

This large genus currently contains 77 species and includes all the former South American *Bufo* species, excluding those of the *Bufo guttatus* species group (now *Rhaebo*), the *B. valliceps* species group (now *Incilius*), and the *B. variegatus* species group (now *Nannophryne*).

South American toads are diurnal or nocturnal; some species are terrestrial, while others are arboreal. They inhabit a wide range of habitats, from savannah to cloud forest.

### **Sexual dimorphism**

Males are usually smaller than females; males of many species have keratinous nuptial excrescences on first finger(s). In some species females develop hypertrophied supratympanic crests (*i.e.* *Rhinella margaritifera*).

### **Eggs**

Aquatic, deposited in long strings in temporary or permanent pools, also in slow-moving and fast-moving water. Clutch deposition site is unknown in several species.

### **Tadpoles**

Unknown in several species. Exotroph (benthic or gastromyzophorous).

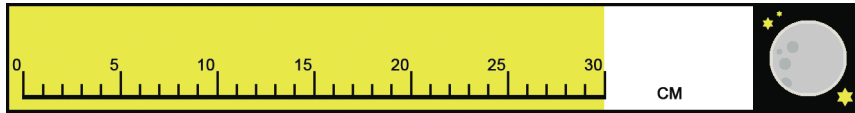
### **Distribution**

The genus *Rhinella* is widespread and currently reported from southern Texas (USA) to southern South America, including Trinidad and Tobago (Frost, 2008). *Rhinella marina* has been introduced widely and is now considered as a major threat for local fauna in many parts of the world (*e.g.* Australia).

Only *Rhinella marina* (p. 132) is currently reported from Kaieteur National Park.

## *Rhinella marina* (Linnaeus, 1758)

1758: 211.



ENGLISH NAME: Giant toad.

LOCAL NAME (PATAMONA): Wāla or Pālātuku.

TYPE LOCALITY: "America".

SELECTED REFERENCES: Duellman, 1978 (brief description, tadpole description, B&W photo, in English); Easteal, 1986 (definition, distribution, pertinent literature, call spectrogram); Duellman, 2005 (brief description, tadpole description, call description and colour photo, in English).

**Field identification** - Males reach at least 140.0 mm SVL, females may exceptionally reach about 300.0 mm; most specimens range in size from 150 to 200 mm.

- ➔ Dorsal ground colour brown to greyish or reddish brown, with or without dark brown or black mottling and/or cream spots; skin on dorsum warty.
- ➔ Ventral surface granular, creamy white, with or without a distinct pattern consisting in greyish brown, dark brown or black spots and/or mottling.
- ➔ Flanks similar to dorsum, not contrasting with the dorsal colour.
- ➔ Lower lip without creamy spots.
- ➔ Cranial crests present and distinct.
- ➔ Parotoid glands very large, trianguloid.
- ➔ When adpressed Finger I longer than II, fingers unwebbed.
- ➔ Disc on fingers and toes unexpanded.

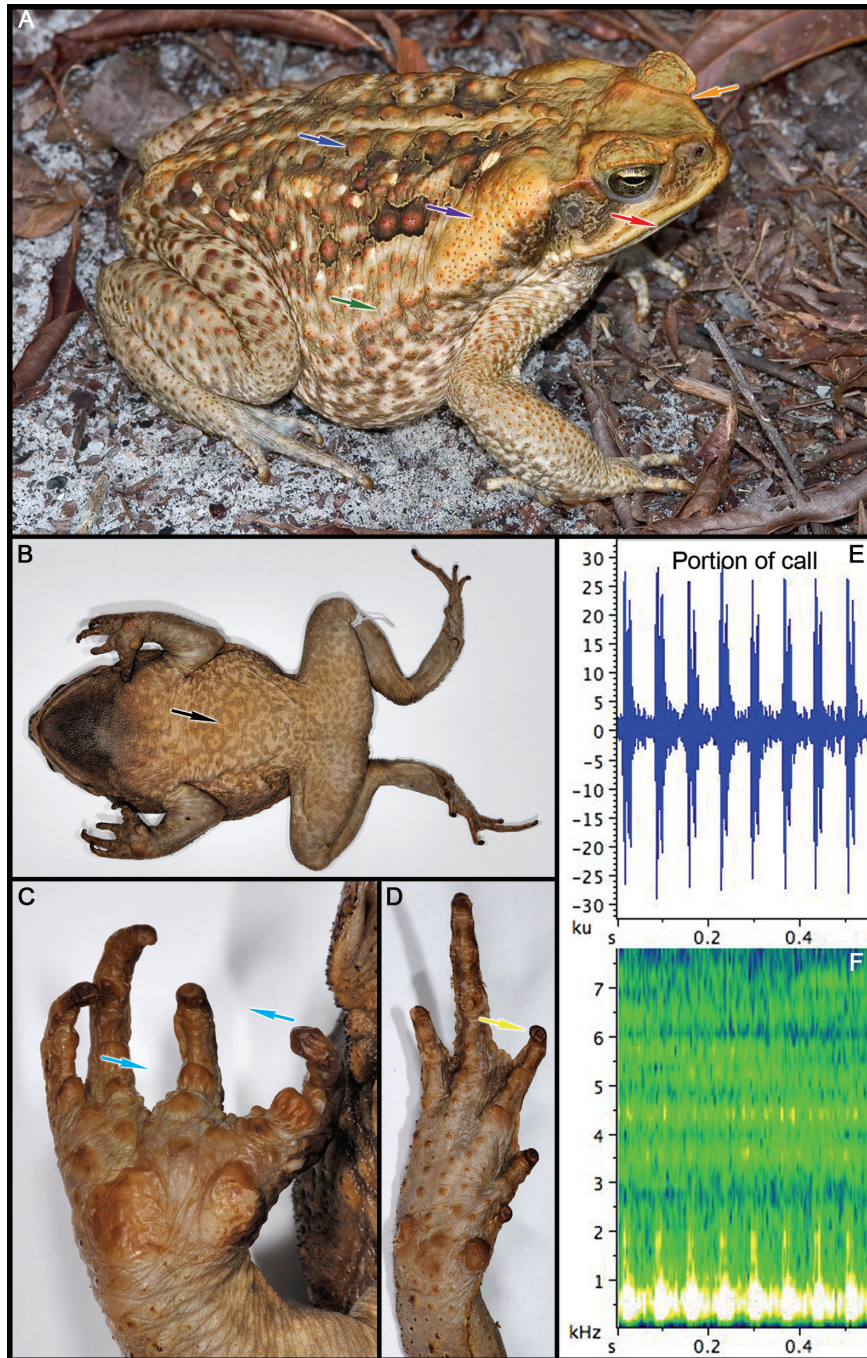
**Life history** - Nocturnal (although juveniles may sometimes be found by day), terrestrial. Occurs in a wide range of habitats, from savannah to primary forest, and is highly anthropophilic. Individuals prefer open areas and are usually found in disturbed habitats, in large clearings in secondary forest, more rarely in primary forest (where the largest specimens seem to occur). Males call from the ground, usually at the edge of slow-moving streams, rivers, or in swampy areas. Eggs are deposited in gelatinous strings in slow-moving water, rocky pools, ponds, lakes, swamps, etc.; always in open areas that receive high amount of sunlight during the day.

