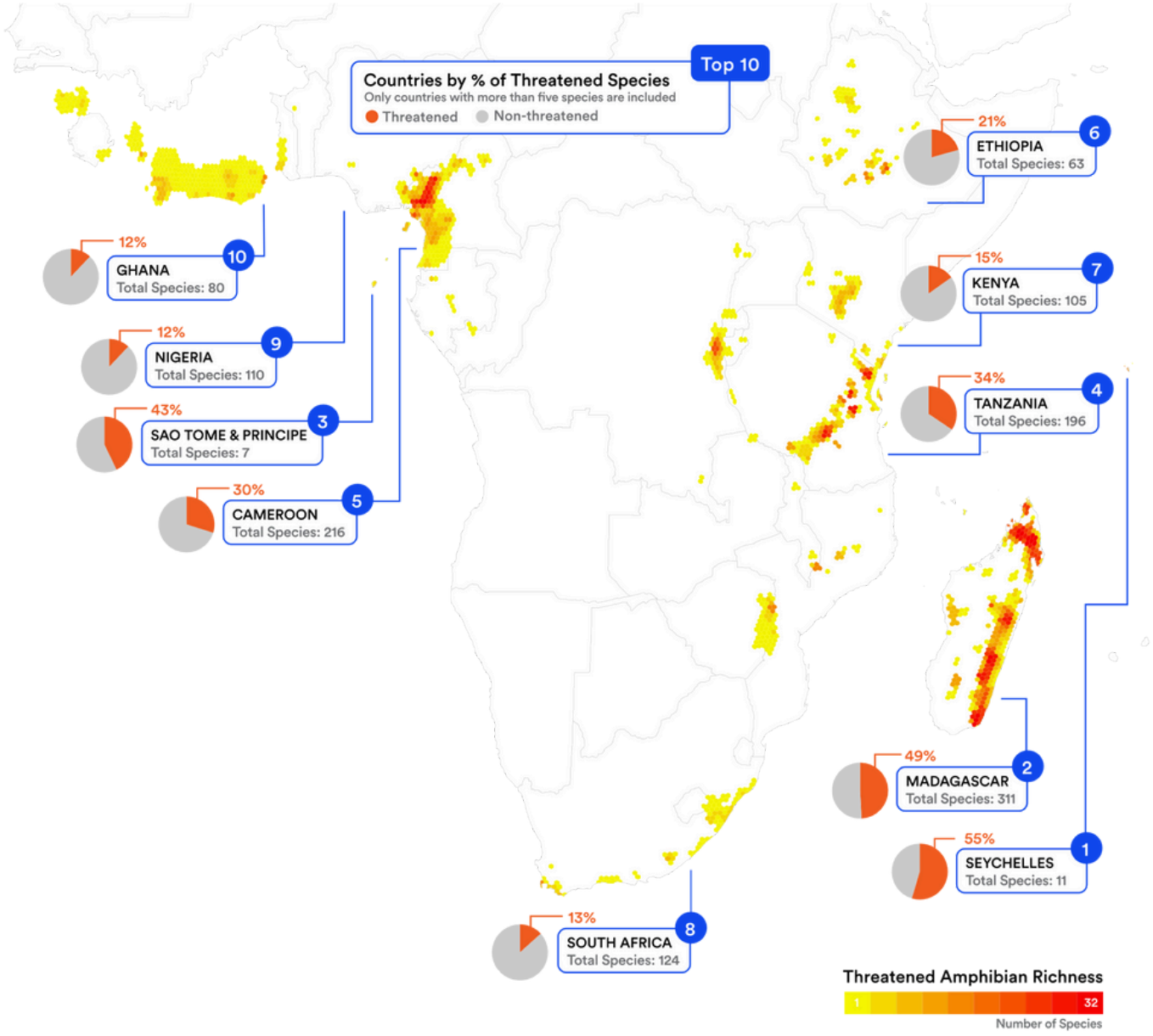
41% of amphibians—that is, two out of every five species—are threatened with extinction. This makes it the most endangered group of vertebrates worldwide. Out of the three groups that compose amphibians—frogs and toads, salamanders, and caecilians—salamanders are the most threatened (60%).



Amphibian species richness in the Afrotropics. Extracted from: Re:wild, Synchronicity Earth, IUCN SSC Amphibian Specialist Group. 2023.State of the World's Amphibians: The Second Global Amphibian Assessment. Texas, USA: Re:wild

According to the 2023 State of the World's Amphibians: The Second Global Amphibian Assessment, the Afrotropical realm has received less research effort compared to other realms, but "it is expected to be a treasure trove of amphibians". As of May 2025, there are 137 described species of frogs that occur within South Africa. Including Data Deficient and Near Threatened, 33% of these are considered threatened according to our most recent assessments. 21% fall into the top threat categories (VU, EN, CR).

