Biological Conservation 157 (2013) 372–385

Contents lists available at SciVerse ScienceDirect

Biological Conservation

journal homepage: www.elsevier.com/locate/biocon

The conservation status of the world's reptiles

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http://dx.doi.org/10.1016/j.biocon.2012.07.015

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ARTICLE INFO

Article history:
Received 17 February 2012
Received in revised form 15 June 2012
Accepted 13 July 2012

Keywords:
IUCN Red List
Extinction risk
Threatened species
Lizards
Snakes
Turtles
Distribution maps

ABSTRACT

Effective and targeted conservation action requires detailed information about species, their distribution, systematics and ecology as well as the distribution of threat processes which affect them. Knowledge of reptilian diversity remains surprisingly disparate, and innovative means of gaining rapid insight into the status of reptiles are needed in order to highlight urgent conservation cases and inform environmental policy with appropriate biodiversity information in a timely manner. We present the first ever global analysis of extinction risk in reptiles, based on a random representative sample of 1500 species (16% of all currently known species). To our knowledge, our results provide the first analysis of the global conservation status and distribution patterns of reptiles and the threats affecting them, highlighting conservation priorities and knowledge gaps which need to be addressed urgently to ensure the continued survival of the world's reptiles. Nearly one in five reptilian species are threatened with extinction, with another one in five species classed as Data Deficient. The proportion of threatened reptile species is highest in freshwater environments, tropical regions and on oceanic islands, while data deficiency was highest in tropical areas, such as Central Africa and Southeast Asia, and among fossorial reptiles. Our results emphasise the need for research attention to be focussed on tropical areas which are experiencing the most dramatic rates of habitat loss, on fossorial reptiles for which there is a chronic lack of data, and on certain taxa such as snakes for which extinction risk may currently be underestimated due to lack of population information. Conservation actions specifically need to mitigate the effects of human-induced habitat loss and harvesting, which are the predominant threats to reptiles.

1. Introduction

Reptiles[1] and their immediate diapsid ancestors have had a long and complex evolutionary history, having first appeared on the planet in the late Palaeozoic Era, more than 250 million years ago (based on molecular phylogeny estimates and early fossil records: e.g., Hedges and Poling, 1999; Reisz et al., 2011; van Tuinen and Hadly, 2004). High rates of cladogenesis in the Triassic and Jurassic periods (Vidal and Hedges, 2009) produced a diverse group of animals adapted to almost every temperate, tropical and desert environment, and to terrestrial, freshwater and marine habitats. Reptiles play important roles in natural systems, as predators, prey, grazers, seed dispersers and commensal species; they serve as bioindicators for environmental health, and their often specific microhabitat associations provide the ideal study system to illustrate the biological and evolutionary processes underlying speciation (Raxworthy et al., 2008; Read, 1998). Reptiles generally have narrower distributional ranges than other vertebrates such as birds and mammals (Anderson, 1984; Anderson and Marcus, 1992), making them more susceptible to threat processes; however, it should be noted that there is some marked variation in range size between different clades of reptiles, so that generalisations and comparisons may not hold true universally [e.g., range sizes of snakes are generally larger than those of lizards (Anderson and Marcus, 1992)]. This combination of often small range and narrow niche requirements makes reptiles susceptible to anthropogenic threat processes, and they are therefore a group of conservation concern. Regional assessments in Europe (Cox and Temple, 2009) and southern Africa (South Africa, Lesotho and Swaziland; Bates et al., in press) indicate that one-fifth and one-tenth of reptilian species respectively are threatened with extinction. It has also been proposed that reptilian declines are similar in taxonomic breadth, geographic scope and severity to those currently observed in amphibians (Gibbons et al., 2000), although this claim was not quantitatively assessed by the authors. Reptilian declines have been attributed to habitat loss and degradation, as well as unsustainable trade, invasive species, pollution, disease and climate change (Cox and Temple, 2009; Gibbons et al., 2000; Todd et al., 2010).

A total of 9,084 species of reptiles have been described so far (Uetz, 2010), and new molecular evidence continues to unearth numerous cryptic species that had not previously been detected by morphological analyses (e.g., Adalsteinsson et al., 2009; Nagy et al., 2012; Oliver et al., 2009). Yet as a group, reptiles are currently poorly-represented on the IUCN Red List of Threatened Species, with only 35% of described species evaluated, and those that are evaluated were done so in a non-systematic manner (IUCN, 2011a). Although the Global Reptile Assessment (GRA) will in the long run address this bias, the current assessment process relies on regional workshops and the formation of IUCN SSC Specialist Groups for specific reptilian taxa, which introduces geographical as well as taxonomic bias into the analysis. Specifically, the Global Reptile Assessment has carried out comprehensive assessments for North America, Madagascar and New Caledonia, with complete endemic-only assessments having been carried out in the Philippines, Europe and selected island groups (Seychelles, Comoros and Socotra). As a result, there are still large geographical gaps which are only slowly being addressed, namely in Africa, Latin America, Asia and Australia. This limits our understanding of how threat processes affect reptiles, so that these taxa are often overlooked in conservation decisions, specifically because the geographical, taxonomic and threatened species bias still inherent in the current IUCN Red List for reptiles makes taking conservation decisions impractical.

We present the results of the first assessment of extinction risk in a randomly selected, representative and global sample of 1500 reptiles, as a shortcut for deriving group patterns on which to base sound global conservation action. We produce the first global species- and threatened species-richness maps for reptiles. The results highlight key regions, taxa and anthropogenic threat processes which need to be urgently targeted to effectively conserve the world's reptiles.

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[1] Here considered to include the various taxa that belong to the non-avian and non-mammalian amniotes: Crocodylia, Testudines and Lepidosauria (snakes, lizards, amphisbaenians, tuataras).

2. Methods

2.1. Sampled approach to Red Listing

Following an approach set out in Baillie et al. (2008), we randomly selected 1500 species from a list of all described reptilian species (Uetz, 2010), using the sample function in R [sample (*x*, size); R Development Core Team, 2007]. A sample of 1500 species is sufficiently large to report on extinction risk and trends, and buffers against falsely detecting improvements in extinction risk (Baillie et al., 2008). Similarly, the representation of spatial patterns derived from a sample of 1500 species was found to be in broad agreement with spatial patterns derived from comprehensive assessments in both mammals and amphibians (Collen, unpublished data). Although the taxonomy of the full species list by Uetz (2010) does not necessarily follow the taxonomy used by all herpetologists, it is the only comprehensive reptile species list available for the purpose of this project. Nevertheless, taxonomic changes based on new research have been incorporated into the sampled species list throughout the project (e.g., the split of Colubridae into numerous families, as suggested by Zaher et al., 2009). It should be noted that the rapid rate at which new species are being described may have some bearing on the representativeness of our sample in the future. Overall, however, we believe that this sampled approach allows for analysis of extinction risk as well as the depiction of broad-scale spatial threat status and processes. A full list of species in the sample, and summaries by habitat system and biogeographical realm, are given in Tables S1 and S2 in the online supplementary material.

Our sample closely reflected the contribution of each group towards total reptilian diversity, with the sample being made up of 58% lizards, 37% snakes, 3% turtles/tortoises, 2% amphisbaenians and <1% crocodiles (tuataras were not represented). Overall, 220 of the 1500 selected species had been previously assessed by IUCN, and these assessments were still up-to-date (i.e., they had been assessed since 2006); for the remaining 1280 species, new or updated assessments were produced through consultation with a global network of herpetologists and following the IUCN Red List Categories and Criteria (IUCN, 2001). Through a centralised editorial and reviewing process we ensured that the IUCN Red List Categories and Criteria were consistently applied between species and regions. A total of 124 species were re-assessed from previous assessments, and genuine changes (category changes showing a real increase or decrease in extinction risk) or non-genuine changes (changes in category which are due to new or better information becoming available, incorrect information used previously, taxonomic change affecting the species, or previously incorrect application of the IUCN Red List Criteria, rather than a true improvement or decline in Red List category) were noted.

Extinction risk was assessed using the IUCN Red List Categories and Criteria (IUCN, 2001). The IUCN Red List Categories classify species' extinction risk from Extinct (EX) and Extinct in the Wild (EW), via the threatened categories Critically Endangered (CR), Endangered (EN) and Vulnerable (VU) to Near Threatened (NT) and Least Concern (LC). A species is listed as Data Deficient (DD) if insufficient data are available to make a conservation assessment. The Red List categories are assigned objectively based on a number of criteria that indicate level of extinction risk, e.g., rate of population decline (Criterion A), population size (Criteria C and D), geographic range size and decline (Criterion B), or quantitative analyses (Criterion E) (IUCN, 2001; Mace et al., 2008). Given the nature of biological information available for reptiles, and the general lack of population data for this group, most of the threatened species in the sample were listed on the basis of restricted geographic range under criteria B or D2 (see Appendix S3 in the online supplementary material for more information on the assessment process and the use of criteria).

Threats were recorded for each species. These were coded following Salafsky et al. (2008) and broadly defined as: threats due to agriculture/aquaculture; biological resource use (e.g., hunting and harvesting of species; logging activities); urban development (residential and commercial); pollution; invasive or problematic species; energy production and mining (oil drilling and mining); natural system modifications (e.g., fire regimes, damming and channelling of waterways); climate change and severe weather; human intrusion and disturbance; transportation and service corridors (e.g., roads and shipping lanes); and geological events.

All of the species assessments have been reviewed and accepted by the IUCN and are now published online (www.iucnredlist.org, IUCN, 2011a), with the exception of some turtle and crocodilian assessments which are still undergoing sign-off.

2.2. Species distributions and maps of threat processes

Distributions were mapped in ArcGIS for 1497 species [three species lacked adequate distributional data: *Anolis baccatus* (DD), *Dipsas maxillaris* (DD), *Typhlops filiformis* (DD)], based on georeferencing of distribution maps published in the literature, conversion of point locations into ranges and expert feedback. Only extant ranges were included in the analysis (i.e., extinct, possibly extinct and uncertain parts of the range were omitted). We produced maps of global species richness, threatened species richness and Data Deficient species richness, by overlaying a hexagonal grid onto the aggregated species' distribution. The grid is defined on an icosahedron, projected to the sphere using the inverse Icosahedral Snyder Equal Area (ISEA) projection, and takes account of the Earth's spherical nature. We then summed the number of species occurring in each hexagonal grid cell (cell size was approximately 7770 km^2) to obtain the species richness pattern of our sample. We also mapped the proportion of species classed as threatened (CR, EN and VU categories), Near Threatened and Data Deficient per grid cell.

We mapped underlying threat processes for all 1497 mapped species as the number of threatened and Near Threatened species within each grid cell affected by the threat process in question. We expressed threat process prevalence using two approaches. Approach A used the number of species affected by a predominant threat and approach B the proportion of species affected by each predominant threat type out of the total number of species (all categories) present in each grid cell. Although coarse in resolution, as threat processes are unlikely to be equally distributed across a species' range, these aggregations provide an impression of those locations where each threat is affecting a particularly large number of species. The two approaches to threat mapping are likely to emphasise different aspects of the pattern, with approach A more likely to be influenced by underlying species richness patterns, and approach B by threat patterns being observed across areas of low reptile numbers in our sample, where the presence of threat in one or a few species is going to result in a larger proportional value compared to species rich areas. It is also likely to be more easily affected by biases in our sample in areas of overall low reptile numbers. In terms of conservation action, approach A is likely to correspond most closely to prioritisation measures which maximise species richness through targeted conservation (similar to hotspot approaches, although in this case driven by underlying threat processes), while approach B gives a better indication of areas where a threat process is affecting a larger proportion of species (though most likely in areas of low species richness).

2.3. Summarising the extinction risk of the world's reptiles

We summarised extinction risk across all reptiles and subgroups (amphisbaenians, crocodiles, lizards, snakes, turtles/tortoises), and by biogeographical realm (see S3.3 in the online supplementary material for information on the geographical extent of biogeographical realms) and habitat system (terrestrial, freshwater, marine). We calculated proportions of threatened (Critically Endangered, Endangered and Vulnerable) species by assuming that Data Deficient species will fall into these categories in the same proportion as non-Data Deficient species:

$$\text{Prop}_{\text{threat}} = (\text{CR} + \text{EN} + \text{VU})/(N - \text{DD}),$$

where N is the total number of species in the sample, CR, EN and VU are the numbers of species in the Critically Endangered, Endangered and Vulnerable categories respectively, and DD is the number of species in the Data Deficient category. Threat levels have been reported in this way in similar studies (e.g., Clausnitzer et al., 2009; Hoffmann et al., 2010; Schipper et al., 2008), representing the current consensus among conservation biologists about how the proportion of threatened species should be presented, while also accounting for the uncertainty introduced by DD species. The approach is likely to result in a conservative estimate of threat proportions, since Data Deficient reptiles are often rare and restricted in range, thus likely to fall within a threatened category in future based on additional data [although in other taxa, indications are that DD species will often fall into Least Concern categories (e.g., birds; Butchart and Bird, 2010) or remain largely Data Deficient (e.g., mammals; Collen et al., 2011)]. Overall, the re-assessment of DD species into different categories is very taxon-specific and depends greatly on the attitude of the assessor to risk, so that it is difficult to make any generalisations about what the future status of DD species might be. To deal with this uncertainty we calculated upper and lower bounds of threat proportions by assuming that (a) no Data Deficient species were threatened [lower margin: $\text{Prop}_{\text{threat}} = (\text{CR} + \text{EN} + \text{VU})/(N)$], and (b) all Data Deficient species were threatened [upper margin; $\text{Prop}_{\text{threat}} = (\text{CR} + \text{EN} + \text{VU} + \text{DD})/N$].

2.4. Taxonomic differences in extinction risk and the effect of range size

We followed Bielby et al. (2006) to evaluate whether extinction risk is randomly distributed across taxonomic families [based on the taxonomy by Uetz (2010), but including some Australasian geckos in the Diplodactylidae (Han et al., 2004), see Table S1 for details], and tested for significant variation in threat levels across families using a chi-square test. The absence of a random distribution of risk suggests that biological or geographical drivers of risk exist, which can help focus conservation activity (Cardillo and Meijaard, 2011). Where we detected taxonomically non-random extinction risk, further analyses were employed to determine which families deviated from the expected level of threat. Using binomial tests, we calculated the smallest family size necessary to detect a significant deviation from the observed proportion of threatened species and excluded families represented by an insufficient number of species from subsequent analysis. We generated a null frequency distribution of the number of threatened species from 10,000 unconstrained randomizations, by randomly assigning Red List categories to all species, based on the frequency of occurrence of each category in the sample. We then counted the number of threatened species in the focal family and compared this with the null frequency distribution. The null hypothesis (extinction risk is taxonomically random) was rejected if this number fell in the 2.5% at either tail.

Because reptiles are mostly listed as threatened under the range-size dependent criteria B and D2, we explored differences in range size between species groups (specifically between lizards and snakes) in order to assess whether increased threat status in the absence of population data could be potentially linked to taxa-specific patterns of range size. This is particularly of interest since it has previously been observed that snakes have larger range sizes (and hence extent of occurrences) than lizards (Anderson, 1984; Anderson and Marcus, 1992). All tests and randomizations were conducted in R version 2.11.1 (R Development Core Team, 2007).

3. Results

3.1. Global extinction risk of reptiles

We classified more than half of reptilian species (59%) in the assessment as Least Concern, 5% as Near Threatened, 15% as threatened (Vulnerable, Endangered or Critically Endangered) and 21% as Data Deficient. Based on this, we estimated the true percentage of threatened reptiles in the world to be 19% (range: 15–36%), as described in Section 2.3. Using the same approach, another 7% of species are estimated as Near Threatened (range: 5–26%); these species are the most likely candidates to become threatened in the future if measures are not taken to eliminate anthropogenic processes which currently affect populations of these species. None of the species in our sample was classed as Extinct or Extinct in the Wild, although three lizard species in the Critically Endangered category were flagged as possibly extinct (*Anolis roosevelti*, *Ameiva vittata* and *Stenocercus haenschi*) and may be up-listed during future reassessments, once "exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual" (IUCN, 2001).

Of the 223 reptilian species classed as threatened, around half (47%) were assigned to the Vulnerable category; another 41% and 12% were assessed as Endangered and Critically Endangered, respectively. Threat estimates for terrestrial species mirrored that recorded for all reptiles (19% threatened), because the vast majority of reptiles inhabit terrestrial systems ($N = 1473$; Table 1). However, for reptiles associated with marine and freshwater environments, 30% were estimated to be threatened ($N = 94$; Table 1). Note that 68 species were dependent on both terrestrial and non-terrestrial environments.

Of the 124 species reassessed during this project, 72 species did not change from the previously assigned category. Overall, 46 category changes were documented, only three of which were genuine changes showing an increase in extinction risk. All other changes ($N = 43$) were non-genuine changes. Six species had previously been listed on the IUCN Red List as Not Evaluated, but have now been assigned categories.

3.2. Global species richness and distribution of threatened and Data Deficient reptiles

Overall species richness in our sample was highest in tropical regions, specifically in Central America and parts of northern South America (especially Brazil), tropical West Africa, parts of Southeast Africa, Sri Lanka and Southern India and throughout Southeast Asia, from Eastern India to Indonesia and the Philippines (Fig. 1).

The tropics also harboured the highest proportions of threatened and Data Deficient species in the sample. Data deficiency was highest in the Indomalayan realm (33%), followed by the Neotropics (20%) and Afrotropics (18%; Table 1). A high percentage of Data Deficient species will give rise to wide margins of uncertainty on any estimates of the percentage of threatened species (see upper and lower margins in Table 1). Oceania had the highest proportion of threatened species (43%; Table 1), although this was based on very low species richness in our sample ($N = 7$), while

Table 1
Extinction risk in a subsample of 1500 reptiles by order, biogeographic realm and habitat system. The number of species falling into each IUCN Category are listed, from which % threatened has been calculated as described in Section 2.3.

