

我国角蟾的分类研究, 兼记二新属

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摘要 对中国角蟾亚科角蟾属现有种作骨骼和形态学的比较, 其中宽头大角蟾和沙坪角蟾和本属其他种差异显著; 依此建立二新属——短腿蟾属和无耳蟾属。初步探讨了这两个新属与角蟾属的系统发生关系。

Boulenger (1908) 在修订角蟾属 (*Megalophrys* Wagler, 1830 = *Megophrys* Kuhl et van Hasselt, 1822) 一文中, 基于对原分隶于 *Leptobrachium*, *Xenophrys* 及 *Megalophrys* 3 属 15 种的标本进行研究后, 认为椎体类型与犁骨齿的有无, 在种间甚至种内个体存在变异, 不能作为划分属的依据。因此将前 2 属合并于角蟾属。

Noble (1931) 认为角蟾属是角蟾亚科最原始的一个属。其特点是瞳孔直立, 上颌齿发达, 犁骨齿多少退化或无, 肩胸骨为软骨或钙化, 胸骨体具一长的骨质柄。本属 25 种, 分布于亚洲南部及印澳群岛的西端。

刘承钊 (1950) 沿用角蟾属的这一概念, 并描记了 *omeimontis*、*shapingensis*、*oshanensis* 三个新种。

刘承钊与胡淑琴 (1961: 45) 在其专著《中国无尾两栖类》一书中, 亦使用广义的角蟾属 (*Megophrys* - sensu lato) 概念, 列出 15 个种。

刘承钊 (1965) 摘要报道了“中国角蟾亚科的分类探讨”, 认为原角蟾属中的蝌蚪有三种类型, 并认为蝌蚪口部具角质颌, 但唇齿行少, 唇缘大, 略呈管状者如 *pelodytoides* 与 *oshanensis*, 可以另立新属。也提出蝌蚪口部如短齿蟾、髭蟾等者的 *hasselti* 很可能是髭蟾。因此, 1977 年出版的《中国两栖动物系统检索》一书中, 已明确恢复拟髭蟾属, 并将 *pelodytoides* 与 *oshanensis* 另立一掌突蟾属 (*Carpophrys*) 以辖之。但由于是检索表, 没有能按《国际动物命名法规》完备建立新分类阶元的要求。

胡淑琴与本文第一作者 (1978) 在讨论我国的角蟾属时与刘承钊的意见一致, 阐释了角蟾属可划分为三个类群: 蝌蚪口部位吻腹面, 唇齿行短, 肛孔斜开于下尾鳍基部右侧, 内掌突大而圆, 位于第一指基部, 腋腺大, 位于腋基部下方便, 恢复为拟髭蟾属 (*Leptobrachium*); 蝌蚪体侧皮肤呈气囊状, 肛孔斜开于下尾鳍基部右侧, 内掌突高大, 位于第一、二指基部之间, 约占掌部之半, 另立新属掌突蟾属 (*Carpophrys*); 而其余各种, 即蝌蚪口部呈漏斗状, 肛孔开

口于下尾鳍基部中央，内掌突扁平，位于第一指基部，胸侧小白腺位于腋基上部内侧的仍保留于角蟾属 (*Megophrys* - sensu stricto) 中。

另一方面，Dubois(1980)撰文讨论了角蟾亚科的分类问题，亦恢复拟髭蟾属 (*Leptobrachium*) 属称，将 *hasselti* 与 *chapaensis* 隶于此属；另将 *oshanensis* 与 *pelodytoides* 从角蟾属中分出，建立新亚属 *Leptolalax* 以辖之。

所有上述各论著，都未讨论到原隶角蟾属中的宽头大角蟾与沙坪角蟾二种，仍将其置于角蟾属 (*Megophrys*) 中。

目前已知角蟾属 (*Megophrys* - sensu stricto) 20 种 (Dubois 1980: 470)，其中我国产 12 种^①。我们仔细检查了我国角蟾属标本，发现宽头大角蟾 (*M. carinensis*) 和沙坪角蟾 (*M. shapingensis*) 与角蟾属其它各种差别显著 (表 1)。

表 1宽头大角蟾、沙坪角蟾和角蟾属其它种的主要区别

	宽 头 大 角 蟾	沙 坪 角 蟾	角 蟾 属 其 它 种
上颌骨前端突起部/上颌骨宽	< 2	= 2	< 2
鼻软骨	不过前颌骨	过前颌骨	过前颌骨
左右鼻骨	相接	不相接	不相接
鼓膜	有	无	有
耳柱骨及鼓环	有	无	有
翼孔纵径	大于眶长	不大于眶长	不大于眶长
鳞骨耳突	有	无	有
椎骨棘突	高	低平	低平
胫腓骨长/股骨长	< 1	> 1	> 1
跟 - 距骨长/宽	≈ 2	> 3	> 3
腹后及股后皮肤	无黑色角质刺	有黑色角质刺	无黑色角质刺
声囊	有	无	有
婚垫及婚刺	有	无	一般有