According to the State of the World's Amphibians (SOTWA), habitat loss and degradation are the main threats to amphibians and affect more than 2,600 (93%) of threatened species. Another major threat to amphibians is climate change. Amphibians are ectotherms with moist, highly permeable skin and depend on the availability of water to survive. Hence, they are particularly sensitive to changes in humidity and temperature. Climate change can also exacerbate other threats, such as fires, diseases, or invasive species, thus compounding the impacts.



Countries of Sub-Saharan Africa by percentage of threatened amphibian species. Extracted from: Re:wild, Synchronicity Earth, IUCN SSC Amphibian Specialist Group. 2023.State of the World's Amphibians: The Second Global Amphibian Assessment. Texas, USA: Re:wild

There are several urgent actions we can take to help amphibians:

- Develop large-scale multi-institutional collaborations for amphibian research and protection.
- Establish environmental management practices that allow a more harmonious coexistence between amphibians, their habitats, and people.
- Establish or expand conservation breeding programs, incorporating biobanks and assisted reproduction technologies, to safeguard against extinction and allow future reintroductions and translocations.

Assessment Team

Conservation Needs Assessment workshop

The third Global Amphibian Assessment—which evaluates every known amphibian species for the IUCN Red List of Threatened Species—kicked off in April 2024 in Cape Town, South Africa. In early 2024, Amphibian Ark's Program Director, Becca Brunner, joined the team of experts to conduct the Conservation Needs Assessments for these species as a joint assessment with the IUCN Red List Authority. This included 10 countries and over 100 species evaluated; in this report we present only the results from South Africa.

The results obtained in this workshop are summarized in this table:

Recommended Conservation Actions*	No. of species
Ark	0
Rescue	5
In situ conservation	25
In situ research	34
Husbandry research	4
Applied *ex situ* research	1
Mass production	0
Education	15
Supplementation	0
Biobank	5
None	1

*The explanation of each conservation action is described on the Appendix

Species recommended for *ex situ* actions

As mentioned before, AArk focuses its efforts on rescuing amphibians that cannot currently be safeguarded in the wild. We do this through supporting *ex situ* conservation programs, training, and assessments. Ideally, an *ex situ* initiative should be temporary and seen as only one of the tools that can assist in the conservation of a species. Therefore, strong links between *ex situ* and *in situ* components are critical to the long-term success of species conservation.

We identified six South African species that need *ex situ* conservation actions, including *ex situ* rescue (n = 5) and *ex situ* research (n = 1). Due to their level of threat, the five species recommended for *ex situ* rescue are also recommended for biobanking.

Vandijkophrynus amatolicus
© Joshua Weeber

Of the five species recommended for *ex situ* rescue, only *M. capensis* and *C. rosei* currently (1) have sufficient numbers of individuals in nature (in situ) that can be used as founders for the program, (2) are distinct biological units, and (3) have sufficient habitat available for reintroduction.

Microbatrachella capensis

Species recommended for *ex situ* rescue.

Distribution
Endemic to South Africa in the Western Cape Province

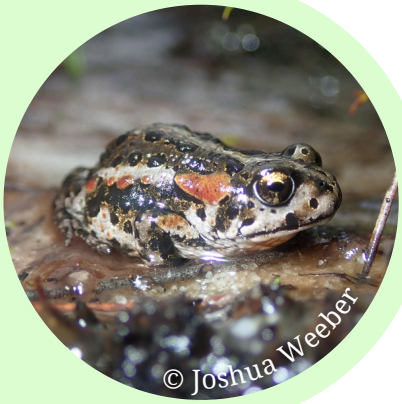
IUCN Global Red List: Endangered (EN) | Changed from CR to EN after this workshop

Assessment Summary: This species relies on lowland flooded areas, but most have been drained for development and agriculture; infestation of invasive trees, which dry out breeding pools, has also been rampant. Most populations are too fragmented for dispersal. *Ex situ* rescue will be essential for assisted translocations to restored protected habitat.

Link to CNA Assessment.

Capensibufo rosei

Species recommended for *ex situ* rescue.



Distribution
Endemic to the Cape Peninsula of South Africa

IUCN Global Red List: Critically Endangered (CR)

Assessment Summary: This species is only found in Table Mountain National Park, with potentially only 2 breeding areas remaining. 3 of the 5 subpopulations have already been lost, and one catastrophic event could wipe out the species. This species relies on fires to keep the vegetation levels low around shallow accumulations of water, but fires are actively suppressed by management. Vegetation (such as the invasive Pampas Grass) encroachment could completely wipe out their breeding habitat in a couple of years.

