Ten years of research on Bolivian amphibians: updated checklist, distribution, taxonomic problems, literature and iconography

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Abstract: After ten years of intensive research, an updated checklist of the amphibians of Bolivia was compiled. For each species, information on its general distribution within the Neotropics, its occurrence within Bolivian departments and ecoregions, and habitat use is provided. Key literature and taxonomic remarks, if pertinent, are added. The list contains 186 valid species recorded from Bolivian territory, 33 (17.7 %) of which are Bolivian endemisms. Two species reported recently (f and) are not included because those reports were based on wrong identifications. Nine species (f m , - , , . , f , , m m - , m m , and m) are recorded for the first time. Moreover, 67 additional species are expected to occur in the country. Finally, we provide a comprehensive bibliography on Bolivian amphibians and an iconography, figuring almost all Bolivian species in color.
Keywords: Amphibia, Bolivia, checklist, taxonomy, distribution, bibliography, iconography

Resumen: Diez años de investigación sobre anfibios de Bolivia: lista actualizada, distribución, problemas taxonómicos, bibliografía e iconografía.- Se presenta una lista actualizada de los anfibios de Bolivia, que recopila los resultados de diez años de investigación. Para cada especie se proporciona información sobre distribución general en el Neotrópico y en los departamentos y ecoregiones bolivianas, uso del hábitat y bibliografía clave, así como comentarios taxonómicos, cuando proceden. La lista contiene 186 especies válidas registradas en territorio boliviano, de las cuales 33 (17.7 %) son endémicas. Dos especies citadas recientemente (- f y) no se incluyen en la lista porque dichas citas se basaron en identificaciones erróneas. Nueve especies (f m , , , . , - f , , m m , m m , e m) se citan en este trabajo por primera vez. Además, 67 especies aún no citadas podrían existir en el país. Finalmente, se proporciona una bibliografía exhaustiva sobre los anfibios de Bolivia y fotografías en color de casi todas las especies registradas.
Palabras clave: Amphibia, Bolivia, lista taxonómica, taxonomía, distribución, bibliografía, iconografía

INTRODUCTION

For many decades, the amphibian fauna of Bolivia has been one of the least known in the world. Until 1990, the information available was scattered among several publications devoted mainly to original descriptions of species, reports on collecting trips, and revisions of several taxa which included Bolivian material. The first comprehensive list of Bolivian amphibians was provided by DE LA RIVA (1990a), who compiled most of the published information, arranged the available data on distribution, included data from several collections, added some new findings, and provided color photographs of 62 species, some of them never illustrated before. This list contained 112 species accepted as valid, plus several others of doubtful taxonomic status. In addition, a total of 47 species from four different biogeographic areas were considered as likely occurring in the country.

Throughout the 1990s, the Bolivian amphibians have been the subject of intensive research, which is obvious from the increased number of recent publications (see biblio-

graphic section below). As a result, the number of species known for the country by early 2000 is much higher than the 1990 number. This fact means not only a dramatic improvement of the knowledge of the diversity of Bolivian amphibians, but also of that of their taxonomy, distribution, ecology, and natural history. Especially remarkable are the many publications dealing with vocalizations, which have led to the description of the calls of nearly 100 Bolivian species of anurans.

We are convinced of the importance of papers summarizing the state of the art of the distribution and diversity of regional faunas, especially those of poorly surveyed countries. The first step is "to know what is known". Thus, these summaries, although best considered works in-progress, are essential not only as keystones on which the advance of knowledge, future research and conservation policies must be based, but also as an important stimulus and guidance for students and other people interested in natural resources. Following this philosophy and given the necessity of a new compilation of the huge amount of new information generated in the last few years, we have prepared the present contribution, whose main goals are to: (1) provide an updated checklist of Bolivian amphibians; (2) give brief guidelines about their geographic and ecological distributions; (3) point out particular cases in which taxonomic problems preclude accurate or definitive statements; (4) include a comprehensive bibliography; (5) discuss the present results and predict plausible, future findings; and (6) show color photographs of almost every amphibian species in Bolivia, many of them illustrated herein for the first time.

MATERIAL, METHODS AND GUIDELINES

Unless stated otherwise, the information provided in the list mainly comes from published papers cited in the literature, which has been updated until April 2000, and also includes papers in press about which we are aware. Basically we intend to reflect the current state of taxonomy of Bolivian amphibians. Thus, in general, in this paper we do not make taxonomic decisions or changes although we are aware of some cases in which such changes would be necessary and justified. Several species are reported for the first time in the present paper, based mostly on voucher specimens. Records based solely on personal communications by other persons have not been included, unless they have been corroborated by us. Apart from published information, additional data from collections and the personal experience of the authors have been used to generate the patterns of geographic and ecological distributions of the species. Orders, families, subfamilies (when pertinent), genera, and species are arranged in alphabetical order. Each species entry consists of the scientific name, author, and year of description, which is followed by an asterisk when the type locality is in Bolivia, and two asterisks when the species is endemic to the country. Additional information is arranged into three sections: "Distribution", "Key literature" and "Remarks".

Distribution.- Under this heading, for each species, the following five kinds of information are provided:

(1) Patterns of distribution in the Neotropics.- They are general geographic areas shared by several species with similar ecological requirements and/or biogeographical histories. Some broad patterns encompass other, more restricted ones. The patterns are:

Amazonia, which comprises the entire Amazon basin plus, usually, the Upper Orinoco basin and the Guianan region.

Andean Highlands, which includes the puna and Altiplano from, at its greatest extension, S Peru to N Argentina and Chile.

Bolivian-Argentinean Forests, comprising the semi-humid montane Andean forests from Santa Cruz (Bolivia) to N Catamarca (Argentina).

Cerrado domain, which comprises the open formations whose core area lies in Central and SE Brazil and may also include open areas in the lower Amazon and NE Brazil (Caatingas), reaching the Guianas, and/or the Plata Basin in Argentina and adjacent countries.

Chaco, which extends mainly throughout N Argentina, Paraguay, SW Brazil and SE Bolivia. The Chaco is often divided into dry and humid Chaco. The later holds some species which are widespread in other areas or are otherwise linked to tropical environments, whereas the dry Chaco is inhabited by the typical Chacoan species adapted to the extreme conditions of this ecosystem.

Humid Montane Forests, and/or humid subparamo in the Andes from S Peru to Bolivia or only those of Bolivia.

Lower Amazon Basin, which comprises the eastern half of the Amazon Basin and may include the Guianan region.

Middle and South America, which corresponds to species with a broad distribution that may reach up to Mexico in the north and SE Brazil and northern or central Argentina in the south, albeit more commonly these distributions range from Panama or Costa Rica to Bolivia, comprising both tropical and subtropical environments (often such broad distributions reflect a poor knowledge on the systematics of a given species complex and, as this knowledge improves, less species will fall within this pattern of distribution).

Peri-Andean Forests, which is the pattern of those species occurring in the foothills and lower Andean slopes from Colombia or Ecuador to Bolivia, but more often from SE Peru to Bolivia.

South America, which comprises tropical and subtropical regions from Colombia to SE Brazil and northern or central Argentina.

Southwestern Amazonia, comprising roughly the Madeira river basin in SE Peru, Amazonian Bolivia, and the Brazilian states of Acre and Rondônia.

Subtropical South America, comprising temperate and subtropical areas south of the Chaco and the Cerrado, in Argentina, Bolivia, SE Brazil, Paraguay and Uruguay. Bolivian species with this general pattern usually occur only in the inter-Andean valleys.

Temperate Inter-Andean Valleys of Bolivia and adjacent areas of N Argentina.

Tropical Middle and South America, including Costa Rica and/or Panama, the Amazon and Orinoco basins and the Guianas, and may include the Brazilian Atlantic forest; it may also include the Pacific lowlands of Colombia and Ecuador.

Tropical South America, which is like the previous one but excluding Middle America.

Upper Amazon Basin, which comprises roughly the western half of the Amazon Basin and may include or not the Guianan region.

All these patterns represent only a rough way to make species distributions fit in a scheme. Consequently, some species can be assigned to more than one region or cannot be easily assigned to any of these regions.

(2) Bolivian departments where the species occurs. The nine Bolivian departments are (Figure 1): Beni, Cochabamba, Chuquisaca, La Paz, Oruro, Pando, Potosí, Santa Cruz, and Tarija. For each species, those departments for which we are aware of published records, voucher specimens or personal observation by any of the authors, are marked in boldface. If the presence of the species is not cofirmed but only expected (for example, because it occurs in neighboring areas of other departments or the type of habitat is the same), the department appears in normal letters.

(3) Bolivian ecoregions (Figure 2), generally following IBISCH (1996). Expectedly, some of them overlap partially or to a great extent the major geographic regions listed in (1). These are:

Amazonian Rainforests: located in Beni, La Paz, Pando, as well as at the Andean foothills in Cochabamba and Santa Cruz; 100-600 m a.s.l.; mean annual temperature 29-27 °C; mean annual precipitation 1800-2200 mm,

Figure 1.- Map of Bolivian departments.
Figura 1.- Mapa de los departamentos Bolivianos.

more at the Andean foothills; 0-3 arid months; tall evergreen rainforest.

Cerrado formations: located in Santa Cruz and Beni; 200-1000 m a.s.l.; mean annual temperatures 18-25 °C; mean annual precipitation 1000-1500 mm; 3-5 arid months; mainly dry open savanna formations but includes also low dry-forests; frequent natural fires.

"Ceja de Montaña" - Cloud Forests: located in La Paz, Cochabamba, and Santa Cruz; 2500-3500 m a.s.l.; mean annual temperature 10-14 °C; mean annual precipitation 2500-3500 mm; 0-2 arid months; low evergreen cloud forest, subparamo.

Chiquitanía Forests: located in the provincias Velasco, Ñuflo de Chávez, Sandoval, and Chiquitos in the Departamento de Santa Cruz; forest type unique to Bolivia; transition zone between humid Amazonian forests and dry Chaco forests; 300-1200 m a.s.l.; mean annual temperatures 18-23 °C; mean annual precipitation 1000-1500 mm; 3-5 arid months; semi-deciduous forests of medium height, large parts evergreen.

Chaco Lowland Forests: located in Chuquisaca, Santa Cruz, and Tarija; 300-600 m a.s.l.; mean annual temperature 25-26 °C; mean annual precipitation 400-900 mm, around 1000 mm at the Andean foothills and in the northern transition zone to the Pantanal; 6-8 arid months; low dry-forests with several succulent plants.

Chaco Montane Forests: located in Chuquisaca, Santa Cruz, and Tarija; 600-1500 m a.s.l.; mean annual temperatures 18-22 °C; mean annual precipitation 1000-2000 mm; 6-7 arid months; deciduous forests of medium height; relationships to Caatinga formations.

High Andean Vegetation: located in Chuquisaca, Cochabamba, La Paz, Oruro, Potosí, and Tarija; 2500-4600 m a.s.l.; forest growth up to 5200 m a.s.l. around Volcán Sajama; mean annual temperature below 10 °C; mean annual precipitation 500-700 mm; 6-8 arid months; puna, low evergreen montane forests.

Humid Transition Lowland Forests: located in Beni, Cochabamba, and Santa Cruz; forest type unique to Bolivia; 150-300 m a.s.l.; mean annual temperatures around 25 °C; mean annual precipitation 1200-1800 mm; 2-4 arid months; evergreen rainforests of medium height; azonal gallery forests along rivers.

Inter-Andean Valleys: located in Chuquisaca, Cochabamba, La Paz, Santa Cruz, and Tarija; 1300-3000 m a.s.l.; mean annual temperature 12-16 °C, maximum above 30 °C, minimum below 0 °C; mean annual precipitation 500-700 mm; 6-8 arid months; deciduous and semideciduous forests of medium height; biogeographical relationships with the dry Chaco forests.

Pre-Cambrian Shield Humid Forests: located in N Santa Cruz and parts of Beni; 200-1000 m a.s.l.; mean annual temperatures 18-25 °C; mean annual precipitation 1500-1800 mm; 2-4 arid months; evergreen forest of medium height; azonal vegetation on rock outcrops (inselbergs) and sandstone ridges.

Tucumanian-Bolivian Montane Forests: located in Chuquisaca, Santa Cruz, and Tarija; 800-2600 m a.s.l.; mean annual temperature

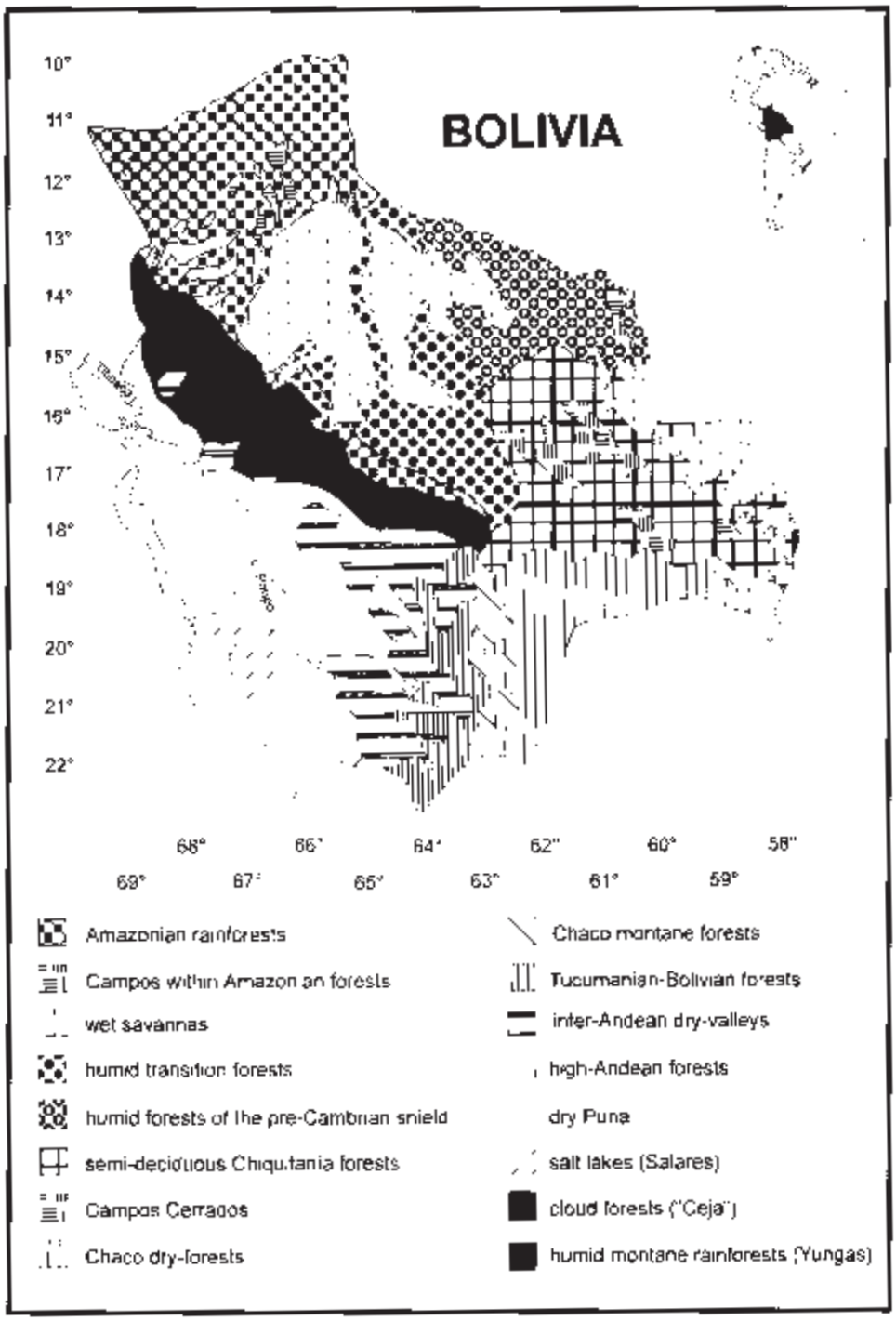

Figure 2.- Map of Bolivian ecoregions.
Figure 2.- Mapa de las ecoregiones de Bolivia.

13-23 °C; mean annual precipitation 1000-2000 mm; 3-5 arid months; montane forests of medium height.

Wet Savannas: located in Beni, Santa Cruz, and N La Paz; 130-250 m a.s.l.; mean annual temperature around 26 °C; mean annual precipitation 1000-2000 mm; 2-6 arid months; swamps and grass savannas with scattered forest islands.

Yungas-Montane Rainforests: located in Cochabamba, La Paz, and Santa Cruz; 600-2500 m a.s.l.; divided into upper montane rainforests (1500-2500 m a.s.l.) and lower montane rainforests (600-1500 m a.s.l.); mean annual temperature 12-24 °C, minimum in upper regions below 0 °C; mean annual precipitation 2500 to more than 6000 mm, maximum rainfall between 1500 and 1800 m a.s.l.; 0-2 arid months; characterized by steep slopes and deep valleys; evergreen montane rainforest of medium height.

The transitional zones between two or more of these ecoregions may contain species of different origin (for example, in Beni, where savannas and forest intermingle to form a patchy environment). Likewise, it must be taken into account that some species (e. g., *f m* , , etc.) are linked to the rainforest domain, but they inhabit open areas within it (river shores, clearings, etc.). Moreover, some Cerrado and/or Chacoan amphibians can enter open areas within the rainforest domain, either as a natural colonization or, quite often, taking advantage of human perturbations to the landscape (roads, deforestation, etc.). As a result, a Chacoan or Cerrado species may be found, for example, in Pando (e. g.,). Likewise, some Chacoan or Cerrado species may be found in temperate inter-Andean valleys (e. g.,). Finally, some Amazonian species enter the northern Chaco (e. g., , -).

(4) Habitat use: Aquatic (when the species is almost always in the water), Arboreal (those species with digital pads adapted to climb on vegetation, although they can also move on the ground), Fossorial (when the species spends a great part of its life underground, for which it has some special adaptations), and Terrestrial [many terrestrial or arboreal species are usually near bodies of water, either ponds or streams, although they do not necessarily enter the water (e. g., centrolenids)].

5) Type of habitat: Forest or Open formation. This is an important distinction. Of

evant publications exist. When the species considered has its type locality in Bolivia but is not a Bolivian endemism, the original citation is provided only if it contains additional information (on taxonomy, ecology, distribution, natural history, etc.) other than the mere description of the species. When a species has been reported in the country only once, the corresponding reference is given. In some cases this publication may be a short note on distribution which, although it contains little information in general terms, represents all the information available for that particular species in the country. Papers and reports on faunal lists and surveys of particular localities or areas, inventories, etc., usually deal with no single species in particular. Thus, a paper of this kind is not mentioned in this section, unless it contains the only known Bolivian record of the species, unless the species is treated more extensively, and/or unless substantial information other than geographical is provided. Likewise, taxonomic reviews of genera or species groups which include Bolivian specimens, but where they are not the main subject, are not cited here unless they treat Bolivian endemic species. Instead, the general bibliography should be consulted.