Taxon	DD	LC	NT	VU	EN	CR	N	No. of species		% Threatened		
								Described	% Sampled	Threatened %	Lower	Upper
Reptiles	318	881	78	105	92	26	1500	9413	15.9	18.9	14.9	36.1
Amphisbaenia	14	11	2	0	1	0	28	181	15.5	7.1	3.6	53.6
Crocodylia	0	1	0	2	0	1	4	24	16.7	75	75	75
Sauria	164	506	48	72	63	14	867	5537	15.7	21.2	17.2	36.1
Serpentes	135	352	19	24	20	5	555	3346	16.6	11.7	8.8	33.2
Testudines	5	11	9	7	8	6	46	323	14.2	51.2	45.7	56.5
Realm												
Afrotropical	53	161	15	33	22	5	289			25.4	20.8	39.1
Australasian	32	149	9	10	14	5	219			15.5	13.2	27.9
Indomalayan	105	167	13	15	10	5	315			14.3	9.5	42.9
Nearctic	2	72	7	7	3	3	94			14.1	13.8	16.0
Neotropical	107	309	27	38	35	11	527			20.0	15.9	36.2
Oceanian	0	4	0	0	2	1	7			42.9	42.9	42.9
Palaearctic	25	105	8	6	8	2	154			12.4	10.4	26.6
Habitat system												
Terrestrial	313	861	78	105	91	25	1473			19.1	15.0	36.3
Freshwater and marine	16	44	11	9	8	6	94			29.5	24.5	41.5
Subsurface	50	46	5	1	5	0	107			10.5	5.6	57.0

DD – Data Deficient; LC – Least Concern; NT – Near Threatened; VU – Vulnerable; EN – Endangered; CR – Critically Endangered. Percentage threatened: assumes DD species are threatened in the same proportion as non-DD species; Lower margin: no DD species threatened; Upper margin: all DD species threatened. Number of described species is based on Uetz (2010). Rhynchocephalia (Tuatara) was not represented in our random sample. Subsurface includes completely or primarily fossorial families: Amphisbaenidae, Anomalepidae, Dibamidae, Leptotyphlopidae, Trogonophidae, Typhlopidae, Uropeltidae, Xenopeltidae.

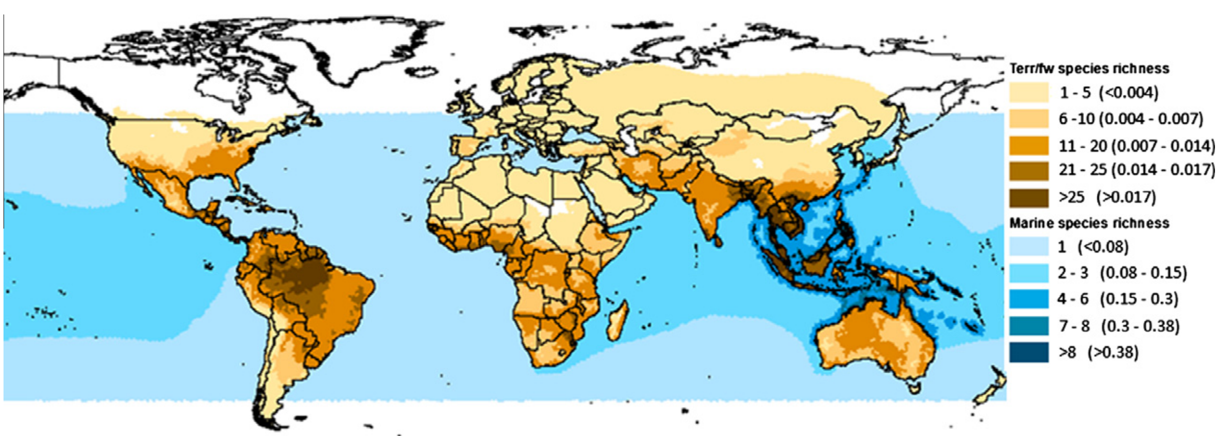

Fig. 1. Global species richness distribution of the sampled reptile assessment ($N_{terr/fw}$ = 1485; N_{marine} = 22), showing number of species and proportion of species in sample per grid cell. Terr/fw – terrestrial and freshwater species.

25% and 20% of species were estimated as threatened in the Afrotropical and Neotropical realms, respectively (Table 1). The lowest level of extinction risk was recorded in the Palaearctic, where 12% of species were estimated as threatened (Table 1).

Localised centres of threatened species richness were particularly apparent in the Caribbean (Hispaniola), Florida and the Florida panhandle, the Ecuadorian Andes, Madagascar, the northeastern Indian subcontinent, Central Asia, Eastern China and oceanic islands such as New Caledonia (Fig. 2A). Prevalence of Near Threatened species was particularly pronounced across Europe, central North America, Central and West Africa, Central China and the South Island of New Zealand (Fig. 2B). Data deficiency was particularly pronounced in tropical regions, specifically in parts of the Indomalayan realm (e.g., throughout India, Borneo and the Philippines) and Central Africa (Fig. 2C).

Some apparently low-diversity areas (for species richness, as well as threatened species richness) are likely explained by the lack of research in particularly inaccessible areas (e.g., the Congo basin; Fig. 2C) and isolated island groups. It is likely that both relative species richness and data deficiency is higher in these areas than is currently apparent. Furthermore, in some localised areas, the fact that all our analysis was based on a random sample may have led to a slight underestimate of species richness, threatened species richness or Data Deficient species richness. Additional maps of species richness are available in the online supplementary material (S4).

3.3. Global distribution of threat processes

Over 80% of all threatened species in our sample were affected by more than one threat process. Agriculture and biological resource use (predominantly logging and harvesting) present the most common threats to terrestrial reptiles (74% and 64% of threatened species affected, respectively). Urban development (34%), natural system modification (by use of fire, damming, etc., 25%) and invasive or problematic native species (22%) also played a role in threat to terrestrial species.

Biological resource use was also the most significant threat to freshwater and marine reptiles (87% of threatened species), with

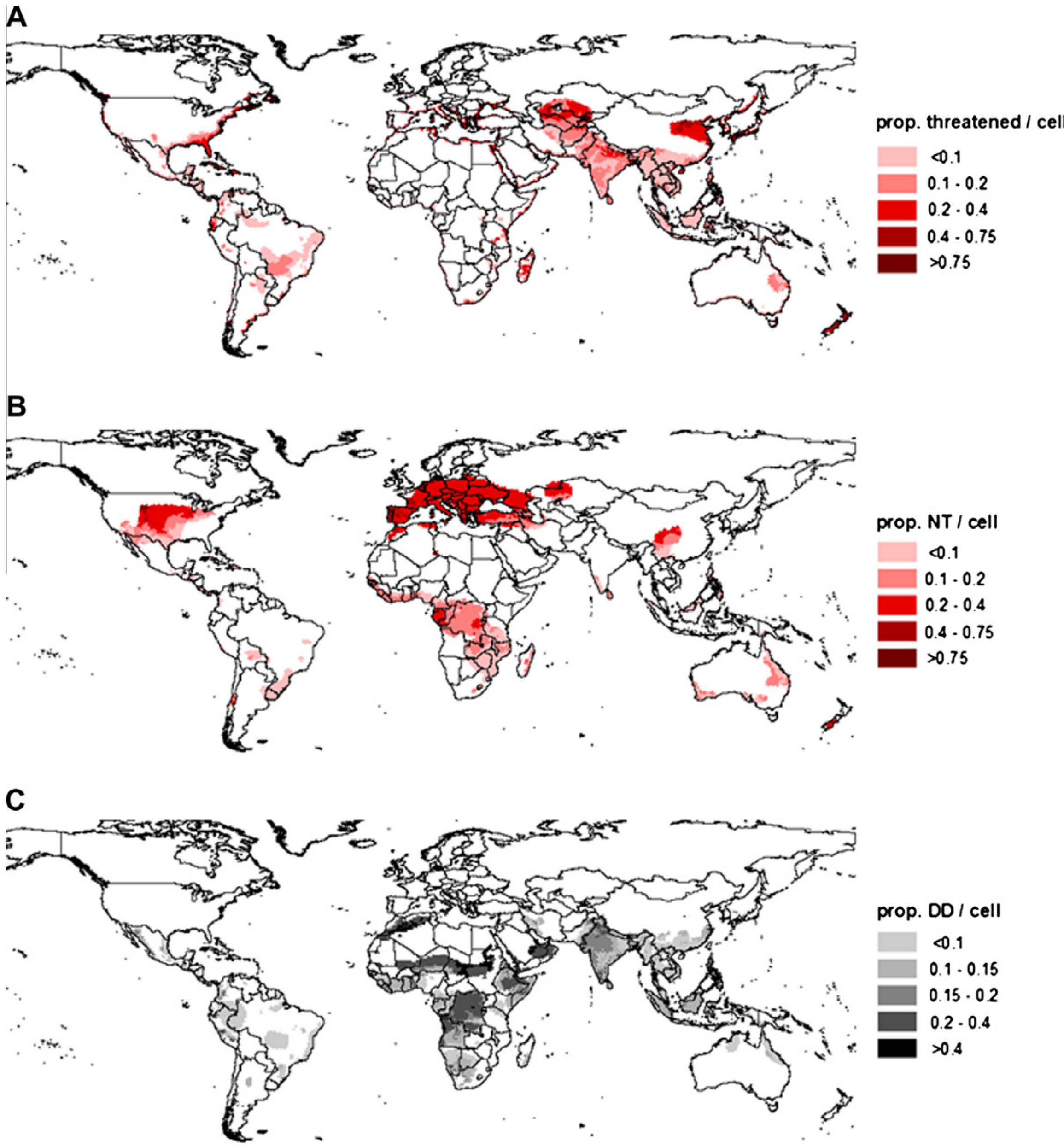

Fig. 2. Distribution of threatened (CR, EN, VU), Near Threatened (NT) and Data Deficient (DD) species in the sample (terrestrial and freshwater only), expressed as the proportion of all species present per grid cell: (A) proportion of species classed as threatened, adjusted to account for DD species as described in Section 2.3; (B) proportion of species classed as Near Threatened, adjusted to account for DD species as described in Section 2.3; and (C) proportion of species classed as Data Deficient per grid cell.

most of this threat stemming from targeted harvesting of species. This reflects the large percentage of turtles in the threatened freshwater and marine sample and their role in human trade activities. Agriculture and aquaculture, urban development and pollution (all affecting 43% of threatened species) were also significant threats to non-terrestrial reptiles.

Species richness of terrestrial and freshwater species affected by habitat loss was particularly high in tropical regions, especially in the Indomalayan realm (mainland southeast Asia, Sri Lanka, Indonesia, the Philippines and Borneo), but also in Central America (specifically Panama and Costa Rica) and northern South America (especially Brazil) (Fig. 3A). Harvesting was highlighted as a major threat in the Indomalayan realm, specifically in southeastern Asia, Java and eastern parts of the Indian sub-continent (Fig. 3B). Both of these patterns were largely reflecting underlying species distribution and richness patterns shown in Fig. 1. Controlling for species richness per grid cell, habitat loss remained an important factor in parts of Sri Lanka and north-western South America, and additionally in Madagascar, with high risk also in some areas of lower reptilian species richness, namely across central USA, the Caribbean, southwestern Europe (particularly Spain), localised areas of North and East Africa, China, northeastern Australia and the South Island of New Zealand (Fig. 3C). Similarly, the picture of risk through harvesting changed to similar areas of lower richness by controlling for species richness per grid cell, with large parts of Europe and Central Asia particularly highlighted (Fig. 3D). In addition to habitat loss and harvesting, invasive species appear to increase extinction risk on islands, but relatively low frequencies of this threat in our sample mask any pattern at the global scale. However, invasive species pose the main threat in New Caledonia, Oceania, New Zealand, southern Australia and on Caribbean islands.

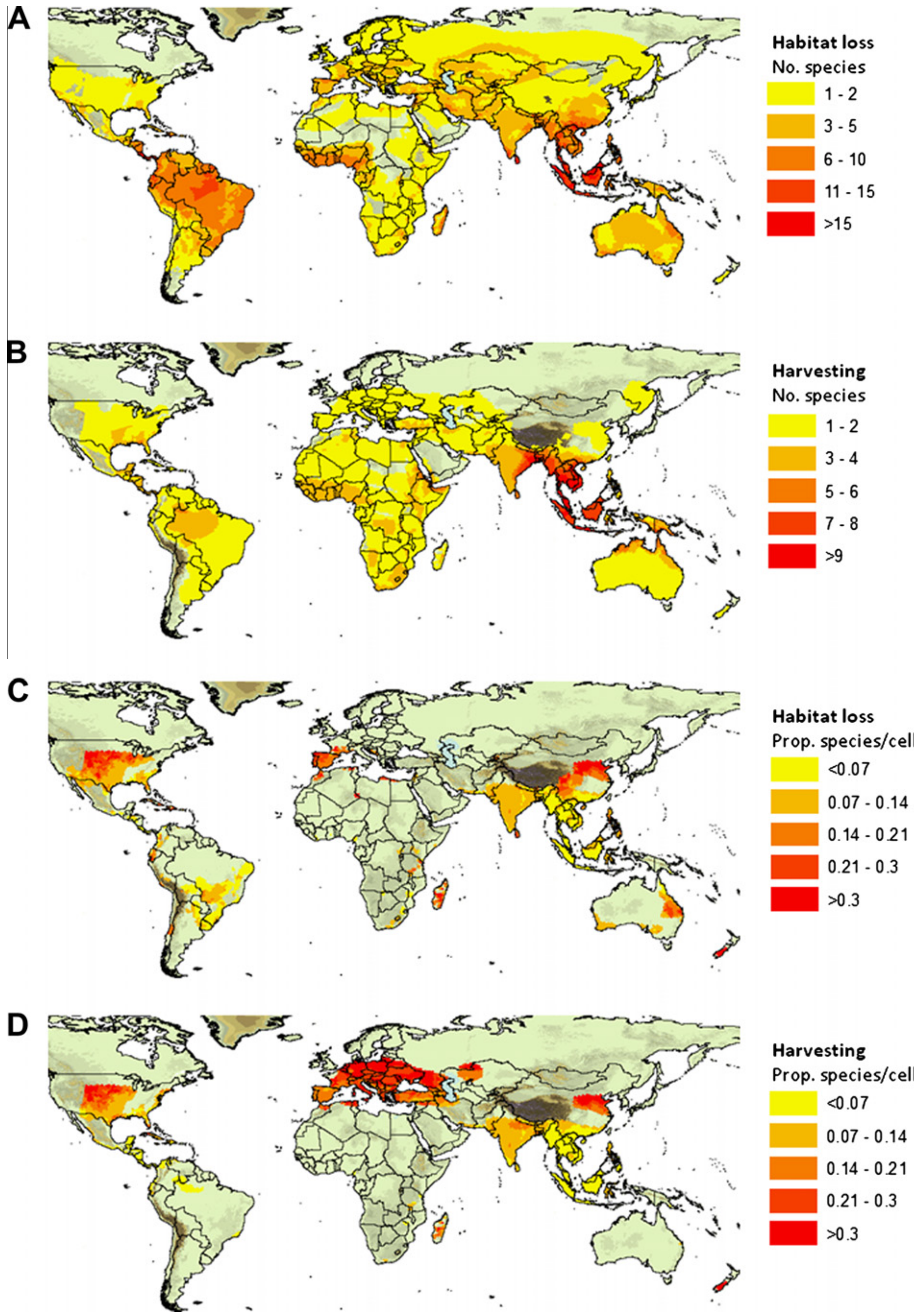

Fig. 3. Global distribution of species affected by the two major threats to terrestrial and freshwater reptiles: (A) number of species affected by habitat loss from agriculture and logging and (B) number of species affected by harvesting. Controlling for species richness per grid cell, we expressed the number of species in elevated threat categories (CR, EN, VU, NT) affected by the threat in question as the proportion of the total species richness (all categories) per grid cell for (C) habitat loss from agriculture and logging and (D) harvesting.

3.4. Taxonomic differences in extinction risk

The percentage of threatened species varied greatly among higher-level taxa, driven by the relatively higher levels of threat to species associated with freshwater and marine habitats compared with terrestrial ones (Table 1), as well as taxa-specific patterns of range size. Three of the four crocodilian species and 52% of freshwater turtles were estimated to be threatened ($N = 37$, margins: 46–57%). As a whole, Testudines ($N = 46$; comprising 37 freshwater species, one marine species and eight terrestrial species) were equally spread among Red List categories, with 51% of species estimated as threatened and another 22% assessed as Near Threatened (Table 1). In contrast, only 21% of lizards, 12% of snakes and 7% of worm lizards were threatened. The lower percentages of threatened species in these groups were paralleled by a lower percentage of species in the Near Threatened category for all three groups (lizards: 7%; snakes: 5%; worm lizards: 14%), compared with Testudines. Proportions of threatened worm lizards were affected by high levels of data deficiency in this group (50% versus 11% in the Testudines, 19% in lizards and 24% in snakes; Table 1). Similarly, our sample contained large numbers of Data Deficient species in snake families that are exclusively, or largely, fossorial or semi-fossorial, such as Typhlopidae [24 out of 49 species (49%) were Data Deficient], Leptotyphlopidae [4 out of 10 (40%)] and Uropeltidae [5 out of 13 (38%)]. Overall, of the exclusively or primarily fossorial families, 47% of species were classed as Data

Deficient. As a result, the estimated percentage of threatened fossorial species is relatively low at 11%, but this is associated with a wide margin of uncertainty (range: 6–57%).

Criterion B was applied to 72% of species assessed as threatened, with another 12% of species being listed under criterion D2. As such, the majority of threatened listings were based on criteria of restricted range rather than population data (only 12% of species, mainly turtles and crocodiles, were listed under criterion A). As a result, range size differences between taxa may at least in part explain differences in perceived extinction risk. Range sizes were significantly larger for snakes compared to lizards (for terrestrial species only: Kruskal–Wallis $\chi^2 = 44.8$, d.f. = 1, $p < 0.001$). Median range size was 24,510 km^2 for lizards and 110,175 km^2 for snakes (additional information is available in Section S5 of the online supplementary material).

To establish whether a particular taxonomic family was at greater risk of extinction than expected by chance ($p < 0.025$) required a minimum of three non-Data Deficient species in our sample from that family, given a background proportion of 223 threatened species from 1182 species assessed in non-Data Deficient categories. As a result, 18 families were excluded from the analysis (Table 2). Each family required a minimum number of 18 species in our sample to establish whether a family was less threatened than expected by chance ($p < 0.025$). Threat was not evenly distributed across families ($\chi^2 = 141.73$, d.f. = 44, $p < 0.001$), with 34 of the 45 families more threatened than expected by chance and only one (Colubridae) less threatened than expected by chance (Table 2). Of the nine families which showed non-significant differences between observed and expected proportions of threatened species, six were snakes, two were lizards and one was turtles (Table 2).