Link to CNA Assessment

B. macrops, B. bagginsi, and *V. amatolicus* are also recommended for *ex situ* rescue, but currently do not have enough habitat available for reintroduction.

Breviceps macrops
Species recommended for *ex situ* rescue.

Distribution
Western coast of South Africa and Namibia

IUCN Global Red List: was previously assessed as Near Threatened (NT). After this assessment has been assesse as Vulnerable (VU).

Assessment Summary: This species does not occur in any protected areas and is facing devastating habitat loss from multiple sources: coastal dune strip mining for diamonds, urbanization, large infrastructure development (namely the Boegoebaai Port and Rail Project), and a forthcoming hydrogen project. Rescue of individuals before these projects begin is of utmost importance if this species is to avoid extinction. Since members of this species spend most of their time buried under sand dunes, very little is known about their ecology. *Ex situ* research, specifically breeding moisture and soil depth requirements, will be necessary to increase the success of reintroductions, especially to restored dune sites post diamond mining/scraping.

Link to CNA Assessment

Breviceps bagginsi
Species recommended for *ex situ* rescue.

Distribution
South-eastern South Africa (Kwazulu-Natal midlands)

IUCN Global Red List: was previously assessed as Near Threatened (NT). After this assessment has been assesse as Critically Endangered (CR).

Assessment summary: Less than 1% of this species' range occurs within a protected area, and more than 75% of its habitat has been lost to land-use change, especially pine monoculture and urbanization. The few grassland habitat patches remaining are under threat from road development, cattle grazing, and fire. The species is projected to go extinct in less than 20 years without conservation intervention. *Ex situ* research on its breeding requirements (soil moisture and temperature) will be essential for this species, as its eggs and tadpoles develop in underground tunnels.
Link to CNA Assessment

Vandijkophrynus amatolicus
Species recommended for *ex situ* rescue.

Distribution
South Africa

IUCN Global Red List: Endangered (EN) | Changed from CR to EN after this workshop

Assessment summary: This species is known only from the Amathole Mountains in the Eastern Cape province, and currently, none of its range occurs within a protected area. The main threat to this species is loss and degradation of grassland and seepage habitat due to land-use change to non-native forest plantations and agricultural practices. Cattle stocking threatens the water quality of breeding seeps. If protected areas are not created and/or these threats are not mitigated, this species will likely disappear.

Link to CNA Assessment

Analog species

We also identified a species that could be good analog candidate for other species. Analog species are species with a lower degree of threat but with biological characteristics similar to those of the target species that require *ex situ* conservation. These analogous species are used to test and refine maintenance and reproduction protocols before applying them to the more threatened species, increasing the likelihood of success for the *ex situ* program.

Analog Species

Capensibufo selenophos

Target Species

Capensibufo rosei

Additionally, we identified *Breviceps adspersus* as a potential analog species for other *Breviceps* species that have a similar biology. However, there are still many unknowns about the biology and ecology of many species within this genus, and their habitats vary widely (e.g. desert, grassland). Until then, the real usefulness as an analog species remains unknown. As one step to better understand the biology of some of these species, the assessment team also identified both *B. macrops* and *B. bagginsi* as good candidates for *ex situ* research.

Species for conservation education programs

Finally, we identified 15 species for which conservation education programs are being carried out or are recommended to be carried out. This list is made up of species that are mostly colorful or that due to other characteristics are excellent candidates for the development of these programs.

Microbatrachella capensis EN

Sclerophrys pantherina EN

Xenopus gilli EN

Breviceps macrops VU

Breviceps bagginsi CR

Heleophryne rosei EN

Vandijkophrynus amatolicus EN

Breviceps gibbosus VU

Arthroleptella rugosa CR

Species for conservation education programs (cont.)

© Oliver Angus

Heleophryne hewitti EN

© Ryan van Huyssteen

Breviceps adspersus LC

© Tony Rebelo

Arthroleptella lightfooti NT

© University of Kansas

Hemisus guttatus LC

© Oliver Angus

Heleophryne depressa LC

© Keir Lynch

Leptopelis xenodactylus EN

Appendix

Conservation actions explained:

Note: one species can have more than one conservation action recommended.