**Call** - First described by Blair (1956: 96), who provided a spectrogram. Easteal (1986: 2) provided a spectrogram, but no description; see also Duellman (2005: 185), who provided a short description and a spectrogram and oscillogram. It consists of a long low-pitched rattling trill repeated at a rate of about 4 calls/min.

**Tadpole** - The first description is apparently that of Ruthven (1919: 7), but see also that of Breder (1946: 395) and Savage (1960: 233). Exotroph, benthic, black; LTRF = 2(2)/3.

**Abundance and distribution in KNP** - Very common locally. Observed around all main sampling localities (see Fig. 3).

**Geographic range** - Widespread from southern Texas to central Brazil. Introduced worldwide.



**Fig. 89.** *Rhinella marina* (Linnaeus, 1758). A. Dorsolateral view of a female. B. Ventral surface of a preserved male. C. Palm (preserved male specimen). D. Sole (preserved male specimen). E. Call, oscillogram. F. Call, spectrogram. (Photos by P. J. R. Kok).

## *Centrolene* Jiménez de la Espada, 1872

### “GIANT GLASS FROGS”



**Fig. 90.** *Centrolene gorzulae*, the only *Centrolene* reported from Kaieteur National Park. (Photo by P. J. R. Kok).

- ⇒ Small to medium size
- ⇒ Maxillary teeth present
- ⇒ Pupil horizontally elliptical (Fig. 42A)
- ⇒ Humeral spine in adult males (Fig. 57B)
- ⇒ Skin on dorsum smooth or shagreened to finely granular (Fig. 44A-C)
- ⇒ Ventral skin transparent, internal organs visible (Fig. 59)
- ⇒ Vocal sac single, subgular (Fig. 56A)
- ⇒ Finger I  $\leq$  II when fingers adpressed
- ⇒ Finger discs expanded (Fig. 51B-C)
- ⇒ Tympanum present, distinct or indistinct (Fig. 43A-B)

The genus *Centrolene* currently contains 42 species.

Frogs of the genus *Centrolene* are nocturnal and mostly arboreal. They inhabit tropical rainforest and are usually found along streams or rivers.

*Centrolene* was found to be paraphyletic with regards to *Cochranella* by Frost *et al.* (2006) [see also taxonomic comments by Cisneros-Heredia & McDiarmid (2007) and Guayasamin *et al.* (2008)].

### **Sexual dimorphism**

Males have a humeral spine and nuptial excrescences on fingers or along flanks. In most species males are smaller than females, except in *Centrolene geckoidum*.

### **Eggs**

Egg masses are deposited outside of water, usually on leaves overhanging lotic water, but some species occasionally place them over lentic water. *Centrolene gorzulae* was found to deposit egg masses in moss on branches overhanging the water (Fig. 91), or between two leaves (P. Kok, pers. obs.), and *C. buckleyi* might deposit eggs in bromeliads (Lynch & Duellman, 1973).



**Fig. 91.** Egg mass of *Centrolene gorzulae* (Photo by P. J. R. Kok)

### **Tadpoles**

Exotroph (fossorial).

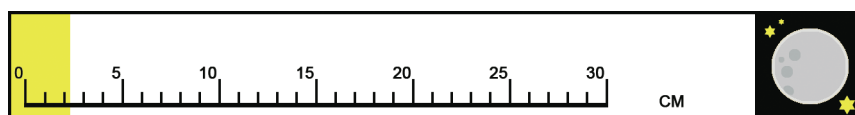
### **Distribution**

Species belonging to the genus *Centrolene* are found from Honduras to Panama, along the Andes from Venezuela to Peru, on the Cordillera de la Costa of Venezuela and in the western part of the Guiana Shield (Cisneros-Heredia & McDiarmid, 2007).

Only *Centrolene gorzulae* (p. 136) is currently reported from Kaieteur National Park.

## ***Centrolene gorzulae* (Ayarzagüena, 1992)**

1992: 19, figs 3e, 4.



ENGLISH NAMES: Bolívar giant glassfrog.

LOCAL NAME (PATAMONA): Unknown.

TYPE LOCALITY: "Cerro Auyantepuy-Cento, Edo. Bolívar, Venezuela (5°56'N, 62°34'W), 1.850 msnm".

SELECTED REFERENCES: Noonan & Harvey, 2000 (description of the synonym *C. papillahalicum*, B&W photo and drawings, in English); Señaris & Ayarzagüena, 2005 (description, natural history, call description, tadpole description, B&W drawings, distribution, in Spanish); Kok & Castroviejo-Fisher, 2008 (description, synonymy, natural history, colour photos, distribution, in English).

**Field identification** - Males reach 22.5 mm SVL, females 22.0 mm.

- Dorsal ground colour dark green with scattered minute paler flecks, upper lip yellowish white; iris metallic copper with black reticulations; skin on dorsum finely shagreened.
- Ventral surface strongly granular, translucent green, internal organs visible through the skin: parietal peritoneum mostly transparent, pericardial peritoneum white, hepatic and visceral peritonea white.
- Bones green, visible through the skin.
- Humeral spine in adult males.
- Prepollical spine projecting.
- When adpressed, Fingers I and II equal in length.
- Enameled fringes present on postaxial edges of Finger IV and Toe V.
- Enlarged round tubercles below vent.