因此，角蟾属显然可以再划分为三个类群。宽头大角蟾与沙坪角蟾可分别立二新属，其余各种则仍保留于角蟾属中。现分述于下：

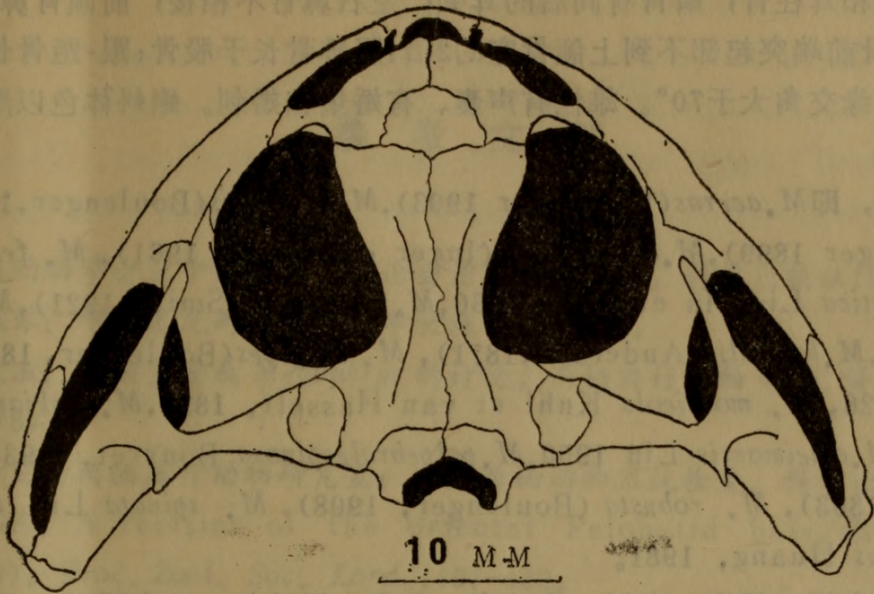
短腿蟾属 *Brachytarsophrys* gen. nov.

模式种 *Leptobrachium carinensis* Boulenger 1889

属 征 皮肤光滑；头大，显著宽短；吻圆，不突出下颌；鼓膜隐蔽，有耳柱骨及鼓环；上颌有齿；左右鼻骨相接；鼻软骨不过前颌骨；额顶骨前端显著宽，背面有纵行嵴；翼孔大，长于眼径；椎骨棘突高；骶椎左右横突后缘交角大于110°；胫腓骨短于股骨；跟 - 距骨长为宽的 2 倍。雄性有声囊、婚垫和婚刺。蝌蚪体色以紫褐色为主。

本属现只有一种，即宽头短腿蟾 *Brachytarsophrys carinensis* (Boulenger)。

① 《中国两栖动物系统检索》(1977: 27, 78) 列有瓦山角蟾 (*M. weigoldi* Vogt) 一种。刘 (1950: 182) 已将其作为 *M. boulengeri* Bedriaga 的同物异名。后者现又改隶齿突蟾属，称西藏齿突蟾 *Scutiger boulengeri* (Bedriaga)。连同最近发表的新种突肛角蟾 (*M. pachyproctus*) 共有 13 种。



宽头短腿蟾 *Brachytarsophrys carinensis*, CIB583589, ♂ (云南景东) 头骨背视

分 布 大致在 $22^{\circ}-27^{\circ}\text{N}$ 与 $100^{\circ}-113^{\circ}\text{E}$ 之间。垂直分布海拔900—1500米。

词 源 *brachy*-希腊文*brachys*——短的, *tars*-希腊文*tarsus*(*tarso meta-tarsus* 跗蹠骨), *phryn*-希腊文*phrynos*——蟾蜍。*Brachytarsophrys*意思是短腿的蟾类。

无耳蟾属 *Atympanophrys* gen. nov.

