Conservation status assessment of the amphibians and reptiles of Uruguay

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ABSTRACT. The native species of amphibians and reptiles of Uruguay were categorized according to the IUCN Red List criteria. Out of 47 amphibian species, seven are listed as Critically Endangered (CR), five as Endangered (EN), one as Vulnerable (VU), three as Near Threatened (NT), and two as Data Deficient (DD); the remaining species are considered to be Least Concern (LC). Among the 64 species of reptiles evaluated, one is listed as Critically Endangered (CR), seven as Endangered (EN), two as Vulnerable (VU), one as Near Threatened (NT) and seven as Data Deficient (DD); the rest are considered to be Least Concern (LC). The use of these results as an additional criterion in the definition of protected areas in Uruguay will contribute towards the conservation of the aforementioned threatened species and their associated ecosystems.

KEYWORDS. Thretened species, Red List, herpetofauna, IUCN.

RESUMEN. Evaluación del estado de conservación de los anfibios y reptiles del Uruguay. Las especies nativas de anfibios y reptiles de Uruguay fueron categorizadas de acuerdo a los criterios de la Lista Roja de UICN. De las 47 especies de anfibios, siete se encuentran En Peligro Crítico (CR), cinco En Peligro (EN), una Vulnerable (VU), tres Casi Amenazadas (NT), y dos con Datos Deficientes (DD); las especies restantes son consideradas como Preocupación Menor (LC). Entre las 64 especies de reptiles evaluados, una se encuentra en Peligro Crítico (CR), siete En Peligro (EN), dos como Vulnerables (VU), una Casi Amenazadas (NT) y siete con Datos Deficientes (DD); las especies restantes son consideradas como Preocupación Menor (LC). El uso de estos resultados como un criterio adicional en la definición de áreas protegidas en Uruguay contribuirá hacia la conservación de dichas especies amenazadas y sus ecosistemas asociados.

PALABRAS CLAVE. Especies amenazadas, Lista Roja, herpetofauna, IUCN.

The ultimate goal of conservation biology is to provide scientific concepts and data to design effective management strategies for the conservation of biodiversity. The design of a conservation system/ network must be based on sound knowledge of species' life histories, as well as an understanding of the functioning of ecosystems and the social component that interacts with natural environments (Primak & Rodrigues, 2001). Unfortunately, efforts and decisions regarding conservation are being taken based on a poor knowledge of the biology of species or the functioning of ecosystems, due to the asymmetries between the time required to generate such knowledge against the urgency of particular conservation actions (Soulé & Orians, 2001; McCallum, 2007).

It was in this context that the IUCN (International Union for the Conservation of Nature) "Red List of Threatened Species" arose as a tool to help in the rapid assessment and monitoring of the conservation status of biodiversity using all available information (Hilton-Taylor, 2000). Based on this categorization method, 5,918 amphibians and 664 of the 8,240 known species of reptiles have been assessed on a global scale (IUCN, 2006b). As a result, 31 % of amphibian and 51 % of reptile species fell into one of the threat categories. In recent years (from 1996 until 2006), there has been a sustained increase in the number of species occupying each of the threat categories (IUCN, 2006a).

As in other regions of the world (see Miller *et al*., 2007), evaluate the conservation status of amphibian and reptile species at a national level has been one of the main interests of Uruguayan herpetologists in the last years. That interest motivated the publication of several categorization schemes, such as those proposed by Achaval & Olmos (2007), Maneyro & Langone (2001; amphibians), Morales Fagundes & Carreira (2001; snakes), Carreira (2004; lizards), and Carreira *et al*. (2007, turtles) using the methodology of Reca *et al*. (1994), which has been widely applied in southern South America (Grigera & Ubeda, 2000). The process of elaboration of the Red Lists of Uruguay began with an initiative spearheaded by the Sociedad Zoológica del Uruguay.

With the participation of the IUCN Uruguayan Committee, two biodiversity groups were created to bring together the researchers working locally on each zoological group: Amphibia and Reptilia. Each of these working groups proposed initiatives to complete the categorization of both taxonomic groups at a regional (national) level using the IUCN criteria. Later, a Uruguayan Fauna Red List Workshop, sponsored by the IUCN Regional Office for South America (Quito, Ecuador), took place in November 2000 in Montevideo. A working agenda was set at this meeting, which resulted in the creation of the Red List of Amphibians and Reptiles of Uruguay following the categories and criteria suggested by IUCN (2003, 2006a).

The aim of this work is to report the results of this assessment at national level.

