

Checklist of Amphibians of Pakistan

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Abstract: Amphibians are one of the most familiar animals found everywhere in Pakistan, except perpetually snow covered mountains in the north and open seas in the south. They disappear as winter sets-in reappearing at the advent of summer. Despite general aridity in Pakistan, 24 anuran amphibian species have been recorded.

Keywords: Amphibians, checklist, Pakistan, synonymy.

INTRODUCTION

Pakistan is stretched over an area of 796,095 km² between longitude 60° 52' to 75° 22' E, and latitude 24° to 37° N, from snowy mountains of world's highest peaks in Himalayas in the north, descending to touch the arid coast of the Arabian Sea in the south. Amphibians are scattered throughout northern and western mountains, Balochistan tableland and arid plains of Punjab and Sindh are unusually wide range of habitats co-inhabiting with wide assemblage of amphibian and reptile species (Khan, 1999).

The aridity prevailing in Pakistan makes it an amphibian poor country when compared with India and Southeast Asia. The meagre humidity sustained in the plains is primarily due to weak trickle in the Indus River and its tributaries; while torrents and streams in the sub-Himalayas and western mountains support resident species; sub-terranean *karez* channels in Balochistan highland support and nurtured local species. The 24 species of anuran amphibians falling in three cosmopolitan families Bufonidae, Microhylidae, Ranidae, and wide ranging Tibeto-Himalayan family Megophryidae, have been recorded within limits of Pakistan (Khan, 2011).

Recent advances in amphibian taxonomy is based on phylogenetic analysis of living amphibians making use of modern biochemical techniques combining morpho-anatomical characterization with DNA sequencing from mitochondrial transcription etc. This methodology surfaces commonalities between taxonomic categories separating or amalgamating classical groups (Frost *et al.*, 2006). It has completely changed the complexion of taxonomic categories of pre and post Boulengerian era, which was based on comparative morphological variations between taxa.

Present amphibian checklist overviews the checklist presented by Khan (2006) and includes present scientific understanding of taxonomy. To give in depth understanding, Appendix I lists the synonymy of each taxon.

CHECKLIST

Checklist by Khan (2006) lists those amphibian species reported from Pakistan and used taxonomic characterization current at that time. Following checklist includes recent changes proposed by Frost *et al.*, (2008). Appendix I lists synonymic history of each species.

Family BUFONIDAE

Genus *Bufo* Laurenti, 1768

Bufo olivaceus Blanford, 1874

Bufo stomaticus Lütkin, 1862

Genus *Duttaphrynus* Frost *et al.*, 2006

Duttaphrynus himalayanus (Günther, 1864)

Duttaphrynus melanostictus hazarensis (Khan, 2000)

Genus *Pseudepidalea* Frost *et al.*, 2006

Pseudepidalea baturae (Stöck *et al.*, 1999)

Pseudepidalea latastii (Boulenger, 1882)

Pseudepidalea pseudoraddei (Mertens, 1971)

Pseudepidalea siachinensis (Khan, 1997)

Pseudepidalea surda (Boulenger, 1891)

Pseudepidalea zugmayeri (Eiselt and Schmidtler, 1973)

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Family MEGOPHRYIDAE

Genus *Stutiger* Theobald, 1868

Scutigera nyingchiensis Fei, 1977

Family MICROHYLIDAE

Genus *Microhyla* Tschudi, 1828

Microhyla ornata (Duméril and Bibron, 1841)

Genus *Uperodon* Duméril and Bibron, 1841

Uperodon systoma (Schneider, 1799)

Family RANIDAE

Genus *Allopaa* Ohler and Dubois, 2006

Allopaa barmoachensis (Khan and Tasnim, 1989)

Allopaa hazarensis (Dubois and Khan, 1979)

Genus *Chrysopaa* Ohler and Dubois, 2006

Chrysopaa sternosignata (Murray, 1885)

