



Colorful Harlequin Frog Re-discovered in Colombia

Luis Alberto Rueda Solano

Atelopus carrikeri is a toad typically of uniform black color that inhabits the paramos (3500 – 4800 msnm) of the Sierra Nevada de Santa Marta (Ruthven 1916). This species belongs to ignescens group since it has a robust body, with relatively short limbs and tubered skin (Lötters 1996). Until recently, there were no recent reports on *Atelopus carrikeri*, due to a lack of new explorations in the Sierra Nevada. The last report was from 1994 at El Paramo de Macostama, Departamento de la Guajira and La Serrania de Cebolleta, Departamento de Magdalena, Colombia.



Atelopus carrikeri © Luis Alberto Rueda Solano

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ATELOPUS CARRIKERI DISCOVERED IN COLOMBIA

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In early February 2008 in La Serania de Cebolleta, I discovered an abundance of tadpoles and six adult males of a red morpho of *Atelopus carrikeri*. It is

important to note that 2 of these adults were sick. The re-discovery of *Atelopus carrikeri* is significant because it adds to the list of *Atelopus* species that persist in the Sierra Nevada, making the Sierra Nevada

de Santa Marta a sanctuary for harlequin frogs in Colombia in contrast to other upperland areas where *Atelopus* are apparently already extinct. Author email: biobetorue@hotmail.com

AROUND THE WORLD

Amphibians of Pakistan

Muhammad Sharif Khan

The arid sub tropical climate in Pakistan places constraints on the local amphibians. However, because of riparian Indus Valley, torrents in the sub Himalayas and subterranean karez channels in Balochistan, twenty four amphibian species and subspecies belonging to four families Bufonidae (10 species), Megophryidae (1), Microhylidae (2), and Ranidae (11) are known from Pakistan (Khan, 2006, 2008).

Family Bufonidae

Bufo stomaticus, excluding higher mountain ranges, is the most common toad throughout Pakistan. Other species of toad: *latastii*, *baturae*, *pseudoraddei*, *siacheninsis*, *himalayanus* and *hazarensis* are Hi-



Bufo melanostictus © Muhammad Sharif Khan

malayan and sub-Himalayan species. The olive toad *B. olivaceus* is spottily distribution from the sub-Himalayas through plains to Balochistan. However, *B. surdus* and *B. viridis zugmayeri* are confined to karez waters in Balochistan.

Bufo tadpoles are small, drab in color, with characteristic bulging round body, and a weak tail. They form loose schools along marginal waters, possess two rows of denticles, with biting jaws, and are rasper feeders.



Bufo stomaticus © Muhammad Sharif Khan

Family Megophryidae

The Tibetan lazy toad *Scutigerynyingchiensis* is the sole representative of this Tibetan family. It is known from the Himalayas between 3000 and 3500 m and has been collected from Azad Kashmir, Gilgit and Dosai Plains in the northwestern Himalayas. The tadpole has a long tail, and is a rasper feeder.

Family Microhylidae

The ant frogs are represented by two species. The tiny *Microhyla ornata* is widely distributed in the sub Himalayas and Punjab riparian system. The recently discovered larger south Indian species *Uperodon systoma* is a burrower, living underground in termite

AMPHIBIANS OF PAKISTAN

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and ant tunnels, and only coming to the surface to breed during heavy rains.

The microhylid tadpole is transparent, filter feeds, and forms



Euphlyctis cyanophlyctis

midstream schools.

Family Ranidae

Frogs of the family Ranidae are a heterogeneous assemblage, widely distributed in Indo-Pakistan sub-continent and Southeast Asia. *Euphlyctis cyanophlyctis* is the most widely distributed species in plains and sub-Himalayas. It comprises three subspecies: *E. c. cyanophlyctis* widely distributed in plains, *E. c. microspinulata* known from Balochistan, and *E. c. seistanica* which occurs along Afghan/Pakistan border. Of the two cricket frogs *Fejervarya limnocharis* is widely distributed in the sub Himalayas and upper Indus Valley, while *F. syhadrensis* occurs in the lower Indus Valley. The bull frog *Hoplobatrachus tigerinus* is the largest and most widely distributed species in the plains.