Remarks.-This section (which does not appear if there is no particular comment about the species) includes pertinent comments on taxonomic problems, subspecies, distribution, ongoing research on particular topics, etc., with a special reference to the changes that have taken place since DE LA RIVA's (1990a) list. Recent synonymizations are indicated, especially if the synonymized species has its type locality in Bolivia, but older, well settled taxonomic changes are not usually mentioned.

In the list we have not included doubtful species [those known only from lost types, or whose type locality is unknown, etc.; see DE LA RIVA (1990a)]. However, we consider them in a separate section because future research may require us to take them into account.

The comprehensive literature on Bolivian amphibians presented herein includes every paper in which Bolivian amphibians are considered in any way. We provide references dealing with ecology, taxonomy, distribution, etc. of Bolivian amphibian species as long as they deal with Bolivian specimens. Papers on species of amphibians that occur in Bolivia but which are based on research carried out in other countries, are not considered (for example, papers dealing with descriptions of species that occur in Bolivia but whose type locality is not in Bolivia). As an exception, a few references cited in the main text do not contain specific information on Bolivian amphibians, but are relevant to understand some problems. Besides published papers, we also list unpublished reports and dissertations. This "gray literature" is usually difficult to obtain (and we are aware that we might have overlooked some of these papers), but we consider it is important to take these papers into account because, in some instances, they deal with faunas of poorly surveyed regions and very often are the only source of information about the amphibians occurring in such areas. Communications presented at congresses and meetings are excluded, unless they were published as books or edited conference proceedings. Likewise, references in which Bolivian amphibians are treated in a vague or general context (for example, non technical books) are excluded, especially if there is more accurate information published on the same topic elsewhere. Two or more references by a given author in the same year are ordered as a, b, c, etc., only when they are cited in this way in the main text. References in the list are in alphabetical order. When there are more than two authors, the citation in the main text is given with the name of the first author followed by " .". In this case, if there are several references of the same first auhor and year, the citations have been marked as a, b, c, etc. in the main text, following the order with which they appear, and irrespective of the alphabetical order followed in the list of references.

RESULTS

Updated checklist of Amphibians of Bolivia.

Anura

f

Atelopus tricolor Boulenger, 1902

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, **La Paz**; 3) Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: REYNOLDS & FOSTER, 1992; LAVILLA ., 1997; LÖTTERS & DE LA RIVA, 1998; LÖTTERS ., 1999a; KÖHLER, 2000a.

Remarks: LÖTTERS & DE LA RIVA (1998) placed *m* Donoso-Barros [type locality: Runerrabaque (sic) (= Rurrenabaque, Beni)] in the synonymy of . - .

Bufo amboroensis Harvey & Smith, 1993*

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, La Paz **Santa Cruz**; 3) Yungas-Montane Rainforests; 4) Aquatic, Terrestrial; 5) Forest.

Key literature: HARVEY & SMITH, 1993.

Bufo arenarum Hensel, 1867

Distribution: 1) Subtropical South America; 2) **Cochabamba**, **Chuquisaca**, **Santa Cruz**, **Tarija**; 3) Chaco Lowland Forests, Chaco Montane Forests, Inter-Andean Valleys, Tucumanian-Bolivian Montane Forests; 4) Terrestrial; 5) Open.

Key literature: DE LA RIVA, 1990a; KÖHLER, 2000a.

Remarks: According to LAURENT (1969) the subspecies present in Bolivia is . *m* *m.* Figure 7 in DE LA RIVA (1990a; p. 305) actually corresponds to . , as well as the record from Caranda, Santa Cruz (p. 265).

Bufo castaneoticus Caldwell, 1991

Distribution: 1) Amazonia; 2) Beni, La Paz, **Pando**; 3) Amazonian Rainforests; 4) Terrestrial; 5) Forest.

Key literature: KÖHLER & LÖTTERS, 1999a.

Bufo fissipes Boulenger, 1903

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, La Paz; 3) Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: DE LA RIVA, 1990a.

Remarks: FROST (1985) reported this Peruvian species (type locality: Santo Domingo, Puno) in the Departamento of Cochabamba, but we are unaware of voucher specimens other than the holotype. It is surprising that several species of the . group have been described in the last years from Peru and Bolivia (and some others still await description), but this species has yet to be collected in Bolivia..

Bufo granulosus Spix, 1824

Distribution: 1) Middle and South America; 2) **Beni**, **Cochabamba**, Chuquisaca, **La Paz**, **Pando**, **Santa Cruz**, **Tarija**; 3) Amazonian Rainforests, Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Terrestrial; 5) Open.

Key literature: REYNOLDS & FOSTER, 1992; KÖHLER, 1995a; REICHLE, 1996; 1997a; KÖHLER ., 1997; HARVEY ., 1998; REICHLE & KÖHLER, 1998.

Remarks: *f* is a polytypic species with 14 described subspecies (GALLARDO, 1965). Some of them have been considered as full species by different authors. We agree that some of these taxa deserve specific status, but a revision of the whole complex is desirable before any taxonomic decision is made. Four subspecies have been reported for Bolivia: . . Gallardo in the north of the Bolivian Amazon, . . *m j* Müller & Hellmich in the Chacoan area (type locality: San José de Chiquitos, Santa Cruz), . . *m* Gallardo in

the Beni area, (type locality: Upper Beni, below mouth of Mapiri) and . . *m* - Gallardo in northern Santa Cruz. *f* . , . . *m* , and . . *m j* are similar in morphology, although . . *m j* is larger than the two other subspecies. The most distinctive form is . . *m* - , which otherwise seems to be more closely related to the nominal subspecies (from NE Brazil) than the other Bolivian subspecies. Thus, at least two different lineages seem to be present in the country. In summary, the splitting of . might lead to the recognition of 2-4 species in Bolivia.

Bufo guttatus Schneider, 1799

Distribution: 1) Amazonia; 2) Beni, **La Paz**, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Forest.

Key literature: LÖTTERS ., 2000.

Bufo justinianoi Harvey & Smith, 1994**

Distribution: 1) CFP; 2) **Cochabamba**, **La Paz**, **Santa Cruz**; 3) Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: HARVEY & SMITH, 1994; KÖHLER, 2000a.

Bufo "margaritifer" (Laurenti, 1768)

Distribution: 1) Tropical Middle and South America; 2) **Beni**, **Cochabamba**, **Chuquisaca**, **La Paz**, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Chiquitanía Forests, Humid Transition Lowland Forests, Inter-Andean Valleys, Pre-Cambrian Shield Humid Forests, Tucumanian-Bolivian Montane Forests, Wet Savannas, Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest, Open.

Key literature: REYNOLDS & FOSTER, 1992; KÖHLER, 1995a; DE LA RIVA ., 1996a; KÖHLER ., 1997; KÖHLER & LÖTTERS, 1999a.

Remarks: The systematics of the . *m* - *f* (or .) complex is perhaps one of the most chaotic of all Neotropical anuran groups (HOOGMOED, 1986; 1989; 1990; HASS ., 1995). HOOGMOED (1986) stated that the small toads of the Bolivian lowlands are similar to . Spix which otherwise occurs in E Colombia, S Venezuela and adjacent Brazil. Bioacoustic studies carried out in N Santa Cruz, northern Chaco of Santa Cruz, and Beni indicate that all these populations are conspecific (DE LA RIVA ., 1996a; KÖHLER ., 1997). KÖHLER & LÖTTERS (1999a) stated that . is one of two forms that occur in the Departament of Pando, and LÖTTERS & KÖHLER (2000a) are describing a new species from the humid montane forests of Cochabamba and Santa Cruz. The type locality of *f* Schmidt (currently considered a synonym of . *m* - *f*) is given as "Grenzgebiet von Bolivia gegen Peru, in etwa 3000 [feet] Höhe" (at the border of Bolivia and Peru, approximately 700 m) by SCHMIDT (1858). According to the loss of Bolivian territory in 1909 and the travel route of the collector J. v. Warszewiez, this locality is most probably situated in present-day Peru. The taxonomic status of some populations of the . *m* *f* complex in the Bolivian lowlands and valleys remains a topic to be investigated, but it is almost sure that not less than four different species occur in the country.

Bufo marinus (Linnaeus, 1758)

Distribution: 1) Middle and South America; 2) **Beni**, **Cochabamba**, **La Paz**, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Open.

Key literature: DE LA RIVA ., 1996a.

Bufo paracnemis Lutz, 1925

DistribeineriaF:

Cruz, **Tarija**; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Chaco Montane Forests, Humid Transition Lowland Forests, Tucumanian-Bolivian Montane Forests, Wet Savannas; 4) Terrestrial; 5) Open.

Key literature: REYNOLDS & FOSTER, 1992; DE LA RIVA, 1993a; KÖHLER, 1995a; 2000a; REICHLE, 1996; 1997a; KÖHLER ., 1997.

Bufo poeppigii Tschudi, 1845

Distribution: 1) Humid Montane Forests, Peri-Andean Forests; 2) **Cochabamba**, **La Paz**, **Santa Cruz**; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Terrestrial. 5) Forest, Open.

Key literature: DE LA RIVA ., 1996a; KÖHLER, 2000a.

Remarks: See remarks under . *m.*

Bufo quechua Gallardo, 1961**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, La Paz, **Santa Cruz**; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: GALLARDO, 1961a; HARVEY & SMITH, 1993; 1994; KÖHLER, 1995a; 2000a; KÖHLER ., 1995a.

Remarks: HARVEY & SMITH (1993) placed *f* Reynolds & Foster [type locality: Parjacti (sic), Cochabamba (=Paracti)] in the synonymy of . .

Bufo spinulosus Wiegmann, 1834

Distribution: 1) Andean Highlands; 2) **Cochabamba**, **Chuquisaca**, **La Paz**, **Oruro**, **Potosí**; 3) High Andean Vegetation, Inter-Andean Valleys; 4) Terrestrial.

Key literature: ERGUETA, 1991; APARICIO, 1993; IBISCH & BÖHME, 1993; KÖHLER, 1995a.

Remarks: GALLARDO (1961a) described the subspecies . . from Bolivia (type locality: Challapata, Oruro). HARVEY (1997) reported a toad tentatively identified as . Carrizo from El Palmar (Chuquisaca). This poorly known Argentinean species might be related either to the group (CARRIZO, 1992), or to the *m* group (HARVEY, 1997). Although . or a similar form most probably occurs in the country, we do not include it in the list until a reliable record exists.

Bufo veraguensis Schmidt, 1857

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, **Chuquisaca**, **La Paz**, **Santa Cruz,** Tarija; 3) Inter-Andean Valleys, Tucumanian-Bolivian Montane Forests, Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: REYNOLDS & FOSTER, 1992; HARVEY & SMITH, 1993; 1994; KÖHLER ., 1995b; KÖHLER, 2000a.

Remarks: Some species in the . group remain to be described, whereas the taxonomic status of others is doubtful. See remarks under . *f* .

Dendrophryniscus minutus (Melin, 1941)

Distribution: 1) Amazonia; 2) Beni, **Cochabamba**, La Paz, Pando, Santa Cruz; 3) Amazonian Rainforests; 4) Terrestrial; 5) Forest.

Key literature: DE LA RIVA, 1999a.

Melanophryniscus rubriventris (Vellard, 1947)

Distribution: 1) Temperate Inter-Andean Valleys; 2) **Cochabamba**, **Chuquisaca**, Santa Cruz, **Tarija**; 3) Inter-Andean Valleys; 4) Terrestrial.

Key literature: DE LA RIVA, 1995a.

Remarks: The Bolivian specimens known seem to belong to the nominotypical form.

C

Cochranella bejaranoi (Cannatella, 1980)**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, **Chuquisaca**, **La Paz**, **Santa Cruz**; 3) Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: CANNATELLA, 1980; CANNATELLA & DUELLMAN, 1982; SANCHÍZ & DE

LA RIVA, 1993; HARVEY, 1996; MÁRQUEZ ., 1996; KÖHLER, 2000a.

Remarks: HARVEY (1996) placed - f Reynolds & Foster (type locality: Road to San Onofre, 3.3 km by road N of the road from Cochabamba to Villa Tunari, Cochabamba) in the synonymy of j .

Cochranella nola Harvey, 1996**

Distribution: 1) Humid Montane Forests, Peri-Andean Forests; 2) Cochabamba, Chuquisaca, **Santa Cruz**; 3) Amazonian Rainforests, Tucumanian-Bolivian Montane Forests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: HARVEY, 1996; KÖHLER, 2000a; LÖTTERS & KÖHLER, 2000b.

Cochranella pluvialis (Cannatella & Duellman, 1982)

Distribution: 1) Humid Montane Forests; 2) **La Paz**, Cochabamba; 3) Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: KÖHLER & REICHLE, 1998.

Hyalinobatrachium bergeri (Cannatella, 1980)*

Distribution: 1) Humid Montane Forests, Peri-Andean Forests; 2) **Cochabamba**, **La Paz**, **Santa Cruz**; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: CANNATELLA, 1980; CANNATELLA & DUELLMAN, 1982; SANCHÍZ & DE LA RIVA, 1993; MÁRQUEZ ., 1996; KÖHLER, 2000a.

Allobates femoralis (Boulenger, 1884 "1883")

Distribution: 1) Amazonia; 2) Beni, **La Paz, Pando**; 3) Amazonian Rainforests; 4) Terrestrial; 5) Forest.

Remarks: Found by J. E. Cadle and S. Reichle in November 1999 and reported herein for the first time.

Colostethus brunneus (Cope, 1887)

Distribution: 1) Amazonia, Cerrado; 2) **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Forest.

Key literature: GONZÁLES ., 1999.

Colostethus mcdiarmidi Reynolds & Foster, 1992**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, **La Paz**; 3) Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: REYNOLDS & FOSTER, 1992; GONZÁLES ., 1999.

Colostethus trilineatus (Boulenger, 1884 "1883")

Distribution: 1) Southwestern Amazonia; 2) **Beni**, **Cochabamba**, **La Paz**, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests; 4) Terrestrial; 5) Forest.

Key literature: MORALES, 1994; DE LA RIVA ., 1996b; REICHLE & KÖHLER, 1996a; GONZÁLES ., 1999; KÖHLER & LÖTTERS, 1999a.

Remarks: MORALES (1994) stated that - is the proper name for southern populations of Amazonian formerly considered as m (Melin). Populations not formally described from Cochabamba (EDWARDS, 1974) are also (DE LA RIVA ., 1996a). An unidentified, related species occurs in Pando (KÖHLER & LÖTTERS, 1999a).

Epipedobates bolivianus (Boulenger, 1902)**

Distribution: 1) Humid Montane Forests; 2) **La Paz**; 3) Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: BOULENGER, 1902; SILVERSTONE, 1976; RODRÍGUEZ & MYERS, 1993; GONZÁLES ., 1999.

Remarks: This species has been only recently rediscovered after almost one century

without new findings (GONZÁLES ., 1999).

Epipedobates hahneli (Boulenger, 1884 "1883")
Distribution: 1) Upper Amazon Basin; 2) Beni, **La Paz**, **Pando**; 3) Amazonian Rainforests; 4) Terrestrial, Arboreal; 5) Forest.
Key literature: DE LA RIVA ., 1996b; GONZÁLES ., 1999; KÖHLER & LÖTTERS, 1999a.

Epipedobates pictus (Bibron Tschudi, 1838)*
Distribution: 1) Southwestern Amazonia, Cerrado, Humid Montane Forests; 2) **Beni**, **Cochabamba**, **La Paz**, **Santa Cruz**; 3) Amazonian Rainforests, Cerrado, Chiquitanía Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas, Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest, Open.
Key literature: REYNOLDS & FOSTER, 1992; DE LA RIVA, 1993a; HADDAD & MARTINS, 1994; KÖHLER, 1995a; 2000a; DE LA RIVA ., 1996b; KÖHLER & LÖTTERS, 1999a; GONZÁLES ., 1999.
Remarks: An undescribed species from La Paz similar to . is being studied by S. Lötters and S. Reichle.

Epipedobates trivittatus (Spix, 1824)
Distribution: 1) Amazonia; 2) Beni, La Paz, **Pando**; 3) Amazonian Rainforests; 4) Terrestrial; 5) Forest.
Remarks: Found by J. E. Cadle and S. Reichle in November 1999 and reported herein for the first time.

Hemiphractinae

Gastrotheca lauzuricae De la Riva, 1992 "1991" **
Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, Santa Cruz; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.
Key literature: DE LA RIVA, 1992a.
Remarks: Known only from the holotype.

Gastrotheca marsupiata (Duméril & Bibron, 1841)
Distribution: 1) Andean Highlands, Humid Montane Forests; 2) **Cochabamba**, **Chuquisaca**, **La Paz**, **Oruro**, **Potosí**, **Santa Cruz**; 3) Ceja de Montaña-Cloud Forests, High Andean Vegetation, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest, Open.
Key literature: ERGUETA, 1991; DE LA RIVA, 1992a; VELLARD, 1992; APARICIO, 1993; IBISCH & BÖHME, 1993; DE LA RIVA ., 1995; KÖHLER, 1995a; KÖHLER ., 1995a.
Remarks: The variation in populations from the highlands and those from the Yungas was studied by DE LA RIVA (1992a), who suggested the possibility that more than one species is hidden under the name . *m* - in Bolivia.

Gastrotheca splendens (Schmidt, 1857)
Distribution: 1) Humid Montane Forests; 2) Cochabamba, **Santa Cruz**; 3) Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.
Key literature: DE LA RIVA, 1992a; DUELLMAN & DE LA RIVA, 1999.
Remarks: This species was "lost" for almost a century and a half. The type locality is unknown, and the two only specimens known at present are the holotype and a specimen recently collected in cloud forests of Santa Cruz (DUELLMAN & DE LA RIVA, 1999). It is likely that . is a Bolivian endemism.

Gastrotheca testudinea (Jiménez de la Espada, 1871)
Distribution: 1) Humid Montane Forests, Peri-Andean Forests; 2) **Cochabamba**, **La Paz**, Santa Cruz; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1992a; KÖHLER, 2000a.

Hylinae

Hyla acreana Bokermann, 1964

Distribution: 1) Southwestern Amazonia; 2) **Beni**, **Cochabamba**, La Paz, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993.

Hyla albonigra Nieden, 1923**

Distribution: 1) Andean Highlands, Temperate Inter-Andean Valleys; 2) **Cochabamba**, **Chuquisaca**, **Potosí**, Santa Cruz; 3) High Andean Vegetation, Inter-Andean Valleys; 4) Arboreal; 5) Open.

Key literature: DUMÉRIL & BIBRON, 1841; D'ORBIGNY, 1847; NIEDEN, 1923; ANDERSSON, 1938; DUELLMAN ., 1997.

