

List of *Anura* (*Amphibia*) of Sudan

Husam Eldin E Abugabr¹ and Zuheir N Mahmoud^{2*}

¹Department of Zoology, University of Shendi, Shendi, Sudan

²Department of Zoology, University of Khartoum, Khartoum, Sudan

*Corresponding author: Zuheir N Mahmoud, Department of Zoology, University of Khartoum, Khartoum, Sudan, Tel: 249911000000; Email: zuheirnm@hotmail.com

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Abstract

The list of *Anura* of Sudan is a compilation of field work data in various ecosystems of Sudan and deskwork. The study revealed 29 anuran species were of definite occurrence in Sudan and seven more species are of possible occurrence. Anurans of the Sudan are poorly known, except for *Sclerophyrus regularis* which is a dissection, parasitological and physiological model animal in universities laboratory classes and research work. Even though, *S. regularis* is widely misclassified with other species of the genus such as *S. maculatus* and *S. xeros*. Therefore, deeper investigation of the anuran fauna and its taxonomy are required.

Keywords: *Anura*; *Amphibia*; Sudan; Species

Introduction

Barbour found *Rana mascareniensis*, *Phrynobatrachus natalensis* and *Bufo regularis*, from HC Phillips collection from Sennar. *Dicrglossus occipitalis* were collected from Khartoum. Mulleir et al. recorded *Bufo pentoni* and *Tomopterna kachowskii* from the red sea hills [1]. Mahmoud recorded *Pyxicephalus cordofana* from west Kordofan. Evans et al. collected fossil vertebrae and described *Kababisha humarensis* and *Kababisha sudanensis* gen. et sp. nov., order *Urodela*, suborder *Salamandroidea*. The unidentified vertebrae belonged to frogs and apoda. Rodel related anurans of the Sudan to the eastern region of Africa [2].

Literature Review

Anurans were collected by hand from the Nile, Khartoum, Geizera, Sinnar, west Kordofan states and the red sea hills. Material was kept moist and either identified in the field or in the laboratory. Identification followed Rodel. The following added to Sudan Amphibian [3]. Barbour reported *Ptychadena mascareniensis*, *Phrynobatrachus natalensis* and *Sclerophyrus regularis* from Sennar. *Hoplobatrachus occipitalis* were collected from Khartoum. Abugabr et al. recorded *Sclerophyrus maculatus* and *Sclerophyrus xeros* from Shendi area. Mulleir et al. collected *Sclerophyrus pentoni* and *Tomopterna kachowskii* from the red

sea hills. Mahmoud found *Pyxicephalus cordofana* from Al Muglad, west Kordofan (Table 1). According to Frost *P. cordofana* (Cordofan frog) is endemic to Sudan [4]. In addition to the nine species listed above, Amphibian web sites recorded 20 species of definite occurrence and seven species which are possibly to be found in Sudan. Evans et al. collected fossil vertebrate of frogs, *Urodeala* and apoda [5-7].

Discussion

The study showed the presence of 11 families, 17 genera and 29 species of definite occurrence. The family *Rhacophoridae* is possibly to be represented by the Kekker's foam-nest frog [8-10]. Diversity wise, Table 1 showed that *Hyperoliidae* has three genera and five species. *Ptychadenidae* has two genera and seven species followed by *Bufo* which is represented by one genus and six species. Families *Arthrolepyidae* and *Dicrglossidae* and the possibly to occur *Microhylidae* and *Rhacophoridae* each is represented by one genus and one species [11].

Microhylidae with its 584 species n 61 genera and 11 subfamilies rendering is the largest frog family (*Amphibia* Web-Microhylidae). *Phrynomantis microps* possibly occur in Sudan. Abugabr et al. managed to differentiate between *S. regularis*, *S. xeros* and *S. maculatus* using their proteinaceous and alkaloid/steroid components. This in line with Maciel et al. and Sciani et al. who found that secretions proved to be a useful tool in taxonomical and species identification [12,13].