Genus *Euphlyctis* Fitzinger, 1843

Euphlyctis cyanophlyctis cyanophlyctis (Schneider, 1799)

Euphlyctis cyanophlyctis microspinulata Khan, 1997

Euphlyctis cyanophlyctis seistanica (Nikolsky, 1900)

Genus *Fejervarya* Bolkay, 1915

Fejervarya limnocharis (Boie, 1834)

Fejervarya syhadrensis (Annandale, 1919)

Genus *Hoplobatrachus* Peters, 1863

Hoplobatrachus tigerinus (Daudin, 1802)

Genus *Nanorana* Günther, 1896

Nanorana vicina (Stoliczka, 1872)

Genus *Sphaeroteca* Duméril and Bibron, 1841

Sphaeroteca breviceps (Schneider, 1799)

APPENDIX I**Synonymy of amphibians of Pakistan**

Following synonymic history of Pakistani amphibian species also reflects the interest of scientific community generated by the diversification of amphibian species of the subcontinent. The data is based on the lists given by Frost, (2008).

Family BUFONIDAE

Genus *Bufo* Laurenti, 1768

Bufo olivaceus Blanford, 1874

1874 Blanford, *Ann. Mag. Nat. Hist.*, ser. 4, **14**:31-35.

Type locality: Dasht, Balochistan, Pakistan.

Bufo stomaticus Lütken, 1864.

1864 *Bufo stomaticus* Lütken, "1863", *Vidensk. Medd. Dansk Naturhist. Foren.*, Ser. 2, **4**: 305.

Type locality: Assam, western Himalayas, India.

1883 *Bufo andersonii* Boulenger, 1883, *Ann. Mag. Nat. Hist.*, Ser. 5, **12**: 163.

1920 *Bufo s. stomaticus* Rao, *J. Nat. Hist. Soc. Bombay*, **27**: 126.

1920 *Bufo s. peninsularis* Rao, *J. Nat. Hist. Soc. Bombay*, **27**: 126.

2006 *Bufo stomaticus* Frost, et. al., *Bull. Am. Mus. Nat. Hist.*, **297**: 364.

Genus *Duttaphrynus* Frost et al., 2006

Duttaphrynus himalayanus (Günther, 1864)

1864 *Bufo melanostictus* var. *himalayanus* Günther, *Rept. Brit. India*: 422.

Type locality: Sikkim and Nepal.

1882 *Bufo himalayanus* Boulenger, *Cat. Batr. Sal. Coll. Brit. Mus.*, Ed. 2: 305.

1925 *Bufo abatus* Ahl, *Zool. Anz.*, **63**: 110.

2006 *Duttaphrynus himalayanus* Frost et al., *Bull. Am. Mus. Nat. Hist.*, **297**: 365.

Duttaphrynus hazarensis (Khan, 2000)

2000 *Bufo melanostictus hazarensis* M. S. Khan, *Pakistan J. Zool.*, **33**(4):297.

Type locality: Ooghi, Mansehra, and Datta, Hazara Division, NWFP, Pakistan.

2001 *Bufo melanostictus hazarensis* Khan, *Pakistan J. Zool.*, **33**: 297.

1799 *Bufo melanostictus* Schneider, *Hist. Amph. Nat.* 216.

2001 *Bufo m. melanostictus* Khan, *Pakistan J. Zool.*, **33**:297.

2006 *Duttaphrynus melanostictus* Frost et al., *Bull. Am. Mus. Nat. Hist.*, 297: 365.

Genus *Pseudepidalea* Frost et al., 2006***Pseudepidalea baturae*** (Stöck et al., 1999)

1999 (Stöck et al., 1999) *Ital. J. Zool.*, **66**: 221.

Type locality: Hunza River, north of Passu River, Gilgit-Baltistan, Pakistan.