Overall, the most threatened families were the Geoemydidae (turtles, 88% threatened, $N = 8$), Crocodylidae (crocodiles, 75%, $N = 4$), Pygopodidae (lizards, 75%, $N = 4$), Xantusiidae (lizards, 75%, $N = 4$), Chelidae (turtles, 50%, $N = 11$) and Iguanidae (lizards, 50%, $N = 4$) (Table 2).

4. Discussion

4.1. Extinction risk of the world's reptiles

This analysis starts to close the knowledge gap between the extinction risk of reptiles and other better-studied vertebrate groups. By establishing a shortcut using a representative sample of 1500 species, we gain for the first time an overview of the global distribution of reptilian diversity and threat, consequently highlighting important areas for conservation attention and gaps in knowledge. Our results support recent reports of high levels of threat in freshwater habitats (e.g., freshwater crabs; Cumberlidge et al., 2009). In particular, freshwater turtles were highly threatened (46–57%), thus mirroring the alarming trends reported elsewhere (Buhlmann et al., 2009).

Some authors have argued that reptiles are undergoing similar declines to those experienced by amphibians, in terms of taxonomic breadth, geographic scope and severity (Gibbons et al., 2000). On a global scale, our assessment shows that threat levels are more severe in amphibians (42% of amphibians are threatened, assuming Data Deficient species are threatened in the same proportion as non-Data Deficient species) relative to reptiles (20%). Overall, threat levels in reptiles are slightly lower than those observed in other taxa such as mammals and freshwater fish (both 25% threatened; Collen, B., unpublished data; Hoffmann et al., 2010), but higher than in birds (13%; IUCN, 2011a). Estimates of 5% for Near Threatened species were similar to those observed in other vertebrate species groups, such as mammals, amphibians (6% each) and freshwater fishes (4%).

Recently reported local declines in snake and lizard populations (Cagle, 2008; Reading et al., 2010; Sinervo et al., 2010) suggest localised elevated extinction risks for both taxa. While we estimate that about one in five lizard species is threatened with extinction, only 12% of snakes were estimated to be threatened with extinction. One barrier to listing, which could be partly responsible for the discrepancy between our analysis and those of snake population trends, is that in the majority of cases there are sufficient data on species distributions only, rather than population trends, at a global scale. Therefore the majority of reptilian species were listed under criteria B and D2 (restricted range). The differences in extinction risk between snakes and lizards may therefore be partly explained by the fact that snakes in our sample (and in previous studies, e.g., Anderson and Marcus, 1992) had larger ranges than lizards. Local population declines such as those reported by Sinervo et al. (2010) are evaluated with finer scale population data than those used to evaluate extinction risk, so could serve as a warning sign of what is to come. In order to understand more fully what is happening to the world's snakes, it is vital that we obtain better global population data for this species group. Based on range size estimation alone, we may be missing ongoing declines which are occurring at sub-threshold levels and thus underestimating extinction risk to this particular species group. Furthermore, snakes are morphologically more conservative and harder to sample (fewer specimens are generally available compared to lizards) which, compared to lizards, makes it harder to detect cryptic species. Thus, larger ranges for some snake species may be masking the range of one or more cryptic species.

4.2. Data deficiency: addressing the knowledge gap

High proportions of data deficiency can significantly hinder our understanding of threat, yet such uncertainty is apparent in many species groups that have been assessed to date. Levels of data deficiency in reptiles (21%) were lower than those reported for amphibians (25%; IUCN, 2011a), dragonflies and damselflies (35%; Clausnitzer et al., 2009) and freshwater crabs (49%; Cumberlidge et al., 2009), but still exceeded those of the more charismatic or conspicuous birds and mammals (less than 1% and 15% respectively; BirdLife International, 2008b; Schipper et al., 2008). Patterns of regional or taxonomical data deficiency could be used to prompt research programmes on specific local faunas or taxonomical groups. For example, data deficiency in reptiles was highest in tropical regions and in exclusively fossorial or semi-fossorial reptiles such as the Amphisbaenia. Similar patterns have been observed in amphibians, where approximately two-thirds of caecilians were classified as Data Deficient (Gower et al., 2005), despite estimates that fossorial species potentially comprise around 20% of the world's herpetofauna (Measey, 2006). It is clear that research attention should focus specifically on fossorial and other elusive taxa (e.g., arboreal species) in order to reduce rates of data deficiency during the course of future re-assessments of the sample.

4.3. Conservation prioritisation: lessons from the world's reptiles

Conservation priorities often focus on regions of high biodiversity value and/or high threat to effectively target conservation funds (Brooks et al., 2006). The assessment of biodiversity value often relies on the distribution patterns of certain indicator taxa (e.g., birds), and the effectiveness of the resulting prioritisation mechanism greatly depends on the degree to which such distribution patterns are congruent with those of other taxa. However, cross-taxon congruence varies with given metrics of biodiversity

Table 2
Threat distribution across families included in our random sample of 1500 species: ns, not significant; – significantly under threatened; + significantly over threatened.

Family	Proportion observed	Proportion expected	Total species (non-DD)	>Expected threat level *p*-value	<Expected threat level *p*-value	Under or over threatened
Agamidae	0.05	0.05	61	0.635	0.365	ns
Amphisbaenidae	0.07	0.01	14	<0.001	1	+
Anguidae	0.29	0.01	17	<0.001	1	+
Atractaspidae	0.00	0.00	6	0.714	0.286	ns
Boidae	0.15	0.01	13	<0.001	1	+
Calamariidae	0.18	0.01	11	<0.001	1	+
Carphodactylidae	0.17	0.00	6	<0.001	1	+
Chamaeleonidae	0.43	0.03	35	<0.001	1	+
Chelidae	0.50	0.01	10	<0.001	1	+
Colubridae	0.04	0.07	78	0.98	0.02	–
Cordylidae	0.44	0.01	9	<0.001	1	+
Crocodylidae	0.75	0.00	4	<0.001	1	+
Crotaphytidae	0.33	0.00	3	<0.001	1	+
Diplodactylidae	0.23	0.01	13	<0.001	1	+
Dipsadidae	0.10	0.08	98	0.147	0.853	ns
Elapidae	0.15	0.05	55	<0.001	1	+
Emydidae	0.33	0.00	6	<0.001	1	+
Gekkonidae	0.12	0.08	91	0.01	0.999	+
Geoemydidae	0.88	0.01	8	<0.001	1	+
Gerrhosauridae	0.17	0.00	6	<0.001	1	+
Gymnophthalmidae	0.39	0.03	31	<0.001	1	+
Homalopsidae	0.17	0.00	6	<0.001	1	+
Iguanidae	0.50	0.00	4	<0.001	1	+
Lacertidae	0.16	0.03	37	<0.001	1	+
Lamprophiidae	0.27	0.03	30	<0.001	1	+
Leptotyphlopidae	0.00	0.00	6	0.72	0.28	ns
Natricidae	0.04	0.02	26	0.049	0.951	+
Pelomedusidae	0.00	0.00	4	0.566	0.434	ns
Phrynosomatidae	0.17	0.03	30	<0.001	1	+
Phyllodactylidae	0.08	0.01	13	<0.001	1	+
Polychrotidae	0.31	0.05	61	<0.001	1	+
Psammophiidae	0.00	0.00	4	0.596	0.404	ns
Pseudoxenodontidae	0.00	0.00	3	0.468	0.532	ns
Pygopodidae	0.75	0.00	4	<0.001	1	+
Scincidae	0.22	0.14	167	<0.001	1	+
Sphaerodactylidae	0.22	0.03	32	<0.001	1	+
Teiidae	0.22	0.01	18	<0.001	1	+
Testudinidae	0.43	0.00	7	<0.001	1	+
Trionychidae	0.33	0.00	3	<0.001	1	+
Tropiduridae	0.13	0.04	45	<0.001	1	+
Typhlopidae	0.20	0.02	25	<0.001	1	+
Uropeltidae	0.00	0.00	8	0.832	0.168	ns
Varanidae	0.00	0.01	10	0.875	0.125	ns
Viperidae	0.19	0.04	42	<0.001	1	+
Xantusiidae	0.75	0.00	4	<0.001	1	+

(Grenyer et al., 2006). While reptilian species richness broadly mirrored species richness patterns observed in mammals, amphibians and birds (BirdLife International, 2008a; Schipper et al., 2008; Stuart et al., 2004), additional areas rich in reptiles (e.g., around the Gulf of Guinea and southern Africa) or threatened reptiles (e.g., islands such as Hispaniola, Sri Lanka, New Caledonia) were highlighted in our assessment and may be overlooked if conservation priorities are set based on patterns in a small number of non-reptilian taxa alone. This has also recently been demonstrated for Australian lizards (Powney et al., 2010). Thus far, both amphibians and reptiles have been greatly overlooked in reserve selection strategies based on coarse-scale biodiversity surrogate measures (Araújo et al., 2001). Our results provide the opportunity for a more representative view of biodiversity to be compiled in order to benefit multiple taxa.

Assessing the global distribution of threat processes, both current and projected, has the potential to provide another powerful tool for conservation prioritization. While for some taxa, the distribution of predominant threats significantly overlaps areas of high species richness (e.g., amphibians, Hof et al., 2011), other studies have shown incongruence between threat distribution and endemic or threatened species richness (e.g., Grenyer et al., 2006; Lee and Jetz, 2008; Orme et al., 2005); however, the latter has traditionally been favoured as a selection tool for conservation priority areas. Similarly, distributions of different threat types may not always spatially overlap (Hof et al., 2011), so that effective mitigation strategies have to be developed in a spatially explicit context in order to reduce extinction risk of species. Reptiles in general are particularly sensitive to habitat degradation because of their comparatively low dispersal ability, morphological specialisation on substrate type, relatively small home ranges and thermoregulatory constraints (Kearney et al., 2009). Clearly, the distribution and severity of threat processes, such as habitat loss from agricultural conversion, logging and over-exploitation, will shape the future fortune of reptiles. Identifying centres of threat, and tackling the origins and effects of anthropogenic threats in these regions through targeted projects (particularly in areas affected by multiple threat processes such as Southeast Asia) will allow more proactive action to be taken to secure the future of reptiles. At the moment the spatial resolution of our species-specific maps of threat processes is still somewhat coarse and allows only the depiction of broad patterns in threat distribution, but future developments and refinements of the method are likely to provide a powerful tool with which to focus threat-specific mitigation projects.

4.4. Reptile conservation: the next steps

This study provides a first step in assessing the global extinction risk of reptiles by employing a short-cut method based on a representative sample of 1500 species. While this assessment feeds into broader scale assessments of biodiversity as a whole, as part of the Sampled Red List Index project (Baillie et al., 2008), it is also important to feed this information into similar regional assessments, since concrete policy decisions are generally being taken at subglobal levels. Specifically, it is important that the data presented here is used to assess how existing and planned protected areas are benefitting the world's reptiles. This will allow us to identify species which at present fall outside protected areas and are most in need of conservation actions, and address the fact that the world's herpetofauna is still often overlooked when conservation decisions are taken. The Global Reptile Assessment (GRA) is currently carrying out assessments via regional workshops, which bring together species experts to discuss extinction risk and conservation priorities. For example, the recent assessment of Madagascan snakes and lizards has helped in evaluating the effectiveness of protected areas for reptiles, with new conservation areas being designated across the island aiming to provide protection to some of the most threatened species (IUCN, 2011b).

While the extensive expert network established during this project is undoubtedly going to feed into global and regional assessment projects, regional data gaps are apparent. It is vital that these are addressed in order to complete our picture of the distribution and extinction risk patterns of reptiles, so that conservation actions can be targeted at regions and areas most in need. Specifically, surveys are needed for key areas (e.g., areas rich in Data Deficient reptiles) and species (e.g., possibly extinct and Data Deficient species; establishing snake population time series to complement distribution data) in order to fill knowledge gaps and to build regional survey capacity via collaborations and targeted capacity building projects.

While we have established a snapshot of the current status of reptiles worldwide, it is now vital to establish trends in this status in order to gauge the rate of change in reptilian extinction risk over time. The next step is to establish a baseline for reptilian extinction risk against which we can compare current status as well as future re-assessments of the sample. This information is vital in order to assess our progress toward global biodiversity targets, such as the Aichi targets and the Millennium Development Goals, and fuel efforts to address the conservation needs of reptiles.

Acknowledgements

MB and MR were funded by a grant from the Esmée Fairbairn Foundation, BC by the Rufford Foundation. North American and Mexican species assessments were funded by the Regina Bauer Frankenberg Foundation for Animal Welfare. Species assessments under the Global Reptile Assessment (GRA) initiative are supported by: Moore Family Foundation, Gordon and Betty Moore Foundation, Conservation International, Critical Ecosystem Partnership Fund (CEPF), and European Commission. Additional acknowledgements are included in the online supplementary material.

The assessment workshop for Mexican reptiles was kindly hosted by Ricardo Ayala and the station personnel of the Estación de Biología Chamela, Instituto de Biología, Universidad Nacional Autonoma de Mexico. Workshop and logistical organisation of the Philippines assessments was provided by the Conservation International Philippines Office, in particular Ruth Grace Rosell-Ambal, Melizar V. Duya and Oliver Coroza. Workshop and logistical organisation for the European Reptile and Amphibian Assessments was provided by Doğa Derneği, in particular Özge Balkiz and Özgür Koç. Workshop and logistical organisation for assessments of sea snakes and homalopsids was provided by the International Sea Turtle Symposium and Dr. Colin Limpus (Australian Government Environmental Protection Agency). Special thanks to Jenny Chapman (EPA) and Chloe Schauble (ISTS). Thank you also to Dr. Gordon Guymer (Chief Botanist – Director of Herbarium) for accommodating us at the Herbarium in the Brisbane Botanical Gardens, and Mark Read and Kirsten Dobbs (Great Barrier Reef Marine Parks Association) and Dave Pollard and Brad Warren (OceanWatch Australia) for institutional support. Mohamed Bin Zayed Species Conservation Fund, Conservation International Madagascar and the Darwin Initiative contributed to funding the costs of the Madagascar reptile workshop.

We would also particularly like to thank all our assessors and the following people who helped with the compilation and finalisation of SRLI Red List assessments and distribution maps: Jennifer Sears, Gary Powney, Paul Lintott, Sarah Lewis, Penny Wilson, Maiko Lutz, Felix Whitton, Ranmali de Silva and Harriet Milligan. For facilitating working groups at GRA and other workshops: Melanie Bilz, Thomas Brooks, Oliver Coroza, Naamal De Silva, Melizar V. Duya, Michael Jensen, Jason Van de Merwe, Kate Hodges, Matthew Foster, Penny Langhammer, Seema Mundoli, Ana Nieto, Lily Paniagua, Ruth Grace Rosell-Ambal, Jan Schipper and Sarah Wyatt.

Shai Meiri, Lital Dabool, Anat Feldman, Yuval Itescu, Amy Kadison, Erez Maze, Maria Novosolov, Lian Pin Koh and other anonymous reviewers commented on and helped to greatly improve an earlier version of this manuscript.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.biocon.2012.07.015.

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Supplementary online material

S1. List of species included in the random representative sample of 1,500 reptiles. Taxonomy largely follows Uetz, 2010 (Reptile Database, http://www.reptile-database.org), but including some recent revisions. **Red List category (RL):** DD – Data Deficient, LC – Least Concern, NT – Near Threatened, VU – Vulnerable, EN – Endangered, CR – Critically Endangered, CR* - Critically Endangered, Possibly Extinct, † denotes species which are likely to change category following recent GRA workshops; **System:** T- Terrestrial, F – Freshwater, M – Marine; **Realm:** Af – Afrotropical, Aus – Australasian, Ind – Indomalayan, Ne – Nearctic, Neo – Neotropical, Oc – Oceanian, Pa – Palearctic. * denotes non-native realms into which a species has been introduced; + denotes a species which has been introduced to other countries within its native realm.