模式种 *Megophrys shapingensis* Liu, 1950

属 征 吻突出下颌；上颌有齿；无犁骨齿；无鼓膜；无耳柱骨及鼓环；鳞骨无向后的耳突；咽鼓管孔小；上颌骨前端突起部为上颌骨宽的2倍；骶椎左右横突后缘交角小于 90° ；胫腓骨长于股骨；跟—距骨长大于宽的3倍。股后及腹后皮肤有黑色角质刺（雄性尤胜）。雄性无声囊、无婚垫及婚刺。蝌蚪体色以黑棕色或灰黑色为主。

本属现只有一种，即沙坪无耳蟾 *Atympanophrys shapingensis* (Liu)。

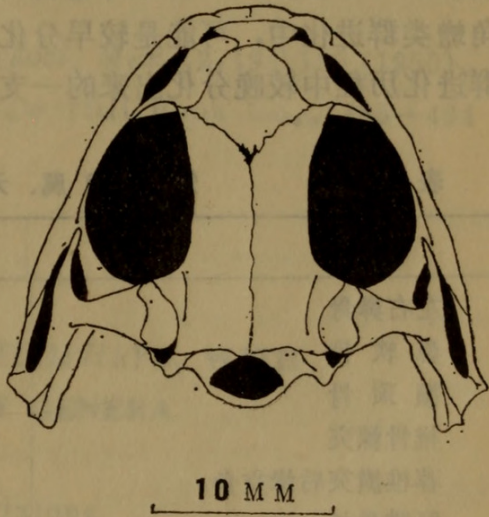
分 布 目前只见于我国西部邛崃山脉及小相岭东侧，大致相当于 $27^{\circ}-32^{\circ}\text{N}$ 与 $102^{\circ}-104^{\circ}\text{E}$ 范围的山区。一般垂直分布在海拔2500—3200米，为分布较高的一个类群。

词 源 *a*-希腊文——无或缺少, *tympan*-希腊文*tympanon*——鼓 (*tympanic membrane* 鼓膜), *phryn*-希腊文*phrynos*——蟾蜍。*Atympanophrys*意思是没有鼓膜的蟾类。

角蟾属 *Megophrys* Kuhl et van Hasselt, 1822

模式种 *Megophrys monticola* Kuhl et van Hasselt, 1822.

属 征 皮肤光滑；吻突出下颌；上颌有齿；有犁骨齿或犁骨棱，或全无；鼓膜显著



沙坪无耳蟾 *Atympanophrys shapingensis*, SMC 00042, ♂ (四川宝兴) 头骨背视

或隐蔽，有鼓环和耳柱骨；鳞骨有向后的耳突；左右鼻骨不相接；前颌骨鼻突竖立；鼻软骨过前颌骨；上颌骨前端突起部不到上颌骨宽的2倍；胫腓骨长于股骨；跟-距骨长大于宽的3倍；骶椎左右横突后缘交角大于70°。雄性有声囊、有婚垫和婚刺。蝌蚪体色以黑棕色或灰黑色为主。

本属有19种，即*M. aceras* (Boulenger 1903), *M. baluensis* (Boulenger, 1899), *M. boettgeri* (Boulenger 1899), *M. brachylolos* (Inger et Romer, 1961), *M. feae* (Boulenger 1887), *M. gigantea* Liu, Hu et Yang 1960, *M. intermedia* (Smith 1921), *M. kuatunensis* (Pope, 1929), *M. lateralis* (Anderson, 1871), *M. longipes* (Boulenger, 1885), *M. minor* Stejneger, 1926, *M. monticola* Kuhl et van Hasselt, 1822, *M. nankiangensis* Liu et Hu, 1966, *M. omeimontis* Liu 1950, *M. palpebralespinosa* Bourret, 1937, *M. parva* (Boulenger 1893), *M. robusta* (Boulenger, 1908), *M. spinata* Liu et Hu 1973, *M. pachyproctus* Huang, 1981。

分 布 中国，越南，老挝，柬埔寨，印度，尼泊尔，马来西亚，印度尼西亚，菲律宾。我国在相当于22°-35°N与 95°-120°E 的范围内广泛有分布。垂直分布海拔 300-2000 米。*M. minor* 的分布可高达海拔2850米。

在角蟾亚科各属之间，短腿蟾属、无耳蟾属和角蟾属的系统关系是较近的。上颌有齿；均有胸侧小白腺及股后腺；蝌蚪口部均呈漏斗状，肛孔开口于下尾鳍基部正中，以及其它一系列头骨、脊柱及附肢骨骼特征的相似性，表明它们在科级以下阶元之间有一个共同祖先的可能性极大。但对三个属存在的主要性状差异的分析结果（表2），短腿蟾属具有较多的原始性状（即祖征），而无耳蟾属则具有更多的进化性状（即离征）。因此，推断短腿蟾属在角蟾类群进化中，可能是较早分化出来的一支，较角蟾属更原始。无耳蟾属则可能是角蟾类群进化历程中较晚分化出来的一支。