It worth mentioning that, Evans et al. collected the first fossil Amphibians of Sudan from the cenomanian formations of Wadi milk. They described *Kababisha humarensis* gen. et sp. nov. and *Kababisha sudanensis* gen. et sp. nov. (family *Sirenidae*). According to them the genus *Kababisha* is the first sirenid (Salamander) to be recognized outside North America [14]. They described gymnophionan (represented by four trunk vertebrae of legless caecilians) as the oldest gymnophionan material from Gondwana, the first fossil gymnophionan from Africa and the earliest gymnophionan with holospondylous vertebrae. Pollath found but not yet identified Amphibians' remains from mid-holocene in Abu Tabari, Wadi Hawar [15].

Table 1: List of Sudan *Anura*.

Family	Scientific name	English Name
<i>Arthrolepyidae</i>	<i>Leptopelis bocagii</i>	Bocage's tree frog
<i>Bufo</i> nidae	<i>Sclerophyrus dodsoni</i>	Dodson's toad
	<i>Sclerophyrus pentoni</i>	Shaata gardens toad
	<i>Sclerophyrus xeros</i>	Desert toad
	<i>Sclerophyrus maculatus</i>	Hallowell's toad
	<i>Sclerophyrus regularis</i>	African common toad
	<i>Sclerophyrus steindachneri</i>	Steindachner's toad
<i>Dicroglossidae</i>	<i>Hoplobatrachus occipitalis</i>	Crowned bullfrog
<i>Hemisotidae</i>	<i>Hemisis marmoratus</i>	Marbled snout-burrower
	<i>Hylarana galamensis</i>	Marble legged frog
<i>Hyperoliidae</i>	<i>Hyperolius viridiflavus</i>	The common reed frog
	<i>Hyperolius cinnamomeoventris</i>	Braganca reed frog
	<i>Afrixalus weidholzi</i>	Weidholz's banana frog
	<i>Afrixalus quadrivittatus</i>	Khorattar bananaf
	<i>Kassina senegalensis</i>	The senegal running frog
<i>Microhylidae</i>	<i>Phrynomantis microps</i>	West African rubber frog
<i>Phrynobatrachidae</i>	<i>Phrynobatrachus natalensis</i>	Natal dwarf puddle frog
	<i>Phrynobatrachus perpalmatus</i>	Lake Mweru river frog
	<i>Phrynobatrachus mababiensis</i>	Mababe puddle frog
<i>Pipidae</i>	<i>Xenopus laevis</i>	African clawed frog
	<i>Xenopus clivii</i>	Eritrea clawed frog
	<i>Xenopus muelleri</i>	Muller's platanna
	<i>Xenopus fischbergi</i>	Fischberg's clawed frog
	<i>Silurana epitropicalis</i>	Cameroon clawed frog
<i>Ptychadenidae</i>	<i>Ptychadena anchietae</i>	Plain grass frog
	<i>Ptychadena schillukorum</i>	Schilluk ridged frog

	<i>Ptychadena mascareniensis</i>	Mascarene grass frog
	<i>Ptychadena nilotica</i>	Nile grass frog
	<i>Ptychadena tellinii</i>	Central grassland frog
	<i>Ptychadena pumilio</i>	Medine grassland frog
	<i>Hildebrandtia ornate</i>	Hildebrandt's burrowing frogs
<i>Pyxicephalidae</i>	<i>Tomopterna cryptoti</i>	Common sand frog
	<i>Tomopterna kachowskii</i>	Kachowski sand frog
<i>Ranidae</i>	<i>Pyxicephalus cordofana</i>	Cordofan frog
	<i>Amnirana galamensis</i>	Marble-legged frog
<i>Rhacophoridae</i>	<i>Chiromantis kelleri</i>	Kekker's foam-nest frog

Conclusion

The present work is a list of anuran of Sudan based on field and deskwork. This work recommends launching of a project to collect anurans, capture their photos using high resolution digital and infrared cameras and automated sound recording. Classical and molecular approaches are to be used in classification of anurans.

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