Remarks: DUELLMAN . (1997) placed Andersson (type locality: Puka Khara, Potosí) in the synonymy of . - .

Hyla albopunctata Spix, 1824

Distribution: 1) Cerrado; 2) **Santa Cruz**; 3) Cerrado; 4) Arboreal; 5) Open.

Key literature: DE SÁ, 1995; DE LA RIVA ., 1997.

Hyla andina Müller, 1924

Distribution: 1) Andean Highlands, Humid Montane Forests, Temperate Inter-Andean Valleys; 2) **Cochabamba**, **Chuquisaca**, **La Paz**, **Santa Cruz**, **Tarija**; 3) Ceja de Montaña-Cloud Forests, High Andean Vegetation, Inter-Andean Valleys, Yungas-Montane Rainforests; 4) Terrestrial, Arboreal; 5) Forest, Open.

Key literature: ERGUETA, 1991; REYNOLDS & FOSTER, 1992; MÁRQUEZ ., 1993; KÖHLER, 1995a; 2000a; KÖHLER ., 1995b; DUELLMAN ., 1997.

Remarks: DUELLMAN . (1997) elevated to specific status. shows remarkable variation and further studies might demonstrate that more than one species is involved. Figures 5 and 6 in KÖHLER . (1995b; p. 17), purportedly showing specimens of . , actually correspond to . *m* . HARVEY (1997) was unsure if specimens he assigned to . *(=* . *)* from El Palmar (Chuquisaca) could actually be Carrizo. He remarked that Carrizo's description was inadequate to make a definite identification without examination of comparative material.

Hyla armata Boulenger, 1902*

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, **La Paz**, **Santa Cruz**; 3) Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: REYNOLDS & FOSTER, 1992; MÁRQUEZ ., 1993; DUELLMAN ., 1997; KÖHLER, 2000a.

Remarks: There is considerable variation in skin texture, color pattern, color of the iris and, apparently, advertisement calls, which suggests that more than one species might be involved under the name . *m* (DUELLMAN ., 1997).

Hyla balzani Boulenger, 1898*

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, **La Paz**; 3) Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: REYNOLDS & FOSTER, 1992; DUELLMAN ., 1997; KÖHLER, 2000a.

Remarks: DUELLMAN . (1997) placed Boulenger [type locality: Charuplaya (Cochabamba) and San Ernesto (La Paz)] in the synonymy of . . However w

and S. Reichle, pers. obs.). Additionally, some frog populations of the . group in the inter-Andean temperate valleys possibly represent an undescribed species (see KÖHLER ., 1995b; DUELLMAN ., 1997).

Hyla bifurca Andersson, 1945

Distribution: 1) Upper Amazon Basin; 2) Beni, Cochabamba, La Paz, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest, Open.

Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993.

Remarks: There are considerable differences in color pattern between Santa Cruz populations and those from Ecuador (where the species has its type locality). In Pando there are specimens like those from Ecuador and those from Santa Cruz, as well as intermediate ones (DE LA RIVA, 1993a).

Hyla boans (Linnaeus, 1758)

Distribution: 1) Tropical Middle and South America; 2) Beni, Cochabamba, **La Paz**, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest, Open.

Key literature: DE LA RIVA, 1990a.

Hyla calcarata Troschel, 1848

Distribution: 1) Upper Amazon Basin; 2) **La Paz**, **Pando**; 3) Amazonian Rainforests, Humid Transition Lowland Forests; 4) Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1990a; APARICIO, 1992.

Hyla charazani Vellard, 1970**

Distribution: 1) Temperate Inter-Andean Valleys; 2) **La Paz**; 3) Ceja de Montaña-Cloud Forests, Inter-Andean Valleys; 4) Aquatic, Arboreal; 5) Open.

Key literature: VELLARD, 1970; DUELLMAN ., 1997.

Remarks: This poorly known species (see DUELLMAN ., 1997, p. 12) was recently rediscovered by J. Aparicio and S. Reichle at the type locality. It is similar to *m* - , but seems to represent a different species whose status must be studied together with that of certain populations currently considered as . *m* (see remarks on . - *m*).

Hyla chlorostea Reynolds & Foster, 1992**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**; 3) Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: REYNOLDS & FOSTER, 1992.

Remarks: Known only from the holotype. Uncertain taxonomic status.

Hyla fasciata Günther, 1859

Distribution: 1) Upper Amazon Basin; 2) **Beni**, **Cochabamba**, La Paz, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993.

Remarks: DE LA RIVA (1990a) placed Boulenger (type locality: Province Sarah, Santa Cruz) in the synonymy of . *f* .

Hyla geographica Spix, 1824

Distribution: 1) Amazonia; 2) **Beni**, **Cochabamba**, **La Paz**, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Arboreal; 5) Open.

Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993; KÖHLER, 1995a; REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1998.

Remarks: DE LA RIVA's (1990a) statement that the subspecies present in Bolivia is . . *m* (Reinhardt & Lütken) is unfounded.

Hyla granosa Boulenger, 1882
Distribution: 1) Amazonia; 2) La Paz, **Pando**; 3) Amazonian Rainforests; 4) Arboreal; 5) Forest, Open.
Key literature: KÖHLER & LÖTTERS, 1999a.

Hyla koechlini Duellman & Trueb, 1989
Distribution: 1) Southwestern Amazonia; 2) **Beni**, **La Paz**, Pando, **Santa Cruz**; 3) Amazonian Rainforests; 4) Arboreal; 5) Forest.
Remarks: This is the first record for the species in the country.

Hyla lanciformis (Cope, 1870)
Distribution: 1) Amazonia; 2) **Beni**, **Cochabamba**, **La Paz**, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Arboreal; 5) Forest, Open.
Key literature: MÁRQUEZ ., 1993.

Hyla leali Bokermann, 1964
Distribution: 1) Southwestern Amazonia; 2) **Beni**, **Cochabamba**, La Paz, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Arboreal; 5) Forest, Open.
Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993; REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1998.
Remarks: This species was erroneously considered a junior synonym of Goin by DUELLMAN (1974). Although HEYER (1977) clearly stated that both species were different and further publications treated . and . as separate species [for example, FROST (1985)], a certain degree of confusion persisted for many years. This situation led DE LA RIVA (1990a) to report . in Bolivia. Finally, DE LA RIVA & DUELLMAN (1997) clarified the taxonomic status of this last mentioned species, which is easily distinguishable from . and belongs to a different species group (the . group). Although . has not been found in Bolivia, its occurrence in the country is expected.

Hyla leucophyllata (Beireis, 1783)
Distribution: 1) Amazonia; 2) **Beni**, Cochabamba, La Paz, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Arboreal; 5) Forest, Open.
Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993; KÖHLER, 1995a; REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1998.

Hyla marianitae Carrizo, 1992
Distribution: 1) Bolivian-Argentinean Forests, Humid Montane Forests, Temperate Inter-Andean Valleys; 2) **Cochabamba**, **Chuquisaca**, **Santa Cruz**, Tarija; 3) Amazonian Rainforests, Inter-Andean Valleys, Tucumanian-Bolivian Montane Forests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest, Open.
Key literature: MÁRQUEZ ., 1993; DUELLMAN ., 1997; HARVEY, 1997; LÖTTERS ., 1999b; KÖHLER, 2000a.
Remarks: The description of the call of . - (= .) in MÁRQUEZ . (1993) actually corresponds to . *m* - , as stated by DUELLMAN . (1997). See remarks under . .

Hyla marmorata (Laurenti, 1768)
Distribution: 1) Upper Amazon Basin; 2) Beni, **La Paz**, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest.
Key literature: KÖHLER, 1995a; 1995b; KÖHLER & BÖHME, 1996.

Hyla melanargyrea Cope, 1887
Distribution: 1) Cerrado; 2) **Santa Cruz**; 3) Cerrado, Chiquitanía Forests; 4) Arboreal; 5) Open.

Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993; KÖHLER, 1995a; KÖHLER & BÖHME, 1996.

Hyla minuta Peters, 1872

Distribution: 1) South America; 2) **Beni**, Cochabamba, **Chuquisaca**, La Paz, **Pando**, **Santa Cruz**, **Tarija**; 3) Amazonian Rainforests, Cerrado, Chiquitanía Forests, Chaco Montane Forests, Humid Transition Lowland Forests, Inter-Andean Valleys, Pre-Cambrian Shield Humid Forests, Tucumanian-Bolivian Montane Forests, Wet Savannas; 4) Arboreal; 5) Forest, Open.

Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993; KÖHLER, 1995a; 2000a; KÖHLER ., 1995b; REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1998.

Remarks: A species related to . *m* from the Chapare region of Cochabamba is being described by KÖHLER & LÖTTERS (2000).

Hyla nana Boulenger, 1889

Distribution: 1) Cerrado, Chaco, Subtropical South America; 2) **Beni**, Chuquisaca, **Santa Cruz**; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Wet Savannas; 4) Arboreal; 5) Open.

Key literature: LANGONE & BASSO, 1987; DE LA RIVA, 1993a; MÁRQUEZ ., 1993; KÖHLER, 1995a; REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1998.

Hyla parviceps Boulenger, 1882

Distribution: 1) Upper Amazon Basin; 2) Beni, Cochabamba, La Paz, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest, Open.

Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993.

Hyla punctata (Schneider, 1799)

Distribution: 1) Tropical South America; 2) **Beni**, Cochabamba, **La Paz**, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Chiquitanía Forests, Chaco Lowland Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Arboreal; 5) Open.

Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993; KÖHLER, 1995a; REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1998.

Remarks: The validity of the Chacoan subspecies Lutz (type locality: Buenavista, Santa Cruz) is doubtful.

Hyla raniceps (Cope, 1862)

Distribution: 1) Cerrado, Chaco; 2) **Beni**, **Santa Cruz**; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Arboreal; 5) Open.

Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993; KÖHLER, 1995a; REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1998.

Hyla rhodopepla Günther, 1859

Distribution: 1) Upper Amazon Basin; 2) Beni, **Cochabamba**, **La Paz**, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest, Open.

Key literature: MÁRQUEZ ., 1993.

Hyla riveroi Cochran & Goin, 1970

Distribution: 1) Upper Amazon Basin; 2) **Beni**, **Cochabamba**, **La Paz**, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Arboreal; 5) Open.

Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1993; REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1998.

Hyla rubicundula Reinhardt & Lütken, 1862

Distribution: 1) Cerrado; 2) **Santa Cruz**; 3) Cerrado, Chiquitanía Forests; 4) Arboreal; 5) Open.

Key literature: DE LA RIVA, 1990a.

Hyla sarayacuensis Shreve, 1935
Distribution: 1) Upper Amazon Basin; 2) Beni, La Paz, **Pando**; 3) Amazonian Rainforests; 4) Arboreal; 5) Forest.
Remarks: This is the first record for the species in the country.

Hyla schubarti Bokermann, 1963
Distribution: 1) Southwestern Amazonia; 2) Beni, **La Paz**, **Pando**; 3) Amazonian Rainforests, Humid Transition Lowland Forests; 4) Arboreal; 5) Forest.
Key literature: DE LA RIVA, 1999b.

Hyla tritaeniata Bokermann, 1965
Distribution: 1) Cerrado; 2) **Beni**, **Santa Cruz**; 3) Cerrado, Chiquitanía Forests, Wet Savannas; 4) Arboreal; 5) Open.
Key literature: REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1996a; 1998.
Remarks: Based on this species' remarkable intra- and interpopulational variation, NAPOLI & CARAMASCHI (1999) suggested that . is a complex of species.

Osteocephalus buckleyi (Boulenger, 1882)
Distribution: 1) Upper Amazon Basin; 2) **Beni**, **Cochabamba**, La Paz, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.
Key literature: DE LA RIVA, 1990a.

Osteocephalus leprieurii (Duméril & Bibron, 1841)
Distribution: 1) Upper Amazon Basin; 2) Beni, La Paz, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest.
Key literature: DE LA RIVA, 1993a; DE LA RIVA ., 1995.
Remarks: SMITH . (2000) are describing a new species of Bolivian which corresponds to what is here considered . .

Osteocephalus pearsoni (Gaige, 1929)*
Distribution: 1) Southwestern Amazonia; 2) **Beni**, Cochabamba, **La Paz**, Pando; 3) Amazonian Rainforests; 4) Arboreal; 5) Forest.
Key literature: GAIGE, 1929; DE LA RIVA, 1990a.

Osteocephalus taurinus Steindachner, 1862
Distribution: 1) Amazonia; 2) **Beni**, **Cochabamba**, **La Paz**, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest.
Key literature: DE LA RIVA, 1993a; DE LA RIVA .,1995; KÖHLER, 1995a; KÖHLER & BÖHME, 1996.

Phrynohyas coriacea (Peters, 1867)
Distribution: 1) Upper Amazon Basin; 2) Beni, La Paz, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest.
Key literature: DE LA RIVA, 1993a; 1994a; DE LA RIVA ., 1995.

Phrynohyas resinifictrix (Goeldi, 1907)
Distribution: 1) Amazonia; 2) Beni, La Paz, **Pando,** Santa Cruz; 3) Amazonian Rainforests; 4) Arboreal; 5) Forest.
Remarks: Found by J. E. Cadle and S. Reichle in November 1999 and reported here for the first time.

Phrynohyas venulosa (Laurenti, 1768)
Distribution: 1) Middle and South America; 2) **Beni**, **Cochabamba**, **Chuquisaca**, **La Paz**, **Pando**, **Santa Cruz**, **Tarija**; 3) Amazonian Rainforests, Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Chaco Montane Forests, Humid Transition Lowland Forests, Inter-Andean Valleys, Pre-Cambrian Shield Humid Forests, Tucumanian-Bolivian Montane Forests, Wet Savannas; 4) Arboreal; 5) Forest, Open.
Key literature: DE LA RIVA, 1993a; DE LA

RIVA ., 1995; KÖHLER, 1995a; 2000a; KÖHLER ., 1995b; REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1998.

Scarthyla ostinodactyla Duellman & de Sá, 1988

Distribution: 1) Upper Amazon Basin; 2) La Paz, **Pando**; 3) Amazonian Rainforests; 4) Aquatic, Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1999c.

Scinax acuminatus (Cope, 1862)

Distribution: 1) Cerrado, Chaco; 2) Chuquisaca, **Santa Cruz**, Tarija; 3) Cerrado, Chaco Lowland Forests, Wet Savannas; 4) Arboreal; 5) Open.

Key literature: DE LA RIVA, 1990a.

Scinax castroviejoi De la Riva, 1993*

Distribution: 1) Bolivian-Argentinean Forests, Temperate Inter-Andean Valleys; 2) Cochabamba, **Chuquisaca**, **La Paz, Santa Cruz**, Tarija; 3) Inter-Andean Valleys, Tucumanian-Bolivian Montane Forests, Yungas-Montane Rainforests; 4) Arboreal; 5) Open.

Key literature: DE LA RIVA, 1993b; DE LA RIVA ., 1994; KÖHLER, 1995a; 2000a; KÖHLER ., 1995b.

Remarks: This species was originally described from temperate valleys of Santa Cruz and from a locality in Jujuy (Argentina). Subsequent surveys carried out at the Jujuy locality failed to find the species. Instead, . *f* was common. These are sibling species difficult to distinguish morphologically, but they have very different advertisement calls. Argentinean paratypes of . *j* were assigned to this species based on morphology only. Thus, it is possible that these specimens actually are . *f* , a species whose geographic variation could have enhanced the similarity between the Jujuy and Santa Cruz populations. Bolivian samples of these two species can be distinguished by meristic characters, but perhaps this is not the case when other populations are considered. However, many species have a distribution comprising the temperate and subtropical valleys of NW Argentina up to Santa Cruz or Cochabamba (HARVEY, 1997). Thus, since the presence of one species does not exclude the other (they are sympatric at some Bolivian localities), the occurrence of . - *j* in Argentina would still be plausible even if the paratypes from Jujuy proved to be . *f* .

Scinax chiquitanus (De la Riva, 1990)*

Distribution: 1) Southwestern Amazonia; 2) **Beni**, Cochabamba, La Paz, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1990b; 1993a; DE LA RIVA ., 1994; KÖHLER, 1995a.

Remarks: DUELLMAN & WIENS (1993) provided data on this species from Peru. The male shown in their Fig. 2 (p. 8) has a color pattern which differs markedly from that of Bolivian males, which otherwise present little variation. The taxonomic status of Peruvian specimens identified as . should be reassessed.

Scinax fuscovarius (Lutz, 1925)

Distribution: 1) Cerrado, Chaco; 2) **Beni**, **Chuquisaca**, **Santa Cruz**, **Tarija**; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Chaco Montane Forests, Humid Transition Lowland Forests, Inter-Andean Valleys, Pre-Cambrian Shield Humid Forests, Tucumanian-Bolivian Montane Forests, Wet Savannas; 4) Terrestrial, Arboreal; 5) Open.

Key literature: DE LA RIVA, 1993a; 1993b; DE LA RIVA ., 1994; KÖHLER, 1995a; 2000a; KÖHLER & BÖHME, 1996.

Remarks: We follow LUTZ (1973) and CEI (1980) in considering (Müller & Hellmich) as a synonym of . *f* .

Scinax garbei (Miranda-Ribeiro, 1926)

Distribution: 1) Upper Amazon Basin; 2) **Beni**, **Cochabamba**, La Paz, **Pando, Santa Cruz**; 3) Amazonian Rainforests, Cerrado, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest, Open.

Key literature: DE LA RIVA, 1993a; DE LA RIVA ., 1994.

Remarks: DUELLMAN & WIENS (1993) placed . (Duellman) [which was reported for Bolivia; see DE LA RIVA (1990a)] in the synonymy of . .

Scinax nasicus (Cope, 1862)

Distribution: 1) Cerrado, Chaco; 2) Beni, Cochabamba, Chuquisaca, **Santa Cruz**, Tarija; 3) Cerrado, Chiquitanía Forests; 4) Arboreal, Terrestrial; 5) Open.

Key literature: DE LA RIVA, 1993b; DE LA RIVA ., 1994; KÖHLER, 1995a.

Scinax nebulosus (Spix, 1824)

Distribution: 1) Lower Amazon Basin; 2) Beni, **Santa Cruz**; 3) Amazonian Rainforests, Cerrado, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Arboreal; 5) Open.

Key literature: DE LA RIVA, 1990a; HOOGMOED, 1993; DE LA RIVA ., 1994; KÖHLER, 1995a.

Scinax parkeri (Gaige, 1929)*

Distribution: 1) Lower Amazon Basin, Cerrado; 2) **Beni**, **Santa Cruz**; 3) Amazonian Rainforests, Chiquitanía Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Arboreal; 5) Open.

Key literature: DE LA RIVA ., 1994; 1997; KÖHLER, 1995a; REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1998.