The sub-Himalayan burrowing frog *Sphaeroteca breviceps* is carried by river waters in the plains, where it has a spotty distribution.

Of the three peculiar brook

frogs from the genus Paa: *P. barmoachensis* and *P. hazarensis* are sub-Himalayan, while *P. sternosignata* is confined to the karez subterranean water channels in Balochistan.

The ranid tadpoles are large, with a long, strong muscular tail, and most are bottom macrophagus. The oral disc possesses simple or multicusped denticles, and most are macrophagus carnivores.

Threats and conservation of Pakistani amphibians

The causes of global amphibian declines are complex and vary from place to place. Some of the main factors implicated include ozone layer depletion, global warming, agricultural chemicals and chytrid fungus.

The aridity in Pakistan restricts the local amphibian species to those areas retaining water for longer periods of time. As soon as summer sets in they become active and feed, well before monsoon rains; the boom period of their activity. They utilize



Hoplobatrachus tigerinus

rains mostly for breeding and dispersal.

Amphibian activity is, however, marred by spraying of pesticide and agri-boost chemicals, since it is also the peak period when pests attack

cash crops. Run-off of the chemicals into nearby ponds and puddles kills eggs, tadpoles, and adults, and deter breeding individuals.

Moreover, considerable number of amphibians are crushed daily under passing traffic while crossing roads to reach their potential breeding sites.

Frogs and toads at egg, tadpole and adult stages are used in school, college and hospital laboratories for experimentation and tests and demonstration of vertebrate anatomy, causing considerable damage to the natural populations. Considerable depletion has been observed in natural population of *Hoplobatrachus tigerinus* around the laboratories where this species is used as a model animal for demonstration of vertebrate anatomy. Thankfully, as yet no amphibians are used as food in Pakistani culture. What will happen in the future can't be predicted, however, because fast foot restaurants are appearing rapidly in food markets.

To ensure the persistence of healthy prosperous amphibian communities in Pakistan, we need to establish protected swamps and wetlands as amphibian reserves throughout the plains and sub-montane areas of Pakistan. Moreover, under-road pathways ("frogways") need to be constructed close to the wetlands which are used as potential breeding sites by the local amphibian species to reduce considerably "road slaughter" of the amphibian species.

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2008 - Year of the Frog - Activities from Sri Lanka

Anslem de Silva Co-Chair, ASG Working Group, Sri Lanka.

Members of the newly formed Amphibian Specialist Group of Sri Lanka are undertaking the following activities:

1. Conducting awareness programs for schools and the general public.
2. Conducting Status survey on amphibians
3. Survey to investigate the pattern of malformations and parasitic infection in amphibians of Sri Lanka.
4. Taxonomy projects.
5. Conservation of threatened species

Sri Lanka is an island of 65,610 km² in area. The amphibian diversity and species richness per unit area of land is one of the highest in the world. Presently, a total of 106 amphibian species are known from Sri Lanka. However, of these, 21 species are considered extinct. Recent observations indicate that amphibians of the country are facing many threats. Additionally, many malformations and parasitic infections were observed in frogs. Sri Lanka is an agricultural country, and presently agrochemicals are widely used in agriculture and plantations and the runoff water from these lands and industrial waste accumulate in waters inhabited by some frogs as well as pollute the natural habitats of frogs. Several cases of parasitic infections and leech attacks of amphibians were also observed.



***Lankanectes corrugatus* (Corrugated water frog) with ectromella © Anslem de Silva**

The major threats posed to amphibians of the country are habitat loss, alterations and degradation. In addition, preliminary observation made on *Polypedates eques*, an endemic frog inhabiting the highest plain of the country (Horton Plains National Park, 2000-2300 m) showed the presence of a life threatening Proteocephalan Cestode infection in 19 (31%) males of the 61 studied. Recently (2006) frogs were observed with ectromella, a malformation condition as reported by Meteyer (2000) in addition to frogs with large wounds (similar to carcinoma).