表 2 短腿蟾属、无耳蟾属和角蟾属的性状分析

	祖 征		离 征	
左右鼻骨	相接	B	不相接	AM
鼻 软 骨	正常	B	向前超过前颌骨	AM
额 顶 骨	正常	AM	背面有纵行骨脊	B
椎骨棘突	高	B	向后低斜	AM
荐椎横突后缘交角	大于110°	BM	小于90°	AM
胫腓骨长	短于股骨	B	长于股骨	AM
跟-距骨长/宽	≈ 2	B	> 3	AM
犁骨齿	有	BM	无	AM
耳柱骨	有	BM	无	A
鳞骨向后的耳突	有	BM	无	A
声 囊	有	BM	无	A

B - Brachytarsophrys

M - Megophrys

A - Atympanophrys

参 考 文 献

- 刘承钊：中国动物学会三十周年学术讨论会论文摘要汇编。科学出版社197 (1965)。
- 刘承钊、胡淑琴：中国无尾两栖类。科学出版社 (1961)。
- 胡淑琴、田婉淑：我国角蟾属 *Megophrys* 的讨论。两栖爬行动物研究资料：4:30—31 (1978)。
- 四川省生物研究所两栖爬行动物研究室：中国两栖动物系统检索。科学出版社(1977)。
- Boulenger GA: A revision of the oriental Pelobatid batrachians (Genus *Megophrys*). *Proc. Zool. Soc. Lond.*, 407-430.
- Dubois A: Notes sur la systematique et la repartition des Amphibiens Anoures de Chine et des regions avoisinantes. IV. classification generique des Pelobatidae Megophryinae. *Bull. Soc. Linn. Lyon*, (8) :469-481 (1980) .
- Griffiths I :The phylogeny of the Salientia. *Biol. Rev.*, 38:241-292 (1963).
- Inger RF: The systematics and zoogeography of the Amphibia Borneo. *Field Mus. Nat. His.*, (52) :17-23 (1966).
- Liem SS: The morphology, systematics, and evolution of the Old World tree-frogs. *Ibid*, (57) : 1-127 (1970).
- Liu CC: Amphibians of Western China. *Fieldiana: Zool. Mem.*, 2:194-196 (1950).
- Noble GK: The Biology of the Amphibia, McGraw-Hill Book Co., 485-494 (1931) .

TAXONOMIC STUDY ON GENUS *MEGOPHRYS*, WITH DESCRIPTIONS OF TWO NEW GENERA

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In comparison of Chinese species of the genus *Megophrys* (sensu lato) in osteology and morphology (tab. 1), we found that *M. Carinensis* and *M. shapingsensis* distinctly different from the rest species of this genus. The former two species are quite difference with each other. On the basis of the above differences, two new genera were established. Thus, *Megophrys* is partitioned into three genera, i.e., *Brachytarsophrys* gen. nov., *Atympano-*

phrys gen. nov. and *Megophrys* (sensu stricto).

The phylogenetic relationships among these three genera are discussed. The authors considered that *Brachytarsophrys* is the most primitive genus in this group, and *Atympanophrys* is the most advanced one. The position of *Megophrys* is between the two genera mentioned above.

Table 1. Comparisons of *M. carinensis*, *M. shapingsensis* and the rest species of genus *Megophrys*

Characters	<i>M. carinensis</i>	<i>M. shapingsensis</i>	the rest species
width of anterior portion of maxilla/width of posterior of it	< 2	= 2	< 2
cartilaginous portion of nasal beyond premaxilla	no	yes	yes
nasals in contact with each other	yes	no	no
tympanic membrane	present	absent	present
columella auris and annulus tympanicus	present	absent	present
longitudinal diameter of foramen pterygoideus longer than that of orbit	yes	no	no
posterior otic projection of squamosum	present	absent	present
neural spine of vertebra	high	low and flat	low and flat
length of tibio-fibula/length of femuris	< 1	> 1	> 1
length of calcis-talus/width of it	≈ 2	> 3	> 3
black cornified spines on skin of posterior abdomen and posterior femur	absent	present	absent
vocal sac	present	absent	present
nuptial pad and nuptial spines	present	absent	usually present

Brachytarsophrys gen. nov.

Type species: *Leptobrachium carinensis* Boulenger, 1889.

Diagnosis: skin smooth; head large, distinct wide and short; snout rounded, slightly projecting beyond mandible; maxillary teeth present, vomerine teeth present; tympanic membrane present, columella auris and annulus tympanicus present; squamosum with a posterior otic projection; nasals in contact with each other, cartilaginous portion of it not beyond premaxilla; anterior frontoparietale distinct wide and with longitudinal crista on its back; longitudinal diameter of foramen pterygoideus longer than that of orbit; neural spine of vertebra high; angle of posterior margin of the two sacral diapophyses 110° or more; tibio-fibula shorter than femur; the length of calcis-talus twice the width of it. Males have vocal sac, nuptial pad and nuptial spines. The ground colour of tadpoles is purplish brown.