Remarks: Many authors have followed LUTZ (1973) in considering this species a junior synonym of . *f m* (Lutz), but comparisons of the calls of both species carried out by DE LA RIVA . (1994; 1997) suggested that they are not conspecific. However, this must be corroborated with more data. As stated by DE LA RIVA . (1997), the taxonomic status of the Amazonian species of the *ff* group needs urgent revision. In Bolivia, at least another species (probably undescribed) in the *ff* group occurs in the open areas of Beni and Santa Cruz.

Scinax ruber (Laurenti, 1768)

Distribution: 1) Tropical Middle and South America; 2) **Beni, Cochabamba, La Paz, Pando, Santa Cruz**; 3) Amazonian Rainforests, Chiquitanía Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Arboreal; 5) Forest, Open.

Key literature: DE LA RIVA, 1993a; DE LA RIVA ., 1994; KÖHLER, 1995a; KÖHLER & BÖHME, 1996; REICHLE, 1996; 1997b; REICHLE & KÖHLER, 1998.

Remarks: Given the broad distribution and variation of . , probably there are more than one species hidden under this name (DUELLMAN & WIENS, 1993). As far as we know, nobody is currently reviewing this species complex. Given that the type locality (Paramaribo, Surinam) is far away from Bolivia, it would be likely that Bolivian populations would receive another name if . were split into several species.

Scinax squalirostris (A. Lutz, 1925)

Distribution: 1) Cerrado; 2) Beni, **La Paz**, Santa Cruz; 3) Cerrado; 4) Arboreal; 5) Open.

Remarks: This species is reported here for the first time, based on specimens collected by J. Bosch, I. De la Riva and S. Reichle near Apolo, La Paz, in November 1999. The occurrence of . in the country was expected in the Pantanal area of Santa Cruz. Admittedly, its discovery for the first time at a locality so far away from the Pan-

tanal is surprising. However, the temperate valleys around Apolo are suitable for this and other species typical of temperate lowlands and/or valleys (e. g., - *j* and *m* , which were also found in the area). We predict that other populations of . will be found in suitable habitats of La Paz, Beni and Santa Cruz.

Sphaenorhynchus lacteus (Daudin, 1802)

Distribution: 1) Amazonia; 2) **Beni**, Cochabamba, La Paz, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Chiquitanía Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Arboreal; 5) Forest, Open.

Key literature: DE LA RIVA, 1993a; DE LA RIVA ., 1995; KÖHLER, 1995a; REICHLE, 1996; 1997c; REICHLE & KÖHLER, 1998.

Phyllomedusinae

Phyllomedusa bicolor (Boddaert, 1772)

Distribution: 1) Upper Amazon Basin; 2) **Beni**, La Paz, **Pando**, Santa Cruz; 3) Amazonian Rainforests; 4) Arboreal; 5) Forest.

Key literature: REICHLE ., 1997.

Phyllomedusa boliviana Boulenger, 1902*

Distribution: 1) Bolivian-Argentinean Forests, Cerrado, Humid Montane Forests, Temperate Inter-Andean Valleys; 2) **Beni**, Cochabamba, **Chuquisaca**, **La Paz**, **Santa Cruz**, **Tarija**; 3) Chiquitanía Forests, Inter-Andean Valleys, Tucumanian-Bolivian Montane Forests, Yungas-Montane Rainforests; 4) Arboreal; 5) Open.

Key literature: CANNATELLA, 1983; KÖHLER, 1995a; 2000a; KÖHLER ., 1995b; DE LA RIVA, 2000.

Remarks: CANNATELLA (1983) synonymized *m* Shreve (type locality: El Pailón, Santa Cruz) with . and stated that FUNKHOUSER's (1957) purported specimens of . actually corresponded to a different species (see remarks under . *m*).

Phyllomedusa camba De la Riva, 2000 "1999"*

Distribution: 1) Southwestern Amazonia; 2) **Beni**, **Cochabamba**, **La Paz**, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Chiquitanía Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1993a; DE LA RIVA ., 1995; KÖHLER & LÖTTERS, 1999a; DE LA RIVA, 2000.

Remarks: The existence of this species, confused with , *(1983)* *(.) f m* , ,

Phyllomedusa palliata Peters, 1872
Distribution: 1) Upper Amazon Basin; 2) **Beni**, Cochabamba, La Paz, **Pando**; 3) Amazonian Rainforests, Humid Transition Lowland Forests; 4) Arboreal; 5) Forest.
Key literature: REICHLE & KÖHLER, 1996a; KÖHLER & LÖTTERS, 1999a.

Phyllomedusa sauvagii Boulenger, 1882
Distribution: 1) Chaco; 2) Chuquisaca, **Santa Cruz**, **Tarija**; 3) Chaco Lowland Forests; 4) Arboreal; 5) Open.
Key literature: DE LA RIVA, 1990a; GONZÁLES, 1998.

Phyllomedusa tomopterna (Cope, 1868)
Distribution: 1) Upper Amazon Basin; 2) Beni, Cochabamba, **La Paz**, Pando; 3) Amazonian Rainforests; 4) Arboreal; 5) Forest.
Remarks: This is the first record for the species in the country.

Phyllomedusa vaillanti Boulenger, 1882
Distribution: 1) Upper Amazon Basin; 2) Beni, **Cochabamba**, **La Paz,** Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Arboreal; 5) Forest.
Key literature: DE LA RIVA, 1993a; DE LA RIVA ., 1995.

Ceratophryinae

Ceratophrys cornuta (Linnaeus, 1758)
Distribution: 1) Amazonia; 2) **Beni**, **Cochabamba**, La Paz, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Fossorial, Terrestrial; 5) Forest.
Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1995.

Ceratophrys cranwelli Barrio, 1980
Distribution: 1) Chaco; 2) Chuquisaca, **Santa Cruz**, **Tarija**; 3) Chiquitanía Forests, Chaco Lowland Forests; 4) Fossorial, Terrestrial; 5) Open.
Key literature: DE LA RIVA, 1990a; GONZÁLES, 1998.

Chacophrys pierottii (Vellard, 1948)
Distribution: 1) Chaco; 2) Chuquisaca, Santa Cruz, **Tarija**; 3) Chaco Lowland Forests; 4) Fossorial, Terrestrial; 5) Open.
Key literature: KÖHLER, 1997a.

Lepidobatrachus laevis Budgett, 1899
Distribution: 1) Chaco; 2) Chuquisaca, **Santa Cruz, Tarija**; 3) Chaco Lowland Forests; 4) Aquatic, Fossorial, Terrestrial; 5) Open.
Key literature: KÖHLER, 1997b.

Leptodactylinae

Adenomera andreae Müller, 1923
Distribution: 1) Amazonia; 2) Beni, **Cochabamba**, La Paz, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Forest.
Key literature: DE LA RIVA, 1995b; MÁRQUEZ ., 1995.

Adenomera diptyx (Boettger, 1885)
Distribution: 1) Cerrado; 2) Chuquisaca, **Santa Cruz**; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Wet Savannas; 4) Terrestrial; 5) Open.
Key literature: DE LA RIVA, 1995b; MÁRQUEZ ., 1995; DE LA RIVA, 1996.
Remarks: This species is very similar to . - but differs in its reproductive mode (DE LA RIVA, 1995b). It enters the humid Chaco. Its advertisement call was described by MÁRQUEZ . (1995) as that of . .

Adenomera hylaedactyla (Cope, 1868)
Distribution: 1) Amazonia; 2) **Beni, Cochabamba, La Paz, Pando, Santa Cruz**; 3) Ama-

zonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Terrestrial; 5) Open.

Key literature: DE LA RIVA, 1995b; KÖHLER, 1995a; 2000a; MÁRQUEZ ., 1995; KÖHLER & BÖHME, 1996; REICHLE, 1997c.

Remarks: See remarks under . .

Leptodactylus bolivianus Boulenger, 1898*

Distribution: 1) Tropical Middle and South America; 2) **Beni, Cochabamba, La Paz, Pando, Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Forest, Open.

Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1995.

Remarks: *m* Barbour from northern South America and Middle America has been often considered a synonym of . . If it proved to be a different species, then the corresponding pattern of distribution of . would be Amazonian, instead of Tropical Middle and South America.

Leptodactylus bufonius Boulenger, 1894

Distribution: 1) Cerrado, Chaco; 2) **Chuquisaca, Santa Cruz, Tarija**; 3) Chaco Lowland Forests; 4) Terrestrial; 5) Open.

Key literature: HEYER, 1978; DE LA RIVA, 1990a.

Leptodactylus chaquensis Cei, 1950

Distribution: 1) Cerrado, Chaco; 2) **Beni**, **Cochabamba**, **Chuquisaca**, **La Paz**, Pando, **Santa Cruz**, **Tarija**; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Chaco Montane Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Terrestrial; 5) Open.

Key literature: DE LA RIVA, 1990a; KÖHLER, 1995a; 2000a; REICHLE, 1996; 1997c; KÖHLER & LÖTTERS, 1999a; DE LA RIVA & MALDONADO, 1999.

Remarks: As stated by DE LA RIVA & MALDONADO (1999), with the present state of knowledge . is indistinguishable from . *m* *m* Miranda-Ribeiro, which is distributed from N South America to Brazil and Bolivia (FROST, 1985). The only revision of the . group was carried out by GALLARDO (1964a), who reported . and . *m* *m* in Bolivia, but it is impossible to assign these species to localities with certainty. Provisionally, it can be assumed that Amazonian records (Beni, Cochabamba, La Paz, northern Santa Cruz) correspond to . *m* - *m,* whereas . is rather restricted to the Chaco (Chuquisaca, S Santa Cruz, Tarija). However, the Chacoan and Cerrado affinities of the Beni and E Santa Cruz herpetofauna make this assumption too feeble. The taxonomy of the pair of species . - . *m* *m* is chaotic and needs revision urgently.

Leptodactylus didymus Heyer, García-López & Cardoso, 1996

Distribution: 1) Southwestern Amazonia; 2) Beni, La Paz, **Pando**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Forest.

Key literature: KÖHLER & LÖTTERS, 1999a.

Remarks: *m* and . *m* - are sibling species barely distinguishable based on morphology. However, the calls of . *m* are more similar to those of . than to those of . *m* (MÁRQUEZ ., 1995; HEYER ., 1996).

Leptodactylus elenae Heyer, 1978

Distribution: 1) Cerrado, Chaco; 2) **Beni**, Cochabamba, **La Paz**, **Pando**, **Santa Cruz**; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Wet Savannas; 4) Terrestrial; 5) Open.

Key literature: DE LA RIVA, 1993a; KÖHLER, 1995a; MÁRQUEZ ., 1995.

Leptodactylus fuscus (Schneider, 1799)

Distribution: 1) Middle and South America; 2) **Beni**, **Cochabamba**, Chuquisaca, **La Paz**, **Pando**, **Santa Cruz**, **Tarija**; 3) Amazonian Rainforests, Cerrado, Chiquitanía Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Terrestrial; 5) Open.

Key literature: REYNOLDS & FOSTER, 1992; KÖHLER, 1995a; MÁRQUEZ ., 1995; KÖHLER & BÖHME, 1996; REICHLE, 1996; 1997c; REICHLE & KÖHLER, 1998.

Leptodactylus gracilis Duméril & Bibron, 1841

Distribution: 1) Subtropical South America; 2) Cochabamba, **Chuquisaca**, **Santa Cruz**, **Tarija**; 3) Inter-Andean Valleys, Tucumanian-Bolivian Montane Forests; 4) Terrestrial; 5) Open.

Key literature: KÖHLER, 1995a; 2000a; KÖHLER ., 1995b; KÖHLER & LÖTTERS, 1999b.

Leptodactylus griseigularis (Henle, 1981)

Distribution: 1) Humid Montane Forests, Peri-Andean Forests; 2) **Cochabamba**, **La Paz**, Santa Cruz; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: HEYER, 1994; KÖHLER, 2000a.

Remarks: HEYER (1994) split the former, widespread . (Peters) into several species. As a result, . no longer occurs in Bolivia.
is the name applied to the populations of the Andean slopes and adjacent foothills, whereas . is the species widespread in the lowlands. Both species are mostly parapatric, but come into contact at the foothills of the Andes.

Leptodactylus knudseni Heyer, 1972

Distrib

Remarks: Most records compiled by DE LA RIVA (1990a) as . correspond to . . See remarks under . - .

Leptodactylus macrosternum Miranda-Ribeiro, 1926
Distribution: 1) Amazonia; 2) **Beni, Cochabamba, La Paz**, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests; 4) Terrestrial; 5) Open.
Key literature: DE LA RIVA & MALDONADO, 1999.
Remarks: See remarks under . .

Leptodactylus mystaceus (Spix, 1824)
Distribution: 1) Amazonia; 2) **Beni**, Cochabamba, La Paz, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Forest, Open.
Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1995.

Leptodactylus mystacinus (Burmeister, 1861)
Distribution: 1) Cerrado, Chaco, Subtropical South America; 2) Chuquisaca, **Santa Cruz**, Tarija; 3) Cerrado, Chaco Lowland Forests; 4) Terrestrial; 5) Open.
Key literature: DE LA RIVA, 1990a.

Leptodactylus ocellatus (Linnaeus, 1758)
Distribution: 1) Subtropical South America; 2) **Santa Cruz**; 3) Wet Savannas; 4) Terrestrial; 5) Open.
Key literature: DE LA RIVA & MALDONADO, 1999.
Remarks: Many old Bolivian records actually corresponding to the pair . - . *m* *m* were assigned to this species in the past. Its distribution in the country is discussed by DE LA RIVA & MALDONADO (1999).

Leptodactylus pentadactylus (Laurenti, 1768)
Distribution: 1) Tropical Middle and South America; 2) Beni, Cochabamba, **La Paz**, **Pando**, Santa Cruz; 3) Amazonian Rainforests; 4) Terrestrial; 5) Forest.
Key literature: APARICIO, 1992.

Leptodactylus petersii (Steindachner, 1864)
Distribution: 1) Amazonia, Cerrado; 2) **Beni**, Cochabamba, La Paz, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Forest.
Key literature: HEYER, 1994; REICHLE, 1996; 1997c; REICHLE & KÖHLER, 1998.
Remarks: This species was formerly considered a subspecies of . . Some of the locality records provided by DE LA RIVA (1990a) for . might correspond to . .

Leptodactylus podicipinus (Cope, 1862)
Distribution: 1) Amazonia, Cerrado; 2) **Beni**, Cochabamba, **La Paz**, **Pando**, **Santa Cruz**; 3) Amazonian Rainforests, Cerrado, Chiquitanía Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Open.
Key literature: HEYER, 1994; KÖHLER, 1995a; MÁRQUEZ ., 1995.
Remarks: See remarks under . .

Leptodactylus rhodomystax Boulenger, 1884
Distribution: 1) Upper Amazon Basin; 2) **Beni**, La Paz, **Pando**; 3) Amazonian Rainforests, Humid Transition Lowland Forests; 4) Terrestrial; 5) Forest.
Key literature: FUGLER, 1983.

Leptodactylus rhodonotus (Günther, 1869)
Distribution: 1) Humid Montane Forests, Peri-Andean Forests; 2) **Cochabamba, La Paz, Santa Cruz**; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.
Key literature: REYNOLDS & FOSTER, 1992; KÖHLER, 1995a; 2000a; KÖHLER & LÖTTERS, 1999b.

Leptodactylus syphax Bokermann, 1969
Distribution: 1) Cerrado; 2) **Santa Cruz**; 3) Cerrado, Chiquitanía Forests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Open.
Key literature: KÖHLER, 1995a; 1995b; KÖHLER & BÖHME, 1996.

Lithodytes lineatus (Schneider, 1799)
Distribution: 1) Amazonia; 2) **Beni**, **Cochabamba**, **La Paz**, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.
Key literature: DE LA RIVA, 1993a; MÁRQUEZ ., 1995.

Physalaemus albonotatus (Steindachner, 1864)
Distribution: 1) Cerrado, Chaco; 2) Beni, **Chuquisaca**, **Santa Cruz**, Tarija; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Chaco Montane Forests; 4) Terrestrial; 5) Open.
Key literature: DE LA RIVA, 1993a; KÖHLER, 1995a; 2000a; MÁRQUEZ ., 1995.
Remarks: Many old records of this species were given as . , which is very similar (they are indistinguishable in alcohol). See remarks under . .

Physalaemus biligonigerus (Cope, 1861 "1860")
Distribution: 1) Cerrado, Chaco; 2) **Chuquisaca**, **Santa Cruz**, **Tarija**; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Chaco Montane Forests; 4) Terrestrial; 5) Open.
Key literature: MÁRQUEZ ., 1995; KÖHLER, 2000a.
Remarks: This species has been mistaken for . *f m* (Steindachner) in the literature for a long period. As a result, the geographic distribution of both species is confused. These problems were discussed by CEI (1990), who clearly stated that these two names represent different species. PERACCA (1897) reported specimens of both species (as *f m* Steindachner and *f* Girard) at some localities in Tarija, but their assignment to one or the other species was not convincing (CEI, 1990). The locality of the rediscovered Paraguayan sample studied by CEI (1990) and, especially, the type locality of . *f m* ("Caissará", Mato Grosso do Sul, Brazil) are very close to the Bolivian border. Thus, the presence of the species in the country is very plausible but, according to CEI (1990), . *f m* is less abundant than . and has a distribution restricted to the lower Paraguay basin. For this reason, the records from Tarija are doubtful and we refrain from including . *f m* in the Bolivian fauna until conclusive evidence of its occurrence in the country is available.

Physalaemus cuqui Lobo, 1993
Distribution: 1) Chaco; 2) Chuquisaca, Santa Cruz, **Tarija**; 3) Chaco Lowland Forests, Chaco Montane Forests; 4) Terrestrial; 5) Open.
Key literature: LAVILLA & SCROCCHI (1999).
Remarks: This species, very similar to . , has been reported in the country only recently. Some Chacoan records of . might actually correspond to . .

Physalaemus cuvieri Fitzinger, 1826
Distribution: 1) Cerrado; 2) **Santa Cruz**; 3) Cerrado; 4) Terrestrial; 5) Open.
Key literature: DE LA RIVA, 1990a.
Remarks: See remarks on . .

Physalaemus nattereri (Steindachner, 1863)
Distribution: 1) Cerrado; 2) **Santa Cruz**; 3) Cerrado; 4) Terrestrial; 5) Open.
Key literature: DE LA RIVA, 1990a; KÖHLER, 1995a; MÁRQUEZ ., 1995.

Physalaemus petersi (Jiménez de la Espada, 1872)

Distribution: 1) Amazonia; 2) **Beni, Cochabamba, La Paz, Santa Cruz**, Pando; 3) Amazonian Rainforests, Humid Transition Lowland Forests; 4) Terrestrial; 5) Forest.

Key literature: CANNATELLA & DUELLMAN, 1984; MÁRQUEZ ., 1995.