Family	Genus	Species	RL	System	Realm
AMPHISBAENIA					
Amphisbaeniidae[1]	Amphisbaena	absaberi	DD	T	Neo
	Amphisbaena	alba	LC	T	Neo
	Amphisbaena	gracilis	DD	T	Neo
	Amphisbaena	hyporissor	NT	T	Neo
	Amphisbaena	lumbricalis	DD	T	Neo
	Amphisbaena	neglecta	DD	T	Neo
	Amphisbaena	polygrammica	DD	T	Neo
	Amphisbaena	polystegum	LC	T	Neo
	Amphisbaena	pretrei	LC	T	Neo
	Amphisbaena	ridleyi	LC	T	Neo
	Amphisbaena	schmidti	NT	T	Neo
	Amphisbaena	scutigerum	DD	T	Neo
	Amphisbaena	slevini	DD	T	Neo
	Amphisbaena	tragorrhectes	DD	T	Neo
	Blanus	cinereus	LC	T	Pa
	Blanus	mettetali	LC	T	Pa
	Cynisca	bifrontalis	LC	T	Af
	Cynisca	feae	LC	T	Af
	Cynisca	kraussi	EN	T	Af
	Cynisca	schaeferi	DD	T	Af
	Cynisca	senegalensis	DD	T	Af
	Loveridgea	ionidesii	LC	T	Af
	Monopeltis	anchietae	LC	T	Af
	Monopeltis	guentheri	DD	T	Af
	Monopeltis	jugularis	DD	T	Af
	Zygaspis	kafuensis	DD	T	Af
	Zygaspis	nigra	LC	T	Af
Trogonophidae[1]	Agamodon	arabicus	DD	T	Pa
CROCODILES					
Crocodylidae	Crocodylus	acutus	VU	T,F,M	Neo
	Crocodylus	moreletii	LC	T,F	Neo
	Crocodylus	palustris	VU	T,F	Ind,Pa
	Crocodylus	rhombifer	CR	T,F	Neo

LIZARDS					
Agamidae	Acanthocercus	annectens	LC	T	Af
	Acanthocercus	atricollis	LC	T	Af
	Acanthocercus	cyanogaster	LC	T	Af
	Acanthosaura	lepidogaster	LC	T	Ind
	Agama	bocourti	DD	T	Af
	Agama	boueti	LC	T	Af
	Agama	cornii	DD	T	Af
	Agama	hispida	LC	T	Af
	Agama	mwanzae	LC	T	Af
	Agama	spinosa	LC	T	Pa
	Amphibolurus	norrisi	LC	T	Aus
	Aphaniotis	fusca	LC	T	Ind
	Brachysaura	minor	DD	T	Ind,Pa
	Bronchocela	jubata	LC	T	Ind
	Bronchocela	smaragdina	VU	T	Ind
	Calotes	chincollium	LC	T	Ind
	Calotes	ellioti	LC	T	Ind
	Calotes	medogensis	DD	T	Ind
	Ceratophora	aspera	VU	T	Ind
	Chlamydosaurus	kingii	LC	T	Aus
	Ctenophorus	maculosus	LC	T	Aus
	Ctenophorus	nuchalis	LC	T	Aus
	Ctenophorus	ornatus	LC	T	Aus
	Ctenophorus	tjantjalka	LC	T	Aus
	Diporiphora	albilabris	LC	T	Aus
	Diporiphora	convergens	DD	T	Aus
	Diporiphora	lalliae	LC	T	Aus
	Diporiphora	linga	LC	T	Aus
	Draco	bimaculatus	LC	T	Ind
	Draco	cornutus	DD	T	Ind
	Draco	haematopogon	LC	T	Ind
	Draco	jareckii	LC	T	Ind
	Draco	lineatus	LC	T	Aus,Ind
	Draco	maculatus	LC	T	Ind
	Draco	reticulatus	LC	T	Ind
	Draco	taeniopterus	LC	T	Ind
	Gonocephalus	grandis	LC	T	Ind
	Gonocephalus	lacunosus	DD	T	Aus
	Harpesaurus	modigliani	DD	T	Ind
	Hypsilurus	binotatus	LC	T	Aus
	Hypsilurus	bruijnii	DD	T	Aus
	Japalura	dasi	DD	T	Pa
	Japalura	fasciata	LC	T	Ind,Pa
	Japalura	flaviceps	LC	T	Ind,Pa
	Japalura	grahami	DD	T	Pa
	Japalura	tricarinata	LC	T	Ind,Pa
	Japalura	variegata	LC	T	Ind
	Laudakia	erythrogastra	LC	T	Pa
	Laudakia	lehmanni	LC	T	Pa
	Laudakia	microlepis	LC	T	Pa

	Lophognathus	gilberti	LC	T	Aus
	Lyriocephalus	scutatus	NT	T	Ind
	Phrynocephalus	arabicus	LC	T	Pa
	Phrynocephalus	axillaris	LC	T	Pa
	Phrynocephalus	helioscopus	LC	T	Pa
	Phrynocephalus	luteoguttatus	LC	T	Pa
	Phrynocephalus	melanurus	LC	T	Pa
	Phrynocephalus	ornatus	LC	T	Pa
	Phrynocephalus	przewalskii	LC	T	Ind
	Phrynocephalus	strauchi	VU	T	Pa
	Phrynocephalus	theobaldi	LC	T	Pa
	Phrynocephalus	versicolor	LC	T	Pa
	Phrynocephalus	vlangalii	LC	T	Pa
	Pogona	barbata	LC	T	Aus
	Psammophilus	dorsalis	LC	T	Ind,Pa*
	Pseudocalotes	brevipes	LC	T	Ind
	Pseudocalotes	dringi	DD	T	Ind
	Pseudocophotis	sumatrana	DD	T	Ind
	Rankinia	diemensis	LC	T	Aus
	Salea	horsfieldii	LC	T	Ind
	Sitana	ponticeriana	LC	T	Ind
	Trapelus	jayakari	DD	T	Pa
	Trapelus	ruderatus	LC	T	Pa
	Tympanocryptis	uniformis	DD	T	Aus
	Uromastyx	alfredschmidti	NT	T	Pa
	Uromastyx	ocellata	LC	T	Pa
Anguidae	Abronia	martindelcampoi	EN	T	Neo
	Abronia	oaxacae	VU	T	Neo
	Abronia	smithi	LC	T	Neo
	Celestus	crusculus	LC	T	Neo
	Celestus	curtissi	VU	T	Neo
	Celestus	enneagrammus	LC	T	Neo
	Celestus	scansorius	NT	T	Neo
	Celestus	sepsoides	LC	T	Neo
	Diploglossus	lessonae	LC	T	Neo
	Elgaria	velazquezi	LC	T	Ne
	Gerrhonotus	infernalis	LC	T	Ne,Neo
	Mesaspis	antauges	DD	T	Neo
	Mesaspis	monticola	LC	T	Neo
	Mesaspis	moreletii	LC	T	Neo
	Ophisaurus	ceroni	EN	T	Neo
	Ophisaurus	hainanensis	VU	T	Ind
	Ophisaurus	harti	LC	T	Ind
	Ophisaurus	koellikeri	LC	T	Pa
	Ophisaurus	wegneri	DD	T	Ind
Anniellidae	Anniella	pulchra	LC	T	Ne
Carphodactylidae	Nephrurus	levis	LC	T	Aus
	Nephrurus	stellatus	LC	T	Aus
	Nephrurus	wheeleri	LC	T	Aus
	Orraya	occultus	DD	T	Aus
	Phyllurus	gulbaru	CR	T	Aus

	Phyllurus	ossa	LC	T	Neo
	Saltuarius	cornutus	LC	T	Aus
Chamaeleonidae	Bradypodion	caffer	EN	T	Af
	Bradypodion	dracomontanum	LC	T	Af
	Bradypodion	setaroi	LC	T	Af
	Bradypodion	taeniabronchum	EN	T	Af
	Bradypodion	transvaalense	LC	T	Af
	Bradypodion	ventrale	LC	T	Af
	Brookesia	bekolosy	EN	T	Af
	Brookesia	exarmata	EN	T	Af
	Brookesia	griveaudi	NT	T	Af
	Brookesia	stumpffi	LC	T	Af
	Brookesia	therezieni	LC	T	Af
	Brookesia	tuberculata	VU	T	Af
	Brookesia	valerieae	EN	T	Af
	Calumma	boettgeri	LC	T	Af
	Calumma	fallax	DD	T	Af
	Calumma	gallus	EN	T	Af
	Calumma	glawi	EN	T	Af
	Calumma	peyrierasi	VU	T	Af
	Calumma	tigris	EN	T	Af
	Chamaeleo	calyptratus	LC	T	Af,Ne*
	Chamaeleo	dilepis	LC	T	Af
	Chamaeleo	namaquensis	LC	T	Af
	Chamaeleo	senegalensis	LC	T	Af
	Furcifer	campani	VU	T	Af
	Furcifer	cephalolepis	LC	T	Af
	Furcifer	tuzetae	DD	T	Af
	Rhampholeon	marshalli	VU	T	Af
	Rhampholeon	spectrum	LC	T	Af
	Rhampholeon	spinosus	EN	T	Af
	Trioceros	chapini	LC	T	Af
	Trioceros	cristatus	LC	T	Af
	Trioceros	feae	NT	T	Af
	Trioceros	hoehnelii	LC	T	Af
	Trioceros	incornutus	VU	T	Af
	Trioceros	ituriensis	LC	T	Af
	Trioceros	laterispinis	VU	T	Af
	Trioceros	montium	NT	T	Af
Cordylidae	Cordylus	aridus	EN	T	Af
	Cordylus	campbelli	DD	T	Af
	Cordylus	meculae	EN	T	Af
	Cordylus	rivae	LC	T	Af
	Cordylus	spinosus	LC	T	Af
	Cordylus	tasmani	VU	T	Af
	Platysaurus	imperator	VU	T	Af
	Platysaurus	intermedius	LC	T	Af
	Platysaurus	pungweensis	LC	T	Af
	Platysaurus	torquatus	LC	T	Af
Corytophanidae	Basiliscus	vittatus	LC	T	Neo
Crotaphytidae	Crotaphytus	reticulatus	VU	T	Ne

	Crotaphytus	vestigium	LC	T	Ne
	Gambelia	copeii	LC	T	Ne,Neo
Dibamidae	Dibamus	bourreti	DD	T	Ind
	Dibamus	novaeguineae	LC	T	Aus,Ind
	Dibamus	smithi	DD	T	Ind
Diplodactylidae	Bavayia	exsuccida	EN	T	Aus
	Bavayia	geitaina	NT	T	Aus
	Bavayia	pulchella	NT	T	Aus
	Diplodactylus	granariensis	LC	T	Aus
	Diplodactylus	ornatus	LC	T	Aus
	Eurydactylodes	symmetricus	EN	T	Aus
	Naultinus	gemmeus	NT	T	Aus
	Naultinus	manukanus	DD	T	Aus
	Rhacodactylus	auriculatus	LC	T	Aus
	Rhacodactylus	trachyrhynchus	EN	T	Aus
	Strophurus	ciliaris	LC	T	Aus
	Strophurus	jeanae	LC	T	Aus
	Strophurus	michaelseni	LC	T	Aus
	Strophurus	taenicauda	NT	T	Aus
Eublepharidae	Coleonyx	elegans	LC	T	Neo
Gekkonidae	Afroedura	nivaria	LC	T	Af
	Agamura	persica	LC	T	Ind,Pa
	Alsophylax	pipiens	LC	T	Pa
	Alsophylax	przewalskii	LC	T	Pa
	Alsophylax	tokobajevi	LC	T	Pa
	Asiocolotes	depressus	LC	T	Ind,Pa
	Asiocolotes	levitoni	LC	T	Pa
	Bunopus	tuberculatus	LC	T	Ind,Pa
	Carinatogecko	aspratilis	DD	T	Pa
	Chondrodactylus	angulifer	LC	T	Af
	Cnemaspis	anaikattiensis	CR	T	Ind
	Cnemaspis	argus	DD	T	Ind
	Cnemaspis	flavolineata	DD	T	Ind
	Cnemaspis	jacobsoni	DD	T	Ind
	Cnemaspis	kandiana	LC	T	Ind
	Cnemaspis	koehleri	LC	T	Af
	Cnemaspis	limi	LC	T	Ind
	Cnemaspis	podihuna	LC	T	Ind
	Cnemaspis	tropidogaster	DD	T	Ind
	Cyrtodactylus	adleri	LC	T	Ind
	Cyrtodactylus	annandalei	DD	T	Ind
	Cyrtodactylus	ayeyarwadyensis	DD	T	Ind
	Cyrtodactylus	biordinis	DD	T	Aus
	Cyrtodactylus	brevidactylus	DD	T	Ind
	Cyrtodactylus	cavernicolus	VU	T	Ind
	Cyrtodactylus	chrysopylos	DD	T	Ind
	Cyrtodactylus	deveti	DD	T	Aus
	Cyrtodactylus	feae	DD	T	Ind
	Cyrtodactylus	gordongekkoi	DD	T	Aus
	Cyrtodactylus	gubernatoris	NT	T	Ind
	Cyrtodactylus	irianjayaensis	DD	T	Aus

	Cyrtodactylus	malcomsmithi	DD	T	Ind
	Cyrtodactylus	sumonthai	DD	T	Ind
	Cyrtodactylus	sworderi	DD	T	Ind
	Cyrtodactylus	wakeorum	DD	T	Ind
	Cyrtodactylus	wetariensis	DD	T	Aus
	Cyrtopodion	agamuroides	LC	T	Ind,Pa
	Cyrtopodion	caspium	LC	T	Pa$^+$
	Cyrtopodion	elongatum	LC	T	Pa
	Cyrtopodion	fortmunroi	LC	T	Ind,Pa
	Cyrtopodion	gastrophole	DD	T	Pa
	Cyrtopodion	kohsulaimanai	LC	T	Ind
	Cyrtopodion	potoharense	LC	T	Ind,Pa
	Cyrtopodion	russowii	LC	T	Pa
	Cyrtopodion	scabrum	LC	T	Af$^+$,Ne*,Pa$^+$
	Cyrtopodion	stoliczkai	LC	T	Ind,Pa
	Cyrtopodion	walli	LC	T	Ind,Pa
	Dixonius	vietnamensis	LC	T	Ind
	Ebenavia	inunguis	LC	T	Af$^+$
	Elasmodactylus	tetensis	LC	T	Af
	Elasmodactylus	tuberculosus	LC	T	Af
	Eublepharis[2]	hardwickii	LC	T	Ind
	Geckoella	triedrus	NT	T	Ind
	Geckolepis	maculata	LC	T	Af
	Geckolepis	polylepis	DD	T	Af
	Geckolepis	typica	LC	T	Af
	Gehyra	australis	LC	T	Aus
	Gehyra	barea	EN	T	Aus
	Gehyra	borroloola	LC	T	Aus
	Gehyra	brevipalmata	DD	T	Ind
	Gehyra	butleri	DD	T	Ind
	Gehyra	dubia	LC	T	Aus
	Gehyra	pilbara	LC	T	Aus
	Gekko	auriverrucosus	DD	T	Pa
	Gekko	badenii	DD	T	Ind
	Gekko	chinensis	LC	T	Ind,Pa
	Gekko	grossmanni	DD	T	Ind
	Gekko	hokouensis	LC	T	Ind
	Gekko	kikuchii	DD	T	Ind
	Gekko	porosus	LC	T	Ind
	Gekko	scabridus	DD	T	Ind
	Gekko	smithii	LC	T	Ind
	Gekko	swinhonis	VU	T	Ind,Pa
	Gekko	tawaensis	LC	T	Pa
	Goggia	essexi	LC	T	Af
	Goggia	gemmula	DD	T	Af
	Goggia	hexapora	LC	T	Af
	Goniurosaurus[2]	kuroiwae	EN	T	Ind
	Hemidactylus	arnoldi	DD	T	Af
	Hemidactylus	depressus	LC	T	Ind
	Hemidactylus	foudaii	LC	T	Pa
	Hemidactylus	frenatus	LC	T	Af*,Aus,Ind,Neo*,Oc*

	Hemidactylus	imbricatus	LC	T	Ind,Pa
	Hemidactylus	mindiae	LC	T	Pa
	Hemidactylus	palaichthus	LC	T	Neo
	Hemidactylus	porbandarensis	DD	T	Ind
	Hemidactylus	scabriceps	DD	T	Ind
	Hemidactylus	smithi	DD	T	Af
	Hemidactylus	subtriedrus	DD	T	Ind
	Hemidactylus	yerburyi	LC	T	Af,Pa
	Hemiphyllodactylus	aurantiacus	LC	T	Ind
	Homopholis	walbergii	LC	T	Af
	Lepidodactylus	balioburius	LC	T	Ind
	Lepidodactylus	mutahi	LC	T	Aus
	Lepidodactylus	oortii	DD	T	Ind
	Lepidodactylus	vanuatuensis	LC	T	Aus
	Lucasium	byrnei	LC	T	Aus
	Luperosaurus	iskandari	DD	T	Aus
	Lygodactylus	blanci	VU	T	Af
	Lygodactylus	chobiensis	LC	T	Af
	Lygodactylus	grandisonae	DD	T	Af
	Lygodactylus	gravis	VU	T	Af
	Lygodactylus	klemmeri	NT	T	Af
	Lygodactylus	nigropunctatus	LC	T	Af
	Lygodactylus	pauliani	DD	T	Af
	Lygodactylus	picturatus	LC	T	Af
	Lygodactylus	pictus	LC	T	Af
	Nactus	multicarinatus	LC	T	Aus
	Nactus	pelagicus	LC	T	Oc
	Pachydactylus	fasciatus	LC	T	Af
	Pachydactylus	labialis	LC	T	Af
	Pachydactylus	maculatus	LC	T	Af
	Pachydactylus	tsodiloensis	NT	T	Af
	Pachydactylus	vansoni	LC	T	Af
	Phelsuma	andamanense	LC	T	Ind
	Phelsuma	comorensis	LC	T	Af
	Phelsuma	flavigularis	EN	T	Af
	Phelsuma	mutabilis	LC	T	Af
	Phelsuma	pronki	CR	T	Af
	Phelsuma	standingi	VU	T	Af
	Phelsuma	v-nigra	LC	T	Af
	Pseudogekko	smaragdinus	LC	T	Ind
	Ptenopus	kochi	LC	T	Af
	Ptychozoon	horsfieldii	DD	T	Ind
	Ptychozoon	intermedium	NT	T	Ind
	Ptychozoon	lionotum	LC	T	Ind
	Tropiocolotes	helenae	DD	T	Pa
	Tropiocolotes	latifi	LC	T	Pa
	Tropiocolotes	nubicus	DD	T	Pa
	Tropiocolotes	tripolitanus	LC	T	Pa
	Urocotyledon	inexpectata	LC	T	Af
	Urocotyledon	weileri	DD	T	Af
	Uroplatus	henkeli	VU	T	Af

Gerrhosauridae	Cordylosaurus	subtessellatus	LC	T	Af
	Gerrhosaurus	skoogi	LC	T	Af
	Tetradactylus	africanus	LC	T	Af
	Zonosaurus	haraldmeieri	NT	T	Af
	Zonosaurus	karsteni	LC	T	Af
	Zonosaurus	quadrilineatus	VU	T	Af
Gymnophthalmidae	Alopoglossus	angulatus	LC	T	Neo
	Amapasaurus	tetradactylus	DD	T	Neo
	Anadia	bitaeniata	DD	T	Neo
	Anadia	marmorata	VU	T	Neo
	Anadia	pulchella	VU	T	Neo
	Arthrosaura	kockii	LC	T	Neo
	Arthrosaura	synaptolepis	LC	T	Neo
	Bachia	bresslaui	VU	T	Neo
	Bachia	flavescens	LC	T	Neo
	Bachia	panoplia	LC	T	Neo
	Bachia	trisanale	DD	T	Neo
	Calyptommatus	confusionibus	EN	T	Neo
	Cercosaura	argulus	LC	T	Neo
	Cercosaura	schreibersii	LC	T	Neo
	Colobodactylus	dalcyanus	DD	T	Neo
	Euspondylus	guentheri	LC	T	Neo
	Gymnophthalmus	lineatus	LC	T	Neo
	Gymnophthalmus	pleii	EN	T	Neo
	Gymnophthalmus	underwoodi	LC	T	Neo
	Gymnophthalmus	vanzoi	DD	T	Neo
	Leposoma	parietale	LC	T	Neo
	Leposoma	percarinatum	LC	T	Neo
	Leposoma	rugiceps	LC	T	Neo
	Macropholidus	ruthveni	LC	T	Neo
	Neusticurus	tatei	LC	T	Neo
	Pholidobolus	annectens	EN	T	Neo
	Placosoma	cordylinum	LC	T	Neo
	Potamites	apodemus	LC	T	Neo
	Potamites	cochranae	LC	T	Neo
	Psilophthalmus	paeminosus	VU	T	Neo
	Ptychoglossus	bicolor	VU	T	Neo
	Ptychoglossus	stenolepis	LC	T	Neo
	Riama	balneator	EN	T	Neo
	Riama	inanis	DD	T	Neo
	Riama	luctuosa	DD	T	Neo
	Riama	oculata	EN	T	Neo
	Riama	petrorum	EN	T	Neo
	Riama	shrevei	DD	T	Neo
	Riama	stigmatoral	VU	T	Neo
Helodermatidae	Heloderma	suspectum	NT	T	Ne,Neo
Hoplocercidae	Morunasaurus	peruvianus	DD	T	Neo
Iguanidae	Ctenosaura	oedirhina	EN	T	Neo
	Ctenosaura	similis	LC	T	Ne^{+},Neo*
	Cyclura	cornuta	EN	T	Neo
	Sauromalus	hispidus	NT	T	Ne