***Lankanectes corrugatus* (Corrugated water frog) with ectromella © Anslem de Silva**

Thus, an island-wide project to investigate the pattern of malformations, injuries and parasitic infection in amphibians of Sri Lanka is in

progress under the Co-Chair (AdS) along with a few members of the Executive Committee of the ASG (Sri Lanka), academics, veterinarians and amateur herpetologists .



***Sphaerotheca species* with a severe wound. © Anslem de Silva**

The researchers hope to exchange their findings with others doing similar projects in other countries as well as applying the results to devising management strategies, conduct awareness programs and in the preparation of Conservation Action Plan for amphibians of Sri Lanka.

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Editor's note: The ASG's Don Church recently returned from Sri Lanka, where he made significant progress in advancing amphibian conservation by facilitating an unprecedented agreement with the government to protect some of the most critical amphibian habitat. A full report will be provided in the next Froglog, along with reports of conservation successes elsewhere.

2008 Projects Funded

Thanks to all those who submitted Seed Grant applications: this year. The quality was exceptional. We received close to 40 applications encompassing an impressive range of geographies and issues. The current projects were selected for funding:

Unrestricted

Catenazzi, A. Conservation of montane forest anurans in Southeastern Peru

de Silva, A. Investigating the incidence and geographical pattern of Malformations, Abnormalities, Injuries, Parasitic infection and Chytrid fungus (*Batrachochytrium dendrobatidis*) of Frogs, Toads and Caecilians of Sri Lanka.

Weerawardhena, R. and Dr. A. P. Russell: Patterns of Recolonization of Tropical Anurans following For-

est Habitat Alteration

Phimmachak, S. and Stuart, B.L. Field conservation of the Lao endemic newt, *Paramesotriton laoensis*.

Kierluff, C. Conservation of *Scinax alcatraz*.

Torsekar, V. Impact of habitat alteration on the amphibian density and diversity in Central Western Ghats of India

Solé, M. Health status assessment of the amphibians of Bahia State, northeastern Brazil.

Kosch, T. Study of the Prevalence of the Amphibian Fungal Disease Chytridiomycosis in Peru and the Role that MHC Genes Play in Resistance.

Chester Zoo

Dempewolf, L. Determination of

the current status and distribution of the critically endangered endemic golden tree frog (*Phyllodytes auratus*).

Laufer, G. Amphibian status in two sites invaded by *Lithobates catesbeianus* and *Batrachochytridium dendrobatidis* in Uruguay.

ARMI

Richardson, J. The influence of habitat connectivity and local adaptation on amphibian population persistence.

Miles, D. Synergistic Effects of Atrazine and Chytrid Fungus on Tadpole Development.

Baldwin, T. The Effect of Multi-scale Forest Disturbance on Pool Breeding Amphibian Ecology.

Harless, M. Effect of road Deicing chemicals on larval amphibians.

DAPTF Seed Grant Reports

Tim Halliday

Recipients of DAPTF Seed Grants are generally expected to publish the results of their projects in refereed journals, or as articles in Froglog. The following papers report work supported by DAPTF Seed Grants awarded to Sebastián Barrionuevo & María Ponssa (2004), David McLeod & Wichase Khonsue (2004) and Paola Peltzer & Rafael Lajmanovich (2005):

Barrionuevo, J. S. & Ponssa, M. L. (2008) Decline of three species of the genus *Telmatobius* (Anura: Leptodactylidae) from Tucumán Province, Argentina. *Herpetologica*: 64; 47-62. (pretorum@hotmail.com)

McLeod, D. S., Sheridan, J. A., Jiraungkoorskul, W. & Khonsue, W. (2008) A survey for chytrid fungus in Thai amphibians. *Raffles Bull. of Zool*: 56; 199-204. (dsmcleod@ku.edu)