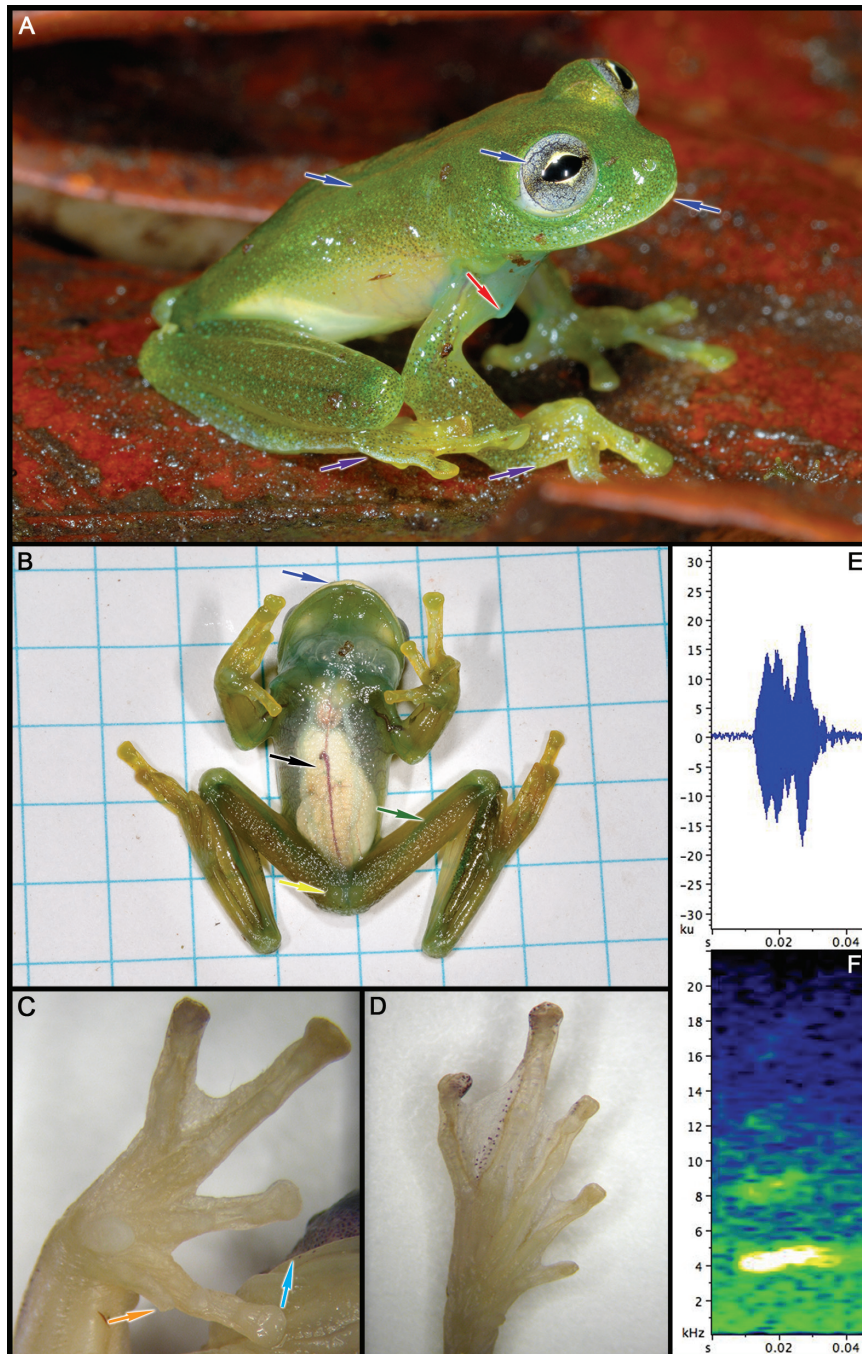
**Life history** - Nocturnal, arboreal. Exclusively found in primary forest. Males call from the upper surface of leaves above or along small streams, usually 1.0-1.5 m above the ground, but the species can be found as high as 4 m above the forest floor. Gelatinous masses of eggs are deposited on mosses overhanging water, from which tadpoles will fall into the water as they hatch; tadpoles probably feed on detritus.

**Call** - First described by Señaris & Ayarzagüena (2005: 83), who provided a spectrogram. It consists of a single short pulsed note repeated at a rate of about 10 notes/min.

**Tadpole** - Still undescribed, description by Kok in progress. Exotroph, fossorial; greenish brown; LTRF = 0/0 (Kok, unpublished data).

**Abundance and distribution in KNP** - Locally common. Collected only around main sampling localities # 4 and 11 (see Fig. 3), but the species is certainly more widespread in the Park.

**Geographic range** - Known from Auyantepui and neighbouring localities in Bolívar State, Venezuela, and from the Pakaraima Mountains in Guyana.



**Fig. 92.** *Centrolene gorzulae* (Ayarzagüena, 1992). A. Dorsolateral view of a male. B. Ventral surface of a male in life. C. Palm (preserved male specimen). D. Sole (preserved male specimen). E. Call, oscillogram. F. Call, spectrogram. (Photos by P. J. R. Kok).

## *Cochranella* Taylor, 1951

### “COCHRAN FROGS”



**Fig. 93.** Portrait of *Cochranella helenae*, the only *Cochranella* species currently reported from Kaieteur National Park. (Photo by P. J. R. Kok).

- ⇒ Small size
- ⇒ Maxillary teeth present
- ⇒ Pupil horizontally elliptical (Fig. 42A)
- ⇒ Humeral spine absent in adult males (Fig. 57A)
- ⇒ Skin on dorsum smooth or shagreened to granular (Fig. 44A-C)
- ⇒ Ventral skin transparent, internal organs visible (Fig. 59)
- ⇒ Vocal sac single, subgular (Fig. 56A)
- ⇒ Finger I < = > II when fingers adpressed
- ⇒ Finger discs expanded (Fig. 51B-C)
- ⇒ Tympanum present, distinct or indistinct (Fig. 43A-B)

The genus *Cochranella* currently contains 42 species.