MATERIAL AND METHODS

The categorization of amphibian and reptile species present in Uruguay followed the criteria established by the IUCN (2006a) and using the guidelines for the application of the IUCN Red List Categories and Criteria at regional levels (IUCN, 2003). Global categorizations for amphibians were taken from IUCN (2006b) and for reptiles from IUCN (2006a). Amphibians nomenclature and systematics followed FAIVOVICH *et al.* (2005), FROST *et al.* (2006), and GRANT *et al.* (2006). Common names for amphibians followed ACHAVAL & OLMOS (2007). The nomenclature and systematics of reptiles followed CARREIRA *et al.* (2005) with some modifications: the name for the genus *Echinanthera* Cope, 1894 is replaced by *Taeniophallus* Cope, 1895 (SCHARGEL *et al.*, 2005) and *Liophis miliaris semiaureus* (Cope, 1862) is replaced by *Liophis semiaureus* (GIRAUDO *et al.*, 2006). Common names for reptiles follow ACHAVAL & OLMOS (2007) and TIPTON (2005).

The information used as a basis to assess each species was taken from published sources (ACHAVAL, 2001; CARREIRA *et al.*, 2005; NÚÑEZ *et al.*, 2004) as well as from personal observations of authors. Introduced amphibian and reptile species (*Lithobates catesbeianus* (Shaw, 1802), *Hemidactylus mabouia* (Moreau de Jonnès, 1818) and *Tarentola mauritanica mauritanica* (Linnaeus, 1758)) were not assessed, and the category assigned to these species is Not Applicable (NA) (IUCN, 2003).

For all the species, all the IUCN criteria were analyzed. However, as a consequence of the type of available information for each taxon, the criteria applied in the support of the categories among amphibian species were those related to the geographic distribution (criterion B) quantified as the extent of occurrence (B1) or the area of occupancy (B2). Other important variables such as habitat fragmentation, continuous decline in the extent of presence (observed, inferred or projected), area, habitat extent and/or quality and number of localities or subpopulations, were also taken into account within these two sub-criteria (B1 and B2). In addition to criterion B, the reduction in population size (A) and restricted or very small population (D) criteria were also applicable in the reptile assessment (for more detailed description of the IUCN criteria, see IUCN, 2006a).

In the case of amphibians and the majority of reptile species, excluding sea turtles, we consider that all species have breeding populations and that Uruguayan populations may experience a negligible "rescue effect" from populations outside the country (BROWN & KODRIC-BROWN, 1977; HANSKI & GYLLENBERG, 1993). Thus, based on the conceptual scheme for assigning an IUCN Red List Category at the regional level (IUCN, 2003), and because it is unlikely that individuals from extra-regional populations would be able to survive and reproduce within the region, we suggest that, in these cases, the assigned regional category be left unchanged. Since sea turtles (*Caretta caretta* (Linnaeus, 1758), *Chelonia mydas* (Linnaeus, 1758), *Lepidochelys olivacea* (Eschscholtz, 1829), *Dermochelys coriacea* (Vandelli, 1761)) are considered as visitors, and the conditions outside and within the region are deteriorating (step 2e and 2f in IUCN, 2003), the assigned regional category should be left unchanged (IUCN, 2003).