Pseudepidalea latastii (Boulenger, 1882)

1882 *Bufo latastii* Boulenger, *Cat. Batr. Sal. Coll. Brit. Mus.*, Ed. 2: 294.

Type locality: Ladakh, north-eastern, Pakistan.

1978 *Bufo latastii latastii* Hemmer et al., *Zool. Abh. Staatl. Mus. Tierkd. Dresden*, **34**: 377.

1997 *Bufo siachinensis* Khan, *Pakistan J. Zool.*, **29**: 43.

2001 Stöck et al., 2001, *Zool. Abh. Staatl. Mus. Tierkd. Dresden*, **51**: 295.

2006 *Pseudepidalea latastii* Frost et al., *Bull. Am. Mus. Nat. Hist.*, **297**: 365.

Pseudepidalea pseudoraddei (Mertens, 1971)

1971 *Bufo viridis pseudoraddei* Mertens, *Senckenb. Biol.*, **52**: 8.

Type locality: Mingora, Swat, Pakistan.

1978 *Bufo latastii pseudoraddei* Hemmer et al., *Zool. Abh. Staatl. Mus. Tierkd. Dresden*, **34**: 377.

1979 *Bufo danatensis pseudoraddei* Pisanets and Shcherbak, *Vestn. Zool., Kiev*, **1979**: 11.

1999 *Bufo pseudoraddei pseudoraddei* Stöck et al., 1999, *Ital. J. Zool.*, **66**: 221.

1999 *Bufo Pseudoraddei baturae* Stöck et al., *Ital. J. Zool.*, **66**: 221.

Pseudepidalea surda (Boulenger, 1891)

1891 *Bufo surdus* Boulenger, *Ann. Mag. Nat. Hist.*, Ser. 6, **7**: 282.

Type locality: Balochistan., Pakistan.

1899 *Bufo viridis var. persica* Nikolskii, *Ann. Mus. Zool. Acad. Imp. Sci. St. Petersburg*, **4**: 406.

Bufo persicus Nikolskii, *Ann. Mus. Zool. Acad. Imp. Sci. St. Petersburg*, **8**: 97.

1969 *Bufo surdus surdus* Schmidtler and Schmidtler, *Salamandra*, **5**: 118.

2006 *Pseudepidalea surda* Frost et al., *Bull. Am. Mus. Nat. Hist.*, **297**: 365.

Pseudepidalea zugmayeri (Eiselt and Schmidtler, 1973)

1973 *Bufo viridis zugmayeri* Eiselt and Schmidtler, *Ann. Naturhist. Mus. Wien*, **77**: 206.

Type locality: Peshin, southeastern Balochistan, Pakistan.

1978 *Bufo latastii zugmayeri* Hemmer et al., *Zool. Abh. Staatl. Mus. Tierkd. Dresden*, **34**: 377.

2006 *Bufo zugmayeri* Stöck et al., *Mol. Phylogenet. Evol.*, **41**: 664.

2007 *Pseudepidalea zugmayeri* Frost, 2007, *Amph. Spec. World Online*, vers. 5.0.

Family MEGOPHRYIDAE**Genus *Stutiger*** Theobald, 1868***Scutigera nyingchiensis*** Fei 1977

Type locality: Linzhi Province, Tibet.

1917 *Rana pleskei* Annandale 1917, *Mis. Bat. Rec. Ind. Mus.*, **13**: 417-418.

1969 *Nanorana pleskei* Mertens, *Stuttg. Beitr. Naturk.*, **197**: 1-96.

Scutigera occidentalis Dubois, *Senckenb. Biol.*, **59**: 164.

1977 *Scutigera nyingchiensis* Fei, *Acta Zool. Sinica*, **23**: 54, 61.

1980 *Scutigera (Scutigera) nyingchiensis* Dubois, *Bull. Mens. Soc. Linn. Lyon*, **49**: 478.

Scutigera (Scutigera) occidentalis Dubois, *Bull. Mens. Soc. Linn. Lyon*, **49**: 478.