Remarks: CANNATELLA & DUELLMAN (1984) placed *m f* Donoso-Barros [type locality: Runerrabaque (sic), Beni] in the synonymy of *m* , and in this were followed by subsequent authors. Recently, CANNATELLA . (1998), in a paper dealing with the phylogeny of the entire . species group, again used the name *m f* , the distribution of which would be the SW Amazon in Peru and Bolivia. We prefer to maintain the name . for these populations until further studies confirm their taxonomic position.

Pleurodema borellii (Peracca, 1895)

Distribution: 1) Chaco, Temperate Inter-Andean Valleys; 2) Chuquisaca, **Tarija**; 3) Chaco Montane Forests, Inter-Andean Valleys, Tucumanian-Bolivian Montane Forests; 4) Terrestrial; 5) Open.

Key literature: PERACCA, 1897; DE LA RIVA & GONZÁLES, 1998.

Remarks: This species has been considered either as a good species or as a synonym of . *m,* primarily on the basis of their almost identical morphology. However, it seems odd that a species may range from the hot, lowland Chaco to the high, cold puna (that is, from 400 to 4500 m or more), an argument sometimes utilized to justify the recognition of the two species (DUELLMAN & VELOSO, 1977). However, the biochemical and biacoustical evidence seems to indicate that only one species might be involved (MCLISTER ., 1991). Argentinean herpetologists tend to recognize two separate species, and populations assigned to . have been recently found far away from the Andean foothills (CÉSPEDEZ, 1997). Admittedly, less evidence is available in Bolivia to either recognize or reject . as a valid species. Since PERACCA (1897) reported . in Tarija, we tentatively recognize it as valid and include it in the list.

Pleurodema cinereum Cope, 1877

Distribution: 1) Andean Highlands, Temperate Inter-Andean Valleys; 2) **Cochabamba, Chuquisaca, La Paz, Oruro, Potosí**; 3) High Andean Vegetation, Inter-Andean Valleys; 4) Terrestrial; 5) Open.

Key literature: ERGUETA, 1991; VELLARD, 1992; APARICIO, 1993; CHRISTMANN, 1995; DE LA RIVA ., 1995; IBISCH & BÖHME, 1995; KÖHLER, 1995a; 2000a; KÖHLER ., 1995b; MÁRQUEZ ., 1995; DE LA RIVA & GONZÁLES, 1998.

Remarks: See remarks under . .

Pleurodema guayapae Barrio, 1964

Distribution: 1) Chaco; 2) Chuquisaca, **Santa Cruz**, Tarija; 3) Chaco Lowland Forests; 4) Terrestrial; 5) Open.

Key literature: DE LA RIVA & GONZÁLES, 1998; GONZÁLES, 1998.

Remarks: Whereas the presence of this species in poorly surveyed areas of Chuquisaca and Tarija is plausible, the Chacoan regions of northern Argentina are well studied and the occurrence of the species there is discarded. The perplexing distribution of this species, with a gap of 1000 km between the Bolivian and Argentinean populations (which live in salty, arid environments), suggests that they might represent different species, although the morphological evidence does not support such an assumption (DE LA RIVA & GONZÁLES, 1998).

Pleurodema marmoratum (Duméril & Bibron, 1841)*

Distribution: 1) Andean Highlands; 2) **Co-**

chabamba, La Paz, Oruro, Potosí; 3) High Andean Vegetation; 4) Terrestrial; 5) Open.
Key literature: ERGUETA, 1991; REYNOLDS & FOSTER, 1992; VELLARD, 1992; APARICIO, 1993.

Pseudopaludicola boliviana Parker, 1927*
Distribution: 1) Tropical South America; 2) **Beni**, Cochabamba, **La Paz**, **Santa Cruz**; 3) Cerrado, Chiquitanía Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Terrestrial; 5) Open.
Key literature: KÖHLER, 1995a; MÁRQUEZ ., 1995; REICHLE, 1996; 1997c; REICHLE & KÖHLER, 1998.
Remarks: LYNCH (1989a) reviewed the - of N South America, and he could not find differences between specimens from eastern Colombia, southern Venezuela, and Bolivia. The currently accepted distribution of . comprises eastern Colombia, S Venezuela, Guyana, Surinam, Roraima (N Brazil), E Bolivia, Paraguay, SW Brazil and N Argentina (LYNCH, 1989a; LOBO, 1992; 1994). Thus, there are two sets of populations separated by the Amazon Basin. This strange distribution roughly parallels that of *m* - . Although it is not necessarily untenable that both sets of populations of - are conspecific, further research is necessary to ascertain their phylogenetic relationships and taxonomic status, and perhaps the northern populations might deserve to be considered a different species.

Pseudopaludicola mystacalis (Cope, 1887)
Distribution: 1) Cerrado; 2) **Beni**, **Santa Cruz**; 3) Cerrado, Wet Savannas; 4) Terrestrial; 5) Open.
Key literature: DE LA RIVA, 1990a.

Vanzolinius discodactylus (Boulenger, 1883)
Distribution: 1) Upper Amazon Basin; 2) Beni, La Paz, **Pando**; 3) Amazonian Rainforests; 4) Terrestrial; 5) Forest.
Key literature: KÖHLER & LÖTTERS, 1999a.

Telmatobiinae

Eleutherodactylus ashkapara Köhler, 2000**
Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, La Paz, Santa Cruz; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.
Key literature: KÖHLER, 2000a; 2000b.

Eleutherodactylus cruralis (Boulenger, 1902)*
Distribution: 1) Bolivian-Argentinean Forests, Humid Montane Forests, Peri-Andean Forests; 2) **Cochabamba**, Chuquisaca, **La Paz**, **Santa Cruz**; 3) Amazonian Rainforests, Tucumanian-Bolivian Montane Forests, Yungas-Montane Rainforests; 4) Terrestrial, Arboreal; 5) Forest.
Key literature: LYNCH, 1989b; DE LA RIVA, 1993c; MÁRQUEZ ., 1995; KÖHLER, 1995a; 2000a; KÖHLER ., 1995b; REICHLE & KÖHLER, 1997; REICHLE ., 2001.
Remarks: LYNCH (1989b) stated that there is remarkable variation in the size of males and females across the range of the species, a fact that might indicate that more than one species is involved under the name . - . LAVILLA & SCROCCHI (1999) report two unidentified species of the . group in Tarija. In our opinion, the morphological variation in samples identified as . from lowland rainforests in SW Peru and central Bolivia, as well as in those from cloud forests and temperate valleys, are incompatible with the idea of a single species. Bioacoustical evidence also supports the presence of more than one species. A new species is being described by REICHLE . (2001) and three others will be described by M. Harvey and R. Aguayo.

Eleutherodactylus danae Duellman, 1978
Distribution: 1) Humid Montane Forests, Peri-

Andean Forests; 2) **Cochabamba**, La Paz, Santa Cruz; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: KÖHLER, 1995a; 2000a; KÖHLER & JUNGFER, 1995.

Eleutherodactylus discoidalis (Peracca, 1895)

Distribution: 1) Bolivian-Argentinean Forests, Humid Montane Forests; 2) **Cochabamba, Chuquisaca, Santa Cruz, Tarija**; 3) Tucumanian-Bolivian Montane Forests, Yungas-Montane Rainforests; 4) Terrestrial, Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1993c; HARVEY, 1997.

Remarks: DE LA RIVA (1990a; 1993c) overlooked the old record of this species in Tarija by PERACCA (1897). See remarks under . .

Eleutherodactylus fenestratus (Steindachner, 1864)

Distribution: 1) Amazonia; 2) **Beni, Cochabamba, La Paz, Pando, Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Yungas-Montane Rainforests; 4) Terrestrial, Arboreal; 5) Forest.

Key literature: REYNOLDS & FOSTER, 1992; DE LA RIVA, 1993c; MÁRQUEZ ., 1995; REICHLE, 1999; KÖHLER, 2000a.

Remarks: Many locality records assigned to this species are probably in error. Considerable confusion exists regarding the taxonomic status of some Peruvian and Bolivian populations of frogs in the . group, which have similar morphologies, moderate to broad distributions, and poorly known regional variation. After REICHLE (1999) *m* Werner [type locality: Chaco, Bolivia (a cloud forest locality in Departamento La Paz)], currently in the synonymy of . *f* , is a different species whose taxonomic position is still under study (see KÖHLER, 2000a).

Eleutherodactylus fraudator Lynch & McDiarmid, 1987**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, La Paz, **Santa Cruz**; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: LYNCH & MCDIARMID, 1987; DE LA RIVA, 1993c; KÖHLER, 1995a; 2000a; KÖHLER ., 1995a; DE LA RIVA & LYNCH, 1997.

Eleutherodactylus llojsintuta Köhler & Lötters, 1999**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, La Paz, **Santa Cruz**; 3) Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: KÖHLER & LÖTTERS, 1999c; KÖHLER, 2000a.

Remarks: See remarks under . - .

Eleutherodactylus mercedesae Lynch & McDiarmid, 1987**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, **La Paz**, Santa Cruz; 3) Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: LYNCH & MCDIARMID, 1987; DE LA RIVA, 1993c; KÖHLER, 2000a.

Eleutherodactylus olivaceus Köhler, Morales, Lötters, Reichle & Aparicio, 1998*

Distribution: 1) Humid Montane Forests, Peri-Andean Forests; 2) **Cochabamba**, La Paz, **Santa Cruz**; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1993c; KÖHLER ., 1998b; KÖHLER, 2000a.

Remarks: This recently described species includes the populations on which former Bolivian records of . *m* Duellman were based (see DE LA RIVA, 1993c). However, the presence of . *m* in the country is still plausible.

Eleutherodactylus peruvianus (Melin, 1941)

Distribution: 1) Humid Montane Forests, Peri-Andean Forests, Upper Amazon Basin; 2) **Cochabamba**, **La Paz**, **Santa Cruz**; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Terrestrial, Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1994b; KÖHLER, 1995a; 2000a.

Remarks: Unlike most Peruvian specimens of . , Bolivian ones often lack orange spots on the posterior surfaces of the thighs. There is a considerable variation in these frogs and, given the fact that the type locality of the species (Roque, Department of San Martín, Peru) is far away from Bolivia, it would not be surprising that some Bolivian populations represent a different species (see KÖHLER, 2000a).

Eleutherodactylus platydactylus (Boulenger, 1903)

Distribution: 1) Humid Montane Forests; 2) **Cochabamba, La Paz, Santa Cruz**; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1993c; KÖHLER, 1995a; 2000a; KÖHLER ., 1995a; MÁRQUEZ ., 1995; DE LA RIVA, 1997; KÖHLER & LÖTTERS, 1999c.

Remarks: Recently, DE LA RIVA (1997) placed . *m* Donoso-Barros [type locality: Runerrabaque (sic), Beni (probably in error)] in the synonymy of . . The striking variation of this species has been pointed out and illustrated repeatedly, and it has been suggested that more than one species might be hidden under the name . . DE LA RIVA (1997) refrained from naming new species but described three morphs which might prove to be valid species. *j* is a sibling species described by KÖHLER & LÖTTERS (1999c) based mainly on differences in the advertisement calls.

Eleutherodactylus pluvicanorus De la Riva & Lynch, 1997**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, La Paz, **Santa Cruz**; 3) Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: KÖHLER, 1995a; 2000a; KÖHLER ., 1995a; DE LA RIVA & LYNCH, 1997.

Eleutherodactylus rhabdolaemus Duellman, 1978

Distribution: 1) Humid Montane Forests; 2) **Cochabamba, La Paz, Santa Cruz**; 3) Yungas-Montane Rainforests; 4) Terrestrial, Arboreal; 5) Forest.

Key literature: LYNCH & MCDIARMID, 1987; REYNOLDS & FOSTER, 1992; DE LA RIVA, 1993c; KÖHLER, 1995a; 2000a.

Eleutherodactylus samaipatae Köhler & Jungfer, 1995**

Distribution: 1) Bolivian-Argentinean Forests, Temperate Inter-Andean Valleys; 2) Cochabamba, Chuquisaca, **Santa Cruz**, **Tarija**; 3) Inter-Andean Valleys, Tucumanian-Bolivian Montane Forests; 4) Terrestrial, Arboreal; 5) Forest, Open.

Key literature: KÖHLER, 1995a; 2000a; KÖHLER & JUNGFER, 1995; KÖHLER ., 1995b; REICHLE, 1999.

Eleutherodactylus toftae Duellman, 1978

Distribution: 1) Peri-Andean Forests; 2) **Cochabamba**, La Paz, Santa Cruz; 3) Amazonian Rainforests; 4) Terrestrial, Arboreal; 5) Forest.

Key literature: DE LA RIVA, 1993c; MÁRQUEZ ., 1995.

Eleutherodactylus ventrimarmoratus (Boulenger, 1912)

Distribution: 1) Humid Montane Forests, Upper Amazon Basin; 2) Beni, La Paz, **Pando**; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Arboreal; 5) Forest.

Remarks: Reported herein for the first time for Bolivia.

Eleutherodactylus zongoensis Reichle & Köhler, 1997**

Distribution: 1) Humid Montane Forests; 2) **La Paz**; 3) Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: REICHLE & KÖHLER, 1997.

Remarks: Known only from the holotype.

Ischnocnema quixensis (Jiménez de la Espada, 1872)

Distribution: 1) Amazonia; 2) Beni, La Paz, **Pando**; 3) Amazonian Rainforests; 4) Terrestrial; 5) Forest.

Remarks: Found by J. E. Cadle and S. Reichle in November 1999 and reported herein for the first time.

Ischnocnema sanctaecrucis Harvey & Keck, 1995**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, La Paz, **Santa Cruz**; 3) Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: HARVEY & KECK, 1995; REICHLE, 1999; KÖHLER, 2000a.

Odontophrynus americanus (Duméril & Bibron, 1841)

Distribution: 1) Subtropical South America; 2) **Cochabamba, Chuquisaca, Santa Cruz, Tarija**; 3) Chaco Lowland Forests, Chaco Montane Forests; 4) Fossorial, Terrestrial; 5) Open.

Key literature: DE LA RIVA, 1990a; MÁRQUEZ ., 1995; KÖHLER, 2000a.

Odontophrynus lavillai Cei, 1985

Distribution: 1) Chaco, Temperate Inter-Andean Valleys; 2) Chuquisaca, **Santa Cruz**, Tarija; 3) Chaco Lowland Forests, Inter-Andean Valleys; 4) Fossorial, Terrestrial; 5) Open.

Key literature: DE LA RIVA ., 1996c; KÖHLER, 2000a.

Remarks: The distribution and variation of . *m* and . in the country is still unclear, and both forms seem to be sympatric in some areas.

Phrynopus kempffi De la Riva, 1992**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, **Santa Cruz**; 3) Ceja de Montaña-Cloud Forests; 4) Terrestrial; 5) Forest.

Key literature: DE LA RIVA, 1992b; MÁRQUEZ ., 1995.

Phrynopus laplacai (Cei, 1968)**

Distribution: 1) Humid Montane Forests; 2) **La Paz**; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest, Open.

Key literature: CEI, 1968; LYNCH, 1975; ERGUETA, 1993.

Phrynopus pinguis Harvey & Ergueta, 1998**

Distribution: 1) Humid Montane Forests; 2) **La Paz**; 3) Ceja de Montaña-Cloud Forests; 4) Terrestrial; 5) Forest.

Key literature: HARVEY & ERGUETA, 1998.

Remarks: The genus seems to be much more speciose in Bolivia than previously expected. Two new species are being described by R. Aguayo and M. Harvey, and some more will be described by I. De la Riva and S. Reichle.

Phyllonastes carrascoicola De la Riva & Köhler, 1998**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, **Santa Cruz**; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: REYNOLDS & FOSTER, 1992; KÖHLER, 1995a; 2000a; 2000c; KÖHLER ., 1995a; DE LA RIVA & KÖHLER, 1998.

Phyllonastes ritarasquinae Köhler, 2000**

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, La Paz, Santa Cruz; 3) Yungas-Montane Rainforests; 4) Terrestrial; 5) Forest.

Key literature: KÖHLER, 2000a; 2000c.

Remarks: More species of the genus - [or a closely related minute leptodactylid genus (M. B. Harvey, in litt.)] are expected to be found in the country as closer attention be paid to the forest litter amphibian fauna.

Telmatobius bolivianus Parker, 1940**

Distribution: 1) Humid Montane Forests; 2) **La Paz**; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Aquatic; 5) Forest.

Key literature: PARKER, 1940; VELLARD, 1951; 1970; LAVILLA & DE LA RIVA, 1993.

Remarks: The taxonomy of the Yungas *m* - is obscured by historical problems related to unclear type localities, state of flux in relation to synonymizations and revalidations, the intrinsic difficulty posed by the frogs themselves due to their intra- and interpopulational variation, and the scarcity of museum specimens. *m* was placed in the synonymy of . - Werner by VELLARD (1951), who later considered both forms as subspecies of . *m m* (VELLARD, 1970). DE LA RIVA (1990a) considered doubtful the validity of . (and, as a consequence, that of .). Later, LAVILLA & DE LA RIVA (1993) described the putative tadpole of . . The tadpole was assigned to this species on the basis of the comparison of some adult frog specimens (for which the tadpole was known) with the holotype of . . Further observations led to conclude that more than one species is involved and the tadpoles were wrongly assigned (I. De la Riva, pers. obs.). *m* - and . seem to be different species (but see remarks under .) and at least there is another related species, which is being described by I. De la Riva.

Telmatobius culeus (Garman, 1875)*

Distribution: 1) Andean Highlands; 2) **La Paz**; 3) High Andean Vegetation; 4) Aquatic; 5) Open.

Key literature: BARBOUR & NOBLE, 1920; PARKER, 1940; VELLARD, 1951; 1953; 1955; 1960; DE MACEDO, 1960; CEI, 1986; VELLARD, 1992; PÉREZ, 1998.

Remarks: The description of subspecies on the basis of morphological differences has created a taxonomic chaos in some species groups of *m* . Up to six subspecies of . have been recognized. The nominal subspecies has its type locality in Bolivia [Achacache, Lago Titicaca (La Paz) (FROST, 1985) or "Proximidades de la Isla del Sol" (La Paz) (VELLARD, 1953)]. Furthermore, VELLARD (1951; 1960) described three subspecies of . Parker, a species that he later placed in the synonymy of . , but he still recognized all the former subspecies of . (VELLARD, 1992). One of these subspecies, . . Vellard, has its type locality in Bolivia [Playa de Copani, Huiñamarca (La Paz)]. As a result, the number of subspecies of . rose to twelve. Fortunately, a thorough study carried out by SINSCH . (1995) demonstrated that the morphological variation in *m* does not match subspecific partitions like this. We follow VELLARD (1992) in that . is a synonym of . .

Telmatobius edaphonastes De la Riva, 1995 "1994" **

Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, **Santa Cruz**; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Aquatic, Terrestrial; 5) Forest.