Frogs of the genus *Cochranella* are nocturnal and mostly arboreal. They inhabit tropical rainforest and are usually found along streams or rivers.

The genus is diagnosed only on the basis of a plesiomorphic character (the absence of a humeral spine in males) and the taxonomy of *Cochranella* needs revision (see comments in Cisneros-Heredia & McDiarmid, 2007, and Guayasamin *et al.*, 2008).

### **Sexual dimorphism**

Males have nuptial excrescences on fingers. In most species males are smaller than females.

### **Eggs**

Egg masses are deposited outside of water, usually on leaves overhanging lotic water, but some species occasionally place them over lentic water. Some taxa (*e.g.* *Cochranella euhystrix* from Peru, *C. nola* from Bolivia) attach egg masses to rocks in the spray zone of waterfalls or in streams (Cadle & McDiarmid, 1990; Lötters & Köhler, 2000).

### **Tadpoles**

Exotroph (fossorial).

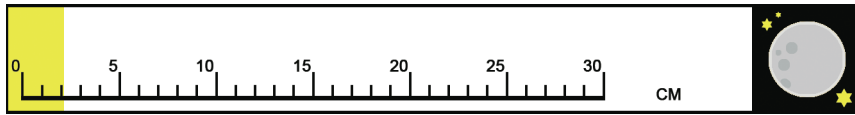
### **Distribution**

Species belonging to the genus *Cochranella* are found from Nicaragua to Amazonian Brazil, in the Guiana Shield, Ecuador, Peru and Bolivia (Frost, 2008).

Only *Cochranella helenae* (p. 140) is currently reported from Kaieteur National Park.

## ***Cochranella helenae* (Ayarzagüena, 1992)**

1992: 21, figs 3d, 4.



ENGLISH NAME: Venezuela Cochran frog.

LOCAL NAME (PATAMONA): Unknown.

TYPE LOCALITY: "Quebrada Jaspe, San Ignacio de Yuruaní, Edo Bolívar, Venezuela".

SELECTED REFERENCES: Ayarzagüena, 1992 (original description, B&W photo, in Spanish); Señaris & Ayarzagüena, 2005 (description, natural history, call description, tadpole description, colour photo, distribution, in Spanish); Kok & Castroviejo-Fisher, 2008 (description, synonymy, natural history, colour photos, distribution, in English).

**Field identification** - Males reach 20.4 mm SVL, female not known.

➔ Dorsal ground colour pale lime green to greenish yellow with scattered dark brown flecks, iris yellow speckled with minute dark brown punctuations; skin on dorsum shagreened.

➔ Ventral surface granular, transparent, internal organs visible through the skin: parietal peritoneum white, pericardial peritoneum white, hepatic and visceral peritonea white.

➔ Bones pale green, visible through the skin.

➔ Humeral spine absent in adult males.

➔ Prepollical spine not projecting.

➔ When adpressed, Fingers I and II almost equal in length.

➔ Fringes on postaxial edges of Finger IV and Toe V (first phalange only) not enameled.

➔ Paired enlarged round tubercles below vent.

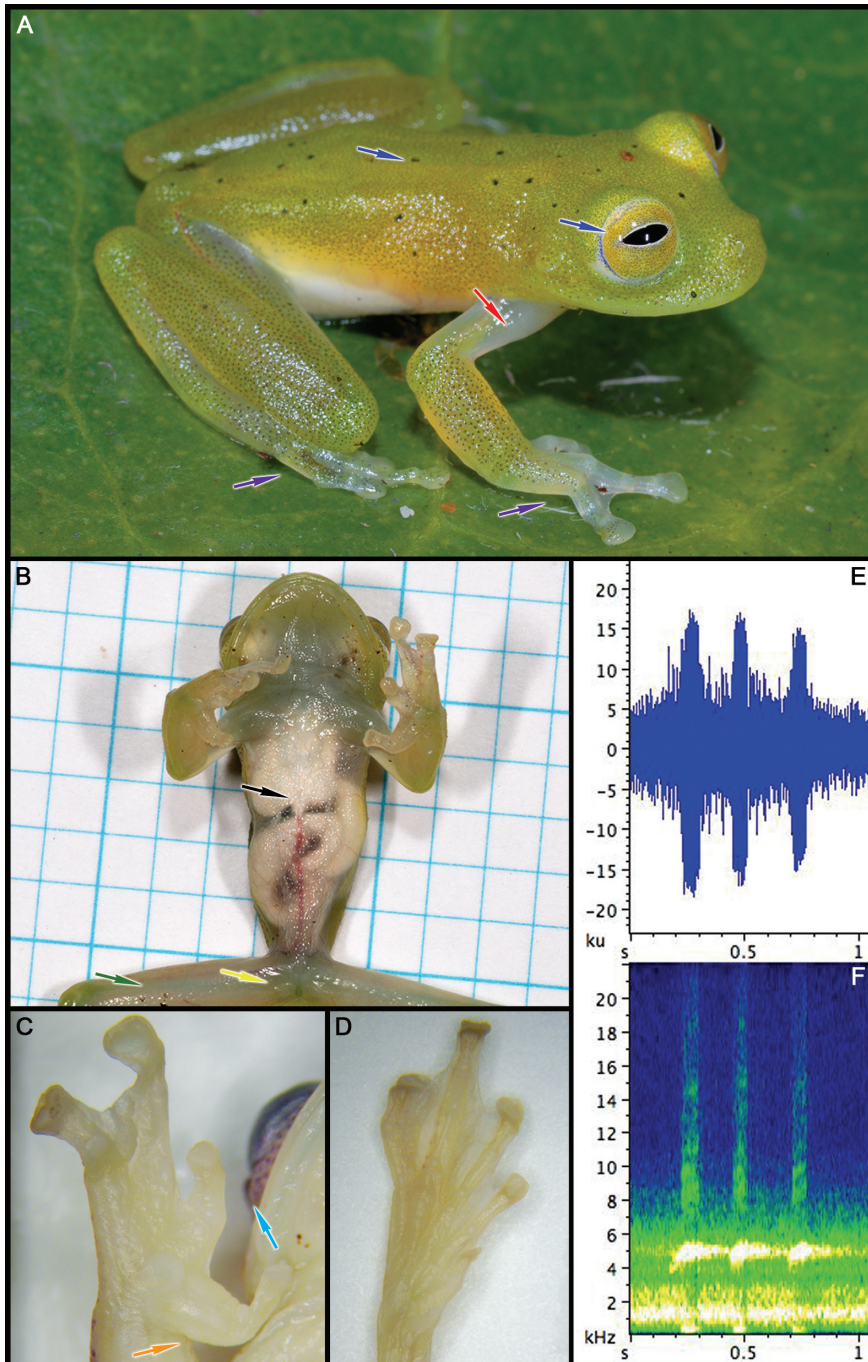
**Life history** - Nocturnal, arboreal. Exclusively found in primary forest. Males call from the upper surface of leaves above or along streams (typically large streams or rivers, but sometimes small streams), usually 3.0-4.0 m above the ground, but the species can be found as high as 10 m above the forest floor. Gelatinous masses of eggs are deposited on leaves overhanging water, from which tadpoles will fall into the water as they hatch; tadpoles probably feed on detritus.