Peltzer, P. M., Lajmanovich, R. C., Sánchez-Hernandez, J. C., Cabaña, M. C., Attademo, A. M. & Bassó, A. (2008) Effects of agricultural pond eutrophication on survival and health status of *Scinax nasicus* tadpoles. *Ecotoxicology & Environmental Safety*: 70; 185-197. (paolapeltzer@hotmail.com)

Threatened Amphibians in the Succulent Karoo Hotspot of southern Namibia

Alan Channing

The Namib Desert is one of the least hospitable places south of the Sahara for amphibians. The meagre rainfall, shifting sand dunes, and gravel plains are far from ideal habitats for frogs. Nevertheless, amphibians do manage to live under special conditions in this region.

Previous work on amphibians in this area (Channing 2001) lists the following species (taxonomy updated):

Family Bufonidae

Poyntonophrynus hoeschi

Widespread in central Namibia.

Vandijkophrynus robinsoni

Restricted to the Orange River Valley.

Vandijkophrynus gariiepensis

Restricted to the Orange River valley.

Family Brevicipitidae

Breviceps macrops

Known from the southern coastal Namib Desert.

Family Microhylidae

Phrynomantis annectens

Widespread in southern Namibia.

Family Pipidae

Xenopus laevis

Widespread in southern Africa.

Family Pyxicephalidae

Amietia angolensis

Restricted to the Orange River valley.

Amietia fuscigula

Restricted to the Orange River valley and the permanent springs in the Naukluft Mountains.

Cacosternum boettgeri

Peripheral, but may extend into the eastern margins of the area.

Cacosternum namaquense

Known from the Orange River valley and into southern Namibia.

Pyxicephalus adspersus

Peripheral, but may extend into the northern margins of the area.

Strongylopus grayii

Restricted to the Orange River valley.

Tomopterna tandyi

Widespread in Namibia.

The aims of this study were to identify and evaluate threatened amphibians in the northern extremes of the Succulent Karoo. Studies on the Desert Rain Frog, *Breviceps macrops*, are reported separately (see Channing 2008a,b).

METHODS

A field trip was made to the area in January, just after unusually heavy rain. Temporary pools had formed which served as breeding areas. Breeding males were located by their calls. Advertisement calls were recorded, as they are species-specific and may indicate cryptic or unrecognized taxa. Tadpoles were collected for later identification. Toe clips were taken for DNA analysis.

Recordings were made with a Marantz PMD 660 digital recorder.

Tissues for later DNA analysis were preserved in absolute ethanol.

RESULTS

Tandy's Sand Frog, *Tomopterna tandyi*, was widespread in riverbeds, as was the common platanna *Xenopus laevis*. The Cape River Frog, *Amietia fuscigula*, was found in the springs on both the eastern and western drainages of the Naukluft Mountains.

The common toad found at Naukluft (*Poyntonophrynus hoeschi*) was heard to have a long buzzing advertisement call, and was recorded. Males call from shallow water.

The recording shows that the call consists of a rapid buzz, with about 100 notes/second, at a dominant frequency of 2.0 kHz. The call may continue uninterrupted for 10 seconds (Fig 1).

The call of *P. hoeschi* from Windhoek consists of brief chirps, uttered at a rate of three per second. Each chirp consists of about 12 notes, with a duration of 0.1 seconds (Fig 2).