Key literature: DE LA RIVA (1995c).

Telmatobius huayra Lavilla & Ergueta, 1995**

Distribution: 1) Andean Highlands; 2) **Potosí**; 3) High Andean Vegetation; 4) Aquatic; 5) Open.

Key literature: LAVILLA & ERGUETA, 1995a.

Telmatobius ifornoi Lavilla & Ergueta, 1999**
Distribution: 1) Humid Montane Forests; 2) **La Paz**; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Aquatic; 5) Forest.
Key literature: LAVILLA & ERGUETA, 1999.

Telmatobius jahuira Lavilla & Ergueta, 1995**
Distribution: 1) Humid Montane Forests; 2) **La Paz**; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Aquatic, Terrestrial; 5) Forest.
Key literature: LAVILLA & ERGUETA, 1995b.

Telmatobius marmoratus (Duméril & Bibron, 1841)
Distribution: 1) Andean Highlands; 2) **Cochabamba, Chuquisaca, La Paz, Oruro, Potosí;** 3) High Andean Vegetation, Inter-Andean Valleys; 4) Aquatic; 5) Open.
Key literature: PARKER, 1940; VELLARD, 1951; 1953; 1955; 1960a; 1969; 1970; 1992; CEI, 1986; ERGUETA, 1991; APARICIO, 1993; IBISCH & BÖHME, 1993; KÖHLER, 1995a.
Remarks: This is the most widespread species of *m* and the one with the most complicated taxonomy. Once . is resurrected as a valid species, still nine subspecies of . *m m* remain. Two of them have their type locality in Bolivia: . *m.* Parker (Tolota, Cochabamba) and . *m.* Vellard (Huayllamarca, Oruro). Furthermore, the nominal subspecies and . *m.* Vellard would also occur in the country. The validity of all these subspecies and the real specific diversity of the . *m* - *m* complex in Bolivia is being reviewed by I. De la Riva.

Telmatobius simonsi Parker, 1940**
Distribution: 1) Temperate Inter-Andean Valleys; 2) **Cochabamba**, **Chuquisaca**, Potosí, **Santa Cruz**, Tarija; 3) Inter-Andean Valleys; 4) Aquatic; 5) Open.
Key literature: PARKER, 1940; VELLARD, 1951.
Remarks: Certain populations of cloud forest *m* in Cochabamba and Santa Cruz were tentatively identified as . - *m* (DE LA RIVA, 1990a; 1994c). These populations actually represent an unnamed species, which is being described by I. De la Riva and M. Harvey, who are also reviewing the taxonomic status of some other populations allied to . *m* - from the temperate valleys of Santa Cruz.

Telmatobius verrucosus Werner, 1899**
Distribution: 1) Humid Montane Forests; 2) **La Paz**; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Aquatic; 5) Forest.
Key literature: WERNER, 1899; BARBOUR & NOBLE, 1920; VELLARD, 1951; 1970.
Remarks: This species has not been found again, and its uncertain taxonomic status is being investigated by I. De la Riva. See remarks under . .

Telmatobius yuracare De la Riva, 1994**
Distribution: 1) Humid Montane Forests; 2) **Cochabamba**, **Santa Cruz**; 3) Ceja de Montaña-Cloud Forests, Yungas-Montane Rainforests; 4) Aquatic; 5) Forest.
Key literature: DE LA RIVA, 1994c; KÖHLER, 1995a; 2000a; KÖHLER ., 1995a.

Microhylinae

Chiasmocleis albopunctata (Boettger, 1885)
Distribution: 1) Cerrado; 2) **Santa Cruz**; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Chaco Montane Forests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Open.
Key literature: DE LA RIVA, 1993a; DE LA RIVA ., 1996c; KÖHLER, 2000a.

Chiasmocleis ventrimaculata (Andersson, 1945)

Distribution: 1) Upper Amazon Basin; 2) **Beni**, **Cochabamba**, La Paz, Pando, Santa Cruz; 3) Amazonian Rainforests, Humid Transition Lowland Forests; 4) Terrestrial; 5) Forest.

Key literature: DE LA RIVA, 1995d.

Remarks: WALKER (1973) reported a specimen of *C.* Dunn from Bolivia. So far, *C.* is known from E Peru and Ecuador (FROST, 1985), but new findings in Brazil, close to the Bolivian border, make Walker's report plausible (S. Reichle, pers. obs.).

Dermatonotus muelleri A

Remarks: The taxonomy of . *m* was reviewed by GALLARDO (1961b; 1964c) but the status of several populations remains problematic. In Bolivia the subspecies . *m* Gallardo (type locality: Reyes, Beni) occurs, and probably . . *m* , whose type locality (Corumbá, Mato Grosso do Sul) lies on the Brazilian bank of the Paraguay river, which divides the Brazilian and Bolivian Pantanal. KLAPPENBACH (1985) stated that . . Parker, from the lower Amazon, should be considered a good species, and suggested that . . might be either a valid species or a subspecies of . . At least two different morphs corresponding to two kinds of advertisement calls are found in the Beni area (S. Reichle, pers. obs.).

Pseudis paradoxa (Linnaeus, 1758)

Distribution: 1) South America; 2) **Beni**, Cochabamba, Chuquisaca, La Paz, Pando, **Santa Cruz**; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests, Wet Savannas; 4) Aquatic; 5) Open.

Key literature: BOSCH ., 1996; REICHLE, 1996; 1997a; REICHLE & KÖHLER, 1998; DE LA RIVA, 1999d.

Remarks: Three subspecies have been reported in the country: . . (Linnaeus) in the Beni region, . . Gallardo in the Cerrado and . . Gallardo (type locality: El Pailón, Santa Cruz) in the Chaco (GALLARDO, 1961b; 1964c). As stated by BOSCH . (1996) and DE LA RIVA (1999d), the validity and distribution of these forms in the country needs to be studied, especially the presence of the nominal subspecies, whose core area of distribution is the Guianan region and for which there are no records in the intervening Amazonian region.

Raninae

Rana palmipes Spix,1824

Distribution: 1) Amazonia; 2) **Beni, Cochabamba, La Paz**, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Terrestrial; 5) Forest.

Key literature: DE LA RIVA, 1990a.

Caudata

Plethodontinae

Bolitoglossa altamazonica (Cope, 1874)

Distribution: 1) Amazonia; 2) Beni, **Cochabamba**, La Paz, **Santa Cruz**, **Pando**; 3) Amazonian Rainforests, Yungas-Montane Rainforests; 4) Arboreal, Terrestrial; 5) Forest.

Key literature: REICHLE ., 2000.

Remarks: *m* is thought to include populations from the mouth of the Amazon to the Andean cloud forests from Colombia to Bolivia (there are scant records from the central Amazon). This is one of the least known species complex of South American amphibians, and it is expected that, upon future research, the Bolivian populations will be identified as one or more different species (REICHLE ., 2000).

Gymnophiona

Caecilia marcusi Wake, 1984**

Distribution: 1) Peri-Andean Forests, Southwestern Amazonia; 2) Beni, **Cochabamba**, La Paz, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests; 4) Fossorial; 5) Forest.

Key literature: WAKE, 1984; REICHLE & KÖHLER, 1996b.

Siphonops annulatus (Mikan, 1820)
Distribution: 1) Tropical South America; 2) **Beni**, Cochabamba, **La Paz**, Pando, **Santa Cruz**; 3) Amazonian Rainforests, Humid Transition Lowland Forests, Pre-Cambrian Shield Humid Forests; 4) Fossorial; 5) Forest.
Key literature: DE LA RIVA, 1990a.

Siphonops paulensis Boettger, 1892
Distribution: 1) Cerrado; 2) Beni, **Santa Cruz**; 3) Cerrado, Chiquitanía Forests, Chaco Lowland Forests; 4) Fossorial; 5) Open.
Key literature: DE LA RIVA, 1990a.

CONCLUSIONS AND DISCUSSION

Taxonomic diversity and changes since 1990.

In total, up to date, there are three orders, eleven families, 44 genera and 186 valid species of amphibians recognized from Bolivia. Their taxonomic distribution is summarized in Table 1. These figures represent a dramatic increase with respect to DE LA RIVA's (1990a) list. Frogs belonging to nine genera not previously reported in the country have been found (either as undescribed species or as already known ones): , - , , , , - , , *m* , and . As could be expected, the most significant change is that of the total number of species, which has increased by 74, from 112 to 186. This change, which overall represents an increase of 66 % in only ten years, is due to several factors, namely: species overlooked in the 1990 list, species deletions, taxonomic changes, rediscovery of doubtful forms that proved to be valid species, species new to science, and new species records for the country.

Species overlooked in the 1990 list.- - *m* *m,* *m* , and .

Species deletions.-There are some species deleted from the 1990 list but, due to taxonomic or nomenclatural reasons, they have been replaced by another species' name (e. g., vs. . *f* *m*). In other cases, they have been identified as new species and described (e. g., - vs. . *m*). These cases do not alter the number of species. However, there are two cases of species present in the 1990 list that have been completely removed from the present one: the hylids *m* *j* (Noble) and . The case of . has been already commented in the remarks section of . There are two references suggesting the presence of *m* *j* in Bolivia. BOULENGER (1903a) treated the reproduction of this species (as) based on a specimen obtained by Mr. Ockenden at Santo Domingo (Puno, Peru) and commented that it is "...an inhabitant of the Andes of Ecuador, Bolivia and Peru". However, as far as we know, no voucher specimens from Bolivia are available. TRUEB (1974) listed a purported Bolivian specimen of . *j* from "Linimbane", 1000 m. [housed at the Natural History Museum, London (BM)]. The name of this locality is an obvious mispelling corresponding either to Limbani or, more probably, to the Linimbare (=Inambari) river. Both sites, in the Peruvian department of Puno, were visited in 1900 by P. O. Simons, collector of the BM. These localities, as well as Santo Domingo, are not far away from the Bolivian border (ca.70 km by airline distance). Thus, . *j* is likely to occur in the country, but its presence is still to be confirmed.

Taxonomic changes.-Three kinds of taxonomic changes have taken place: (1) synonymizations (the synonymyzed "species" disappears from the list); (2) change from subspecific to specific status (a species is added if more than one subspecies were already cited); and (3)

Table 1: Taxonomic diversity and number of endemic species of Amphibians of Bolivia.
Tabla 1: Diversidad taxonómica y número de especies endémicas de anfibios de Bolivia.

Order	Family	Genus	Spp	Endemics
Anura	Bufonidae		1	0
		f	14	2
			1	0
			1	0
		4	17	2
	Centrolenidae	*e*	3	2
		m	1	0
		2	4	2
	Dendrobatidae		1	0
		e	3	1
			4	1
		3	8	2
	Hylidae		4	2
			32	3
			4	0
			3	0
			1	0
			10	0
			1	0
		m	8	0
		8	63	5
	Leptodactylidae	*e*	2	0
		e	1	0
			1	0
		m	3	0
			23	0
			1	0
		m	6	0
		m	4	0
			2	0
			1	0
			17	7

Table 1: Continuation.
Tabla 1: Continuación.

Order	Family	Genus	Spp	Endemics
		m	2	1
			2	0
			3	3
			2	2
		m	10	8
		16	80	21
	Microhylidae	*m*	2	0
		m	1	0
			2	0
		m	1	0
		4	6	0
	Pipidae		1	0
	Pseudidae		1	0
			1	0
		2	2	0
	Ranidae		1	0
Caudata	Plethodontidae		1	0
Gymnophiona	Caeciliidae		1	1
			2	0
		2	3	1
3	11	44	186	33

resurrection from synonymy (a species is added if the senior synonym represents a species also present in the country).

Synonymizations affected eight species: *m* , , . - (DE LA RIVA, 1993d), . , . (it was listed in the 1990 list, but synonymized with . *f* therein), - *(=)* , - *m* , and *m* . Case (2) affects five species: *f* - , , ,

, and *m* -
.

Case (3) is represented by four species: -
, *m* ,
, and . .

Rediscovery of doubtful forms.-Two species listed as doubtful in 1990 are included in the present list: and -
m .

Species new to science.-A total of 28 Bolivian species of anurans in 13 genera have been described as new since 1990: *f m* -
, . (described from Brazil),
. *j* , *e* ,
, , . *m*
(described from Argentina), -
j , . , *m* *m* ,
m (described from Peru),
m (described from Argentina), , . *j*-
, . , . , .
m , . , *m* -
, *m ff* , . ,
, . ,
m , . , . *f* ,
. *j* , and . .

All of them except those described from other countries plus *f m* (which occurs in Peru), *j* (which presumably occurs in Argentina), *m* -
m (which occurs in Peru and Brazil), and (which occurs in Peru) are Bolivian endemisms. The number of endemic species is now 33, which represents 17.7 % of the total amphibian fauna of the country. Most of these endemic species (21) belong to the family Leptodactylidae.

Finally, two species described in the last decade were considered as not valid in the same period: *f* Reynolds & Foster, and *e* *f* Reynolds & Foster were, respectively, synonymized with . and *e* *j* by HARVEY & SMITH (1993) and HARVEY (1996).

Overall, of 50 valid species (at present-day) described from Bolivia over a period of 162 years (in 1838 was described the first species whose type locality is in Bolivia, -
), 25 (50%) have been described since 1990. This figure gives an idea about how much the research in Bolivia has lately become dynamic and intense in comparison to past periods. New species are expected to be described in the next years, especially, but not exclusively, in the genera *f* , , -
, , and *m* .

New species for the country.-They are 37 species in 22 genera, accounting for the largest number of additions to the 1990 list. These species are: *f* , -
m , -
, *e* ,
f m , *e* , *e* -
, , . ,
, . , . *m* *m* , .
, . , . ,
f , -
, , *m*
, . , . *m* , *e* -
, , -
, . , . -
, . , *m* , -
m , ,
, . , .
, . *f* , *m* -
, , and *e* *m*
m .

The occurrence of 19 of these species was expected by DE LA RIVA (1990a). The number of new records increases steadily with every herpetological field trip to poorly surveyed areas of the country, especially those close to the border of neighboring countries.

Two species of frogs reported recently in Bolivia have not been included in the present list. *f* Bokermann was reported in the country by DE LA RIVA . (1997), based

mainly on bioacoustical criteria. Further examination of the specimens and comparative studies of their advertisement calls revealed that the reported population actually corresponds to . (I. De la Riva, pers. obs.). Thus, . *f* has not been included in the present list, but its occurrence in the country is highly plausible [see LANGONE & BASSO (1987)]. (Noble) was reported by KÖHLER (1995a; b), but further examination of the single specimen collected demonstrated that it was a juvenile of *m m m m* (I. De la Riva & S. Reichle, pers. obs.).

Species of doubtful status.

For many species named long ago there may be no more published information than that provided in the original description. However, these species may be common and/or have broad distributions. The redescription and publication of biological or ecological data on these species is always advisable. More remarkable are those cases in which a species has remained unknown for a long period and the expectations to get new information are scant, due to the loss of the type material or because their type locality is unknown. We are unhappy with lists containing species whose information is almost unretrievable. Such lists obscure the reality of what is well known about the composition and diversity of a given fauna. However, we are aware of the importance of taking - into account in order to carry out further taxonomic research properly. The case of commented above is an illustrative example: being unaware of the existence of such a "lost" taxon, probably would have led the taxonomist to describe a new species. Thus, a briefly commented list of Bolivian (or putatively Bolivian) doubtful species follows:

f m Schmidt, 1857. A case equal to that of [see SAVAGE (1972)].

m Schmidt, 1857. A case equal to that of [see DUELLMAN (1970)].

m De Grys, 1938. Type lost and type locality imprecise ("Beni, Bolivia"). Boettger, 1891. Type lost and generic assignment doubtful (see DE LA RIVA, 1990a).

Species expected to occur.

Many species not yet discovered are expected within the Bolivian boundaries when further surveys are done. Some of the species listed below have been reported very close to the Bolivian border; others are known from more distant localities, but substantial range extensions into Bolivia are plausible. In spite of the fact that many species predicted by DE LA RIVA (1990a) have already been found in Bolivia (see above), the number of potential species (we propose 67) remains roughly as high as in 1990. This is due to two facts: the improvD0.654 376.645gomehin the diri(R)Tj16898 0

, , , and - *m* .

Chaco and Cerrado: , , - , , *m* , . *f* *m* , - , and *m* *m* .

Northern Cordillera Oriental: - , , , , *m* *j* , - , . , . *m* , . , . *m,* - , and *m* .

Southern Cordillera Oriental: *f* - , . , . *m* , , . , and *m* - .

Cordillera Occidental: *m* , . *f* , and . .

Conservation, recommendations and future research.