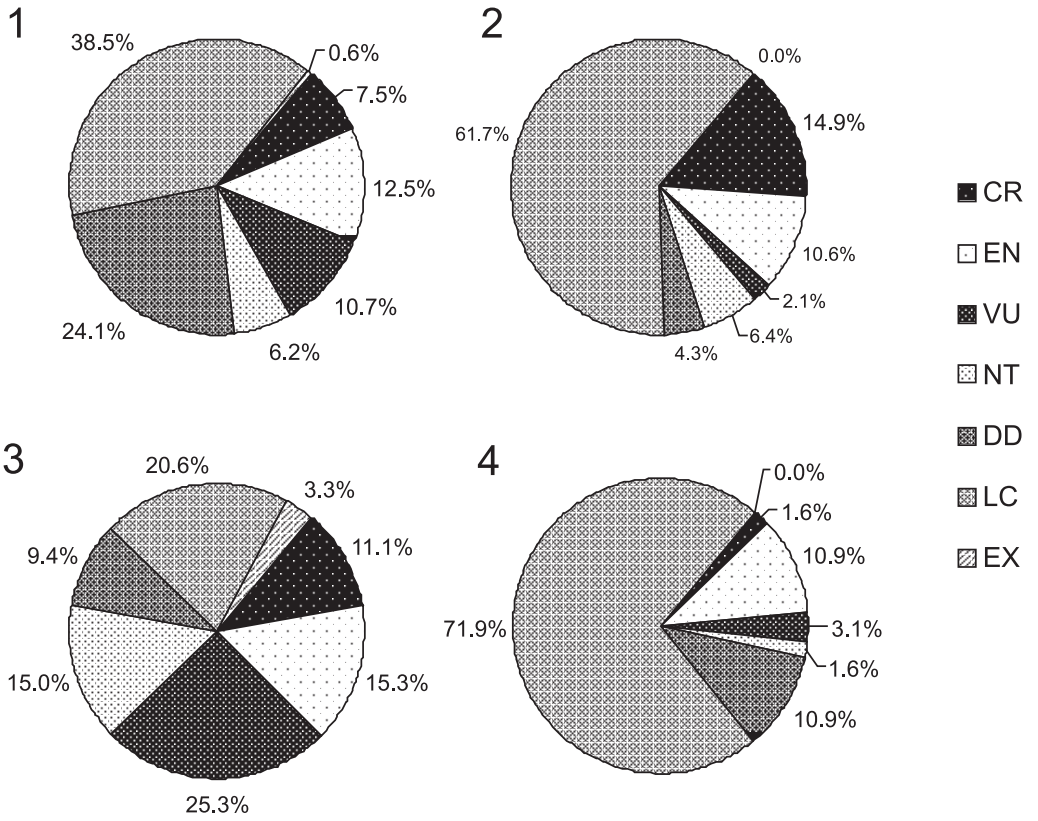
We compared the percentages of each threat category for Uruguayan amphibians and reptiles at both global and regional (national) scales (*sensu* IUCN, 2006a) (Figs. 1-4).

RESULTS AND DISCUSSION

Of the 47 native amphibian and 64 native reptile species evaluated, 23 species were classified in a threat category (CR, EN, VU), four were Near Threatened (NT) and nine were considered as Data Deficient (DD). So, a total of 75 species could be considered as Least Concern (LC), this represents 67.6 % of herpetofauna from Uruguay (Tabs. I, II).

The conservation status of the amphibians of Uruguay appears to be critical due to the relatively high proportion of Critically Endangered species (CR = 14.9 %), which is twice that of the global average (7.4 %) (STUART *et al.*, 2004), and Endangered species (EN =10.6 %). On a different note, the low proportion of Data Deficient taxa (DD = 4.3 % *vs.* 24.1 % globally) reflects a relatively well-developed knowledge of the distribution of the Uruguayan amphibian fauna.

It is important to point out that 12.7 % of the Uruguayan amphibian species were recorded or described during the last six years (*Scinax aromothyella* Faivovich, 2005, *Melanophryniscus pachyrhynus* (Miranda-Ribeiro, 1920), *Rhinella achavali* (Maneyro, Arrieta & Sá , 2004); *Physalaemus cuvieri* (Fitzinger, 1826), *Hypsiboas albopunctatus* (Spix, 1824), *Leptodactylus furnarius* Sazima & Bokermann, 1978) (CANAVERO *et al.*, 2001; KWET *et al.*, 2002; MANEYRO *et al.*, 2004; BORTEIRO *et al.*, 2005; PRIGIONI *et al.*, 2005; MANEYRO & BEHEREGARAY, 2007). The above mentioned species are known from very few localities, but their categorization was very different because of the unequal knowledge about their life history and local populations. For instance, we have good records on the life history of *Hypsiboas albopunctatus*, *Leptodactylus furnarius*, and *Physalaemus cuvieri* (see IUCN, 2006b), all of these species have southernmost distribution limits in the territory of Rivera in northern Uruguay. In Uruguay, they have been found in very well sampled localities, and thus their relative abundances could be estimated. For example, less than twelve



Figures 1-4. The pie charts represent the percentages of amphibians and reptiles on each threat category evaluated at the global and local scale: 1, amphibians at the global scale; 2, amphibians of Uruguay; 3, reptiles at the global scale (until now, only 664 of the 8,420 species described have been evaluated); 4, reptiles of Uruguay (EX, extinct; CR, critically endangered; EN, endangered; VU, vulnerable; NT, near threatened; DD, data deficient; LC, least concern).

specimens of *P. cuvieri* were recorded in a particular locality, although this locality was surveyed intensively during two years (Raúl Maneyro, pers. comm.). On the other hand, the abundance of *L. furnarius* recorded in a given locality in the course of one year was thirty times lower than that of a syntopic species *Leptodactylus gracilis* (Duméril & Bibron, 1841) (N *L. furnarius* = 11; N *L. gracilis* = 375), based on catalog information of the Vertebrate Collection of the Faculty of Sciences (Universidad de la República, Uruguay). These localities are situated in regions with forestry production and close to urban zones (Achkar *et al*., 2004). This fact allows us to categorize *Hypsiboas albopunctatus*, *Leptodactylus furnarius*, and *Physalaemus cuvieri* in the CR category. On the other hand, species such as *Melanophryniscus pachyrhynus* (with one record, Borteiro *et al.*, 2005) and *Scinax aromothyella* (Prigioni *et al.*, 2005; Borteiro *et al.*, 2007; Kolenc *et al.*, 2007), also recently recorded (as mentioned above), were categorized as DD because of the lack of knowledge of their life history traits and the absence of other local data.