Lacertidae	Acanthodactylus	arabicus	LC	T	Af
	Acanthodactylus	blanci	EN	T	Pa
	Acanthodactylus	busacki	LC	T	Pa
	Acanthodactylus	erythrurus	LC	T	Pa
	Acanthodactylus	haasi	LC	T	Pa
	Adolfus	alleni	VU	T	Af
	Adolfus	vauereselli	LC	T	Af
	Anatololacerta	anatolica	LC	T	Pa
	Australolacerta	australis	LC	T	Af
	Dinarolacerta	mosorensis	VU	T	Pa
	Eremias	acutirostris	LC	T	Pa
	Eremias	nigrolateralis	LC	T	Pa
	Iberolacerta	aurelioi	EN	T	Pa
	Ichnotropis	grandiceps	DD	T	Af
	Iranolacerta	brandtii	DD	T	Pa
	Lacerta	agilis	LC	T	Pa
	Lacerta	bilineata	LC	T	Ne*,Pa
	Lacerta	media	LC	T	Pa
	Lacerta	schreiberi	NT	T	Pa
	Lacerta	trilineata	LC	T	Pa
	Latastia	cherchii	LC	T	Af
	Mesalina	brevirostris	LC	T	Ind,Pa
	Nucras	scalaris	DD	T	Af
	Ophisops	elbaensis	DD	T	Pa
	Ophisops	jerdonii	LC	T	Ind,Pa
	Ophisops	microlepis	LC	T	Ind
	Parvilacerta	parva	LC	T	Pa
	Pedioplanis	gaerdesi	LC	T	Af
	Pedioplanis	laticeps	LC	T	Af
	Phoenicolacerta	cyanisparsa	LC	T	Pa
	Phoenicolacerta	kulzeri	EN	T	Pa
	Phoenicolacerta	laevis	LC	T	Pa
	Podarcis	hispanicus	LC	T	Pa
	Podarcis	melisellensis	LC	T	Pa
	Pseuderemias	striatus	DD	T	Af
	Takydromus	hani	DD	T	Ind
	Takydromus	kuehnei	LC	T	Pa
	Takydromus	sexlineatus	LC	T	Ind
	Takydromus	toyamai	EN	T	Pa
	Timon	lepidus	NT	T	Pa
	Timon	princeps	LC	T	Pa
	Tropidosaura	cottrelli	NT	T	Af
	Zootoca	vivipara	LC	T	Pa
Opluridae	Oplurus	quadrimaculatus	LC	T	Af
Phrynosomatidae	Cophosaurus	texanus	LC	T	Ne,Neo
	Petrosaurus	mearnsi	LC	T	Ne
	Phrynosoma	mcallii	NT	T	Ne
	Sceloporus	aeneus	LC	T	Ne,Neo
	Sceloporus	angustus	LC	T	Ne
	Sceloporus	arenicolus	VU	T	Ne
	Sceloporus	horridus	LC	T	Ne,Neo

	Sceloporus	hunsakeri	LC	T	Ne,Neo
	Sceloporus	jarrovi	LC	T	Ne,Neo
	Sceloporus	lineatulus	LC	T	Ne
	Sceloporus	magister	LC	T	Ne,Neo
	Sceloporus	mucronatus	LC	T	Ne,Neo
	Sceloporus	orcutti	LC	T	Ne
	Sceloporus	poinsettii	LC	T	Ne,Neo
	Sceloporus	pyrocephalus	LC	T	Neo
	Sceloporus	serrifer	LC	T	Ne,Neo
	Sceloporus	siniferus	LC	T	Neo
	Sceloporus	smithi	LC	T	Neo
	Sceloporus	spinosus	LC	T	Ne,Neo
	Sceloporus	subpictus	DD	T	Neo
	Sceloporus	teapensis	LC	T	Neo
	Sceloporus	undulatus	LC	T	Ne
	Sceloporus	vandenburgianus	LC	T	Ne
	Sceloporus	variabilis	LC	T	Neo
	Uma	inornata	EN	T	Ne
	Urosaurus	auriculatus	EN	T	Neo
	Urosaurus	nigricaudus	LC	T	Ne,Neo
	Urosaurus	ornatus	LC	T	Ne,Neo
	Uta	encantadae	VU	T	Neo
	Uta	palmeri	VU	T	Neo
	Uta	squamata	LC	T	Ne
Phyllodactylidae	Asaccus	platyrhynchus	DD	T	Pa
	Haemodracon	trachyrhinus	LC	T	Af
	Homonota	fasciata	LC	T	Neo
	Phyllodactylus	bugastrolepis	LC	T	Ne
	Phyllodactylus	clinatus	DD	T	Neo
	Phyllodactylus	inaequalis	LC	T	Neo
	Phyllodactylus	interandinus	LC	T	Neo
	Phyllodactylus	lanei	LC	T	Ne,Neo
	Phyllodactylus	leei	VU	T	Neo
	Phyllodactylus	reissii	LC	T	Neo^{+}
	Phyllodactylus	tuberculosus	LC	T	Neo
	Tarentola	americana	LC	T	Neo
	Tarentola	boettgeri	LC	T	Pa
	Tarentola	delalandii	LC	T	Pa
	Tarentola	mindiae	LC	T	Pa
Polychrotidae	Anisolepis	grilli	LC	T	Neo
	Anolis	ahli	EN	T	Neo
	Anolis	allogus	LC	T	Neo
	Anolis	altae	LC	T	Neo
	Anolis	alumina	NT	T	Neo
	Anolis	alvarezdeltoroi	DD	T	Neo
	Anolis	amplisquamosus	EN	T	Neo
	Anolis	armouri	NT	T	Neo
	Anolis	baccatus	DD	T	Neo
	Anolis	bimaculatus	LC	T	Neo
	Anolis	caquetae	DD	T	Neo
	Anolis	carpenteri	LC	T	Neo

	Anolis	centralis	LC	T	Neo
	Anolis	clivicola	LC	T	Neo
	Anolis	crassulus	LC	T	Neo
	Anolis	cristifer	DD	T	Neo
	Anolis	cusuco	EN	T	Neo
	Anolis	cymbops	DD	T	Neo
	Anolis	eulaemus	LC	T	Neo
	Anolis	festae	LC	T	Neo
	Anolis	fitchi	LC	T	Neo
	Anolis	fortunensis	DD	T	Neo
	Anolis	fraseri	LC	T	Neo
	Anolis	gadovi	LC	T	Neo
	Anolis	gemmosus	LC	T	Neo
	Anolis	grahami	LC	T	Neo^{+}
	Anolis	granuliceps	LC	T	Neo
	Anolis	guafe	EN	T	Neo
	Anolis	haetianus	EN	T	Neo
	Anolis	jacare	LC	T	Neo
	Anolis	juangundlachi	CR	T	Neo
	Anolis	koopmani	EN	T	Neo
	Anolis	lemniscatus	DD	T	Neo
	Anolis	lineatus	LC	T	Neo
	Anolis	lionotus	LC	T	Neo
	Anolis	longiceps	VU	T	Neo
	Anolis	loveridgei	EN	T	Neo
	Anolis	lynchi	LC	T	Neo
	Anolis	maculigula	VU	T	Neo
	Anolis	marron	EN	T	Neo
	Anolis	megalopithecus	DD	T	Neo
	Anolis	monticola	NT	T	Neo
	Anolis	muralla	VU	T	Neo
	Anolis	nebuloides	LC	T	Neo
	Anolis	nubilis	LC	T	Neo
	Anolis	occultus	LC	T	Neo
	Anolis	oculatus	LC	T	Neo
	Anolis	olssoni	LC	T	Neo
	Anolis	pachypus	LC	T	Neo
	Anolis	parvicirculatus	LC	T	Neo
	Anolis	pinchoti	VU	T	Neo
	Anolis	pogus	VU	T	Neo
	Anolis	polyrhachis	DD	T	Neo
	Anolis	proboscis	EN	T	Neo
	Anolis	pygmaeus	EN	T	Neo
	Anolis	quercorum	LC	T	Neo
	Anolis	roosevelti	CR*	T	Neo
	Anolis	ruizii	EN	T	Neo
	Anolis	semilineatus	LC	T	Neo
	Anolis	sericeus	LC	T	Neo
	Anolis	sminthus	DD	T	Neo
	Anolis	spectrum	NT	T	Neo
	Anolis	strahmi	EN	T	Neo

	Anolis	valencienni	LC	T	Neo
	Anolis	ventrimaculatus	NT	T	Neo
	Anolis	whitemani	LC	T	Neo
	Diplolaemus	darwinii	LC	T	Neo
	Enyalius[3]	bibronii	LC	T	Neo
	Enyalius[3]	pictus	LC	T	Neo
	Leiosaurus	catamarcensis	LC	T	Neo
	Polychrus	peruvianus	DD	T	Neo
	Pristidactylus	torquatus	LC	T	Neo
Pygopodidae	Aprasia	aurita	CR	T	Aus
	Delma	fraseri	LC	T	Aus
	Delma	labialis	VU	T	Aus
	Delma	torquata	VU	T	Aus
Scincidae	Ablepharus	deserti	LC	T	Pa
	Acontias	breviceps	NT	T	Af
	Acontias	gracilicauda	LC	T	Af
	Acontias	percivali	LC	T	Af
	Acontias	plumbeus	LC	T	Af
	Afroablepharus	africana	VU	T	Af
	Afroablepharus	annobonensis	CR	T	Af
	Afroablepharus	wilsoni	DD	T	Af
	Amphiglossus	alluaudi	VU	T	Af
	Amphiglossus	ardouini	VU	T	Af
	Amphiglossus	crenni	LC	T	Af
	Amphiglossus	elongatus	DD	T	Af
	Amphiglossus	frontoparietalis	LC	T	Af
	Amphiglossus	johannae	LC	T	Af
	Amphiglossus	melanurus	LC	T	Af
	Amphiglossus	punctatus	LC	T	Af
	Anomalopus	brevicollis	LC	T	Aus
	Anomalopus	gowi	LC	T	Aus
	Barkudia	insularis	DD	T	Ind
	Barkudia	melanosticta	DD	T	Ind
	Bassiana	trilineatus	LC	T	Aus
	Brachymeles	elerae	DD	T	Ind
	Brachymeles	pathfinderi	DD	T	Ind
	Brachymeles	talinis	LC	T	Ind
	Carlia	bicarinata	LC	T	Aus
	Carlia	diguliensis	LC	T	Aus
	Carlia	dogare	LC	T	Aus
	Carlia	gracilis	LC	T	Aus
	Carlia	rubrigularis	LC	T	Aus
	Carlia	tetradactyla	LC	T	Aus
	Celatiscincus	euryotis	EN	T	Aus
	Chalcides	colosii	LC	T	Pa
	Chalcides	guentheri	VU	T	Pa
	Chalcides	lanzai	NT	T	Pa
	Chalcides	pseudostriatus	NT	T	Pa
	Chalcides	sphenopsiformis	LC	T	Pa
	Chalcides	striatus	LC	T	Pa
	Chioninia	fogoensis	DD	T	Af

	Chioninia	vaillantii	DD	T	Af
	Cryptoblepharus	ater	DD	T	Af
	Cryptoblepharus	gloriosus	VU	T	Af
	Cryptoblepharus	leschenault	LC	T	Aus
	Cryptoblepharus	novaeguineae	LC	T	Aus
	Cryptoblepharus	renschi	LC	T	Ind
	Cryptoblepharus	rutilus	LC	T	Oc
	Ctenotus	allotropis	LC	T	Aus
	Ctenotus	burbidgei	LC	T	Aus
	Ctenotus	gagudju	LC	T	Aus
	Ctenotus	gemmula	LC	T	Aus
	Ctenotus	helenae	LC	T	Aus
	Ctenotus	inornatus	LC	T	Aus
	Ctenotus	leonhardii	LC	T	Aus
	Cyclodomorphus	celatus	LC	T	Aus
	Dasia	olivacea	LC	T	Ind
	Egernia	kingii	LC	T	Aus
	Egernia	rugosa	LC	T	Aus
	Emoia	adspersa	EN	T	Oc
	Emoia	aneityumensis	EN	T	Aus
	Emoia	boettgeri	EN	T	Aus
	Emoia	isolata	VU	T	Aus
	Emoia	lawesi	EN	T	Oc
	Emoia	loveridgei	LC	T	Aus
	Emoia	nativitatis	CR	T	Ind
	Emoia	oribata	DD	T	Aus
	Emoia	submetallica	LC	T	Aus
	Eremiascincus	brongersmai	LC	T	Aus
	Eremiascincus	timorensis	DD	T	Aus
	Eulamprus	heatwolei	LC	T	Aus
	Eulamprus	luteilateralis	LC	T	Aus
	Eulamprus	sokosoma	LC	T	Aus
	Eulamprus	tryoni	LC	T	Aus
	Eutropis	bibronii	DD	T	Ind
	Eutropis	carinata	LC	T	Ind
	Eutropis	novemcarinata	LC	T	Aus,Ind
	Geomyersia	coggeri	VU	T	Aus
	Geoscincus	haraldmeieri	CR	T	Aus
	Glaphyromorphus	crassicaudus	LC	T	Aus
	Hemiergis	decresiensis	LC	T	Aus
	Hemiergis	quadrilineatum	LC	T	Aus
	Isopachys	anguinoides	LC	T	Ind
	Isopachys	roulei	DD	T	Ind
	Kaestlea	travancorica	LC	T	Ind
	Lamprolepis	nieuwenhuisi	LC	T	Ind
	Lankascincus	deignani	EN	T	Ind
	Lankascincus	taprobanensis	NT	T	Ind
	Larutia	miodactyla	LC	T	Ind
	Larutia	sumatrensis	DD	T	Ind
	Leptosiaphos	aloysiisabaudiae	LC	T	Af
	Leptosiaphos	meleagris	VU	T	Af

	Leptosiaphos	pauliani	EN	T	Af
	Leptosiaphos	rhodurus	DD	T	Af
	Lerista	allochira	LC	T	Aus
	Lerista	connivens	LC	T	Aus
	Lerista	elongata	LC	T	Aus
	Lerista	kennedyensis	LC	T	Aus
	Lerista	onsloviana	LC	T	Aus
	Lerista	stylis	LC	T	Aus
	Lerista	taeniata	LC	T	Aus
	Lerista	vermicularis	LC	T	Aus
	Lerista	walkeri	LC	T	Aus
	Liburnascincus	scirtetis	LC	T	Aus
	Liopholis	inornata	LC	T	Aus
	Liopholis	striata	LC	T	Aus
	Liopholis	whitii	LC	T	Aus
	Lioscincus	greeri	DD	T	Aus
	Lipinia	auriculata	LC	T	Ind
	Lipinia	infralineolata	LC	T	Aus
	Lipinia	miangensis	DD	T	Ind
	Lipinia	vulcania	DD	T	Ind
	Lipinia	zamboangensis	DD	T	Ind
	Lobulia	glacialis	DD	T	Aus
	Lygisaurus	sesbrauna	LC	T	Aus
	Lygosoma	anguinum	DD	T	Ind
	Lygosoma	ashwamedhi	DD	T	Ind
	Lygosoma	carinatum	DD	T	Ind
	Lygosoma	frontoparietale	DD	T	Ind
	Lygosoma	haroldyoungi	LC	T	Ind
	Lygosoma	koratense	LC	T	Ind
	Lygosoma	mafianum	EN	T	Af
	Lygosoma	productum	LC	T	Af
	Lygosoma	singha	DD	T	Ind
	Mabuya	bistriata	LC	T	Neo
	Mabuya	carvalhoi	LC	T	Neo
	Madascincus	intermedius	LC	T	Af
	Madascincus	nanus	VU	T	Af
	Marmorosphax	montana	VU	T	Aus
	Melanoseps	ater	LC	T	Af
	Menetia	amaura	LC	T	Aus
	Menetia	concinna	DD	T	Aus
	Microacontias	lineatus	LC	T	Af
	Mochlus	guineensis	LC	T	Af
	Mochlus	sundevalli	LC	T	Af
	Morethia	boulengeri	LC	T	Aus
	Nannoscincus	gracilis	VU	T	Aus
	Nannoscincus	hanchisteus	CR	T	Aus
	Nannoscincus	slevini	EN	T	Aus
	Neoseps	reynoldsi	VU	T	Ne
	Oligosoma	acrinasum	NT	T	Aus
	Oligosoma	fallai	VU	T	Aus
	Oligosoma	notosaurus	DD	T	Aus