Ark	A species that is extinct in the wild (locally and globally) and will become completely extinct without *ex situ* management.
Rescue	A species in imminent danger of extinction (locally or globally) which require *ex situ* management as part of a comprehensive conservation program to ensure their survival.
***In situ* conservation**	A species for which effective mitigation of threats in nature and/or the creation of additional protected habitats is required as part of an integrated action plan to ensure successful survival and conservation.
***In situ* research**	A species that requires further *in situ* research as part of conservation actions. At least one critical piece of information is still to be known.
Husbandry research	Species recommended as reproductive analogs of more threatened species that have been recommended for *ex situ* recovery. These species should be used to study and develop handling protocols that can be applied to more threatened species.
Applied *ex situ* research	Species recommended for *ex situ* research projects other than husbandry research, which directly contribute to the conservation of this species, or a related species, in the wild.

Conservation actions explained (cont.):

Mass production	A species threatened in the wild due to its collection (*e.g.* as a food source), which can be bred in captivity at this time—usually in the country of origin of the species—to meet the demand for special purposes that would otherwise imply collecting species from the wild. This category generally excludes breeding for pets, except in cases where the careful and coordinated breeding and handling can demonstrate reduced pressure of threatened species in the wild.
Education	Species selected for management with the purpose of inspiring visitors of zoos and aquariums, national parks, recreation areas and forests, and in ecotourism activities to increase their knowledge and promote behavioral change in people. For example, when a species is used to promote financial or other support for field conservation projects (including “flag” species or “ambassador species” that are clearly defined).
Supplementation	A species for which *ex situ* management would benefit wild populations through a breeding-and-release program as part of conservation action recommendations.
Biobank	Species for which storage of sperm or cells to perpetuate their genetic variation is urgently recommended due to the serious threat of extinction of the species.
None	Species that do not require any conservation action at this time.

Detailed recommended conservation actions

Species	Rescue (n = 5)	*in situ* conservation (n = 26)	*in situ* research (n = 34)	husbandry analog (n = 5)	applied *ex situ* research (n = 1)	conservation education (n = 15)	biobanking (n = 5)
Microbatrachella capensis	x	x	x			x	x
Sclerophrys pantherina		x	x			x	
Xenopus gilli		x	x			x	
Breviceps macrops	x	x	x			x	x
Arthroleptella subvoce		x	x				
Breviceps bagginsi	x	x	x			x	x
Capensibufo rosei	x	x	x				x
Heleophryne rosei		x	x			x	
Hyperolius pickersgilli		x	x				
Natalobatrachus bonebergi		x	x				

Detailed recommended conservation actions (cont.)

Species	Rescue (n = 5)	*in situ* conservation (n = 26)	*in situ* research (n = 34)	husbandry analog (n = 5)	applied *ex situ* research (n = 1)	conservation education (n = 15)	biobanking (n = 5)
Vandijkophrynus amatolicus	x	x	x			x	x
Breviceps gibbosus		x	x			x	
Arthroleptella rugosa		x	x			x	
Afrixalus knysnae		x	x				
Anhydrophryne ngongoniensis		x	x		x		
Arthroleptella landdrosia		x	x				
Capensibufo selenophos		x	x	x			
Heleophryne hewitti		x	x			x	
Arthroleptella kogelbergensis		x	x				

Detailed recommended conservation actions (cont.)

Species	Rescue (n = 5)	*in situ* conservation (n = 26)	*in situ* research (n = 34)	husbandry analog (n = 5)	applied *ex situ* research (n = 1)	conservation education (n = 15)	biobanking (n = 5)
Breviceps adspersus			x	x		x	
Cacosternum capense		x	x				
Cacosternum platys		x	x				
Arthroleptella atermina		x	x				
Arthroleptella draconella		x	x				
Arthroleptella drewesii			x	x			
Capensibufo magistratus			x				
Arthroleptella lightfooti			x			x	

Detailed recommended conservation actions (cont.)

Species	Rescue (n = 5)	*in situ* conservation (n = 26)	*in situ* research (n = 34)	husbandry analog (n = 5)	applied *ex situ* research (n = 1)	conservation education (n = 15)	biobanking (n = 5)
Cacosternum thorini		x	x				
Poyntonia paludicola			x				
Cacosternum cederbergense			x				
Hemisus guttatus			x			x	
Capensibufo deceptus			x				
Heleophryne depressa			x	x		x	
Leptopelis xenodactylus		x	x			x	
Schismaderma carens				x			

Any questions? **Contact us!**

www.AmphibianArk.org
luis@amphibianark.org

Donate:

Amphibian Ark depends on donations and long-term collaborations to continue rescuing amphibians in crisis. Your contribution makes a big difference!
Donate here.

Breviceps macrops