In the present study, the regional categories of two nearly endemic species (*Melanophryniscus montevidensis* (Philippi, 1902) and *M. orejasmirandai* Prigioni & Langone, 1986) did not agree with the Global Amphibian Assessment (GAA) by IUCN (2006b) (Tab. I). This is a consequence of the newly acquired, highly detailed information on the distribution and natural history of these species provided by specialists working at the national level (Kolenc *et al*., 2003; Kwet *et al*., 2005; Maneyro & Carreira, 2006), which was not available to the authors of the GAA at the time of the first comprehensive assessment (Kolenc *et al*., 2003; Kwet *et al*., 2005; Maneyro & Carreira, 2006).

Because *Rhinella achavali* was recently described (Maneyro *et al*., 2004), this species needs to be evaluated for the first time at the global level (IUCN, 2006a). Based on scientific collection records, mostly from the original description and the recent report from Rio Grande do Sul, Brazil (Kwet *et al*., 2006), we propose that *R. achavali* be considered under the Least Concern (LC) global category. However, we propose that the species be considered under the Near Threatened (NT) category at the national level, in view of land use regulations for the areas occupied by the species. These areas are considered to have favourable soils for the afforestation industry, which means that habitats in those areas will eventually change in a few years as a consequence of the forest industry.

Compared to amphibians, reptiles have a greater proportion of insufficiently known taxa (DD = 10.9 %) and only one species is categorized as Critically Endangered (CR = 1.6 %). Similarly to amphibians, 10.6 % of the reptiles are in the Endangered category (EN). Compared to the global situation, a much higher proportion of Uruguayan reptiles are assigned to any of the threat categories (total CR, EN, VU, NT = 17.2 % *vs*. 66.7 % globally). It is noteworthy that the Uruguayan analysis for reptiles includes 100 % of the known fauna, whereas only 8 % of the total species were included in the global analysis. Most of the reptile

Table I. Amphibians of Uruguay with global and national threat categorizations for each species. Species are grouped by taxonomic families and the scientific and common names are provided. For a detailed description of the IUCN codes that define criteria, see IUCN (2006a).