	Oligosoma	oliveri	NT	T	Aus
	Oligosoma	otagense	EN	T	Aus
	Oligosoma	suteri	LC	T	Aus
	Oligosoma	zelandicum	LC	T	Aus
	Ophiomorus	raithmai	LC	T	Ind
	Panaspis	cabindae	DD	T	Af
	Panaspis	helleri	LC	T	Af
	Panaspis	quattuordigitata	DD	T	Af
	Panaspis	togoensis	LC	T	Af
	Paracontias	holomelas	LC	T	Af
	Paracontias	rothschildi	CR	T	Af
	Phoboscincus	bocourti	EN	T	Aus
	Plestiodon	copei	LC	T	Ne,Neo
	Plestiodon	fasciatus	LC	T	Ne
	Plestiodon	gilberti	LC	T	Ne
	Prasinohaema	flavipes	LC	T	Aus
	Prasinohaema	prehensicauda	LC	T	Aus
	Proablepharus	reginae	LC	T	Aus
	Pseudemoia	baudini	DD	T	Aus
	Pseudemoia	pagenstecheri	LC	T	Aus
	Pseudoacontias	angelorum	EN	T	Af
	Ristella	rurkii	VU	T	Ind
	Saproscincus	czechurai	LC	T	Aus
	Scelotes	inornatus	EN	T	Af
	Scelotes	mossambicus	LC	T	Af
	Scincella	monticola	NT	T	Ind
	Scincella	punctatolineata	DD	T	Ind
	Scincella	vandenburghi	LC	T	Pa
	Scincopus	fasciatus	DD	T	Pa
	Scolecoseps	acontias	VU	T	Af
	Sepsina	alberti	LC	T	Af
	Sigaloseps	ruficauda	VU	T	Aus
	Sphenomorphus	abdictus	LC	T	Ind
	Sphenomorphus	cyanolaemus	NT	T	Ind
	Sphenomorphus	decipiens	LC	T	Ind
	Sphenomorphus	diwata	DD	T	Ind
	Sphenomorphus	dussumieri	LC	T	Ind
	Sphenomorphus	fasciatus	LC	T	Ind
	Sphenomorphus	jagori	LC	T	Ind
	Sphenomorphus	microtympanus	DD	T	Aus
	Sphenomorphus	mindanensis	NT	T	Ind
	Sphenomorphus	nigrolineata	LC	T	Aus
	Sphenomorphus	tritaeniatus	DD	T	Ind
	Sphenomorphus	tropidonotus	LC	T	Aus
	Sphenomorphus	victoria	NT	T	Ind
	Trachylepis	bayonii	DD	T	Af
	Trachylepis	bensonii	DD	T	Af
	Trachylepis	bocagii	LC	T	Af
	Trachylepis	lacertiformis	LC	T	Af
	Trachylepis	lavarambo	VU	T	Af
	Trachylepis	madagascariensis	LC	T	Af

	Trachylepis	margaritifera	LC	T	Af
	Trachylepis	punctatissima	LC	T	Af
	Trachylepis	socotrana	LC	T	Af
	Trachylepis	tandrefana	LC	T	Af
	Trachylepis	tavaratra	VU	T	Af
	Trachylepis	vato	LC	T	Af
	Trachylepis	vezo	DD	T	Af
	Trachylepis	vittata	LC	T	Pa
	Tribolonotus	blanchardi	VU	T	Aus
	Tropidophorus	laotus	LC	T	Ind
	Tropidophorus	latiscutatus	DD	T	Ind
	Tropidophorus	mocquardi	LC	T	Ind
	Tropidoscincus	boreus	LC	T	Aus
	Typhlosaurus	caecus	LC	T	Af
	Typhlosaurus	lineatus	LC	T	Af
	Vietnascincus	rugosus	DD	T	Ind
Sphaerodactylidae	Aristelliger	lar	NT	T	Neo
	Coleodactylus	natalensis	DD	T	Neo
	Coleodactylus	septentrionalis	LC	T	Neo
	Gonatodes	albogularis	LC	T	Neo
	Gonatodes	caudiscutatus	LC	T	Neo[+]
	Gonatodes	hasemani	LC	T	Neo
	Gonatodes	seigliei	DD	T	Neo
	Lepidoblepharis	colombianus	DD	T	Neo
	Lepidoblepharis	montecanoensis	DD	T	Neo
	Lepidoblepharis	sanctaemartae	LC	T	Neo
	Lepidoblepharis	xanthostigma	LC	T	Neo
	Pristurus	ornithocephalus	DD	T	Pa
	Pristurus	rupestris	LC	T	Af,Pa
	Pristurus	saada	DD	T	Pa
	Quedenfeldtia	trachyblepharus	NT	T	Pa
	Saurodactylus	mauritanicus	LC	T	Pa
	Sphaerodactylus	argus	LC	T	Neo
	Sphaerodactylus	armasi	EN	T	Neo
	Sphaerodactylus	callocricus	VU	T	Neo
	Sphaerodactylus	corticola	LC	T	Neo
	Sphaerodactylus	difficilis	LC	T	Neo
	Sphaerodactylus	dunni	LC	T	Neo
	Sphaerodactylus	glaucus	LC	T	Neo
	Sphaerodactylus	goniorhynchus	NT	T	Neo
	Sphaerodactylus	klauberi	LC	T	Neo
	Sphaerodactylus	nicholsi	LC	T	Neo
	Sphaerodactylus	pimienta	EN	T	Neo
	Sphaerodactylus	richardi	NT	T	Neo
	Sphaerodactylus	savagei	LC	T	Neo
	Sphaerodactylus	scaber	LC	T	Neo
	Sphaerodactylus	scapularis	VU	T	Neo
	Sphaerodactylus	storeyae	EN	T	Neo
	Sphaerodactylus	streptophorus	LC	T	Neo
	Sphaerodactylus	thompsoni	NT	T	Neo
	Sphaerodactylus	torrei	VU	T	Neo

	Sphaerodactylus	vincenti	LC	T	Neo
	Sphaerodactylus	williamsi	CR	T	Neo
	Teratoscincus	przewalskii	LC	T	Pa
Teiidae	Ameiva	chrysolaema	LC	T	Neo
	Ameiva	corax	VU	T	Neo
	Ameiva	corvina	VU	T	Neo
	Ameiva	lineolata	LC	T	Neo
	Ameiva	maynardii	VU	T	Neo
	Ameiva	quadrilineata	LC	T	Neo
	Ameiva	vittata	CR*	T	Neo
	Aspidoscelis	arizonae	NT	T	Ne
	Aspidoscelis	burti	LC	T	Ne
	Aspidoscelis	deppei	LC	T	
	Aspidoscelis	flagellicauda	LC	T	Ne
	Aspidoscelis	guttata	LC	T	
	Aspidoscelis	neomexicana	LC	T	Ne
	Aspidoscelis	pai	LC	T	Ne
	Cnemidophorus	gramivagus	LC	T	Neo
	Cnemidophorus	vacariensis	DD	T	Neo
	Crocodilurus	amazonicus	LC	T	Neo
	Kentropyx	viridistriga	LC	T	Neo
	Tupinambis	merianae	LC	T	Neo[+]
Tropiduridae	Ctenoblepharys	adspersa	NT	T	Neo
	Eurolophosaurus	amathites	DD	T	Neo
	Eurolophosaurus	nanuzae	NT	T	Neo
	Leiocephalus[4]	carinatus	LC	T	Ne*,Neo
	Leiocephalus[4]	greenwayi	VU	T	Neo
	Leiocephalus[4]	melanochlorus	NT	T	Neo
	Leiocephalus[4]	schreibersii	LC	T	Ne*,Neo
	Liolaemus[5]	arambarensis	EN	T	Neo
	Liolaemus[5]	archeforus	LC	T	Neo
	Liolaemus[5]	atacamensis	LC	T	Neo
	Liolaemus[5]	austromendocinus	LC	T	Neo
	Liolaemus[5]	capillitas	LC	T	Neo
	Liolaemus[5]	chaltin	DD	T	Neo
	Liolaemus[5]	constanzae	LC	T	Neo
	Liolaemus[5]	curicensis	DD	T	Neo
	Liolaemus[5]	dicktracyi	LC	T	Neo
	Liolaemus[5]	duellmani	DD	T	Neo
	Liolaemus[5]	fitzgeraldi	LC	T	Neo
	Liolaemus[5]	fitzingerii	LC	T	Neo
	Liolaemus[5]	flavipiceus	DD	T	Neo
	Liolaemus[5]	gallardoi	LC	T	Neo
	Liolaemus[5]	hellmichi	LC	T	Neo
	Liolaemus[5]	hernani	NT	T	Neo
	Liolaemus[5]	josephorum	DD	T	Neo
	Liolaemus[5]	juanortizi	LC	T	Neo
	Liolaemus[5]	maldonadae	DD	T	Neo
	Liolaemus[5]	mapuche	DD	T	Neo
	Liolaemus[5]	nigromaculatus	LC	T	Neo

	Liolaemus[5]	olongasta	LC	T	Neo
	Liolaemus[5]	petrophilus	LC	T	Neo
	Liolaemus[5]	platei	LC	T	Neo
	Liolaemus[5]	pleopholis	DD	T	Neo
	Liolaemus[5]	reichei	LC	T	Neo
	Liolaemus[5]	signifer	LC	T	Neo
	Liolaemus[5]	somuncurae	DD	T	Neo
	Liolaemus[5]	stolzmanni	LC	T	Neo
	Liolaemus[5]	vallecurensis	LC	T	Neo
	Liolaemus[5]	williamsi	DD	T	Neo
	Liolaemus[5]	xanthoviridis	DD	T	Neo
	Microlophus	albemarlensis	LC	T	Neo
	Microlophus	peruvianus	LC	T	Neo
	Microlophus	tarapacensis	DD	T	Neo
	Microlophus	yanezi	DD	T	Neo
	Phymaturus[5]	calcogaster	DD	T	Neo
	Phymaturus[5]	palluma	LC	T	Neo
	Plica	lumaria	LC	T	Neo
	Stenocercus	aculeatus	LC	T	Neo
	Stenocercus	crassicaudatus	VU	T	Neo
	Stenocercus	festae	VU	T	Neo
	Stenocercus	frittsi	LC	T	Neo
	Stenocercus	haenschi	CR*	T	Neo
	Stenocercus	imitator	LC	T	Neo
	Stenocercus	marmoratus	LC	T	Neo
	Stenocercus	nigromaculatus	DD	T	Neo
	Stenocercus	praeornatus	DD	T	Neo
	Stenocercus	prionotus	LC	T	Neo
	Stenocercus	scapularis	LC	T	Neo
	Stenocercus	torquatus	VU	T	Neo
	Tropidurus	arenarius	DD	T	Neo
	Tropidurus	chromatops	LC	T	Neo
	Tropidurus	erythrocephalus	NT	T	Neo
	Tropidurus	psammonastes	DD	T	Neo
	Tropidurus	semitaeniatus	LC	T	Neo
	Tropidurus	torquatus	LC	T	Neo
Varanidae	Varanus	bengalensis	LC	T,F	Ind,Pa
	Varanus	boehmei	DD	T	Ind
	Varanus	exanthematicus	LC	T	Af
	Varanus	finschi	LC	T	Aus
	Varanus	glauerti	LC	T	Aus
	Varanus	indicus	LC	T	Aus,Oc[+]
	Varanus	jobiensis	LC	T	Aus
	Varanus	primordius	LC	T	Aus
	Varanus	rosenbergi	LC	T	Aus
	Varanus	salvator	LC	T	Ind
	Varanus	scalaris	LC	T	Aus
	Varanus	telenesetes	DD	T	Aus
	Varanus	yemenensis	DD	T	Pa
Xanthusiidae	Lepidophyma	flavimaculatum	LC	T	Neo

	Lepidophyma	gaigeae	VU	T	Ne,Neo
	Lepidophyma	lipetzi	EN	T	Neo
	Lepidophyma	reticulatum	VU	T	Neo
SNAKES					
Acrochordidae	Acrochordus	granulatus	LC	F,M	Aus,Ind
Anomalepididae	Liotyphlops	argaleus	LC	T	Neo
	Liotyphlops	beui	LC	T	Neo
	Liotyphlops	schubarti	DD	T	Neo
Atractaspididae	Amblyodipsas	concolor	LC	T	Af
	Amblyodipsas	microphthalma	LC	T	Af
	Amblyodipsas	rodhaini	DD	T	Af
	Amblyodipsas	teitana	DD	T	Af
	Amblyodipsas	ventrimaculata	LC	T	Af
	Aparallactus	capensis	LC	T	Af
	Aparallactus	lineatus	DD	T	Af
	Atractaspis	irregularis	LC	T	Af
	Atractaspis	reticulata	DD	T	Af
	Micrelaps	bicoloratus	LC	T	Af
	Polemon	barthii	DD	T	Af
	Xenocalamus	michellii	DD	T	Af
Boidae	Boa	constrictor	LC	T	Neo
	Charina	bottae	LC	T	Ne
	Corallus	cropanii	EN	T	Neo
	Epicrates	inornatus	LC	T	Neo
	Epicrates	monensis	EN	T	Neo
	Eunectes	beniensis	LC	T	Neo
	Eunectes	deschauenseei	DD	T,F	Neo
	Liasis[6]	fuscus	LC	T	Aus
	Morelia[6]	amethistina	LC	T	Aus
	Morelia[6]	spilota	LC	T	Aus
	Morelia[6]	viridis	LC	T	Aus
	Python[6]	anchietae	LC	T	Af
	Python[6]	regius	LC	T	Af
	Ungaliophis	continentalis	NT	T	Neo
Calamariidae	Calamaria	abstrusa†	EN	T	Ind
	Calamaria	boesemani	DD	T	Aus
	Calamaria	hilleniusi	LC	T	Ind
	Calamaria	ingeri†	EN	T	Ind
	Calamaria	lumbricoidea	LC	T	Ind
	Calamaria	modesta	LC	T	Ind
	Calamaria	muelleri	LC	T	Aus
	Calamaria	nuchalis	LC	T	Aus
	Calamaria	septentrionalis	LC	T	Ind
	Macrocalamus	chanardi	LC	T	Ind
	Macrocalamus	lateralis	LC	T	Ind
	Pseudorabdion	oxycephalum	LC	T	Ind
	Pseudorabdion	saravacense†	DD	T	Ind
Colubridae	Aeluroglena	cucullata	DD	T	Af
	Ahaetulla	prasina	LC	T	Ind
	Bogertophis	subocularis	LC	T	Ne

	Boiga	beddomei	DD	T	Ind
	Boiga	bourreti†	DD	T	Ind
	Boiga	forsteni	LC	T	Ind
	Boiga	multifasciata	DD	T	Ind,Pa
	Boiga	trigonata	LC	T	Ind,Pa
	Cemophora	coccinea	LC	T	Ne
	Chrysopelea	pelias	LC	T	Ind
	Conopsis	amphisticha	NT	T	Neo
	Dasypeltis	fasciata	LC	T	Af
	Dasypeltis	scabra	LC	T	Af,Pa
	Dendrelaphis	bifrenalis	LC	T	Ind
	Dendrelaphis	calligastra	LC	T	Aus
	Dendrelaphis	cyanochloris	LC	T	Ind
	Dendrelaphis	gorei	LC	T	Ind,Pa
	Dendrelaphis	grandoculis	NT	T	Ind
	Dendrelaphis	lorentzi	LC	T	Aus
	Dendrelaphis	punctulatus	LC	T	Aus
	Drymarchon	caudomaculatus	LC	T	Neo
	Drymobius	melanotropis	LC	T	Neo
	Drymobius	rhombifer	LC	T	Neo
	Dryocalamus	gracilis	DD	T	Ind
	Dryophiops	rubescens	LC	T	Ind
	Eirenis	collaris	LC	T	Pa
	Eirenis	decemlineatus	LC	T	Pa
	Eirenis	eiselti	LC	T	Pa
	Eirenis	levantinus	LC	T	Pa
	Eirenis	mcmahoni	LC	T	Ind,Pa
	Eirenis	medus	LC	T	Pa
	Elachistodon	westermanni	LC	T	Ind
	Ficimia	ruspator	DD	T	Neo
	Ficimia	streckeri	LC	T	Ne,Neo
	Gongylosoma	scripta†	DD	T	Ind
	Lampropeltis	alterna	LC	T	Ne
	Leptophis	ahaetulla	LC	T	Neo
	Leptophis	santamartensis	DD	T	Neo
	Liopeltis	rappi	DD	T	Ind
	Lycodon	dumerili	LC	T	Ind
	Lycodon	effraenis	LC	T	Ind
	Lycodon	jara	LC	T	Ind
	Lycodon	osmanhilli	LC	T	Ind
	Lycodon	paucifasciatus	VU	T	Ind
	Lycodon	zawi	LC	T	Ind
	Lytorhynchus	maynardi	LC	T	Ind,Pa
	Lytorhynchus	ridgewayi	LC	T	Ind,Pa
	Macroprotodon	cucullatus	LC	T	Pa^{+}
	Masticophis	slevini	LC	T	Ne
	Mastigodryas	heathii	LC	T	Neo
	Mastigodryas	melanolomus	LC	T	Neo
	Meizodon	plumbiceps	LC	T	Af
	Oligodon	affinis	DD	T	Ind
	Oligodon	cinereus	LC	T	Ind

	Oligodon	cyclurus	LC	T	Ind
	Oligodon	durheimi	DD	T	Ind
	Oligodon	erythrorhachis	DD	T	Ind
	Oligodon	forbesi	LC	T	Aus
	Oligodon	joynsoni	LC	T	Ind
	Oligodon	juglandifer	VU	T	Ind
	Oligodon	lacroixi†	DD	T	Ind
	Oligodon	macrurus	DD	T	Ind
	Oligodon	planiceps†	DD	T	Ind
	Oligodon	pulcherrimus†	DD	T	Ind
	Oligodon	sublineatus	LC	T	Ind
	Oligodon	taeniolatus	LC	T	Ind,Pa
	Oligodon	templetoni	DD	T	Ind
	Oligodon	torquatus	DD	T	Ind
	Oligodon	unicolor	LC	T	Ind
	Omoadiphas	texiguatensis	DD	T	Neo
	Oocatochus	rufodorsatus	LC	T,F	Pa
	Opheodrys	aestivus	LC	T	Ne,Neo
	Philothamnus	irregularis	LC	T	Af
	Phyllorhynchus	decurtatus	LC	T	Ne,Neo
	Pituophis	deppei	LC	T	Ne,Neo
	Pituophis	melanoleucus	LC	T	Ne
	Platyceps	florulentus	LC	T	Af,Pa
	Platyceps	najadum	LC	T	Pa
	Pseudocyclophis	persicus	LC	T	Ind,Pa
	Ptyas	carinata	LC	T	Ind
	Ptyas	dipsas	DD	T	Aus
	Rhinobothryum	bovallii	LC	T	Neo
	Salvadora	hexalepis	LC	T	Ne,Neo
	Salvadora	mexicana	LC	T	Ne,Neo
	Sibynophis	bistrigatus	DD	T	Ind
	Sibynophis	bivittatus	LC	T	Ind
	Sibynophis	collaris	LC	T	Ind,Pa
	Spalerosophis	dolichospilus	DD	T	Pa
	Spalerosophis	microlepis	LC	T	Pa
	Stegonotus	florensis	DD	T	Aus
	Stenorrhina	degenhardti	LC	T	Neo
	Symphimus	leucostomus	LC	T	Neo
	Symphimus	mayae	LC	T	Neo
	Tantilla	bairdi	DD	T	Neo
	Tantilla	boipiranga	VU	T	Neo
	Tantilla	johnsoni	DD	T	Neo
	Tantilla	moesta	LC	T	Neo
	Tantilla	nigra	DD	T	Neo
	Tantilla	robusta	DD	T	Neo
	Tantilla	sertula	DD	T	Neo
	Tantilla	slavensi	DD	T	Neo
	Tantilla	vermiformis	DD	T	Neo
	Tantilla	wilcoxi	LC	T	Ne,Neo
	Telescopus	rhinopoma	LC	T	Ind,Pa
	Telescopus	variegatus	LC	T	Af