**Call** - First described by Señaris & Ayarzagüena (2005: 119), who provided a spectrogram. It consists of two or three short-pulsed notes repeated at a rate of about 4-6 calls/min.

**Tadpole** - First described by Señaris & Ayarzagüena (2005: 120). Exotroph, fossorial; light green; LTRF = 1/3.

**Abundance and distribution in KNP** - Rare. Observed and heard calling only around main sampling localities # 2, 5 and 12 (see Fig. 3), but the species is probably more widespread in the park.

**Geographic range** - Known from the type locality and Salto Karuay, Bolívar State, Venezuela, and from KNP in Guyana.



**Fig. 94.** *Cochranella helenae* (Ayarzagüena, 1992). A. Dorsolateral view of a male. B. Ventral surface of a male in life. C. Palm (preserved male specimen). D. Sole (preserved male specimen). E. Call, oscillogram. F. Call, spectrogram. (Photos by P. J. R. Kok).

## *Hyalinobatrachium* Ruiz-Carranza & Lynch, 1991

“GLASS FROGS”



**Fig. 95.** *Hyalinobatrachium taylori*, one of the ca. 31 described species in the genus.  
(Photo by P. J. R. Kok).

- ⇒ Small size
- ⇒ Maxillary teeth present
- ⇒ Pupil horizontally elliptical (Fig. 42A)
- ⇒ Humeral spine absent in adult males (Fig. 57A)
- ⇒ Skin on dorsum smooth or shagreened to granular (Fig. 44A-C)
- ⇒ Ventral skin transparent, internal organs visible (Fig. 59)
- ⇒ Vocal sac single, subgular (Fig. 56A)
- ⇒ Finger I < = > II when fingers adpressed
- ⇒ Finger discs expanded (Fig. 51B-C)
- ⇒ Tympanum present, distinct or indistinct (Fig. 43A-B)

The genus *Hyalinobatrachium* currently contains 31 species, although the taxonomic status of several of its members needs clarification.

*Hyalinobatrachium* species are nocturnal and mostly arboreal. They inhabit tropical rainforest and are usually found along streams or rivers.

The genus is diagnosed on the basis of a character shared by *Centrolene* and *Cochranella* [a bulbous liver (*i.e.* not tri- or tetralobate) with white hepatic peritoneum] and requires a taxonomic revision (see comments in Cisneros-Heredia & McDiarmid, 2007, and Guayasamin *et al.*, 2008).

### Sexual dimorphism

Males have nuptial excrescences on fingers. In most species males are smaller than females.

### Eggs

Egg masses are deposited outside of water, on the upper side or on the underside of leaves (Fig. 96), overhanging lotic water, but some species occasionally place them over lentic water.



Fig. 96. Egg mass of *Hyalinobatrachium crurifasciatum*. (Photo by P. J. R. Kok).

### Tadpoles

Exotroph (fossorial).

### Distribution

Species belonging to the genus *Hyalinobatrachium* are found from Nicaragua to Amazonian Brazil, in Tobago, in the Guiana Shield, Ecuador, Peru and Bolivia (Frost, 2008).

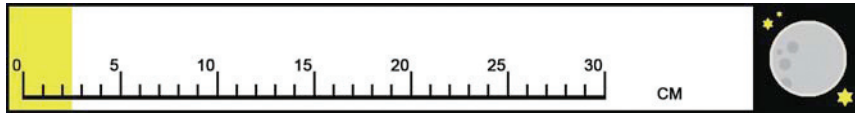
### Field key to the *Hyalinobatrachium* species of Kaieteur National Park

1. Snout truncate in profile (Fig. 40B); dorsum light green with pale yellowish spots; iris yellowish with small brown flecks and usually a reddish ring around pupil; bones translucent green (visible through skin) . . . . . ***H. crurifasciatum*** (p. 144)
- 1'. Snout slightly sloping in profile (Fig. 40B); dorsum dark green with pale green spots, usually bearing a white fleck in their centre; iris metallic lavender with dark brown reticulations; bones white (visible through skin) . . . . . ***H. taylori*** (p. 146)

Remark: the presence of *Hyalinobatrachium mondolfii* in KNP is probable (Kok & Castroviejo-Fisher, 2008). See Señaris & Ayarzagüena (2005: 273) for a colour photo of that species.

## *Hyalinobatrachium crurifasciatum* Myers & Donnelly, 1997

1997: 9, figs 7-10.



ENGLISH NAME: None; we propose "Banded limb glassfrog".

LOCAL NAME (PATAMONA): Pakak.

TYPE LOCALITY: "north base of Pico Tamacuari, 1160-1200 m elevation, Sierra Tapirapeco, Amazonas, Venezuela (1°13'N, 64°42'W)".