Taxon	Common Name	Global Category	National Category
Threatened species (CR, EN, VU)			
ANURA			
BUFONIDAE			
Melanophryniscus devincenzii Klappenbach, 1968	Rivera Red Belly Toad	EN	EN B2ab(iii)
M. montevidensis (Philippi, 1902)	Montevideo Red Belly Toad	VU	EN B1b(i,iii,iv)
M. orejasmirandai Prigioni & Langone, 1986	Orejas Miranda Red Belly Toad	VU	CR B1ab(iii)
CERATOPHRYIDAE			
Ceratophrys ornata (Bell, 1843)	Ornate Horned Frog/ Bell's Horned Frog	NT	CR B1ab(i,ii,iii,iv) + 2ab(i,ii,iii,iv)
HYLIDAE			
Argenteohyla siemersi (Mertens, 1937)	Red-Spotted Argentina's Frog	EN	CR B2a(ii)b(i, ii, iii, iv)
Hypsiboas albopunctatus (Spix, 1824)	Spotted Treefrog	LC	CR B2ab(iii)
Lysapsus limellus Cope, 1862	Uruguay Harlequin Frog	LC	EN B1ab(iii)+2 ab(iii)
LEIUPERIDAE			
Physalaemus fernandezae (Müller, 1926)	Whistling Dwarf Frog	LC	EN B1a(ii)b(iii) +2 a(ii)b(iii)
P. cuvieri (Fitzinger, 1826)	Ranita de Cuvier	LC	CR B1a(ii)b(iii)
Pleurodema bibroni Tschudi, 1838	Four-Eyed Frog	NT	VU B1ab(i,ii,iii,iv) + 2ab(i,ii,iii,iv)
LEPTODACTYLIDAE			
Leptodactylus furnarius Sazima & Bokermann, 1978	Campo Grande Frog	LC	CR B1a(ii)b(iii)
L. podicipinus (Cope, 1862)	Pointed Belly Frog	LC	CR B1a(ii)b(iii)c(iii)
GYMNOPHIONA			
CAECILIIDAE			
Chthonerpeton indistinctum (Reinhardt & Lütken, 1862)	Agentine Caecilian	LC	EN B1b(i,iii,iv)
Near Threatened Species (NT)			
ANURA			
BUFONIDAE			
Rhinella achavali (Maneyro, Arrieta & de Sá, 2004)	Achaval's Toad	LC	NT
Melanophryniscus sanmartini Klappenbach, 1968	San Martín Red Belly Toad	NT	NT
LEPTODACTYLIDAE			
Leptodactylus chaquensis Cei, 1950	Cei's White Lipped Frog	LC	NT
Data Deficient Species (DD)			
ANURA			
BUFONIDAE			
Melanophryniscus pachyrhynus (Miranda-Ribeiro, 1920)		DD	DD
HYLIDAE			
Scinax aromothyella Faivovich, 2005		DD	DD
Species Categorized as Least Concern (LC)			
ANURA			
BUFONIDAE			
Rhinella arenarum (Hensel, 1867)	Common Toad	LC	LC
R. dorbignyi (Duméril & Bibron, 1841)	D´Orbigny's Toad	LC	LC
R. fernandezae (Gallardo, 1957)	Bella Vista Toad	LC	LC
R. schneideri (Werner, 1894)	Cururú Toad	LC	LC
Melanophryniscus atroluteus (Miranda - Ribeiro, 1920)	Uruguay Red Belly Toad	LC	LC
CYCLORAMPHIDAE			
Limnomedusa macroglossa (Duméril & Bibron, 1841)	Rapids Frog	LC	LC
Odontophrynus americanus (Duméril & Bibron, 1841)	Common Lesser Escuerzo	LC	LC
HYLIDAE			
Dendropsophus minutus (Peters, 1872)	Lesser Treefrog	LC	LC
D. nanus (Boulenger, 1889)	Dwarf Treefrog	LC	LC
D. sanborni (Schmidt, 1944)	Sanborn's Treefrog	LC	LC
Hypsiboas pulchellus (Duméril & Bibron, 1841)	Montevideo Treefrog	LC	LC
Phyllomedusa iheringii Boulenger, 1885	Southern Walking Leaf Frog	LC	LC
Pseudis minuta Günther, 1858	Lesser Swimming Frog	LC	LC
Scinax berthae (Barrio, 1962)	Dwarf Snouted Treefrog	LC	LC
S. fuscovarius (A. Lutz, 1925)	Snouted Treefrog	LC	LC
S. granulatus (Peters, 1871)	Granular snouted Treefrog	LC	LC
S. nasicus (Cope, 1862)	Lesser Snouted Treefrog	LC	LC
S. squalirostris (A. Lutz, 1925)	Striped Snouted Treefrog	LC	LC
S. uruguayus (Schmidt, 1944)	Schmidt's Uruguay Treefrog	LC	LC
LEIUPERIDAE			
Physalaemus biligonigerus (Cope, 1861)	Weeping Frog	LC	LC
P. gracilis (Boulenger, 1883)	Graceful Dwarf Frog	LC	LC
P. henselii (Peters, 1872)	Hensel's Dwarf Frog	LC	LC
P. riograndensis Milstead, 1960	Río Grande Dwarf Frog	LC	LC
Pseudopaludicola falcipes (Hensel, 1867)	Hensel's Swamp Frog	LC	LC
LEPTODACTYLIDAE			
Leptodactylus gracilis (Duméril & Bibron, 1841)	Dumeril's Striped Frog	LC	LC
L. latinasus Jiménez de la Espada, 1875	Oven Frog	LC	LC
L. mystacinus (Burmeister, 1861)	Moustached Frog	LC	LC
L. ocellatus (Linnaeus, 1758)	Criolla Frog	LC	LC
MICROHYLIDAE			
Elachistocleis bicolor (Guérin Méneville, 1838)	Common Oval Frog	LC	LC

species were first assessed at the global level (IUCN, 2006a), with some exceptions such as: *Anisolepis undulatus* (Wiegmann, 1834), *Caiman latirostris* (Daudin, 1801), *Calamodontophis paucidens* (Amaral, 1935), *Acanthochelys spixii* (Duméril & Bibron, 1835) and the sea turtles.