2006 *Scutigera nyingchiensis* Khan, *Amp. Rept. Pakistan*: 52-53.

Family MICROHYLIDAE

Genus *Microhyla* Tschudi, 1828

Microhyla ornata (Duméril and Bibron, 1841)

Type locality: Malabar Coast, India.

1854 *Engystoma carnaticum* Jerdon, 1854. *J. Asiat. Soc. Bengal*, **22**: 534.

Jerdon, 1870, *Proc. Asiat. Soc. Bengal*, 1870: 67.

1841 Duméril and Bibron, *Erp. Gen.*, **8**: 746.

1870 *Diplopelma carnaticum* Stoliczka, 1870, *J. Asiat. Soc. Bengal*, **39**: 154.

1882 *Microhyla (Engystoma) carnatica* Mason, *Burma*, Ed. **3**: 292.

2006 *Microhyla ornata* Khan, *Amp. Rept. Pakistan*: 54-55.

Genus *Uperodon* Dumeril and Bibron, 1841

Uperodon systoma (Schneider, 1799).

1799 *Rana systoma* Schneider, 1799, *Hist. Amph. Nat.*: 144.

Type locality: Carnatic, Biligiriranga Hills, Mysore, Madras, India.

1820 *Bombinator systoma* Merrem, *Tent. Syst. Amph.*: 178.

1841 Duméril and Bibron, *Erp. Gen.*, **8**: 746-748.

1838 *Systema leschenaultii* Tschudi, *Classif. Batr.* **49**: 86.

1864 *Cacopus systoma* Günther, *Rept. Brit. India*: 415.

1867 *Systema marmoratum* Steindachner, *Reise Österreichischen Fregatte Novara, Zool.*: 36.

1931 *Uperodon systoma* Parker, *Arch. Zool. Ital. Torino*: **16**:1243.

Family DICROGLOSSIDAE

Genus *Allopaa* Ohler and Dubois, 2006

Allopaa barmoachensis (Khan and Tasnim, 1989)

1989 *Rana barmoachensis* Khan and Tasnim, 1989, *J. Herpetol.*, **23**: 419.

Type locality: "Barmoach, Goi Madan, District Kotli, Azad Kashmir, Pakistan.

2002 *Paa barmoachensis* Khan, 2002, *Bull. Chicago Herpetol. Soc.*, **37**: 161.

2005 *Nanorana barmoachensis* Chen *et. al.*, *Herpetol. J.*, **15**: 239.

2007 *Allopaa barmoachensis* Frost, *Amph. Spec. World Online*, vers. 5.0, 780.

Allopaa hazarensis (Dubois and Khan, 1979)

1979 *Rana (Paa) hazarensis* Dubois and Khan, 1979, *J. Herpetol.*, **13**: 403.

Type locality: "near Datta, Manshera District, Hazara Division, Pakistan

1992 *Paa (Paa) hazarensis* Dubois, 1992, *Bull. Mens. Soc. Linn. Lyon*, **61**: 320.

2005 *Nanorana hazarensis* Chen *et al.*, *Herpetol. J.*, **15**: 239.

2006 *Allopaa hazarensis* Ohler and Dubois, 2006, *Zoosystema*, **28**: 780.

2006 *Paa hazarensis* Khan, *Amp. Rept. Pakistan*: 63-64.

Genus *Chrysopaa* Ohler and Dubois, 2006

Chrysopaa sternosignata (Murray, 1885)

Type locality: Quetta, Balochistan, Pakistan.

1885 *Rana sternosignata* Murray, 1885, *Ann. Mag. Nat. Hist., Ser. 5*, **16**: 120.

1992 *Paa (Gynandropaa) sternosignata* Dubois, 1992, *Bull. Mens. Soc. Linn. Lyon*, **61**: 319.

2005 *Nanorana sternosignata* Chen, Murphy, Lathrop, Ngo, Orlov, Ho, and Somorjai, 2005.