TAXONOMY

The advertisement call differences between the Windhoek and Naukluft toads indicate that two species are involved. The type locality of *P. hoeschi* is Okahandja, situated 45 km

THREATENED AMPHIBIANS OF THE SUCCULENT KAROO

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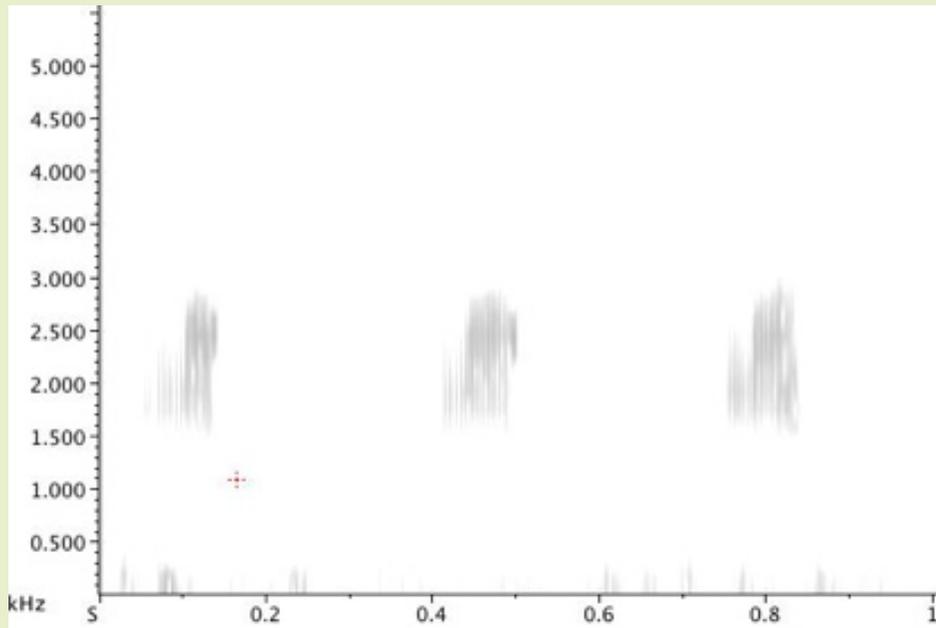


Figure 1. The advertisement call of *Poyntonophrynus jordani*

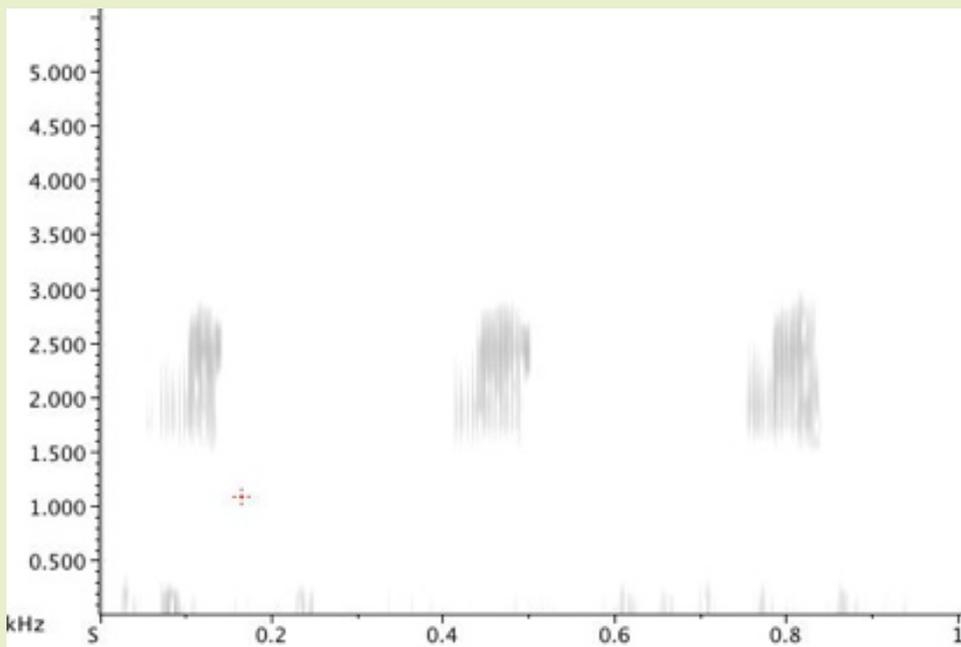


Figure 2. The advertisement call of *Poyntonophrynus hoeschi*

north of Windhoek. The name *jordani* was erected for then *Bufo jordani*, from Satansplatz, by Power in 1926. Satansplatz is only 15 km from the Naukluft Mountains. Detailed taxonomic studies by Poynton (1964) on this group recognised slight differences from typical *hoeschi* in a reduced auditory apparatus, and no marginal toe webbing. The dorsal colouration of preserved material was uniform (Poynton 1964), although in life the dorsum closely matches the colors of the local river gravel (Fig 3), with black, red and orange on a beige background.