The differences observed between the national and global analyses as they pertain to Uruguay might be due to two main causes. First, the geographical location of Uruguay is transitional between northern, subtropical and southern, cooler temperate biogeographical realms. Because the geographical distribution (and more specifically, the extent of presence) is a highly weighted variable in IUCN (2006a) categories, those species barely reaching Uruguay at their southernmost distributions (*Hypsiboas albopunctatus*, *Leptodactylus chaquensis* Cei, 1950, *L. furnarius*, *L. podicipinus* (Cope, 1862), *Lysapsus limellus* Cope, 1862, *Physalaemus cuvieri*, *Leptophis ahaetulla marginatus* (Cope, 1862)) can mistakenly be included in a threatened category.

Second, many of the localities occupied by species placed in a threat category are situated in regions with an established forest industry, rice and soybean fields or zones where urban growth and development have recently accelerated (Achkar *et al*., 2004). Examples of threatened amphibian species with distributions restricted to areas with forestry impact are: *Rhinella achavali*, *Hypsiboas albopunctatus*, *Leptodactylus furnarius*, *Melanophryniscus devincenzii* Klappenbach, 1968, *M. orejasmirandai*, *M. pachyrhynus*, *M. sanmartini* Klappenbach, 1968, *Physalaemus cuvieri*, and *Scinax aromothyella*. Species occurring in rice-crops zones are: *Leptodactylus chaquensis*, *L. podicipinus*, *Lysapsus limellus*, and *Chthonerpeton indistinctum* (Reinhardt & Lütken, 1862). In areas of accelerated urban development, we find *Argenteohyla siemersi* (Mertens, 1937), *Ceratophrys ornata* (Bell, 1843), *Melanophryniscus montevidensis*, *Physalaemus fernandezae* (Müller, 1926), and *Pleurodema bibroni* Tschudi, 1838. This situation also holds for reptiles because several species in the threat categories are observed in areas with similar anthropogenic development (i.e. *Calamodontophis paucidens*, *Taeniophallus poecilopogon* (Cope, 1864)). The single rattlesnake species present in Uruguay (*Crotalus durissus terrificus* (Laurenti, 1768)) constitutes an example of a species that, like those mentioned above, shows no apparent conservation threats at a global level, while at the national scale its distribution has been notoriously reduced, presently restricted to a few localities in the north of the country (Carreira *et al*., 2005). Habitat destruction and fragmentation are repeatedly invoked factors in species categorization, whereas information regarding population sizes and dynamics is very scarce, except for the sea turtles and *Caiman latirostris* (Borteiro *et al*., 2006). Sea turtles comprise a particular case because they do not reproduce in Uruguayan beaches, although the Uruguayan maritime space is an important feeding area for the sea turtle populations of the southern Atlantic (López-Mendilaharsu *et al*., 2006).

Another threat for biodiversity that has been detected in the last years in Uruguay, but that perhaps could have an impact comparable to habitat loss and environmental contamination, is the introduction of alien species and diseases (Alford & Richards, 1999). Mazzoni *et al*. (2003) reported the presence of an infectious disease parasite, the fungus *Batrachochytrium dendrobatidis*, in a North American bullfrog farm near Montevideo. Later, Laufer *et al*. (2008) reported the presence of the North American bullfrog (*Lithobates catesbeianus*) in the wild; such an occurrence has been found to have negative effects on native amphibian species via competition and predation (Adams, 2000; Blaustein & Kiesecker, 2002; Boone *et al*., 2004). Both invasions pose a risk to the native amphibian species because *L. catesbeianus* can act as a vector and a reservoir (Hanselmann *et al*., 2004) for pathogenic micro-organisms, especially *Batrachochytrium dendrobatidis*, which is responsible for chytridiomycosis, an emerging infectious disease associated to global amphibian declines (Pechmann & Wilbur, 1994; Longcore *et al*., 1999; Lips *et al*., 2001; Young *et al*., 2001; Collins & Storfer, 2003; Daszak *et al*., 2003; Semlitsch, 2003; Stuart *et al*., 2004). The occurrence of both the invading species and the parasite in the Uruguayan national territory is almost unknown, but given the serious risk that both species represent (the fungus and the bullfrog), we call for an immediate response from the scientific community and the local authorities.

It is important to consider that several species of reptiles and amphibians have been recently recorded for Uruguay, and because of that, updated information on the distribution and natural history of these species is scarce and fragmented. The species recently added to the Uruguayan fauna are *Rhinella achavali* (Maneyro *et al*., 2004), *Melanophryniscus pachyrhynus* (Borteiro *et al*., 2005), *Physalaemus cuvieri* (Maneyro & Beheregaray, 2007), *Scinax aromothyella* (Prigioni *et al*., 2005), *Atractus reticulatus* (Boulenger, 1885) (Carreira *et al*., 2004) and *Waglerophis merremi* (Wagler, 1824) (Carreira *et al*., 2005). We believe it is important to set as priority goals for the near future the gathering of information for evaluating the species that are currently in the Data Deficient category (DD) as well as encouraging those actions that will promote the protection of the species included in threat categories. In particular, IUCN Red List categories are useful to define priority areas for conservation, and for that reason, the existence of Data Deficient taxa raises questions that are difficult to answer in order to provide timely and informed actions towards biodiversity protection.