2006 *Chrysopaa sternosignata* Ohler and Dubois, 2006, *Zoosystema*, **28**: 780.

Genus *Euphlyctis* Fitzinger, 1843

Euphlyctis cyanophlyctis (Schneider, 1799)

Type locality: Eastern India.

1799 *Rana cyanophlyctis* Schneider, *Hist. Amph. Nat.*: 137.

1801 *Bufo cyanophlyctis* Latreille In Sonnini de Manoncourt and Latreille, 1801 (An. X), *Hist. Nat. Rept.*, **2**: 132.

1802 Daudin, 1802 (An. XI), *Hist. Nat. Rain. Gren. Crap.*, Quarto: 103.

1899 *Rana cyanophlyctis* var. *seistanica* Nikol'skii, 1899, *Ann. Mus. Zool. Acad. Imp. Sci. St. Petersburg*, **4**: 406.

1920 *Rana (Rana) cyanophlyctis* Boulenger, 1920, *Rec. Indian Mus.*, **20**: 6.

1841 *Rana cyanophlyctis cyanophlyctis* Parker, 1941, *Exped. SW Arabia 1937-1938*, **1**, **1**: 5.

1958 *Rana cyanophlyctis* variety *fulvus* De Silva, 1958, *Spolia Zeylan.*, **28**: 158.

1981 *Rana (Euphlyctis) cyanophlyctis* Dubois, 1981, *Monit. Zool. Ital., N. S., Suppl.*, **15**: 240.

1974 *Rana (Dicroglossus) cyanophlyctis cyanophlyctis* Dubois, 1974, *Bull. Mus. Natl. Hist. Nat. Paris, Ser. 3, Zool.*, **213**: 376.

1997 *Euphlyctis cyanophlyctis cyanophlyctis* Khan, *Pakistan J. Zool.*, **29**: 108.

Euphlyctis microspinulata Khan, 1997

Type locality: Khuzdar, southeast Kalat Division, Balochistan, Pakistan.

1997 *Euphlyctis cyanophlyctis microspinulata* Khan, *Pakistan J. Zool.*, **29**: 108.

1997 *Euphlyctis cyanophlyctis seistanica* Dutta, *Amph. India Sri Lanka*: 115.

Euphlyctis seistanica (Nikolsky, 1900)

1899 *Rana cyanophlyctis* var. *seistanica* Nikol'skii, 1899, *Ann. Mus. Zool. Acad. Imp. Sci. St. Petersburg*, **4**: 406.

Type locality: Seistan, along Afghanistan and Baluchistan border.

1997 *Euphlyctis cyanophlyctis seistanica* Dutta, *Amph. India Sri Lanka*: 115.

Genus *Fejervarya* Bolkay, 1915

Fejervarya limnocharis (Gravenhorst, 1829)

1829 *Rana limnocharis* Gravenhorst, 1829, *Delic. Mus. Zool. Vratislav.*, **1**: 42.

Type locality: Java.

1854 *Rana agricola* Jerdon, 1854

1872 *Rana lymnocharis* Stoliczka, 1872, *Proc. Asiat. Soc. Bengal*, 1872: 102.

1938 *Dicroglossus limnocharis* Deckert, 1938, *Sitzungsber. Ges. Naturforsch. Freunde Berlin*, 1938: 138.

1985 *Euphlyctis limnocharis* Poynton and Broadley, 1985, *Ann. Natal Mus.*, **27**: 124.

1987 *Limnonectes (Fejervarya) limnocharis* Dubois, 1987 „1986“, *Alytes* **5**: 61.

1998 *Fejervarya limnocharis* Iskandar, 1998, *Amph. Java Bali*: 71.

2002 *Limnonectes limnocharis* Khan, *Bull. Chicago Herp. Soc.*, **37**(9): 160.