	Thelotornis	capensis	LC	T	Af
	Trachischium	guentheri	LC	T	Ind
	Trimorphodon	biscutatus	LC	T	Neo
	Zamenis	lineatus	DD	T	Pa
Dipsadidae	Adelphicos	quadrivirgatum	DD	T	Ne,Neo
	Adelphicos	visoninum	LC	T	Neo
	Alsophis	antiguae	CR	T	Neo
	Alsophis	sanctonum	EN	T	Neo
	Apostolepis	goiasensis	DD	T	Neo
	Apostolepis	multicincta	NT	T	Neo
	Apostolepis	phillipsae	LC	T	Neo
	Apostolepis	polylepis	DD	T	Neo
	Arrhyton	taeniatum	LC	T	Neo
	Atractus	albuquerquei	LC	T	Neo
	Atractus	biseriatus	DD	T	Neo
	Atractus	bocourti	LC	T	Neo
	Atractus	crassicaudatus	LC	T	Neo
	Atractus	duidensis	LC	T	Neo
	Atractus	limitaneus	LC	T	Neo
	Atractus	major	LC	T	Neo
	Atractus	modestus	VU	T	Neo
	Atractus	nicefori	VU	T	Neo
	Atractus	obtusirostris	DD	T	Neo
	Atractus	paravertebralis	DD	T	Neo
	Atractus	pauciscutatus	DD	T	Neo
	Atractus	poeppigi	LC	T	Neo
	Atractus	roulei	VU	T	Neo
	Atractus	snethlageae	LC	T	Neo
	Caraiba	andreae	LC	T	Neo
	Carphophis	amoenus	LC	T	Ne
	Chapinophis	xanthocheilus	DD	T	Neo
	Clelia	clelia	LC	T	Neo
	Clelia	hussami	DD	T	Neo
	Coniophanes	bipunctatus	LC	T	Neo
	Coniophanes	dromiciformis	VU	T	Neo
	Coniophanes	imperialis	LC	T	Ne,Neo
	Conophis	lineatus	LC	T	Neo
	Conophis	morai	DD	T	Neo
	Conophis	vittatus	LC	T	Ne,Neo
	Dipsas	catesbyi	LC	T	Neo
	Dipsas	chaparensis	LC	T	Neo
	Dipsas	maxillaris	DD	T	Neo
	Dipsas	nicholsi	LC	T	Neo
	Dipsas	pavonina	LC	T	Neo
	Dipsas	peruana	LC	T	Neo
	Dipsas	sanctijoannis	DD	T	Neo
	Dipsas	viguieri	LC	T	Neo
	Echinanthera	undulata	LC	T	Neo
	Enulius	oligostichus	DD	T	Neo
	Erythrolamprus	bizonus	LC	T	Neo
	Farancia	abacura	LC	F	Ne,Neo

	Geophis	bicolor	DD	T	Ne,Neo
	Geophis	brachycephalus	LC	T	Neo
	Geophis	cancellatus	LC	T	Neo
	Geophis	dunni	DD	T	Neo
	Geophis	nasalis	LC	T	Neo
	Geophis	pyburni	DD	T	Neo
	Geophis	ruthveni	LC	T	Neo
	Helicops	scalaris	LC	F,M	Neo
	Helicops	trivittatus	LC	T,F	Neo
	Heterodon	simus	VU	T	Ne
	Hydrops	caesurus	LC	F	Neo
	Hydrops	martii	LC	F	Neo
	Hypsiglena	torquata	LC	T	Ne,Neo
	Imantodes	inornatus	LC	T	Neo
	Imantodes	phantasma	DD	T	Neo
	Imantodes	tennuissimus	LC	T	Neo
	Liophis	ceii	LC	T	Neo
	Liophis	jaegeri	LC	T	Neo
	Liophis	janaleeae	LC	T	Neo
	Liophis	longiventris	LC	T	Neo
	Liophis	melanotus	LC	T,F	Neo
	Liophis	problematicus	DD	T	Neo
	Liophis	viridis	LC	T	Neo
	Liophis	williamsi	EN	T	Neo
	Lygophis	dilepis	LC	T	Neo
	Lygophis	elegantissimus	LC	T	Neo
	Lygophis	vanzolinii	DD	T	Neo
	Lystrophis	histricus	LC	T	Neo
	Lystrophis	semicinctus	LC	T	Neo
	Mussurana	bicolor	LC	T	Neo
	Ninia	espinali	NT	T	Neo
	Ninia	sebae	LC	T	Neo
	Nothopsis	rugosus	LC	T	Neo
	Oxyrhopus	leucomelas	LC	T	Neo
	Oxyrhopus	melanogenys	LC	T	Neo
	Oxyrhopus	occipitalis	LC	T	Neo
	Oxyrhopus	petola	LC	T	Neo
	Phalotris	lemniscatus	LC	T	Neo
	Phalotris	tricolor	LC	T	Neo
	Philodryas	argenteus	LC	T	Neo
	Philodryas	livida	VU	T	Neo
	Philodryas	psammophidea	LC	T	Neo
	Philodryas	tachymenoides	LC	T	Neo
	Philodryas	varia	LC	T	Neo
	Plesiodipsas	perijanensis	DD	T	Neo
	Pliocercus	euryzonus	LC	T	Neo
	Pseudalsophis	elegans	LC	T	Neo
	Pseudoboa	haasi	LC	T	Neo
	Pseudoeryx	plicatilis	LC	T,F	Neo
	Psomophis	obtusus	LC	T	Neo
	Rachidelus	brazili	LC	T	Neo

	Rhadinaea	cuneata	DD	T	Neo
	Rhadinaea	gaigeae	DD	T	Neo
	Rhadinaea	godmani	LC	T	Neo
	Rhadinaea	kinkelini	LC	T	Neo
	Rhadinaea	macdougalli	DD	T	Neo
	Rhadinaea	montana	EN	T	Ne
	Rhadinaea	schistosa	LC	T	Neo
	Rhadinaea	serperastra	DD	T	Neo
	Sibon	dunni	DD	T	Neo
	Sibon	linearis	DD	T	Neo
	Sibynomorphus	ventrimaculatus	LC	T	Neo
	Siphlophis	compressus	LC	T	Neo
	Siphlophis	leucocephalus	LC	T	Neo
	Siphlophis	pulcher	LC	T	Neo
	Siphlophis	worontzowi	LC	T	Neo
	Synophis	lasallei	DD	T	Neo
	Tachymenis	chilensis	LC	T	Neo
	Taeniophallus	affinis	LC	T	Neo
	Taeniophallus	nebularis	DD	T	Neo
	Thamnodynastes	corocoroensis	LC	T	Neo
	Thamnodynastes	marahuaquensis	LC	T	Neo
	Thamnodynastes	pallidus	LC	T	Neo
	Thamnodynastes	strigatus	LC	T	Neo
	Trimetopon	slevini	NT	T	Neo
	Tropidodryas	serra	LC	T	Neo
	Umbrivaga	mertensi	DD	T	Neo
	Umbrivaga	pyburni	DD	T	Neo
	Urotheca	dumerilli	DD	T	Neo
	Urotheca	guentheri	LC	T	Neo
	Xenodon	neuwiedii	LC	T	Neo
	Xenopholis	scalaris	LC	T	Neo
Elapidae	Acanthophis	rugosus	LC	T	Aus
	Aipysurus	fuscus	EN	M	Aus
	Aipysurus	tenuis	DD	M	Aus
	Astrotia	stokesii	LC	M	Aus,Ind
	Bungarus	andamanensis	VU	T	Ind
	Calliophis	bibroni	LC	T	Ind
	Calliophis	intestinalis	LC	T	Ind
	Demansia	torquata	DD	T	Aus
	Dendroaspis	polylepis	LC	T	Af
	Drysdalia	mastersii	LC	T	Aus
	Drysdalia	rhodogaster	LC	T	Aus
	Echiopsis	curta	NT	T	Aus
	Elapsoidea	chelazzii	EN	T	Af
	Elapsoidea	nigra	EN	T	Af
	Emydocephalus	annulatus	LC	M	Aus
	Emydocephalus	ijimae	LC	M	Aus
	Ephalophis	greyae	LC	M	Aus
	Furina	dunmalli	VU	T	Aus
	Hemachatus	haemachatus	LC	T	Af
	Hemibungarus	calligaster	LC	T	Ind

	Hoplocephalus	stephensii	NT	T	Aus
	Hydrophis	atriceps	LC	M	Aus,Ind
	Hydrophis	elegans	LC	F,M	Aus
	Hydrophis	klossi	DD	M	Aus
	Hydrophis	macdowelli	LC	M	Aus
	Hydrophis	sibauensis	DD	F	Ind
	Laticauda	guineai	NT	T,M	Aus
	Laticauda	laticaudata	LC	T,M	Aus,Ind
	Micruroides	euryxanthus	LC	T	Ne,Neo
	Micrurus	bogerti	DD	T	Neo
	Micrurus	dissoleucus	LC	T	Neo
	Micrurus	elegans	LC	T	Neo
	Micrurus	isozonus	LC	T	Neo
	Micrurus	langsdorffi	LC	T	Neo
	Micrurus	limbatus	LC	T	Neo
	Micrurus	multiscutatus	DD	T	Neo
	Micrurus	paraensis	LC	T	Neo
	Micrurus	pyrrhocryptus	LC	T	Neo
	Micrurus	ruatanus	CR	T	Neo
	Micrurus	tener	LC	T	Ne,Neo
	Naja	kaouthia	LC	T	Ind
	Naja	siamensis†	LC	T	Ind
	Notechis	scutatus	LC	T	Aus
	Ophiophagus	hannah	VU	T	Ind
	Oxyrhabdium	leporinum	LC	T	Ind
	Parapistocalamus	hedigeri	LC	T	Aus
	Pelamis	platura	LC	M	Af,Aus,Ind,Neo,Oc
	Prosymna	ambigua	LC	T	Af
	Prosymna	angolensis	LC	T	Af
	Prosymna	janii	LC	T	Af
	Prosymna	ornatissima	CR	T	Af
	Pseudohaje	nigra	LC	T	Af
	Rhinoplocephalus	bicolor	LC	T	Aus
	Rhinoplocephalus	pallidiceps	LC	T	Aus
	Simoselaps	australis	LC	T	Aus
	Simoselaps	incinctus	LC	T	Aus
	Simoselaps	littoralis	LC	T	Aus
	Sinomicrurus	japonicus	NT	T	Pa
	Suta	flagellum	LC	T	Aus
	Suta	nigriceps	LC	T	Aus
	Toxicocalamus	misimae	DD	T	Aus
	Vermicella	snelli	LC	T	Aus
Homalopsidae	Bitia	hydroides	LC	F,M	Ind
	Cantoria	annulata	DD	F,M	Aus
	Cantoria	violacea	LC	F,M	Ind
	Enhydris	enhydris	LC	T,F	Aus,Ind
	Enhydris	indica	DD	T,F	Ind
	Enhydris	longicauda	VU	T,F	Ind
	Enhydris	punctata	DD	T,F	Ind
	Erpeton	tentaculatum	LC	T,F	Ind
	Homalopsis	buccata	LC	T,F	Aus,Ind

Lamprophiidae	Duberria	lutrix	LC	T	Af
	Duberria	variegata	LC	T	Af
	Gonionotophis	grantii	LC	T	Af
	Ithycyphus	perineti	LC	T	Af
	Lamprophis	aurora	LC	T	Af
	Lamprophis	fiskii	DD	T	Af
	Lamprophis	geometricus	EN	T	Af
	Leioheterodon	modestus	LC	T	Af
	Liophidium	apperti	DD	T	Af
	Liophidium	therezieni	VU	T	Af
	Liophidium	trilineatum	DD	T	Af
	Liophidium	vaillanti	LC	T	Af
	Liopholidophis	grandidieri	VU	T	Af
	Lycodonomorphus	bicolor	LC	F	Af
	Lycodonomorphus	inornatus	LC	T	Af
	Lycodonomorphus	subtaeniatus	LC	T	Af
	Lycodonomorphus	whytii	LC	T	Af
	Lycodryas	carleti	NT	T	Af
	Lycodryas	citrinus	VU	T	Af
	Lycodryas	granuliceps	LC	T	Af
	Lycodryas	inopinae	EN	T	Af
	Lycophidion	acutirostre	LC	T	Af
	Lycophidion	hellmichi	DD	T	Af
	Lycophidion	nanus	VU	T	Af
	Lycophidion	ornatum	LC	T	Af
	Lycophidion	semicinctum	LC	T	Af
	Madagascarophis	colubrinus	LC	T	Af
	Mehelya	capensis	LC	T	Af
	Mehelya	nyassae	LC	T	Af
	Phisalixella	arctifasciata	LC	T	Af
	Pseudoxyrhopus	heterurus	LC	T	Af
	Pseudoxyrhopus	imerinae	NT	T	Af
	Pseudoxyrhopus	sokosoko	VU	T	Af
	Thamnosophis	stumpffi	VU	T	Af
Leptotyphlopidae	Epictia	collaris	LC	T	Neo
	Epictia	melanurus	DD	T	Neo
	Epictia	rufidorsa	LC	T	Neo
	Epictia	subcrotilla	DD	T	Neo
	Epictia	tricolor	LC	T	Neo
	Guinea	bicolor	LC	T	Af
	Leptotyphlops	jacobseni	LC	T	Af
	Namibiana	rostrata	DD	T	Af
	Rena	nicefori	DD	T	Neo
	Tricheilostoma	joshuai	LC	T	Neo
Natricidae	Afronatrix	anoscopus	LC	T	Af
	Amphiesma	flavifrons†	NT	T	Ind
	Amphiesma	groundwateri	DD	T	Ind
	Amphiesma	inas	LC	T	Ind
	Amphiesma	popei	LC	T	Ind
	Amphiesma	sieboldii	DD	T	Ind,Pa
	Anoplohydrus	aemulans	DD	T,F	Ind

	Aspidura	copei	DD	T	Ind
	Atretium	schistosum	LC	T	Ind
	Balanophis	ceylonensis	NT	T	Ind
	Clonophis	kirtlandii	NT	T,F	Ne
	Natriciteres	fuliginoides	LC	T,F	Af
	Natriciteres	olivacea	LC	T	Af
	Natrix	tessellata	LC	T,F	Pa
	Nerodia	clarkii	LC	M	Ne,Neo
	Nerodia	harteri	NT	T,F	Ne
	Nerodia	sipedon	LC	T,F	Ne
	Opisthotropis	alcalai	EN	T	Ind
	Opisthotropis	maxwelli	DD	T,F	Ind
	Opisthotropis	spenceri	DD	F	Ind
	Paratapinophis	praemaxillaris†	DD	T	Ind
	Regina	septemvittata	LC	F	Ne
	Rhabdophis	nuchalis	LC	T	Ind
	Seminatrix	pygaea	LC	F	Ne,Neo
	Sinonatrix	aequifasciata	LC	T,F	Ind
	Storeria	occipitomaculata	LC	T	Ne
	Thamnophis	butleri	LC	T	Ne
	Thamnophis	chrysocephalus	LC	T	Neo
	Tropidonophis	dahlii	LC	T,F	Aus
	Tropidonophis	elongatus	DD	T	Aus
	Tropidonophis	mairii	LC	T,F,M	Aus
	Tropidonophis	parkeri	LC	T	Aus
	Tropidonophis	punctiventris	DD	T,F	Ind
	Tropidonophis	statistictus	LC	T	Aus
	Xenochrophis	punctulatus	LC	F,M	Ind
Pareatidae	Aplopeltura	boa	LC	T	Ind
	Pareas	boulengeri	LC	T	Ind
Psammophiidae	Hemirhagerrhis	hildebrandtii	LC	T	Af
	Psammophis	condanarus	LC	T	Ind
	Psammophis	subtaeniatus	LC	T	Af
	Psammophylax	tritaeniatus	LC	T	Af
Pseudoxenodontidae	Plagiopholis	delacouri†	LC	T	Ind
	Plagiopholis	nuchalis†	DD	T	Ind
	Plagiopholis	styani	LC	T	Ind,Pa
	Pseudoxenodon	inornatus	LC	T	Ind
Tropidophiidae	Tropidophis	hendersoni	CR	T	Neo
	Tropidophis	pardalis	LC	T	Neo
Typhlopidae	Afrotyphlops	blanfordii	DD	T	Af
	Afrotyphlops	gierrai	EN	T	Af
	Austrotyphlops	endoterus	LC	T	Aus
	Austrotyphlops	hamatus	LC	T	Aus
	Austrotyphlops	kimberleyensis	LC	T	Aus
	Austrotyphlops	pilbarensis	LC	T	Aus
	Austrotyphlops	proximus	LC	T	Aus
	Austrotyphlops	waitii	LC	T	Aus
	Letheobia	erythraea	DD	T	Af
	Letheobia	graueri	LC	T	Af
	Ramphotyphlops	bicolor	LC	T	Aus

