

Amphibian Conservation Needs Assessments

Amphibian Ark,
Joint SIS and
CNA assessment
in Honduras
© Amphibian Ark



Kevin Johnson¹ and Luis Carrillo²

¹Communications and Development Officer, ²Training Officer, Amphibian Ark

Conservation Needs Assessments (CNAs) use current knowledge of species in the wild to determine those with the most pressing conservation needs and provide a foundation for the development of holistic conservation action plans that combine *in situ* and *ex situ* actions as appropriate.

These assessments allow us to maximise the impact of conservation resources by identifying which measures could best serve those species requiring help. In conjunction with data from recent International Union for the Conservation of Nature (IUCN) Red List Assessments (RLAs) and other amphibian databases, the CNAs are a valuable resource for directing and prioritising amphibian conservation planning and action at the national level, especially for the zoo and aquarium, and the wider *ex situ* conservation community.

Conservation resources are limited, especially for amphibians, and the global zoo and aquarium community, along with the wider *ex situ* conservation community lacks the resources required to effectively manage the number of amphibian programmes which will likely be required to prevent species extinctions. With 41% of amphibian species assessed by the IUCN Red List of Threatened Species currently threatened with extinction (IUCN 2021) the CNA process seeks to objectively and consistently identify priority species and their immediate conservation needs, so resources can be most appropriately allocated.

Background

The Amphibian Ark (AArk) was formed in 2006 as a joint effort of the IUCN Species Survival Commission Conservation Breeding Specialist Group (CBSG), now known

as the Conservation Planning Specialist Group (CPSG), the Amphibian Specialist Group (ASG), and WAZA, in response to the Amphibian Conservation Action Plan (ACAP, Gascon et al., 2007). The AArk is an international NGO which supports a global network of captive breeding programmes that are explicitly linked to conservation and research programmes, and our role is to implement the *ex situ* component of the ACAP. We work closely with the Amphibian Specialist Group (ASG) and the Amphibian Survival Alliance (ASA), to achieve a shared Vision: *Amphibians thriving in nature*. Our mission is “Ensuring the survival and diversity of amphibian species focusing on those that cannot currently be safe-guarded in their natural environments”.

Among other activities, AArk assists its partners in evaluating the needs of amphibian species and regions for conservation work.

The assessment process

In 2006, CBSG, now CPSG, and WAZA held an Amphibian *Ex Situ* Conservation Planning workshop during which a species selection working group developed a decision tree to provide high-level guidance to the *ex situ* conservation community, providing a means to identify and prioritise which amphibian species were most in need of *ex situ* intervention to prevent extinction (Zippel et al. 2006). In many countries the *ex situ* conservation community lacks sufficient expertise on the status of wild populations, and assessments based on the most current field knowledge encourage more appropriate decisions to be made.

At the time the original process was developed, there was no established methodology for evaluating the suitability and need for a given amphibian species to be included in an *ex situ* programme, and which of those species should have *ex situ* programmes established ahead of others. Where Amphibian Red List Authority assessment priorities overlap with those of the AArk, our two organisations have worked together during the past four years to hold joint RLA/CNA assessment workshops.

The decision tree has subsequently been further reviewed and refined and has now evolved into the AArk Conservation Needs Assessment process, and while the primary focus is still to identify and prioritise species for *ex situ* conservation actions, the current version includes recommendations for both *in situ* and *ex situ* conservation actions (Johnson et al. 2020). It is available online (www.ConservationNeeds.org), in English, Spanish and French versions, and all completed assessments and recommended conservation actions are available on the website.

The assessment process is usually coordinated by ASG Chairs who assemble appropriate experts in their country to collaborate on the assessments. Scientists, field biologists and researchers, animal husbandry experts, government representatives, and other stakeholders are vital to the success of the CNAs. Sharing expertise and experiences enhances the assessments, ensuring that appropriate recommendations for national conservation actions are delivered where they are most needed. Participation in the process, along with networking opportunities encourages stronger stakeholder buy-in. Assessments can be undertaken in a physical workshop-based situation, or online.

Unlike RLAs, which assess the risk of species becoming globally extinct, CNAs are developed at the national level, since typically, conservation actions are also planned and implemented at the national level. Multiple assessments for the same species, in different countries within its distribution, and with differing recommendations might be available.

- | | |
|-------------------|----------------------|
| ■ Caribbean | ■ North America |
| ■ Central America | ■ South America |
| ■ Eastern Africa | ■ South-Eastern Asia |
| ■ Eastern Asia | ■ Southern Asia |
| ■ Eastern Europe | ■ Southern Europe |
| ■ Melanesia | ■ Western Africa |
| ■ Middle Africa | |