Fejervarya syhadrensis (Annandale, 1919)

1919 *Rana limnocharis syhadrensis* Annandale, 1919, *Rec. Indian Mus.*, **16**: 123.

Type locality: Bombay Presidency, between 300 and 500 m in southern India.

1974 *Rana (Dicroglossus) syhadrensis* Dubois, 1974, *Bull. Mus. Natl. Hist. Nat. Paris, Ser. 3, Zool.*, **213**: 383.

2006 *Limnonectes syhadrensis* Khan, *Bull. Chicago Herp. Soc.*, **37**(9): 160.

Genus *Hoplobatrachus* Peters, 1863

Hoplobatrachus tigerinus (Daudin, 1802)

1802 *Rana tigerina* Daudin, 1802 (An. XI), *Hist. Nat. Rain. Gren. Crap. Quarto*: 62.

Type locality: "Bengale", India.

- 1758 *Rana typhonia* Linnaeus, *Syst. Nat.*, Ed. 10, 1: 211.
- 1799 *Bufo typhonius* Schneider, 1799, *Hist. Amph. Nat.*: 207.
- 1820 *Rana tigrina* Merrem, 1820, *Tent. Syst. Amph.*: 174.
- 1829 *Rana picta* Gravenhorst, 1829, *Delic. Mus. Zool. Vratislav.*, 1: 39.
- 1858 *Osilophus typhonius* Tschudi, 1838, *Classif. Batr.*: 52, 89.
- 1841 *Cystignathus typhonius* Duméril and Bibron, 1841, *Erp. Gen.*, 8: 402.
- 1882 *Leptodactylus typhonius* Boulenger, 1882, *Cat. Batr. Sal. Coll. Brit. Mus.*, Ed. 2: 246.
- 1990 *Tigrina tigrina* Fei, Ye, and Huang, *Key to Chinese Amph.*: 144.
- 1992 *Hoplobatrachus tigerinus* Dubois, 1992, *Bull. Mens. Soc. Linn. Lyon*, 61: 315.

Genus *Nanorana* Günther, 1896

Nanorana vicina (Stoliczka, 1872)

- 1872 *Rana vicina* Stoliczka, *Proc. Asiat. Soc. Bengal*, 1872: 130.

Type locality: "Marri (Murree), western Himalaya, Pakistan.

- 1920 *Rana (Rana) vicina* Boulenger, 1920, *Rec. Indian Mus.*, 20: 8.

- 1975 *Rana (Paa) vicina* Dubois, 1975, *Bull. Mus. Natl. Hist. Nat. Paris*, Ser. 3, Zool., 324: 1098.

- 2006 *Paa vicina* Khan, *Amp. Rept. Pakistan*: 65.

Family RANIDAE

Genus *Sphaerotheca* Duméril and Bibron, 1841.

Sphaerotheca breviceps (Schneider, 1799)

- 1799 *Rana breviceps* Schneider, 1799, *Hist. Amph. Nat.*: 140.

Type locality: Indes orientales; probablement de Tranquebar

- 1860 *Tomopterna strigata* Günther, 1860, *Proc. Zool. Soc. London*, 1860: 165.

- 1976 *Tomopterna swani* Dubois, 1976, *Cah. Nepal. Doc.* 6: 12.

- 1981 *Rana (Tomopterna) swani* Dubois, *Monit. Zool. Ital., N.S., Suppl.*, 15: 233.

- 1983 *Rana (Tomopterna) breviceps breviceps* Dubois, 1983, *Alytes*, 2: 166.

- 1987 *Tomopterna (Sphaerotheca) breviceps* Dubois, 1987 "1986", *Alytes*, 5: 57.

Sphaerotheca swani Vences et al., Lourenço and Goodman (eds.), *Divers. Endem. Madagascar*: 232.

- 2006 *Sphaerotheca breviceps* Khan, *Amp. Rept. Pakistan*: 66-67.

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