SELECTED REFERENCES: Myers & Donnelly, 1997 (original description, call description, tadpole description, in English); Noonan & Bonett, 2003 (description and tadpole description as *H. ignioculus*, in English); Señaris & Ayarzagüena, 2005 (description, osteology, natural history, call description, tadpole description, distribution, in Spanish).

**Field identification** - Males reach 24.0 mm SVL, females 22.8 mm.

➤ Dorsal ground colour light green with scattered dark green to dark brown flecks and pale yellowish spots; iris variable, yellowish with small brown flecks and usually a reddish ring around pupil (complete or incomplete); skin on dorsum shagreened to slightly granular.

➔ Ventral surface strongly granular, transparent, internal organs visible through the skin: parietal peritoneum transparent, pericardial peritoneum partly white, hepatic and visceral peritonea white.

➤ Bones white, visible through the skin.

➤ Humeral spine absent in adult males.

➤ Prepollical spine not projecting.

➤ When adpressed, Finger I longer than II.

➤ Enameled fringes present on postaxial edges of Finger IV and Toe V, and on metacarpal, ulnar, metatarsal and tarsal folds.

➤ No distinctly enlarged round tubercles below vent.

**Life history** - Nocturnal, arboreal. Exclusively found in primary forest. Males call from the lower surface of leaves above or along streams, usually 2.0-4.0 m above the ground (up to 15 m). Gelatinous masses of eggs are deposited on the lower surface of leaves overhanging water, from which tadpoles will fall into the water as they hatch; tadpoles probably feed on detritus.

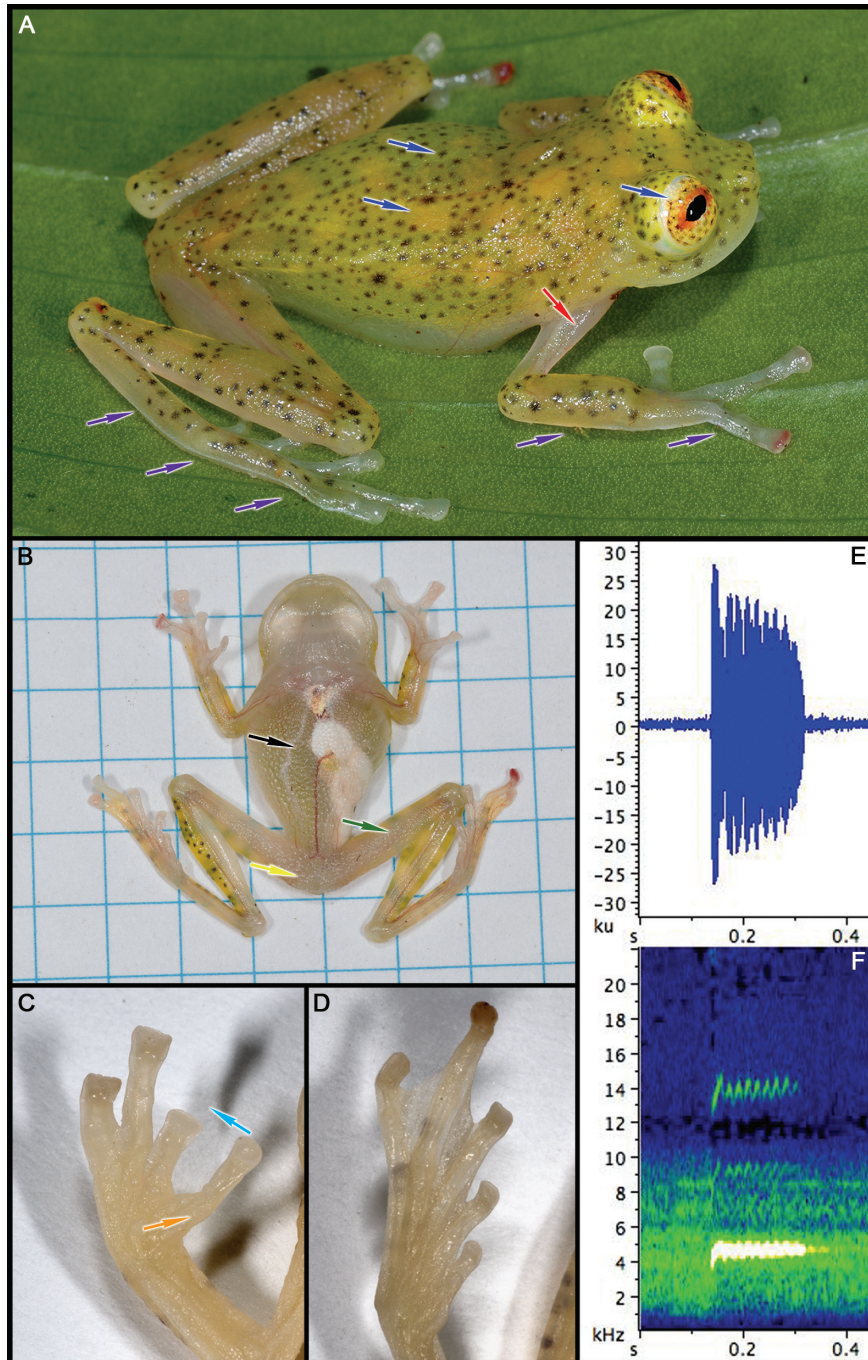
**Call** - First described by Myers & Donnelly (1997: 13), who provided a spectrogram. It consists of a single pulsed note repeated at a rate of about 20 notes/min.

**Tadpole** - First described by Myers & Donnelly (1997: 13); see also Noonan & Bonett (2003: 95, as *H. ignioculus*). Exotroph, fossorial; tan peppered with melanophores; LTRF = 2(2)/2(1).

**Abundance and distribution in KNP** - Rare. Heard calling only around main sampling locality # 5 (see Fig. 3), but the species is certainly more widespread in the park.