Finally, taking in mind the information stated above, we are allowed to recommend that the "*in situ*" conservation strategies seem to be the most appropriate for the Uruguayan herpetofauna. The most relevant factor related to herpetofauna conservation in Uruguay is the habitat destruction and fragmentation (as a consequence of urbanization and agrarial macroindustries – afforestation, soybean and rice crops). So, the results of the present article (and its continuous update) should be taken in account both in the definition of conservation units (e.g. National System of Protected Areas and other initiatives) and in the enrironmental management of the areas destinated to agro-sylvo production.

Table II. Reptiles of Uruguay with global and national threat categorizations for each species. Species are grouped by taxonomic families and the scientific and common names are provided. For a detailed description of the IUCN codes that define criteria, see IUCN (2006a).

Species within Threat Categories (CR, EN, VU)			
Taxon	Common Name	Global Category	National Category
TESTUDINES			
CHELONIIDAE			
Caretta caretta (Linnaeus, 1758)	Loggerhead Turtle	EN	EN A1abd
Chelonia mydas (Linnaeus, 1758)	Green Turtle	EN	EN A1bd
Lepidochelys olivacea (Eschscholtz, 1829)	Olive Ridley Sea Turtle	EN	EN A1bd
DERMOCHELYIDAE			
Dermochelys coriacea (Vandelli, 1761)	Leatherback Turtle	CR	CR A1abd
CHELIDAE			
Phrynops williamsi Rhodin & Mittermeier, 1983	William's Side-Necked Turtle	LC	EN B2 ab(iv)
SAURIA			
LEIOSAURIDAE			
Anisolepis undulatus (Wiegmann, 1834)	Wiegmann's Tree Lizard	VU	VU B1ab(iv)
SERPENTES			
ANOMALEPIDIDAE			
Liotyphlops ternetzii (Boulenger, 1896)	Ternetzi's Slender Blindsnake	LC	EN B2ab(iv)
DIPSADIDAE			
Calamodontophis paucidens (Amaral, 1935)	Xadrez Snake	VU	VU B1+2c, D2
Taeniophallus poecilopogon (Cope, 1863)	Pampa Savanna Racer	LC	EN B2ab(ii)
VIPERIDAE			
Crotalus durissus terrificus (Laurenti, 1768)	South American Rattlesnake	LC	EN B1ab(i)
Near Threatened Species (NT)			
TESTUDINES			
CHELIDAE			
Acanthochelys spixii (Duméril & Bibron, 1835)	Black Spine-Necked Swamp Turtle	NT	NT
Data Deficient Species (DD)			
AMPHISBAENIA			
RHINEUROIDEA			
Leposternon microcephalum Wagler, 1824	Smallhead Worm Lizard	LC	DD
SERPENTES			
BOIDAE			
Eunectes notaeus Cope, 1862	Yellow Anaconda	LC	DD
DIPSADIDAE			
Atractus reticulatus (Boulenger, 1885)	Common Tellurian Snake	LC	DD
Leptophis ahaetulla marginatus (Cope, 1862)	Blue Parrot Snake	LC	DD
Xenodon histricus (Jan, 1863)	Jan's Hog-nosed Snake	DD	DD
Thamnodynastes hypoconia (Cope, 1860)	Argentine Large-eyed Snake	DD	DD
Waglerophis merremi (Wagler, 1824)	Merrem's False Pit Viper	LC	DD
Species Categorized as Least Concern (LC)			
EMYDIDAE			
Trachemys dorbigni (Duméril & Bibron, 1835)	Orbigni's Slider Turtle	LC	LC
CHELIDAE			
Hydromedusa tectifera Cope, 1869	South American Side-Necked Turtle	LC	LC
Phrynops hilarii (Duméril & Bibron, 1835)	Hilarie's Side-Necked Turtle	LC	LC
AMPHISBAENIDAE			
Amphisbaena darwinii darwinii Duméril & Bibron, 1839	Darwin's Ringed Worm Lizard	LC	LC
A. munoai Klappenbach, 1960	Munoa Worm Lizard	LC	LC
Anops kingii Bell , 1833	King's Worm Lizard	LC	LC
PHYLLODACTYLIDAE			
Homonota uruguayensis (Vaz-Ferreira & Sierra de Soriano, 1961)	Uruguay Marked Geko	LC	LC
IGUANIDAE			
Liolaemus wiegmannii (Duméril & Bibron, 1837)	Wiegmann's Tree Iguana	LC	LC
TROPIDURIDAE			
Stenocercus azureus (Müller, 1882)	Spotted Lizard	LC	LC
Tropidurus torquatus (Wied, 1820)	Amazon Lava Lizard	LC	LC
ANGUIDAE			
Ophiodes intermedius Boulenger, 1894	Middle Worm Snake	LC	LC
O. **aff.** *striatus* (Spix, 1825)	Striped Worm Lizard	LC	LC
O. vertebralis Bocourt, 1881	Jointed Worm Lizard	LC	LC
SCINCIDAE			
Mabuya dorsivittata Cope, 1862	Paraguay Mabuya	LC	LC
GYMNOPHTHALMIDAE			
Cercosaura schreibersii Wiegmann, 1834	Schreiber's Many-Fingered Teiid	LC	LC
TEIIDAE			
Cnemidophorus lacertoides Duméril & Bibron, 1839	Bibron's Whiptail	LC	LC
Teius oculatus (D'Orbigny & Bibron, 1837)	Fourtoed Whiptail Lizard	LC	LC
Tupinambis merianae (Duméril & Bibron, 1839)	Black Tegu	LC	LC
LEPTOTYPHLOPIDAE			
Leptotyphlops munoai Orejas-Miranda, 1961	Pantanal Threadsnake	LC	LC