DNA analysis is ongoing, to compare this form with other members of *Poyntonophrynus*. Provisionally, the Naukluft toad is assigned to *P. jordani*.

DISCUSSION

Two amphibians in the northern Succulent Karoo Biome are considered threatened: *Breviceps macrops* and *Poyntonophrynus jordani*. *Breviceps macrops* is threatened by diamond mining, discussed in Channing (2008a, b). *P. jordani* is presently only known from a very restricted range, within an extremely hostile environment for a small toad, considering the aridity of this area. It is considered Vulnerable as it is only known to oc-



Figure 3. Dorsal color pattern of the Naufluft toad

occupy an extremely small area (IUCN 2000).

The discovery of an apparent new endemic species in the northern parts of the Succulent Karoo, increases the number of vertebrates restricted to this biome, and emphasizes the conservation importance of this hotspot.

Acknowledgements

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University, funded by the CEPF. The Critical Ecosystem Partnership Fund is a joint initiative of Conservation International, the Global Environment Facility, the Government of Japan, the MacArthur Foundation and the World Bank. A fundamental goal is to ensure civil society is engaged in biodiversity conservation. Additional funding was provided by the University of the Western Cape, and the Nation-

al Research Foundation. Mike Griffin of the Ministry for the Environment and Tourism in Namibia kindly arranged permits and assisted in fieldwork in Namibia.

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ANNOUNCEMENTS

Sabin Award for Amphibian Conservation

Thanks to a generous donation from Andrew Sabin, the Amphibian Specialist Group (ASG) announces a call for nominations for the second annual award to recognize individuals and groups who have made a significant contribution to promoting the conservation of

globally threatened amphibians. The award is open to individuals or groups from all disciplines relevant to amphibian conservation and research anywhere in the world. Nominations of individuals from developing countries are highly encouraged.

ELIGIBLE CANDIDATES

Individuals or groups will be considered based on contributions in any area. Examples include:

- Habitat Protection
- Capacity Building
- Education/Awareness

- Policy
- Species recovery projects
- Advances in understanding threats and how they may be mitigated
- Improving knowledge of status and distribution of amphibians
- Innovative approaches to conservation

individual or group and a detailed description of what they have done and its significance for amphibian conservation.

Nominees will be assessed by a review panel representing a broad cross-section of disciplines.

AWARD CEREMONY

The award of 25,000 USD will be presented to the selected recipient at the 6th World Congress of Herpetology in Manaus in August. Award recipients and their work will be featured in Froglog.

NOMINATIONS

The closing date for nominations is June 1 2008. Nominations should include the name of the



Rana catesbeiana © Don Church

Instructions to Authors

FROGLOG publishes a range of articles on any research, discoveries or conservation news relating to the amphibian decline phenomenon. We encourage authors describing original research to first make submissions to a refereed journal and then, if appropriate, to publish a synopsis in Froglog. Submissions should be in English, normally no more than 1000

words and follow the style of FROGLOG Vol 83 (as should references). You may also submit images, maps, figures or tables. We encourage the submission of photographs to accompany text. Short news items and press releases are also acceptable. Please submit potential contributions to Robin Moore at the address in the box to the right.

FROGLOG is the bi-monthly newsletter of the Amphibian Specialist Group (ASG). Articles on any subject relevant to the understanding of amphibian conservation, research and / or assessments should be sent to: Robin Moore, Editor, Conservation International, 2011 Crystal Drive, Suite 500, Arlington, VA 22202, USA.
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