**Geographic range** - Known from Amazonas and Bolívar states in Venezuela, Guyana, Suriname and French Guiana.

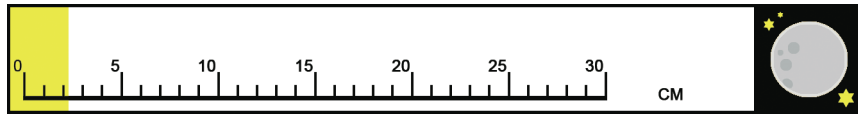
**Taxonomic comments** - The taxonomic status of this species is under review by S. Castroviejo-Fisher and colleagues.



**Fig. 97.** *Hyalinobatrachium crurifasciatum* Myers & Donnelly, 1997. A. Dorsolateral view of a male. B. Ventral surface of a male in life. C. Palm (preserved male specimen). D. Sole (preserved male specimen). E. Call, oscillogram. F. Call, spectrogram. (Photos by P. J. R. Kok).

## *Hyalinobatrachium taylori* (Goin, 1968)

1968: 115, fig. 1.



ENGLISH NAME: Taylor's glassfrog.

LOCAL NAME (PATAMONA): Unknown.

TYPE LOCALITY: "at an elevation of 750 ft. along the New River, Guyana".

SELECTED REFERENCES: Goin, 1968 (original description, in English); Señaris & Ayarzagüena, 2005 (description, osteology, natural history, call description, tadpole description, distribution, colour photo, in Spanish); Kok & Castroviejo-Fisher, 2008 (description, synonymy, natural history, colour photos, distribution, in English).

**Field identification** - Males reach 20.5 mm SVL, females 21.5 mm.

➔ Dorsal ground colour dark green with pale green spots, usually bearing a white fleck in their centre, bronze flecks/lines sometimes present on dorsal surfaces; iris metallic lavender with dark brown reticulations; skin on dorsum smooth to finely shagreened.

➔ Ventral surface granular, transparent, internal organs visible through the skin: parietal peritoneum transparent, pericardial peritoneum partly white, hepatic and visceral peritonea white.

➔ Bones translucent green, visible through the skin.

➔ Humeral spine absent in adult males.

➔ Prepollical spine not projecting.

➔ When adpressed, Finger I longer than II.

➔ Enamelled fringes present on postaxial edges of Finger IV and Toe V, and on metacarpal, ulnar, metatarsal and tarsal folds.

➔ No distinctly enlarged round tubercles below vent.

**Life history** - Nocturnal, arboreal. Exclusively found in primary forest. Males call from the upper surface of leaves above or along large streams and rivers, usually 1.0-10.0 m above the ground. Gelatinous masses of eggs are deposited on the lower surface of leaves overhanging water, from which tadpoles will fall into the water as they hatch; tadpoles probably feed on detritus.

**Call** - First described by Señaris & Ayarzagüena (2005: 228), who provided a spectrogram. Typically, the call consists of five to eight short notes given in very quick succession and repeated at a rate of about 1-3 calls/min.

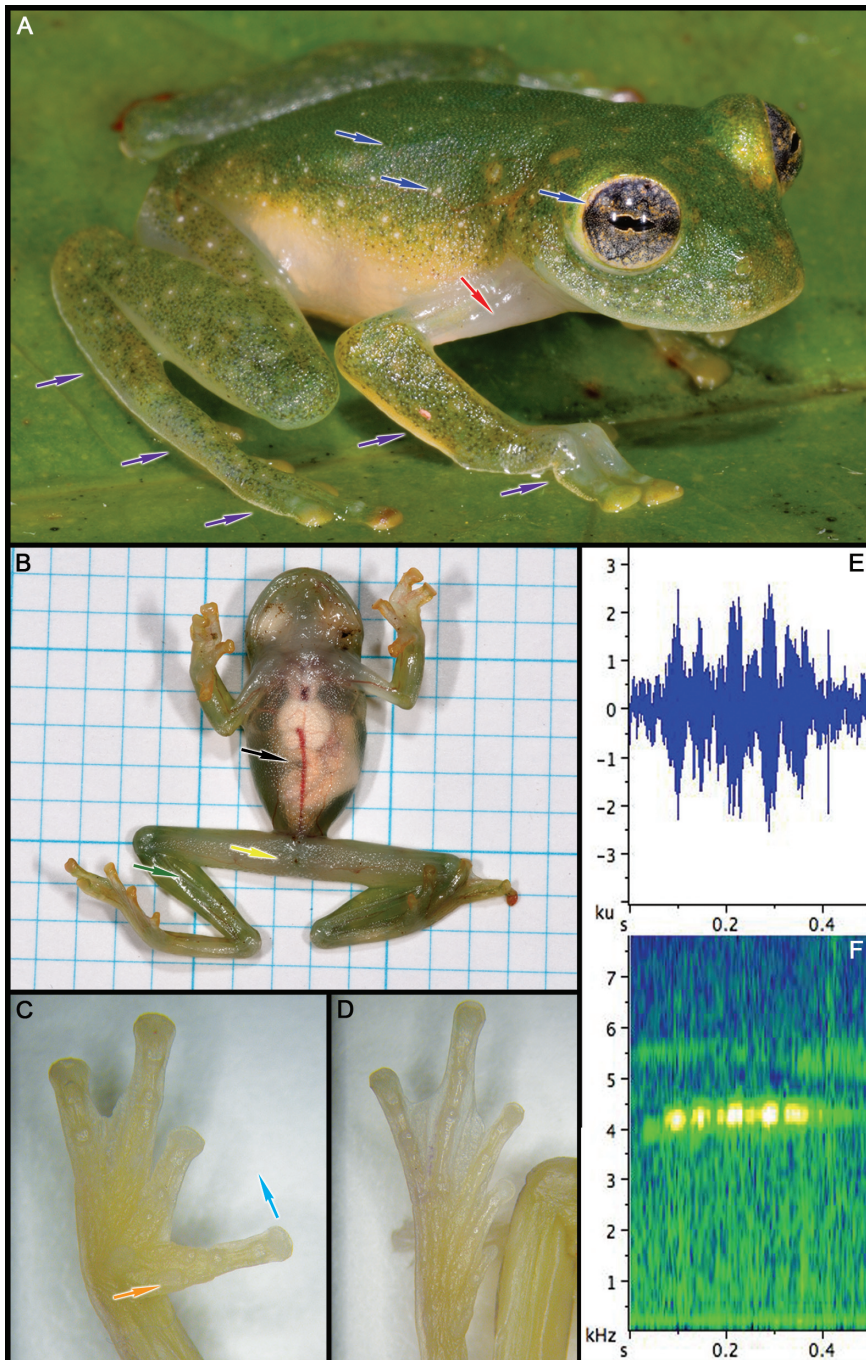
**Tadpole** - First described by Señaris & Ayarzagüena (2005: 229). Exotroph, fossorial; light green; LTRF = 1/3.