The figure of 186 species of amphibians in Bolivia is still very conservative. Considering the expected descriptions of new species plus the finding of species known from neighboring areas of other countries, a more realistic figure for the Bolivian amphibian diversity is around 250-300 species. The majority of the endemic amphibians of Bolivia occur in the Cordillera Oriental of the Andes, and have restricted distributions in fragile ecosystems (see KÖHLER ., 1998b; KÖHLER 2000a). The existence of this rich endemic fauna must be necessarily taken into account by Bolivian agencies involved in the management and protection of natural resources, in order to make sound and responsible environmental policy. This amphibian endemism often parallels equally interesting faunas and floras, but many groups of animals and plants remain poorly investigated. Thus, in general, preserving areas of amphibian endemism warrants the preservation of other valuable biological resources. However, the amphibians are often ignored and mostly excluded from biodiversity inventories, faunal lists, and regional surveys, primarily due to lack of information and taxonomic expertise. For example, The Red Data Book of Bolivian Vertebrates (ERGUETA & MORALES, 1996) includes only two species of amphibians (*m* and . , which are synonyms), and contains recommendations about some others, but these recommendations are only tentative, for sound knowledge of the real problems affecting Bolivian amphibians is lacking. Financial support and academic stimulus to carry out herpetological research are paramount if amphibians are to occupy the place they deserve in conservation policies. Especially, the situation in Bolivia concerning the global phenomenon of declining amphibian populations is completely unknown. Some observations seem to indicate that drastic declines might be affecting certain populations of montane species [e. g., some *m* ; (ERGUETA & HARVEY, 1996; I. De la Riva, pers. obs.)]. Locally, rivers and lakes are being polluted and large tracts of forest are being wiped out by agriculture, mining, logging, ranching, erosion, road construction, oil exploitation, etc. Information on amphibian diversity and distribution is a first step to know what is being destroyed. Nevertheless, overall, Bolivia is still well preserved and, if natural resources are wisely managed, there are still great opportunities to leave a rich natural heritage to future generations. We hope that further updated lists of Bolivian amphibians will not have to include a section of "probably extinct" species.

m

Understandably, our years of work on Bolivian amphibians which resulted in this list would not have been possible without the kind help of many friends and colleagues. To list all of them would probably require a separate publication. Nevertheless, we want to thank all these persons and institutions who helped

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. Chapare, Cochabamba (JK)

f m . Río Chua Khocha, Cochabamba (IR)

f *m.* Vaca Guzmán, Chuquisaca (JK)

f . Cobija, Pando (JK)

f . Rurrenabaque, Beni (SR)

f . P. N. Noel Kempff Mercado, Santa Cruz (SR)

f j . Chapare, Cochabamba (JK)

f m *f* . La Bola, Santa Cruz (IR)

f m . Valle de Sajta, Cochabamba (IR)

f m . Puerto Almacén, Santa Cruz (IR)

f . López Mendoza, Cochabamba (IR)

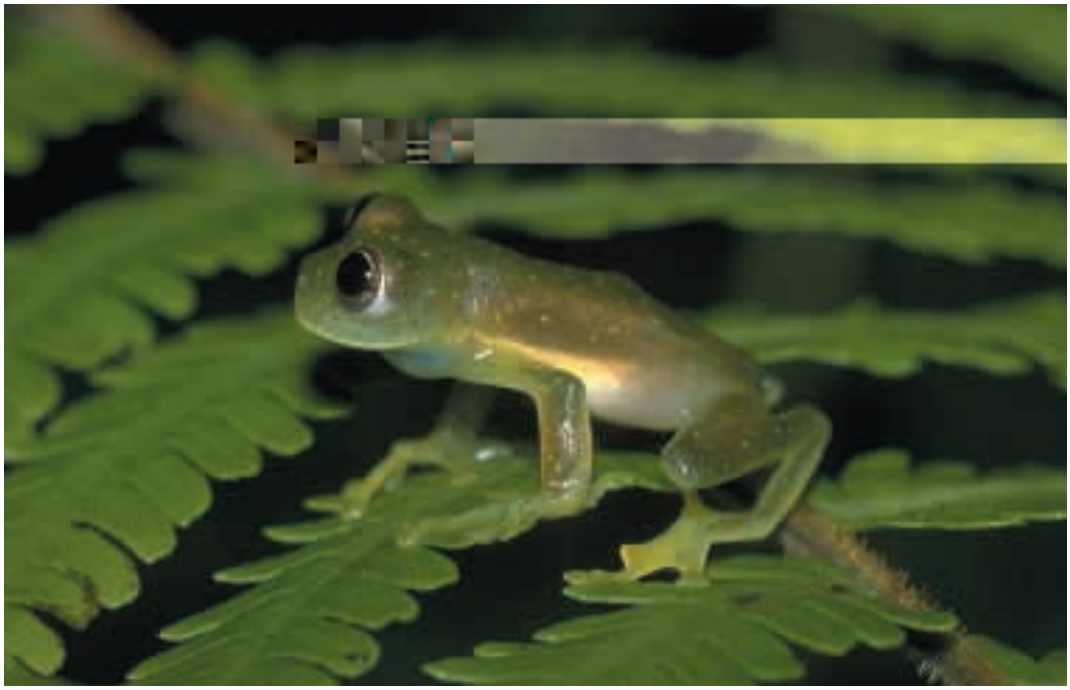
f . La Yunga, Santa Cruz (IR)

m . Valle de Sajta, Cochabamba (IR)

. López Mendoza, Cochabamba (IR)

e j . Sehuencas, Cochabamba (JK)

e . El Fuerte de Samaipata, Santa Cruz (JK)



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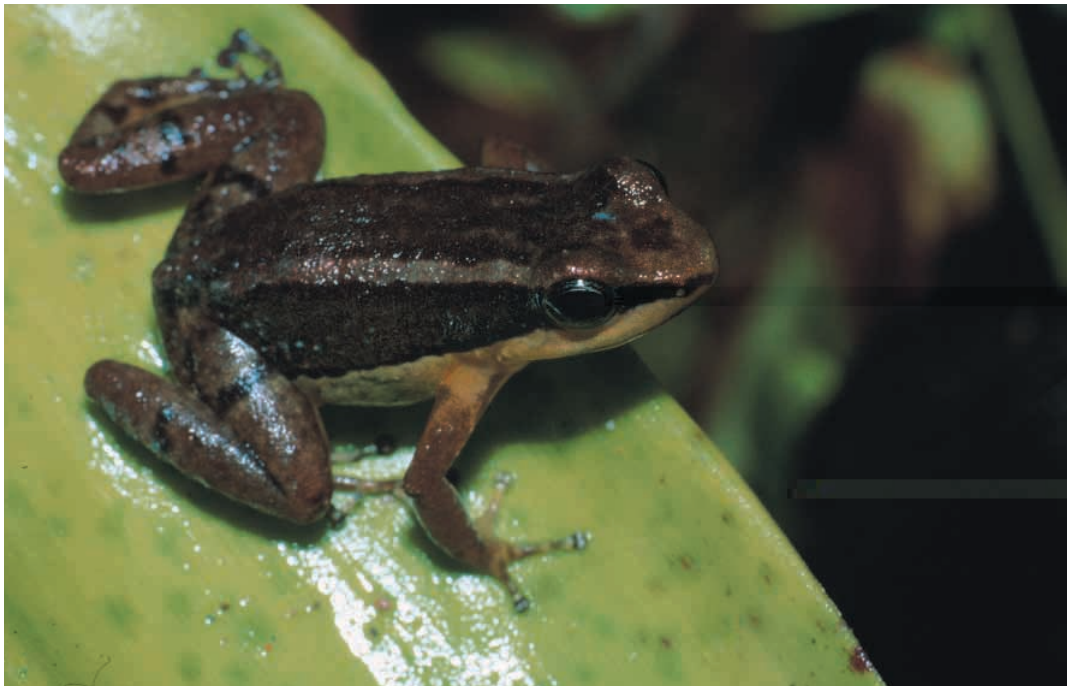
m . Chapare, Cochabamba (JK)

f m . Chalalán, La Paz, (SR)

e . P. N. Noel Kempff, Santa Cruz (SR)



e *m* *m* . Río Yuyo, La Paz (IR)

e . Estación Biológica Beni, Beni (SR)

. Correo, La Paz (IR)

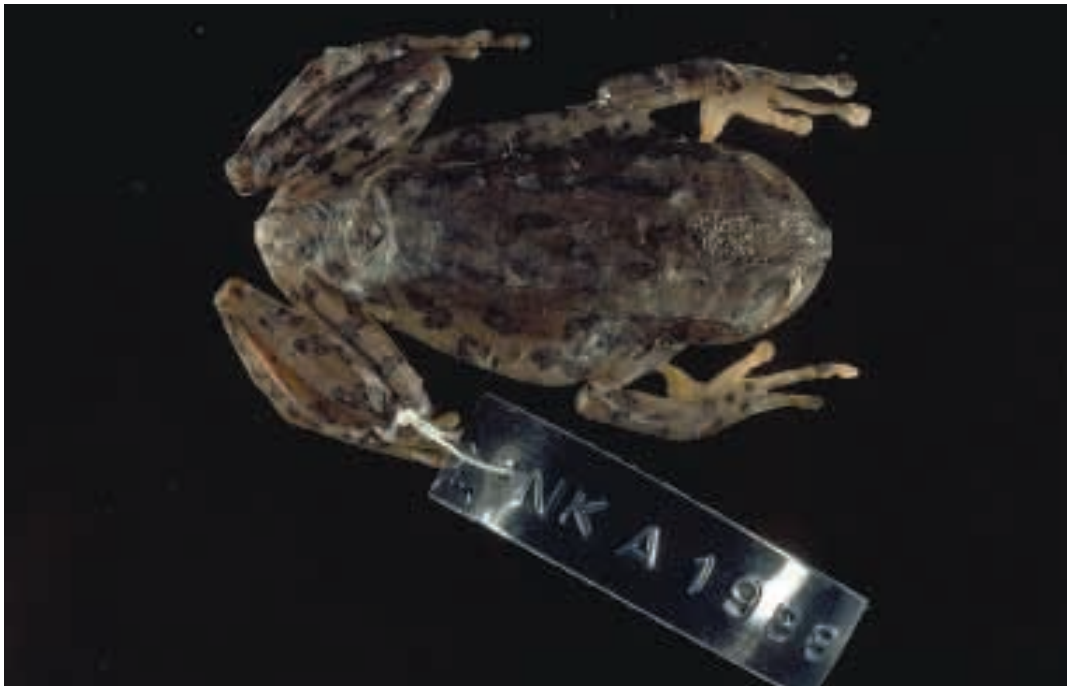
. Cobija, Pando (JK)

. P. N. Noel Kempff Mercado, Santa Cruz (IR)

. San Sebastián, Pando (SR)

. Serranía Siberia, Cochabamba (IR)

m . Sehuencas, Cochabamba (JK)



. Abra de la Cruz, Santa Cruz (IR)

. Chapare, Cochabamba (JK)

. Mataracú, Santa Cruz (SR)

. Toro Toro, Potosí (PI)

. P. N. Noel Kempff Mercado, Santa Cruz (IR)

. Aguirre, Cochabamba (IR)

m . Chaco, La Paz (IR)

. Coroico, La Paz (SR)

f . Puerto Almacén, Santa Cruz (IR)

. P. N. Noel Kempff Mercado, Santa Cruz (SR)

. San Sebastián, Pando (SR)

. Charazani, La Paz (IR)

(holotype). Paracti, Cochabamba (IR)

f . Cobija, Pando (JK)

. Puerto Almacén, Santa Cruz (IR)

. Cobija, Pando (JK)

. Rurrenabaque, Beni (SR)

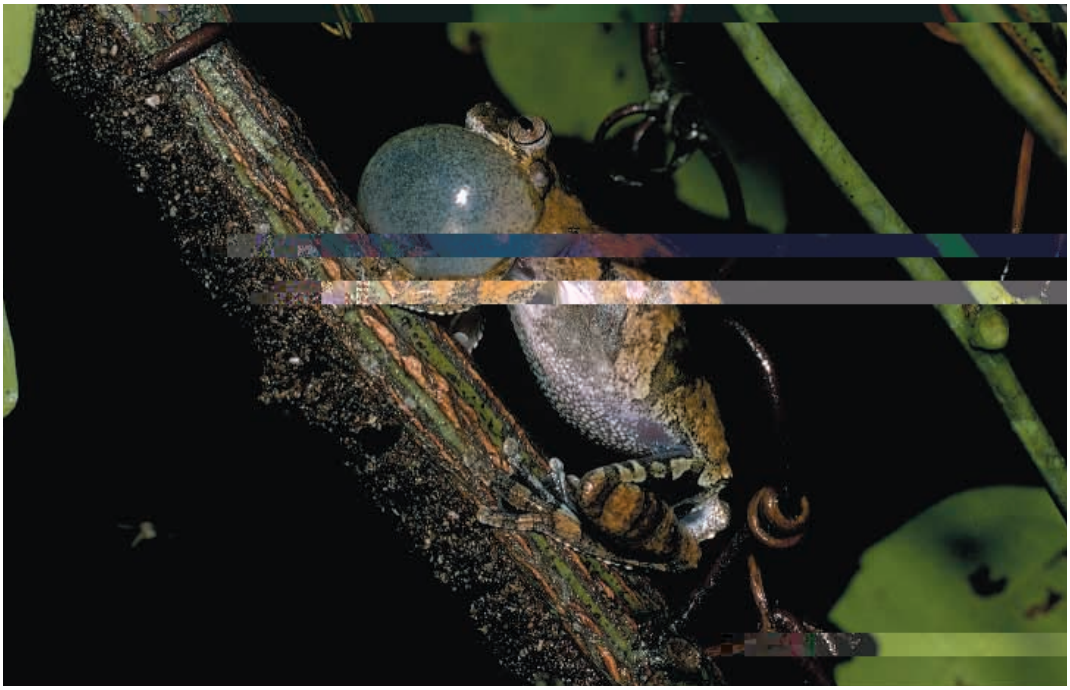
f m . Valle de Sajta, Cochabamba (IR)

. Estación Biológica Beni, Beni (SR)

. Estación Biológica Beni, Beni (SR)

m . Carahuasi, Cochabamba (IR)

m m . “Inselberg” Santa Cruz (JK)



m . P. N. Noel Kempff Mercado, Santa Cruz (SR)

m . Laguna Volcán, Santa Cruz (SR)

. Estación Biológica Beni, Beni (SR)

. Puerto Almacén, Santa Cruz (IR)

. Puerto Almacén, Santa Cruz (IR)

. La Bola, Santa Cruz (IR)

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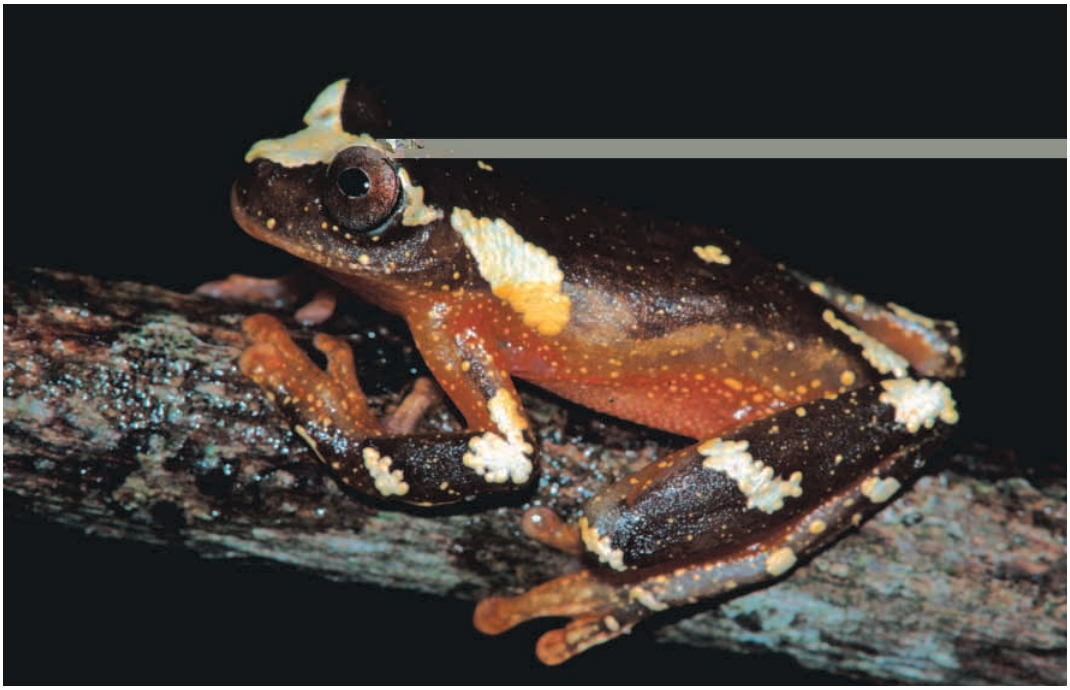
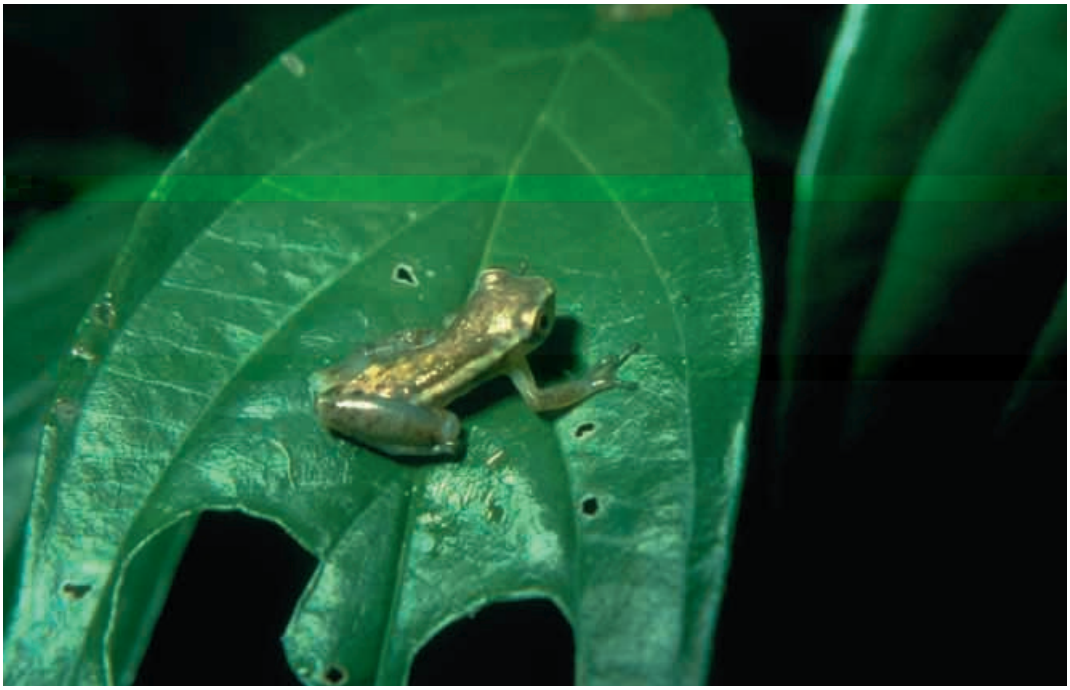
. Cobija, Pando (JK)



San Sebastián, Pando (SR)



. Cuzco Amazónico, Peru (EW)

. Estación Biológica Beni, Beni (SR)

. Mataracú, Santa Cruz (SR)

cf. . Los Fierros, Santa Cruz (SR)

. Rurrenabaque, Beni (SR)

. Estación Biológica Beni, Beni (SR)

. Puerto Almacén, Santa Cruz (IR)

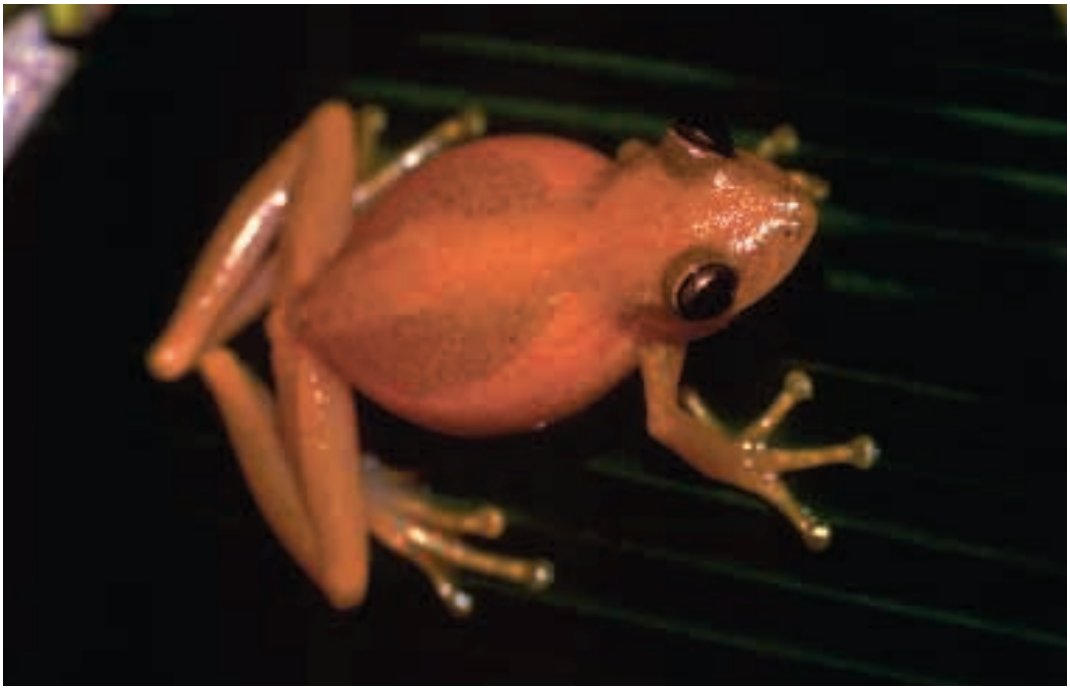
f . Centro Científico Yasuní, Napo, Ecuador (KHJ)

