

A Study of Morphological Variations in Populations of *Euphlyctis cyanophlyctis* (Schneider, 1799) (Anura: Ranidae) From District Jamshoro, Sindh

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Abstract.- In total twenty three adult specimens of *Euphlyctis cyanophlyctis* (Schneider, 1799) (Anura: Ranidae) were collected from three different but adjoining areas of District Jamshoro viz., village Sain Dino Mallah, K.B. Feeder canal and village Faiz Mohammad. The collected specimens were identified using authentic literature and variations were determined by international taxonomic characteristics. *E. cyanophlyctis* collected from the adjacent areas were observed to be morphologically variable from each other. The most important variable characters were dorsal body color, body length and body weight. This species is being reported for the first time from the studied area.

Key words: Skittering frog, *Euphlyctis cyanophlyctis*, morphology, variation.

Euphlyctis cyanophlyctis was first discovered and reported by Schneider in 1799. It is commonly called the Skittering frog because of its peculiar unique habit of skittering over the water surface (Das and Dutta, 1998). The skittering frog is widely distributed throughout the Pakistan. It extends from Thailand to Nepal, India, Sri Lanka, Iran and Afghanistan (Suresh and Katti, 2002). *E. cyanophlyctis* is highly aquatic and littoral. It inhabits different types of habitats including water pools, plains and sub-mountainous areas (Khan, 1997). The body length is about 50-60 mm from snout to vent; throat is smooth; vocal sacs are light

brown; male has vocal slits under the lower jaw; dorsal side of the body is light grey, olive green or light brown, some times black with numerous scattered small smooth tubercles and irregular black spots; ventrum is white and smooth, immaculate or with dark speckling or reticulation (Khan and Tasnim, 1989). Head is moderate in size; snout is scarcely pointed; canthus rostralis indistinct; tympanum is distinct, about two third the size of the eye; interorbital space narrower than the upper eyelid; fingers are slender and pointed or slightly swollen at the tips, the first not extending beyond second; toes of hind limbs completely webbed; inner metatarsal tubercle is long, conical like a rudimentary toe (Boulenger, 1890).

The aim of this study was to investigate the intraspecific variations among *E. cyanophlyctis* populations.

Materials and methods

District Jamshoro is located on the right bank of Indus River. It covers the geographical area of 11,517 km² and embraces large number of *E. cyanophlyctis*.

Nine adult specimens of skittering frog were collected from stagnant water pond of Village Sain Dino Mallah during May 2011, eight adult specimens were collected from K.B. Feeder canal during June 2011 and six adult specimens were collected from village Faiz Muhammad during July 2011 by using an Arial Net. The specimens were identified using taxonomic literature (Das and Dutta, 1998; Dubois and Ohler, 1995; Khan and Mufti, 1995; Ford and Cannatella, 1993; Khan and Ahmed, 1987; Balletto *et al.*, 1985). The morphometrics of collected specimens was determined by using international taxonomic characteristics. Body weight of specimens was sought in grams by using electronic balance. Where as Metric ruler and Divider were used for various length measurements in millimeters including body (snout to vent), fore limbs, hind limbs, eye diameter and tympanum diameter.

The male and female skittering frogs were identified by tympanum diameter: Larger than eye in the male frog, and equal or smaller than eye in females. In male body weight was lighter than female, and the body length was shorter than female

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Results and discussion

District Jamshoro is highly variable in soil texture and environmental conditions. It is rich in water reservoirs including river tributaries, ditches, ponds, canals and swampy field areas that contain large number of different frog species including Skittering frog.

E. cyanophlyctis has previously been reported by several researchers of Pakistan and other regions (Nauwelaerts *et al.*, 2004; Das and Dutta, 1998; Khan, 1987; Boulenger, 1890), but none of them have reported any variations within different populations of *E. cyanophlyctis* of same region.

The skittering frogs collected from Village Sain Dino Mallah had dorsal side light brown in color, entirely plane without any dark patch or mark. Thighs had very rare patches (Fig. 1). They were determined to be heaviest in body weight and largest in body length (Table I) in comparison with other skittering frogs collected from other areas.

Skittering frogs collected from village Sain Dino Mallah differs from others (Nauwelaerts *et al.*, 2004; Khan, 1987) in having no slim body with dark spots or patches on dorsal side.

The male and female specimens collected from K.B. Feeder Canal observed to be grey in dorsal body color with dark patches on all the dorsal side of the body (Fig. 1). Body weight and body length determined to be less than specimens collected from village Sain Dino Mallah (Table I).

All the specimens of this *E. cyanophlyctis* collected from Village Faiz Muhammad were light yellow dorsally with dark patches (Fig. 1). The lightest weight and shortest length of the body was also recorded from the specimens of this area (Table I).

The specimens collected from K.B. Feeder canal and village Faiz Muhammad exhibit variations from skittering frogs of other localities (Khan, 1987; Boulenger, 1890) in having dorsal side of body without tubercles, rugose and distinct rows of pores.