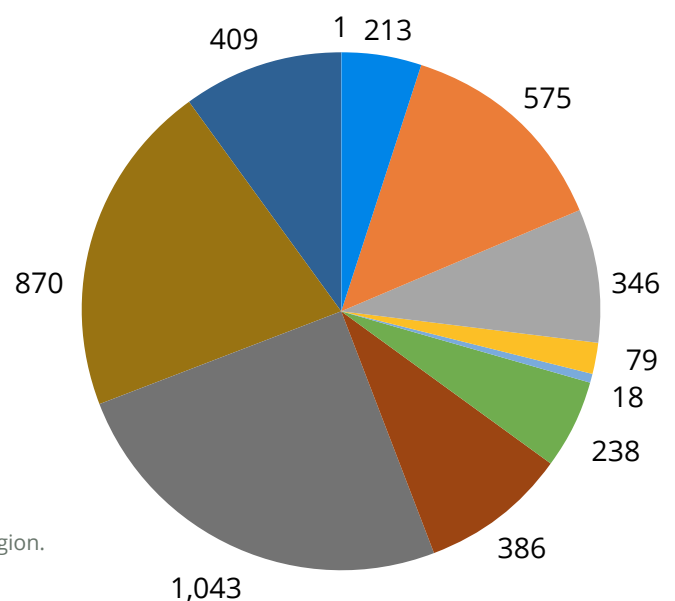
Figure 1. Number of completed Conservation Needs Assessments by region.

A complete CNA for each species includes:

- current information on the status of the species
- in the wild
- suitable protected habitat
- details of the threats facing each species and the likelihood of them being mitigated in time to prevent further decline
- cultural, scientific, socio-economic and phylogenetic significance
- past *ex situ* experience with the species
- information about potential authorisation for any proposed *ex situ* conservation programmes, and the availability of founder animals.

Once assessments have been completed and saved, each species is assigned to one or more of ten different conservation actions, based on the data in the assessments, with none, one, or multiple actions being recommended for each species. These high-level actions, in combination with the data and extensive supporting comments recorded during the assessment process, can subsequently be used by amphibian conservation groups as a guide to develop new, or update existing amphibian action plans or as a prioritised guide to inform future conservation programme development. Species are listed according to their priority for the particular conservation action.

The current version of the CNA process has been used to generate almost 4,200 assessments for 3,544 species of amphibians (31% of the 8,384 currently known species (Amphibiaweb 2021)), in 47 countries (Amphibian Ark 2001a) (Figure 1). Anurans account for 3,582 assessments, with 528 assessments for caudates and 87 for caecilians.



Of the assessments completed to date, 398 of them recommend *ex situ* conservation-assurance programmes for 382 different species, to prevent their imminent extinction, and 561 species have been recommended as potential husbandry analogue species (Figure 2). If all known amphibian species were assessed, we can extrapolate that 934 species will potentially require *ex situ* management to prevent their extinction.

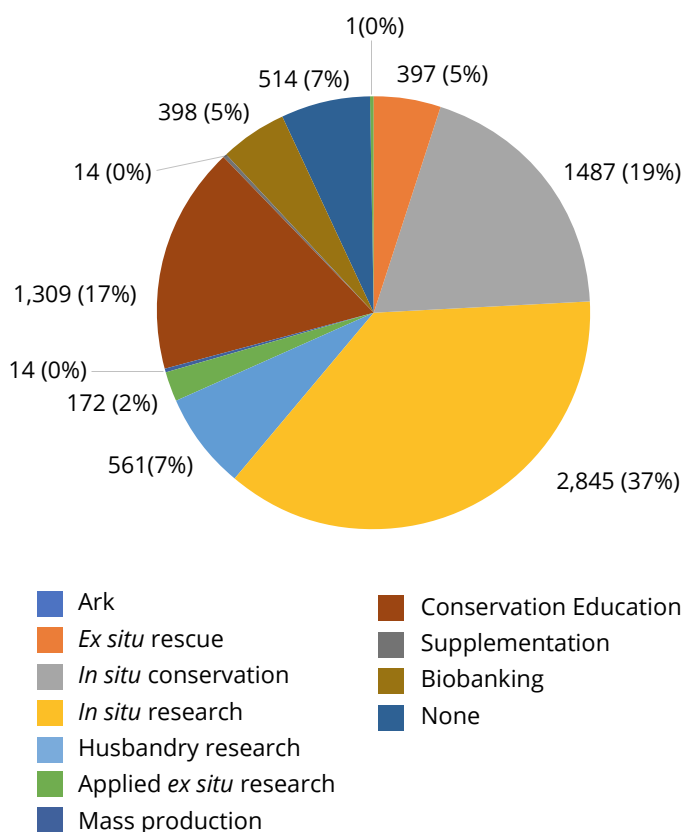
Unfortunately, to date only about 12% of the 398 species recommended for *ex situ* rescue have ever been managed in captive conservation programmes, with just 37 (9.5%) of these species currently in *ex situ* programmes, according to AArk's programme progress database (Amphibian Ark 2021b). Of the 195 active *ex situ* programmes in that database, 95 of these programmes are managed by zoos and aquariums, with the remainder based in universities, museums and private facilities (Amphibian Ark 2021b). Although there are an additional 49 species currently in *ex situ* survival-assurance programmes, for which CNAs have not yet been completed (Amphibian Ark 2021b), it is evident that many more resources are required to effectively manage the number of *ex situ* programmes required. While AArk endeavours to monitor and evaluate the progress of each programme to determine its success or failure, as tasked in the ACAP (Gascon et al., 2007; Wren et al., 2015), there are almost certainly additional *ex situ* survival-assurance programmes for threatened amphibian species which are not yet included in the progress database.