. P. N. Noel Kempff Mercado, Santa Cruz (IR)

. Iquitos, Peru (MG)

m . Lago Ipacaraí, Paraguay (KHJ)

j . Laguna Volcán, Santa Cruz (IR)



. Puerto Almacén, Santa Cruz (AM)

f . Puerto Almacén, Santa Cruz (IR)

. Cobija, Pando (JK)

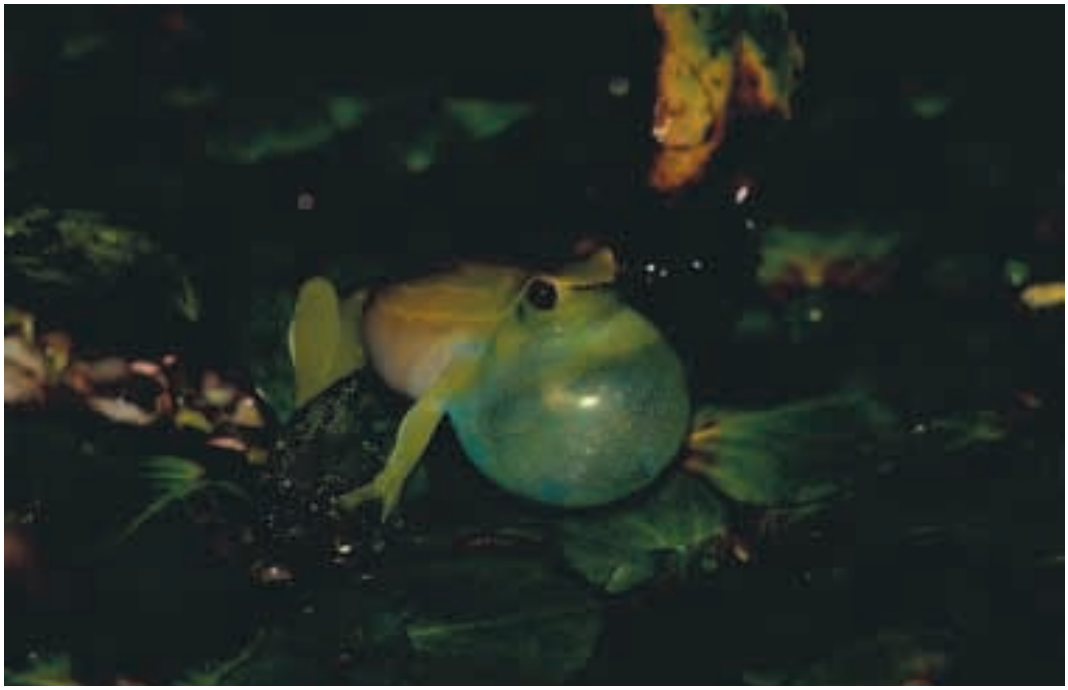
. Estación Biológica Beni, Beni (SR)

. P. N. Noel Kempff Mercado, Santa Cruz (SR)

. P. N. Noel Kempff Mercado, Santa Cruz (IR)

. Estación Biológica Beni, Beni (SR)

. Apolo, La Paz (IR)



. Puerto Almacén, Santa Cruz (IR)

m . Pingo de Oro, Pando (SR)

m . P. N. Amboró, Santa Cruz (IR)

m *m* . Puerto Almacén, Santa Cruz (IR)

m . Buenavista, Santa Cruz (IR)

m . Estación Biológica Beni, Beni (SR)

m . Raco, Tucumán, Argentina (IR)

m *m* . Cuzco Amazónico, Perú (IR)

m . Mataracú, Santa Cruz (JK)

. Puerto Almacén, Santa Cruz (IR)

. Santa Cruz de la Sierra, Santa Cruz (JK)

. Captive specimen from the pet trade (IR)

. Cerro Cortado, Santa Cruz (SR)

m . Cobija, Pando (JK)

m . Santa Cruz de la Sierra, Santa Cruz (JK)

m . Cobija, Pando (JK)

. Puerto Almacén, Santa Cruz (IR)

f . La Bola, Santa Cruz (IR)

-*m* *m* . Vaca Guzmán, Chuquisaca (JK)

m . Cobija, Pando (JK)

. Macuñucu, Santa Cruz (JK)

f . Buenavista, Santa Cruz (JK)

. El Fuerte de Samaipata, Santa Cruz (JK)

. Chapare, Cochabamba (JK)

. Rurrenabaque, Beni (SR)

. Puerto Almacén, Santa Cruz (IR)

. Argentina (WED)

. Arroyo Los Naranjos, Jujuy, Argentina (WED)

. P. N. Noel Kempff Mercado, Santa Cruz (IR)

m . Río Chevejecure, Beni (SR)

m . Paraguay (JK)

. Lago Ipacaraí, Paraguay (KHJ)

. Isla Coiba, Panama (IR)

. Buenavista, Santa Cruz (JK)

. San Ramón, Santa Cruz (JK)

m . Manaus, Brazil (KHJ)

. La Hoyada, Santa Cruz (JK)

. “Inselberg”, Santa Cruz (JK)

. Mataracú, Santa Cruz (SR)

m . Santa Cruz de la Sierra, Santa Cruz (JK)

m . Santa Cruz de la Sierra, Santa Cruz (IR)

m . Porto Alegre, Brazil (AK)

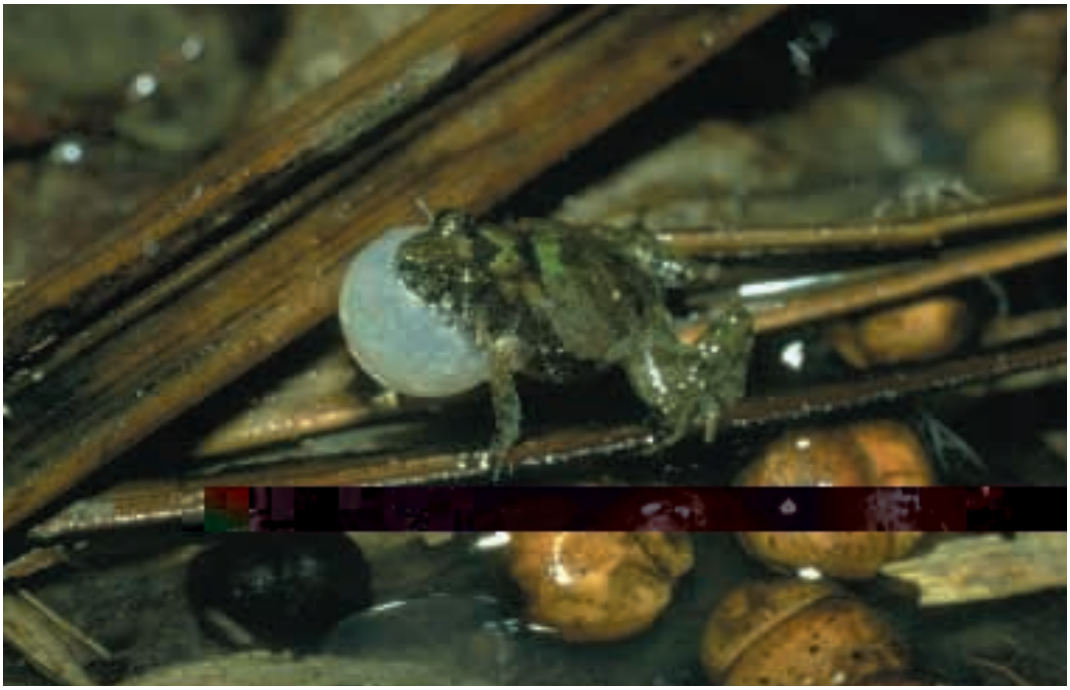
m . Santa Rosa de la Roca, Santa Cruz (JK)

m . Mataracú, Santa Cruz (JK)

m *m.* Huayllamarca, Oruro (IR)

m . Izozog, Santa Cruz (SR)

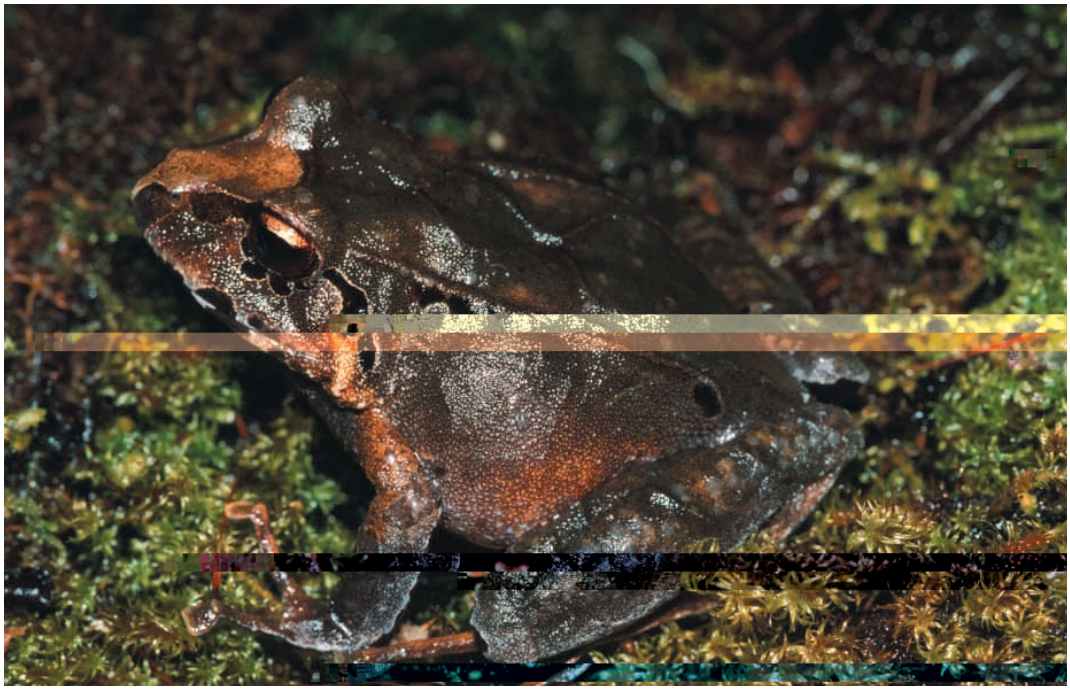
m m m m. Comanche, La Paz (IR)



. Estación Biológica Beni, Beni (SR)

m . P. N. Noel Kempff Mercado, Santa Cruz (IR)

. Cobija, Pando (JK)



. Chapare, 2100 m, Cochabamba (JK)

. Mataracú, Santa Cruz (SR)

. Chapare, Cochabamba (JK)

. La Yunga, Santa Cruz (IR)

f . Santa Cruz del Valle Ameno, La Paz (IR)

f . Serranía Siberia, Cochabamba (IR)

j . Sehuencas, Cochabamba (JK)

m . Road Caranavi-Yucumo, La Paz (SR)

. Chapare, Cochabamba (JK)

. Santa Cruz del Valle Ameno, La Paz (IR)

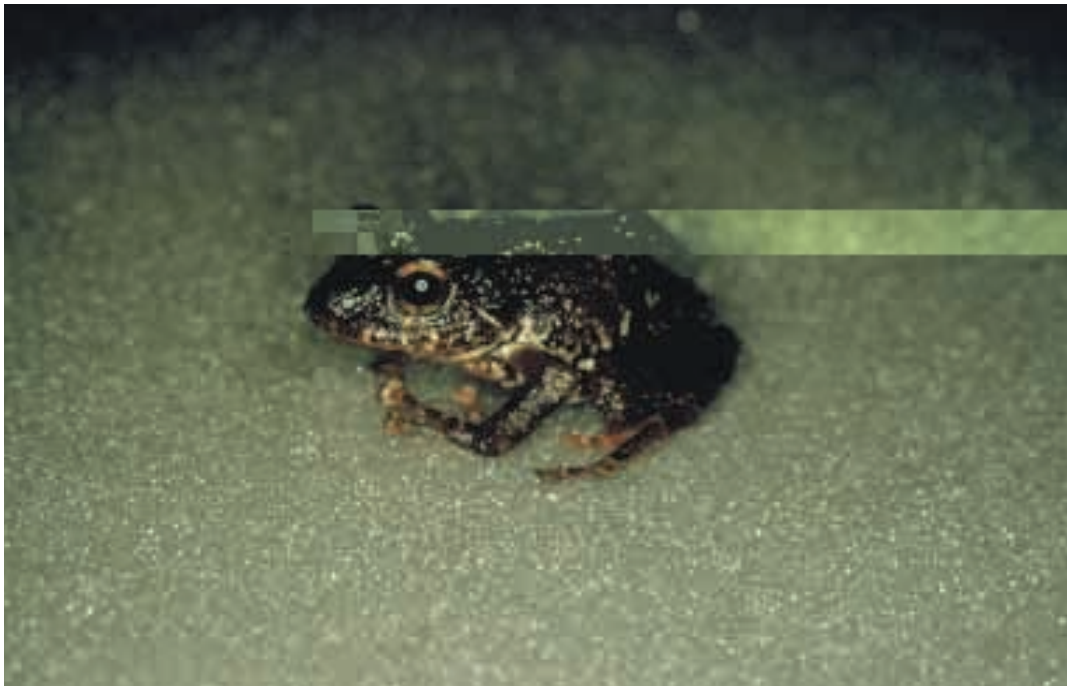
. Sehuencas, Cochabamba (JK)

. Carahuasi, Cochabamba (SR)

m . Río Ronquito, Cochabamba (JK)

m . El Fuerte de Samaipata, Santa Cruz (JK)

f . Paractito, Cochabamba (JD)



m m . Mera, Ecuador (JL)

. Zongo Valley, La Paz (SR)

m . P. N. Amacayacu, Colombia (IR)

m . Carahuasi, Cochabamba (JK)

m . Pampa Grande, Santa Cruz (SR)

. Santa Cruz de la Sierra, Santa Cruz (JK)

m ff . Serranía Siberia, Cochabamba (IR)

. Unduavi, La Paz (SR)

(paratypes). Choquetanga Chico, La Paz (IR)

. Chapare, Cochabamba (JK)

. Chapare, 1250 m, Cochabamba (JK)

m . Chaco, La Paz (IR)

m . Lago Titicaca, La Paz (KHJ)

m . Serranía Siberia, Santa Cruz (SR)

m (holotype). Campamento Khastor, Potosí (IR)

m *j* . Kkota Pata, La Paz (IR)

m *m* *m* . Comanche, La Paz (IR)

m *m* . Sucre, Chuquisaca (JK)

m (holotype). Chaco, La Paz (IR)

m . Sehuencas, Cochabamba (JD)

e m . Río Seco, Santa Cruz (JK)

e m m . Estación Biológica Beni, Beni (SR)

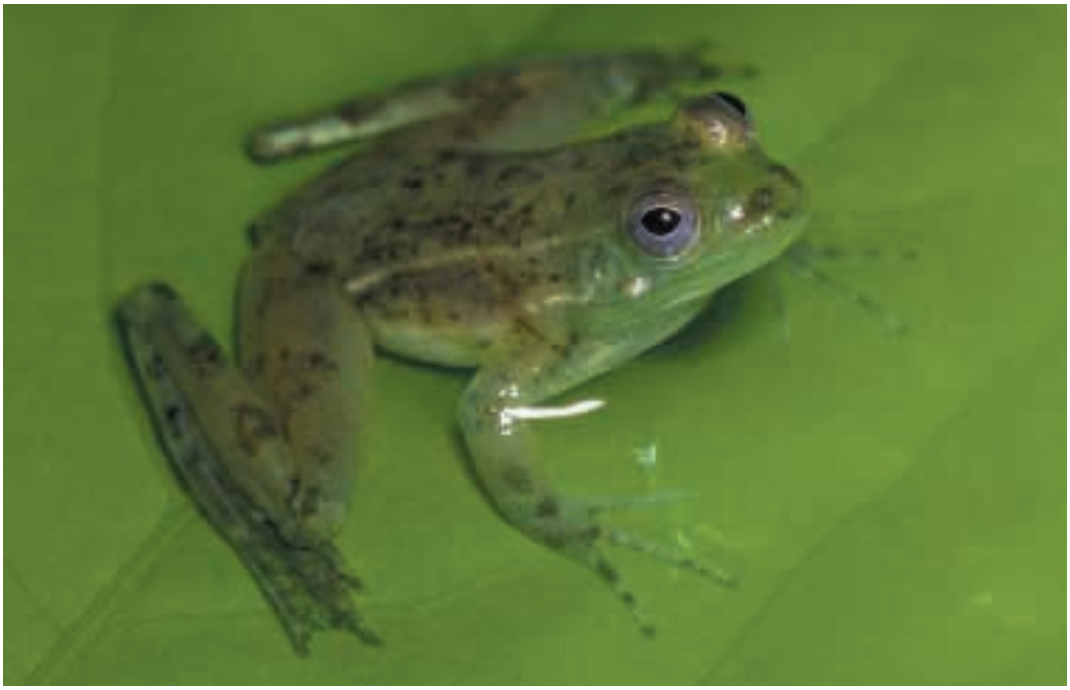
m *m* . Paraguay (JK)

. Estación Biológica Beni, Beni (SR)

. Río Seco, Santa Cruz (JK)

m . Puerto Almacén, Santa Cruz (JD)

. Captive specimen from the pet trade (IR)



m . P. N. Noel Kempff, Santa Cruz (JK)

. Montero, Santa Cruz (JK)

m . Paracti, Cochabamba (JK)

m . Villa Tunari, Cochabamba (SR)

e *m* . Totaizal, Beni (SR)

. Puerto Maldonado, Peru (WED)

. Santa Cruz de la Sierra, Santa Cruz (JK)