Species included: one species only, i. e., *Brachytarsophrys carinensis* (Boulenger, 1889).

Distribution: China, India, Burma and Thailand.

Etymology: *brachy-* (Greek) *brachys* means "short", *tars-* (Greek) *tarsos* (tarso-meta-tarsus), *phryn-* (Greek) *phrynos* means "toad". *Brachytarsophrys* means "toad with short thigh".

Atympanophrys gen. nov.

Type species: *Megophrys shapingsensis* Liu, 1950.

Diagnosis: snout slightly projecting beyond mandible; maxillary teeth present, without vomerine teeth; tympanic membrane absent, columella auris and annulus tympanicus absent; squamosum without posterior otic projection; the openings of Eustachian tube small; anterior portion of maxilla twice as wide as its posterior portion; angle of posterior margin of the two sacral diapophyses 90° or less; tibio-fibula longer than femur; skin of posterior abdomen and posterior femur with black cornified spines (especially in males). Males have not vocal sac, nuptial pad and nuptial spines. The ground colour of tadpoles is blackish brown or grayish black.

Species included: one species only, i. e., *Atympanophrys shapingenensis* (Liu, 1950).

Distribution: Sichuan, China.

Etymology: *a-* (Greek) means "no" or "lack", *tympan-* (Greek) *tympanon* means "drum" (tympanic membrane), *phryn-* (Greek) *phrynos* means "toad". *Atympanophrys* means "toad without tympanic membrane".

Diagnosis: skin smooth, head large, distinct wide and short snout, slightly projecting beyond mandible; maxillary teeth present, vomerine teeth present; tympanic membrane present, columella absent; annular tympanicus present; squamosum with a posterior otic projection; no contact with each other, cartilaginous portion of it not beyond maxilla; anterior frontoparietal distinct wide and with longitudinal crest on its back; longitudinal diameter of foramen pterygoides longer than that of orbit; neural spine of vertebra high; angle of posterior margin of the two sacral diapophyses 110° or more; tibio-fibula shorter than femur; the length of calcis-talus twice the width of it. Males have vocal sac, nuptial pad and nuptial spines. The ground colour of tadpoles is purplish brown.

Species included: one species only, i. e., *Atympanophrys chinensis* (Long, 1889).

Distribution: China, India, Burma and Thailand.

Etymology: *brechy-* (Greek) *brechy* means "short", *phryn-* (Greek) *phrynos* means "toad". *Brachyphrynops* (larva-male-tarsus), *phryn-* (Greek) *phrynos* means "toad". *Brachyphrynops* means "toad with short thigh".

Diagnosis: skin smooth, head large, distinct wide and short snout, slightly projecting beyond mandible; maxillary teeth present, vomerine teeth present; tympanic membrane absent, columella present; annular tympanicus absent; squamosum without posterior otic projection; the opening of Eustachian tube small; anterior portion of maxilla twice as wide as its posterior portion; angle of posterior margin of the two sacral diapophyses 90° or less; tibio-fibula longer than femur; skin of posterior abdomen and posterior femur with black cornified spines (especially in males). Males have not vocal sac, nuptial pad and nuptial spines. The ground colour of tadpoles is blackish brown or grayish black.

Species included: one species only, i. e., *Brachyphrynops chinensis* (Lin, 1959).

Type species: *Brachyphrynops chinensis* Lin, 1959.

Diagnosis: skin smooth, head large, distinct wide and short snout, slightly projecting beyond mandible; maxillary teeth present, vomerine teeth present; tympanic membrane absent, columella present; annular tympanicus absent; squamosum without posterior otic projection; the opening of Eustachian tube small; anterior portion of maxilla twice as wide as its posterior portion; angle of posterior margin of the two sacral diapophyses 90° or less; tibio-fibula longer than femur; skin of posterior abdomen and posterior femur with black cornified spines (especially in males). Males have not vocal sac, nuptial pad and nuptial spines. The ground colour of tadpoles is blackish brown or grayish black.

Species included: one species only, i. e., *Brachyphrynops chinensis* (Lin, 1959).



Warishu, Tian and Hu, Qixiong. 1983. "爬行动物分类学/Taxonomic study on genus Megophrys, with descriptions of two new genera." *Liangqi baxing dongwu yanjiu* = *Acta herpetologica Sinica* 2, 41–48.

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