Red List and Conservation Needs Assessments

We are often asked if there is overlap with RLAs. Approximately 40% of the data contained within a RLA is also required within CNAs. The CNAs amplify conservation actions in RLAs, with the Conservation Needs section in many older RLAs lacking consistency and not providing guidance, although recommendations are now required in RLAs for threatened species. The CNAs complement RLAs, and when used together, they provide a more holistic guide to conservation priorities and actions.

The group of experts required to compile both RLAs and CNAs is similar and bringing them together for a single workshop is a much better use of our respective resources. Since early 2018, joint assessment workshops have been held for species in Costa Rica, Ghana, Honduras, India, Malaysia and Papua New Guinea, with a joint methodology being developed to integrate both sets of questions into a single process.

Figure 2. Number of recommended conservation actions generated by Conservation Needs Assessments.



The False Malabar Gliding Frog (*Rhacophorus pseudomalabaricus*) was recommended as a high priority species for *ex situ* rescue, and other conservation actions during the 2020 Conservation Needs Assessments for Indian amphibians © Dr. Benjamin Tapley, ZSL

Using the assessments

Many *ex situ* rescue programmes have been implemented as a result of recommendations from CNAs (e.g. for *Telmatobius culeus* in Bolivia, *Lithobates vibicarius* in Costa Rica, *Telmatobius pisanoi* and *T. stephani* in Argentina, *Alsodes vanzolinii* in Chile, *Eleutherodactylus portoricensis* in Puerto Rico and *Scinax alcatraz* in Brazil). Using the recommendations generated by the CNAs when considering the establishment of new conservation programmes for threatened amphibians will help to ensure that our collective conservation resources are used wisely.

Additional tools are currently being developed which will further prioritise species recommended for *ex situ* conservation action, in an effort to reduce the list of species requiring *ex situ* management to those that are most suitable for a captive breeding programme, and therefore most likely to succeed. It is not feasible, nor practical, for the *ex situ* community to manage the 900+ species which could potentially require *ex situ* rescue. One of the new tools assesses a number of variables for each species (biology; geographic, socio-cultural and political issues; and biosecurity risks), with recommendations being made for species which are most suitable for *ex situ* care, and those which are not, or face potential risks. Species which are recommended for *ex situ* management via a CNA, and deemed to be potentially suitable for captive management, should be considered highest priorities for *ex situ* programmes. Institutions wishing to embark on a programme for those species can use the recently-expanded Program Implementation Tool on the AArk web site (www.amphibianark.org/program-implementation-tool) to determine their potential to host a programme for the species.

The CNA process has changed over time. The criteria and their rankings have been adjusted as experience with the process was gained, and we continue to work with the broader conservation community to identify goals, threats, and conservation options. This evolution is ongoing, with regular reviews of the type of information being collected in the assessments, and the methodologies used to generate priorities and recommended conservation actions. Assessments and prioritisation of individual species are reviewed and updated as we gain knowledge and as the threats to each species change. While the process was originally designed to be used with amphibians, it is now designed so that it can be applied to any group of taxa, and its use with species other than amphibians is currently being tested. The questions in the assessments, possible responses, and the text used within the interface are all customisable and can readily be modified if needed, to better suit different taxonomic groups.

Aparasphenodon pomba is a Critically Endangered tree-frog from Brazil - due to the threats facing the species, *ex situ* management, as well as other conservation actions, is highly recommended and urgent until the threats in nature can be solved. © Cybele Sabino Lisboa, São Paulo Zoo.



References

- Amphibian Ark. 2021a. Conservation Needs Assessments. <https://conservationneeds.org>. [accessed 7 October 2021].
- Amphibian Ark. 2021b. Ex situ program progress. <https://progress.amphibianark.org>. [accessed 7 October 2021].
- AmphibiaWeb. 2021. <https://amphibiaweb.org>. University of California, Berkeley, CA, USA. [accessed 5 Oct 2021].
- Gascon, C., Collins, J.P., Moore, R.D., Church, D.R., McKay, J.E. & Mendelson, III, J.R. (eds) 2007. Amphibian Conservation Action Plan. IUCN/Species Survival Commission Amphibian Specialist Group. Gland, Switzerland, and Cambridge, UK.
- IUCN. 2021. The IUCN Red List of Threatened Species. Version 2021-2. <https://www.iucnredlist.org> [accessed 4 October 2021].
- Johnson, K., Baker, A., Buley, K., Carrillo, L., Gibson, R., Gillespie, G.R., Lacy, R.C & Zippel, K. 2020. A process for assessing and prioritizing species conservation needs: Going beyond the Red List. *Oryx*, 54(1), 125-132. doi:10.1017/S0030605317001715
- Wren, S., Angulo, A., Meredith, H., Kielgast, J., Do S Santos, M. & Bishop, P. (eds) 2015. Amphibian Conservation Action Plan. IUCN Species Survival Commission Amphibian Specialist Group. <https://www.amphibians.org/resources/library/acap/> [accessed 4 October 2021].