Table II (cont.)

Taxon	Common Name	Global Category	National Category
DIPSADIDAE			
Boiruna maculata (Boulenger, 1896)	Common False Mussurana	LC	LC
Clelia rustica (Cope, 1878)	Smooth Brown Mussurana	LC	LC
Chironius bicarinatus (Wied, 1820)	Two-keeled Whipsnake	LC	LC
Helicops infrataeniatus (Jan, 1865)	Brazilian Watersnake	LC	LC
Liophis almadensis (Wagler, 1824)	Almada Legion Snake	LC	LC
L. anomalus (Günther, 1858)	Red-tailed Legion Snake	LC	LC
L. flavifrenatus (Cope, 1862)	Cope's Legion Snake	LC	LC
L. jaegeri (Günther, 1858)	Jaeger's Swamp Legion Snake	LC	LC
L. poecilogyrus sublineatus (Cope, 1860)	Argentine Legion Snake	LC	LC
L. semiaureus (Cope, 1862)	Pampa Smooth Legion Snake	LC	LC
Xenodon dorbignyi (Duméril, Bibron & Duméril, 1854)	South American Hog-nosed Snake	LC	LC
Oxyrhopus rhombifer rhombifer Duméril, Bibron & Duméril, 1854	Common Calico Snake	LC	LC
Phalotris lemniscatus (Duméril, Bibron & Duméril, 1854)	Dumeril's Burrowing Snake	LC	LC
Philodryas aestiva (Duméril, Bibron & Duméril, 1854)	Brazilian Green Tree Snake	LC	LC
P. olfersii olfersii (Lichtenstein, 1823)	Southeastern Green Racer	LC	LC
P. patagoniensis (Girard, 1857)	Patagonian Savanna Racer	LC	LC
Pseudablabes agassizii (Jan, 1863)	South American Scorpion Snake	LC	LC
Sibynomorphus turgidus (Cope, 1868)	Tigrada Snail-eater	LC	LC
Taeniophallus occipitalis (Jan, 1863)	Spotted Savanna Racer	LC	LC
Thamnodynastes strigatus (Günther, 1858)	American Large-eyed Snake	LC	LC
Tomodon ocellatus Duméril, Bibron & Duméril, 1854	Ocellated Night	LC	LC
Tantilla melanocephala (Linneaus, 1758)	Common Black-headed Snake	LC	LC
Psomophis obtusus (Cope, 1864)	Red-bellied Diminutive Snake	LC	LC
ELAPIDAE			
Micrurus altirostris (Cope, 1860)	Uruguayan Coral Snake	LC	LC
VIPERIDAE			
Bothrops alternatus Duméril, Bibron & Duméril, 1854	Crossed Lancehead Pit Viper	LC	LC
B. pubescens (Cope, 1869)	Uruguayan Painted Lancehead Pit Viper	LC	LC
ALLIGATORIDAE			
Caiman latirostris (Daudin, 1801)	Broad-Snouted Caiman	LC	LC

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