Green Operations in Leadership & Development
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FOUNDATIONAL REPORT FOR EX SITU CONSERVATION OF IRANGI PUDDLE FROG (PHRYNOBATRACHUS IRANGI)

info@goldkenya.org

In a report submitted to the Mohamed bin Zayed Species Conservation Fund, a number of issues were highlighted in the light of the Ex situ conservation of this endangered frog as follows;

In reference to the IUCN Redlist: The population of Irangi Puddle Frog, an endangered frog threatened to habitat loss was feared extinct at Kimandi Forest since 2003. It may therefore demand the following:-

1. Controlled increase of its population at Irangi Forest
2. Captive Breeding and Reintroduction of the frog at Kimandi Forest.

In regards to our specimen AMK028: In one of the farms in the Irangi Community, inspected by the research team, a large population of the African Clawed Frog ***Xenopus laevis*** was found in three of the fish ponds owned by a community member. While we believe that there is a possibility that this frog is native in this region, the unusually large population in this farm indicates that there is a high probability of introduction of the frog from another region. Our team therefore concluded that the species was carried together with fingerlings from a hatchery in Sagana, where the farmer acquire their fish. This invasive species are a great fear to us in as much as its competition with P. Irangi is concerned because:-

1. X. laevis and other clawed frogs of the genus Xenopus are highly adaptive to a wide range of environments and would easily outwit the population of P. Irangi.
2. X. laevis is a scavenger that feeds on almost everything that comes its way and this will include the tadpoles and eggs of P. Irangi.
3. Upon examination, specimen AMK 028 was infected by the monogenean ***Protopolystoma xenopodis***, a parasite of the urinary bladder.
4. X. laevis produces so fast and has been observed migrating to nearby water bodies. If it found its way into the habitats of P. irangi or is introduced further into the area, the subsequent erosion of biodiversity, not only of amphibians, but to a wide array of taxa: will inevitably lead to competition &when coupled with the spread of novel pathogens, the habitat loss may lead to further decline of P. irangi.

In regard to studies by Drewes: it is hypothesized that P. irangi breeds in rivers and small streams. The Irangi community has embraced agriculture at a very high scale. Due to the montane temperatures of the region, many crops used in the area require large amount of agrochemicals frequently. The following were observed:-

1. P. Irangi being in threaten and coupled with habitat loss, its exposure to toxicants would accelerate its decline.
2. This exposure to pesticides, though not studied, could be another driver for the observed decline of P. irangi and other amphibians in the locality.
3. Establishing an ex situ facility would not only help us understand these questions but would also lead to an increased population of P. Irangi in the forest.

Irangi Frog is confined to a small area that is characterised with rapid modification of its habitat, settlement and extension of agricultural fields. There is little or no enforcement of land laws regarding the obstruction of water from the streams, drainage of wetlands, diversion of water bodies and other improper management of water systems. Therefore, while the decline of the population of P. Irangi is rapid, the following observations were made:-

1. It would require a lot of money to finance a project that would lobby all stakeholders in the region of P. Irangi to enforce these regulations at this pace and therefore would delay the cause of action.
2. The region populated by P. Irangi is rapidly decreasing and while the puddles inhabited by p. Irangi have not been earmarked, an ex situ facility would ease the process of earmarking them while controlling the population in the wild.
3. An ex situ facility within the regions of P. Irangi would be one of the ways of reducing trespass into its habitat thereby benefiting its increase in the short-term while captive breeding increases its population in the long-term.

Climate Change is rapidly changing the habitats of P. Irangi. At the banks of small streams where males had been found calling in the rainy season have been characterised with many changes. The research team did not establish these calls during the research period. Therefore, the following were deduced.

1. The breeding patterns of the Irangi frog, though not known have probably shifted with the climate change phenomena.
2. The population of P. Irangi is reducing at a rate higher than has been shown by the previous estimations.

Habitat Loss is truly, the greatest single cause of the declining populations of the Irangi Frog. However, we have further developed a list of other equally significant causes of the decline which have been included in details in our report. This is because apart from the Irangi Frog, other amphibians and bird species are also in the verge of decline and this proves that the causes of this are multiple. These were:-

1. Deforestation and overdependence on primary forest products like timber, firewood and charcoal.
2. Poor management of wetlands, destruction of native reeds on the banks of small streams and planting water draining trees along the river banks and wetlands.
3. Obstruction of water bodies is continuing at an alarming rate. This has resulted to further changes in the natural environment of P. Irangi which further exerts pressure on its population.
4. A large number of frogs are killed, though not eaten by cats. With notable external hindrances to the native environment of P. Irangi, the chances of survival are continuously diminishing.
5. Introduction of new or invasive species has closely been associated with the spread of diseases affecting the amphibian species like the deadly chitridiomicosis fungus.
6. Use of inorganic fertilizers and other substances that add unwarranted nutrients into the ecosystem may have led to changes on energy and diet composition in the ecosystem affecting the behavior and adaptation of P. Irangi.

Whereas there are many issues surrounding the conservation of the irangi frog and whereas there is no published accounts of studies that have successfully facilitated amphibians' evolved resistance to diseases and rapid genetic modifications of their morphology to adapt to immediate environmental pressures, and whereas it was assumed that no such protocols will be imminently developed that can protect the P. irangi populations in the short-term, we, therefore recommended the establishment of an Ex situ facility to enhance its survival.

Project Details	Species Name
Community Based Conservation of Irangi Puddle Frog	Phrynobatrachus irangi The Irangi Puddle Frog

Principle Investigator	Other Investigators
Anthony M. Karani, Mr. akarani@goldkenya.org	Galgallo G. Golompo, Mr. Anne W. Wambui, Ms.

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