No yellow or white irregular longitudinal stripes found on the posterior side of thighs of any specimens of *E. cyanophlyctis* of District Jamshoro as some workers found this character in skittering frogs of other regions (Das and Dutta, 1998). Skittering frogs of closely adjacent areas show high variations in morphology as stated above however

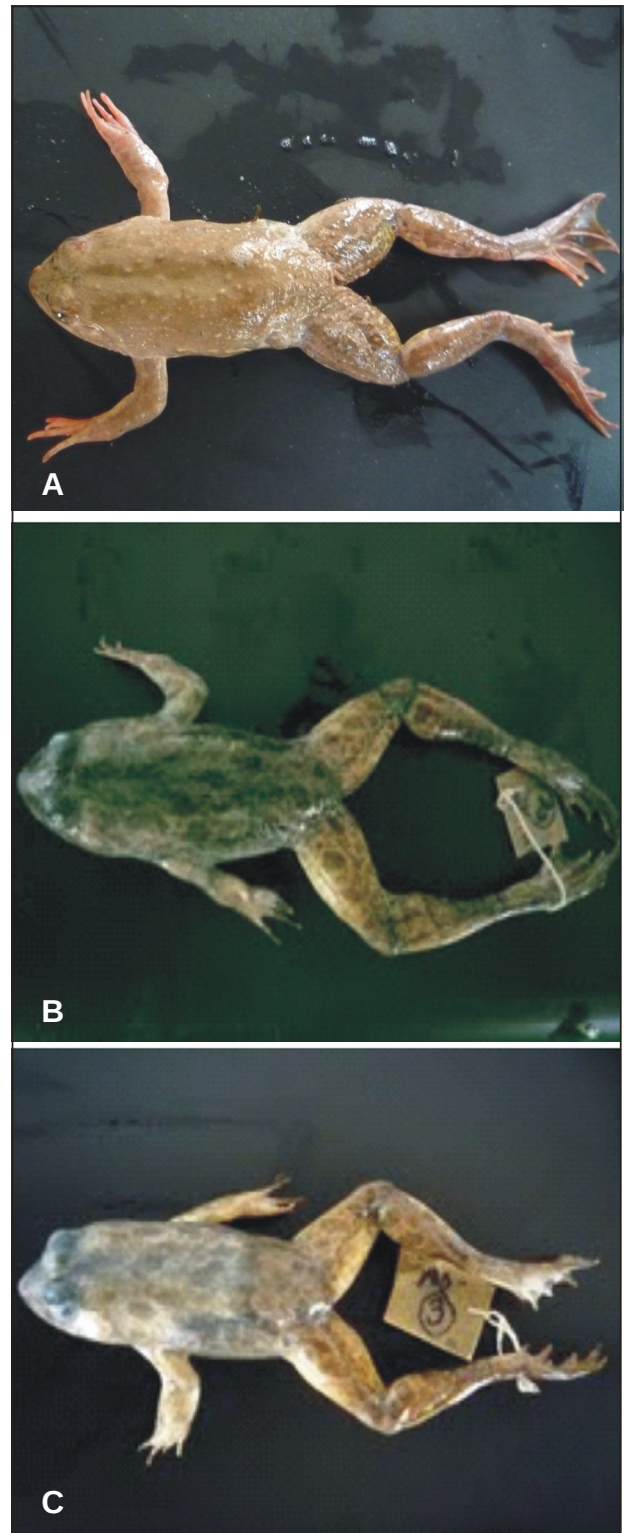


Fig. 1. *Euphlyctis cyanophlyctis* collected from Village Sain Dino Mallah (A), K.B. Feeder (B), and Village Faiz Mohammad (C).

Table I.- Morphometrics of *Euphlyctis cyanophlyctis* population recorded from village Sain Dino Mallah, K.B. Feeder canal, and village Faiz Mohammad.

S. no	Sex	Body weight (g)	Body length (mm)	Fore limbs length (mm)	Hind limbs length (mm)	Eye diameter (mm)	Tympanum diameter (mm)
Sain Dino Mallah							
5	Male	35.4±0.89	52.6±2.40	22.4±1.81	30.2±1.64	7.4±0.54	8.8±0.44
4	Female	38.5±1.73	58.25±2.36	24.25±0.95	34±1.15	7.5±0.57	7.25±0.5
K.B. Feeder canal							
3	Male	32±1.73	47±1.73	18.66±0.57	25.66±0.57	7.33±0.57	8.66 ± 0.57
5	Female	35.4±0.89	49.6±0.89	19.8±0.44	27.4±0.89	7.6±0.54	6.8 ± 0.83
Village Faiz Mohammad							
4	Male	21.5±1	34±3.36	16.25±1.25	25.25±0.5	6.25±0.5	7.5±0.57
2	Female	24.5±0.70	41±1.41	18.5±0.70	26.5±0.70	6.5±0.70	5.5±0.70

light intensity and atmospheric temperature of these areas are not very different from each other but difference in chemical quality of water reservoirs inhabited by different populations, difference in the food quantity and age groups may be the cause of such great variation.

References

- Balletto, E., Cherchi, M.A. and Gasperetti, J., 1985. *Fauna Saudi Arabia*, 7: 318-392.
- Boulenger, G.A., 1890. *Reptilia and Batrachia*, 7: 94-117.
- Dubois, A. and Ohler, A. 1995. *Zool. Pol.*, 39: 139-204.
- Das, I., and S.K. Dutta, 1998. *Hamadryad*, 23:63-68.
- Ford, L.S. and Cannatella, D.C., 1993. *Herpetol. Monogr*, 7: 94-117.
- Khan, M.S., 1997. *Pakistan J. Zool.*, 29: 107-112.
- Khan, M.S., 1987. *Proc. Pakistan Congr. Zool.*, 7: 105-112.
- Khan, M.S. and Ahmed, N., 1987. *Pakistan J. Zool.*, 19: 361-370.
- Khan, M.S. and Mufti, S.A., 1995. *Pakistan J. Zool.*, 27: 43-49.
- Khan, M.S. and Tasnim, R. 1989. *J. Herpetol.*, 23: 419-423.
- Nauwelaerts, Sandra, Schollier, J. and Peter, A., 2004. *Biol. J. Linnean Soc.*, 83:413-420.
- Suresh M.K., and Katti, P., 2002. *Copeia*, 31: 870-872.

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