**Abundance and distribution in KNP** - Locally common. Heard calling around main sampling localities # 5, 12 and 13 (see Fig. 3), but the species is certainly more widespread in the park.

**Geographic range** - Known from French Guiana, through Suriname and Guyana, to Bolívar and Amazonas states in Venezuela.

**Taxonomic comments** - *Hyalinobatrachium taylori* has been confused with *H. crurifasciatum* by several authors.





**Fig. 98.** *Hyalinobatrachium taylori* (Goin, 1968). A. Dorsolateral view of a male. B. Ventral surface of a male in life. C. Palm (preserved male specimen). D. Sole (preserved male specimen). E. Call, oscillogram. F. Call, spectrogram. (Photos by P. J. R. Kok).

## *Adelophryne* Hoogmoed & Lescure, 1984

### “SHIELD FROGS”



**Fig. 99.** The recently described *Adelophryne patamona*, a species that does not occur in Kaieteur National Park; here from Mt. Maringma. (Photo by P. J. R. Kok).

- ⇒ Very small to small size
- ⇒ Maxillary teeth present
- ⇒ Pupil horizontally elliptical (Fig. 42A)
- ⇒ Skin on dorsum smooth or shagreened to granular (Fig. 44A-C)
- ⇒ Digits flattened with subdigital pads rather than subarticular tubercles
- ⇒ Finger IV reduced in size with single subdigital pad
- ⇒ Vocal sac single, subgular (Fig. 56A)
- ⇒ Finger I < II when fingers adpressed
- ⇒ Discs with pointed tips (Fig. 51D) and lateral fringes (Fig. 46E)
- ⇒ Tympanum present, distinct (Fig. 43A)

The genus *Adelophryne* currently contains six species.

Frogs of the genus *Adelophryne* are strictly terrestrial, mainly nocturnal, but some species are also active by day (especially during heavy rains). They are cryptic inhabitants of the leaf litter in tropical rainforest and are not dependent on water bodies for reproduction (see below).

### Sexual dimorphism

There is no evident sexual dimorphism or dichromatism. Males have a large subgular vocal sac and are usually slightly larger than females.

### Eggs

Very little is known about the reproductive biology of *Adelophryne* species. Our observations in Kaieteur National Park indicate that in *A. gutturosa*, one large egg is laid among plant roots or in the leaf litter. The large vitellin reserve strongly suggests direct development in this species (see MacCulloch *et al.*, 2008), and probably in other *Adelophryne* as well.



**Fig. 100.** Terrestrial egg that was laid among leaf litter by a female *Adelophryne gutturosa*. (Photo by P. J. R. Kok).

### Tadpoles

Endotroph (direct developer).

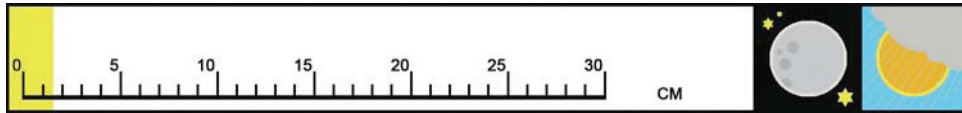
### Distribution

*Adelophryne* species are found in northern South America, east of the Andes (Frost, 2008).

Only *Adelophryne gutturosa* (p. 150) is currently reported from Kaieteur National Park.

## *Adelophryne gutturosa* Hoogmoed & Lescure, 1984

1984: 101, figs 4, 8-11.



ENGLISH NAME: Guiana Shield frog.

PATAMONA NAME: Unknown.

TYPE LOCALITY: "Between camp IV and V, northern slopes of Mount Roraima, Guyana (60°46'W 5°17'N), 3000 feet (914 m)".

SELECTED REFERENCES: Hoogmoed & Lescure, 1984 (original description, B&W drawings, in English); Hoogmoed *et al.*, 1994 (B&W photos, description refined, in English); MacCulloch *et al.*, 2008 (description, colour variation, colour photos, natural history, call description, in English).

**Field identification** - Males reach 14.7 mm SVL, females 16.0 mm.

- ➔ Dorsal ground colour variable, medium brown to grey with numerous small sky blue dots and scattered dark markings, a middorsal black "((" usually present; skin on dorsum smooth to slightly shagreened.
- ➔ Ventral surface smooth, brown to grey with small irregular sky blue dots.
- ➔ Upper arm orange.
- ➔ Iris copper with a red ring around pupil.
- ➔ When addressed, Finger I slightly shorter than II, fingers unwebbed.
- ➔ Tips of fingers pointed, discs absent.
- ➔ Tips of toes dilated into small narrow discs.
- ➔ Inner and outer metacarpal tubercle large, flat.

**Life history** - Diurnal and nocturnal, terrestrial. Found exclusively in primary forest, usually hidden in the leaf litter or among the rootlets at the base of plants. Males call from the base of plants, among rootlets or dead leaves. In KNP the species is often closely associated with the plant *Monotagma spicatum* (Marantaceae). Probably no more than one large egg is laid on the ground, among rootlets at the base of plants, froglets directly hatched from egg capsule.

**Call** - First described by MacCulloch *et al.* (2008: 46). It consists of a group of 2-15 short notes produced in quick succession with the interval between notes increasing progressively from the beginning to the end of the call.

**Tadpole** - Eggs of *Adelophryne* species undergo direct development and hatch as tiny frogs. Endotroph, direct developer.

**Abundance and distribution in KNP** - Very common, but difficult to spot. Collected or heard around all main sampling localities (see Fig. 3).

**Geographic range** - Widespread in the Guiana Shield from Bolívar State in Venezuela to Amapá, Brazil.