	Ramphotyphlops	cumingii	DD	T	Ind
	Ramphotyphlops	similis	DD	T	Aus
	Rhinotyphlops	episcopus	DD	T	Pa
	Rhinotyphlops	feae	LC	T	Af
	Rhinotyphlops	praeocularis	LC	T	Af
	Rhinotyphlops	stejnegeri	DD	T	Af
	Typhlops	amoipira	DD	T	Neo
	Typhlops	arenarius	DD	T	Af
	Typhlops	biminiensis	NT	T	Neo
	Typhlops	bothriorhynchus	DD	T	Ind
	Typhlops	canlaonensis	DD	T	Ind
	Typhlops	capitulatus	EN	T	Neo
	Typhlops	conradi	DD	T	Ind
	Typhlops	diardii	LC	T	Ind
	Typhlops	domerguei	DD	T	Af
	Typhlops	etheridgei	DD	T	Af
	Typhlops	filiformis	DD	T	Ind
	Typhlops	hectus	EN	T	Neo
	Typhlops	hedraeus	DD	T	Ind
	Typhlops	hypomethes	LC	T	Neo
	Typhlops	hypsobothrius	DD	T	Ind
	Typhlops	jamaicensis	LC	T	Neo
	Typhlops	koshunensis†	LC	T	Ind
	Typhlops	luzonensis	DD	T	Ind
	Typhlops	manni	VU	T	Af
	Typhlops	mcdowelli	DD	T	Aus
	Typhlops	meszoelyi	DD	T	Ind
	Typhlops	oligolepis	DD	T	Ind
	Typhlops	pammeces	LC	T	Ind
	Typhlops	reticulatus	LC	T	Neo
	Typhlops	reuteri	DD	T	Af
	Typhlops	schmutzi	EN	T	Aus
	Typhlops	siamensis	DD	T	Ind
	Typhlops	sulcatus	LC	T	Neo
	Typhlops	syntherus	NT	T	Neo
	Typhlops	tenuicollis	DD	T	Ind
	Typhlops	tenuis	LC	T	Neo
	Typhlops	wilsoni	DD	T	Pa
Uropeltidae	Melanophidium	wynaudense	LC	T	Ind
	Platyplectrurus	madurensis	DD	T	Ind
	Platyplectrurus	trilineatus	LC	T	Ind
	Rhinophis	drummondhayi	NT	T	Ind
	Rhinophis	fergusonianus	DD	T	Ind
	Rhinophis	oxyrhynchus	LC	T	Ind
	Uropeltis	arcticeps	LC	T	Ind
	Uropeltis	ocellatus	LC	T	Ind
	Uropeltis	petersi	DD	T	Ind
	Uropeltis	pulneyensis	LC	T	Ind
	Uropeltis	rubromaculatus	DD	T	Ind
	Uropeltis	smithi	DD	T	Ind
	Uropeltis	woodmasoni	LC	T	Ind

Viperidae	Agkistrodon	contortrix	LC	T	Ne
	Agkistrodon	taylori	LC	T	Ne,Neo
	Atheris	barbouri	VU	T	Af
	Atheris	ceratophora	VU	T	Af
	Atheris	chlorechis	LC	T	Af
	Atheris	hirsuta	VU	T	Af
	Atropoides	nummifer	LC	T	Ne,Neo
	Bitis	atropos	LC	T	Af
	Bitis	peringueyi	LC	T	Af
	Bothriopsis	oligolepis	LC	T	Neo
	Bothrocophias	myersi	LC	T	Neo
	Bothropoides	erythromelas	LC	T	Neo
	Bothropoides	lutzi	LC	T	Neo
	Bothrops	jararacussu	LC	T	Neo
	Bothrops	lojanus	EN	T	Neo
	Cerastes	vipera	LC	T	Pa
	Crotalus	aquilus	LC	T	Ne,Neo
	Crotalus	catalinensis	CR	T	Ne
	Crotalus	cerastes	LC	T	Ne
	Crotalus	durissus	LC	T	Neo
	Crotalus	pricei	LC	T	Ne,Neo
	Crotalus	ravus	LC	T	Ne,Neo
	Crotalus	scutulatus	LC	T	Ne,Neo
	Cryptelytrops	albolabris	LC	T	Ind
	Cryptelytrops	erythrurus	LC	T	Ind
	Cryptelytrops	insularis	LC	T	Ind
	Echis	hughesi	DD	T	Af
	Echis	megalocephalus	DD	T	Af
	Echis	pyramidum	LC	T	Pa
	Gloydius	saxatilis	LC	T	Pa
	Himalayophis	tibetanus	LC	T	Ind
	Hypnale	nepa	LC	T	Ind
	Macrovipera	schweizeri	EN	T	Pa
	Montivipera	latifii	EN	T	Pa
	Ovophis	monticola	LC	T	Ind
	Parias	sumatranus	LC	T	Ind
	Popeia	fucata	LC	T	Ind
	Protobothrops	jerdonii	LC	T	Ind
	Protobothrops	kaulbacki	DD	T	Ind,Pa
	Protobothrops	mucrosquamatus	LC	T	Ind
	Protobothrops	sieversorum†	LC	T	Ind
	Protobothrops	xiangchengensis	LC	T	Ind
	Pseudocerastes	persicus	LC	T	Pa
	Rhinocerophis	itapetiningae	LC	T	Neo
	Trimeresurus	brongersmai†	VU	T	Ind
	Trimeresurus	gramineus	DD	T,F	Ind
Xenodermatidae	Achalinus	ater	LC	T	Ind
	Achalinus	jinggangensis	DD	T	Ind
Xenopeltidae	Xenopeltis	unicolor	LC	T	Aus
Xenophiidae	Xenophidion	acanthognathus	DD	T	Ind

TURTLES & TORTOISES					
Chelidae	Acanthochelys	macrocephala	NT	T,F	Neo
	Acanthochelys	pallidipectoris	VU	T,F	Neo
	Acanthochelys	radiolata	DD	T,F	Neo
	Acanthochelys	spixii	NT	T,F	Neo
	Chelodina	pritchardi	EN	T,F	Aus
	Elseya	novaeguineae	LC	T,F	Aus
	Elusor	macrurus	EN	T,F	Aus
	Emydura	victoriae	LC	T,F	Aus
	Mesoclemmys	hogei	CR	T,F	Neo
	Mesoclemmys	tuberculata	VU	T,F	Neo
	Rhinemys	rufipes	LC	T,F	Neo
Cheloniidae	Eretmochelys	imbricata	CR	T,M	Af,Aus,Ind,Ne,Neo,Oc,Pa
Emydidae	Emys	orbicularis	NT	T,F	Pa$^+$
	Emys	trinacris	DD	T,F	Pa
	Graptemys	barbouri	VU	T,F	Ne
	Malaclemys	terrapin	VU	T,F	Ne
	Pseudemys	concinna	LC	T,F	Ne
	Pseudemys	nelsoni	LC	T,F	Ne$^+$
	Terrapene	nelsoni	DD	T,F	Neo
	Terrapene	ornata	NT	T,F	Ne
Geomydidae	Batagur	kachuga	CR	T,F	Ind
	Batagur	trivittata	EN	T,F	Ind
	Cuora	mouhotii	EN	T,F	Ind,Pa
	Cyclemys	atripons	VU	T,F	Ind
	Hardella	thurjii	EN	T,F	Ind
	Heosemys	annandalii	EN	T,F	Ind
	Mauremys	mutica	EN	T,F	Ind,Pa
	Pangshura	tecta	LC	T,F	Ind
Kinosternidae	Kinosternon	alamosae	DD	T,F	Neo
	Sternotherus	depressus	CR	T,F	Ne
Pelomedusidae	Pelusios	carinatus	NT	T,F	Af
	Pelusios	castaneus	NT	T,F	Af,Neo*
	Pelusios	gabonensis	NT	T,F	Af
	Pelusios	subniger	NT	T,F	Af,Neo*
Podocnemididae	Podocnemis	erythrocephala	VU	T,F	Neo
Testudinidae	Chersina	angulata	LC	T	Af
	Gopherus	polyphemus	EN	T	Ne
	Kinixys	erosa	NT	T	Af
	Psammobates	oculifer	DD	T	Af
	Stigmochelys	pardalis	LC	T	Af
	Testudo	graeca	LC	T	Pa$^+$
	Testudo	horsfieldii	VU	T	Ind,Pa
	Testudo	kleinmanni	CR	T	Pa
Trionychidae	Apalone	spinifera	LC	T,F	Ne$^+$
	Chitra	chitra	CR	F	Ind
	Dogania	subplana	LC	T,F	Ind

[1] Amphisbaenians have more recently been placed within the lacertiform lizard radiation (e.g., Townsend et al., 2004; Vidal and Hedges, 2005; Wiens et al., 2010).

[2] has been more commonly placed under the family Eublepharidae (Kluge 1987; Grismer 1988)

[3] has also been placed under family Leiosauridae (Frost et al., 2001)
[4] has also been placed under its own family, Leiocephalidae (Frost et al., 2001).
[5] has also been placed under either Liolaemidae (Frost et al., 2001) or family Iguanidae, subfamily Tropidurinae, tribe Liolaemini (Schulte et al., 2003).
[6] has also been placed under its own family, Pythonidae, by various authors (e.g., see Vidal and Hedges, 2004).

S2. Summary of species per major taxonomic groups (crocodiles, turtles & tortoises, lizards, snakes, amphisbaenia) by A) habitat system (terrestrial, freshwater, marine) and B) biogeographical realm. Some species fall within multiple system/realms.
Realm: Af – Afrotropical, Aus – Australasian, Ind – Indomalayan, Ne – Nearctic, Neo – Neotropical, Oc – Oceanian, Pa – Palearctic.

A)	**Terrestrial**	**Freshwater**	**Marine**
Amphisbaenia (*N* = 28)	28	0	0
Crocodiles (*N* = 4)	4	4	1
Lizards (*N* = 867)	867	1	0
Snakes (*N* = 555)	529	38	21
Turtles & tortoises (*N* = 46)	45	37	1

B)	**Af**	**Aus**	**Ind**	**Ne**	**Neo**	**Oc**	**Pa**
Amphisbaenia (*N* = 28)	11	0	0	0	14	0	3
Crocodiles (*N* = 4)	0	0	1	0	3	0	1
Lizards (*N* = 867)	174	150	151	44	280	5	106
Snakes (*N* = 555)	95	64	150	41	193	1	36
Turtles & tortoises (*N* = 46)	9	5	12	9	11	1	8

S3. Additional methodology information.

S3.1 Red List assessment process and review

Species assessments were produced using a network of more than 300 species experts. Draft assessments for the majority of species which did not fall under Red List initiatives via a dedicated IUCN SSC Specialist Group or Red List programme [such as the Global Reptile Assessment (GRA) or the Global Marine Species Assessment (GMSA)] were collated from published literature, reports and grey literature by the Zoological Society of London (ZSL). These draft assessments included the IUCN category based on the information available so far. These were then circulated to previously identified species experts (to act as assessors) and respective Specialist Groups for review and comment. This required the inclusion of any additional information that may have been missed in the initial draft assessment, as well as verification of the information collated thus far (including verification of the species' distribution maps). Lastly, the IUCN Categories and Criteria were again applied to the updated assessments and sent out to the experts for final approval. All approved assessments and distribution maps were submitted to the IUCN Red List office for review. This entails the signing off on each assessment by a minimum of two reviewers (for example, the relevant Red List Authority for a specific taxon or experts on the Red Listing process) and the passing of standards and consistency checks by the IUCN Red List office, before publication on the IUCN Red List.

Because of the nature of the Red List network, other programmes and species specialist groups were involved in the assessment process. The Global Reptile Assessment steered the assessment process for North American squamates in conjunction with NatureServe, and contributed to and reviewed assessments for Central America, Madagascar and the Western Ghats. The Global Marine Species Assessment (GMSA) and the IUCN SSC Sea Snake Specialist Group coordinated the assessment of sea snakes. Assessments for the following taxa were carried out in collaboration with the respective IUCN SSC specialist groups: chamaeleons (IUCN SSC Chamaeleon Specialist Group), crocodiles (IUCN SSC Crocodile Specialist Group), iguanas (IUCN SSC Iguana Specialist Group), marine turtles (IUCN SSC Marine Turtle Specialist Group), sea snakes (IUCN SSC Sea Snake Specialist Group), and tortoises and freshwater turtles (IUCN SSC Tortoise and Freshwater Turtle Specialist Group).

S3.2 IUCN Criteria used to assess the extinction risk of 1,500 reptiles

In order to standardise the estimation of extinction risk across different taxa and by different people, the IUCN have produced a set of Red List Categories and Criteria which have several specific aims: 1) to provide a system that can be applied consistently by different people; 2) to improve objectivity by providing users with clear guidance on how to evaluate different factors which affect the risk of extinction; 3) to provide a system which will facilitate comparisons across widely different taxa; 4) to give people using threatened species lists a better understanding of how individual species were classified.

Specifically, different types of data are available for different taxa and extinction risk can be estimated via a number of factors which are correlated with increased risk, such as knowledge of population estimates or decline, range size estimates or range configuration. The IUCN Red List Categories and Criteria provide us with five different criteria to assess a species' extinction risk, based on:

- Reduction in population size (Criterion A)
- Restricted geographic range (Criterion B)
- Small population size and decline (Criterion C)
- Very small population size (Criterion D/D1) or very restricted range (Criterion D2)
- Quantitative analysis of probability of extinction (Criterion E)

Meeting any one of these criteria qualifies a taxon for listing at that level of threat.

In our sample, the 223 threatened species were categorised using the following criteria:

Criterion A: 28 species (12.6%)
Criterion B: 162 species (72.7%)
Criterion C: 6 species (2.7%)
Criterion D/D1: 3 species (1.3%)
Criterion D2: 27 species (12.1%)

Because they were the most widely used criteria to list species in threatened categories, we compile a short description of criteria A, B and D2, based on the information given in the Guidelines for using the IUCN Red List Categories and Criteria (IUCN Standards and Petitions Subcommittee. 2011. Guidelines for Using the IUCN Red List Categories and Criteria. Version 9.0. Prepared by the Standards and Petitions Subcommittee. Downloadable from http://www.iucnredlist.org/documents/RedListGuidelines.pdf, 2001).

Criterion A:

The A criterion is designed to highlight taxa that have undergone a significant decline in the near past, or are projected to experience a significant decline in the near future. The criterion is split into the criteria A1, A2, A3 and A4 (IUCN Standards and Petitions Subcommittee, 2011).

Criterion A1 deals with reductions in the past 10 years or three generations (whichever is longer) and is applicable to taxa in which the causes of reduction are clearly reversible AND understood AND have ceased (IUCN Standards and Petitions Subcommittee, 2011). Criterion A1 has been applied to seven of the 28 species classed as threatened under criterion A.

Criterion A2 also deals with reductions in the past 10 years or three generations (whichever is longer) but for taxa where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible (IUCN Standards and Petitions Subcommittee, 2011). Criterion A2 has been applied to 25 of the 28 species classed as threatened under criterion A.

Criterion A3 deals with population reductions projected or suspected to be met in the future 10 years or three generations (whichever is longer, but up to a maximum of 100 years) (IUCN Standards and Petitions Subcommittee, 2011). Criterion A3 has been applied to only one of the 28 species classed as threatened under criterion A.

Criterion A4 deals with reductions observed, estimated, inferred, projected or suspected over any 10 year or three generation time period (up to a maximum of 100 years into the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible (IUCN Standards and Petitions Subcommittee, 2011). Criterion A4 has been applied to nine of the 28 species classed as threatened under criterion A.

The reduction can be the reduction based on (a) direct observation (A1, A2 and A4 only), (b) an index of abundance appropriate to the taxon, (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat, (d) actual or potential levels of exploitation, and/or (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites (IUCN Standards and Petitions Subcommittee, 2011).

Criterion B:
The B criterion has been designed to identify populations with restricted distributions that are also severely fragmented, undergoing a form of continuing decline, and/or exhibiting extreme fluctuations (in the present or near future; IUCN Standards and Petitions Subcommittee, 2011). To qualify for criterion B, the general distributional threshold must first be met for one of the categories of threat, either in terms of extent of occurrence (Criterion B1: EOO is 20,000 km^2 for VU; 5,000 km^2 for EN; 100 km^2 for CR) or area of occupancy (Criterion B2: AOO is 2,000 km^2 for VU; 500 km^2 for EN; 10 km^2 for CR) (IUCN Standards and Petitions Subcommittee, 2011). The taxon must then meet at least TWO of the three options listed for criterion B: (a) severely fragmented or known to exist in no more than *x* locations (*x* being 10 locations for VU; 5 locations for EN; 1 location for CR), (b) continuing decline in range (extent of occurrence or area of occupancy), habitat (quality or extent) or numbers of mature individuals, locations or subpopulations, or (c) extreme fluctuation in range (extent of occurrence or area of occupancy) or numbers of mature individuals, locations or subpopulations (IUCN Standards and Petitions Subcommittee, 2011).

In our analysis, 157 species qualified as threatened under criterion B1 and 20 under criterion B2 (out of a total of 162 species classed under criterion B).

Criterion D2
Criterion D identifies very small or restricted populations. Under Vulnerable, the criterion is split into D1 (very small population size of less than 1,000 mature individuals) and D2 (very restricted population with a plausible threat) (IUCN Standards and Petitions Subcommittee, 2011). Typically, and as a guideline, criterion D2 suggests an area of occupancy of less than 20 km^2 or that the species exists at typically five or fewer locations; however, the thresholds are not intended to be interpreted in a strict sense and species-specific (IUCN Standards and Petitions Subcommittee, 2011). Crucially, restriction in itself is no cause for a listing under criterion D2; instead, there needs to be a plausible natural or anthropogenic threat which is likely to affect the species in the near future, i.e., within a very short time period (e.g., one or two generations) in an uncertain future, the species is capable of becoming Critically Endangered or even Extinct due to the plausible threat (IUCN Standards and Petitions Subcommittee, 2011).

S3.3 Useful links on the IUCN Red List Categories and Criteria and the Red List Index (RLI) and Sampled Red List Index (SRLI)

The following links provide valuable information about the IUCN Red List Categories and Criteria, their application and the standards and documentation requirements of the IUCN.

IUCN Red List Categories and Criteria, Version 3.1:
http://www.iucnredlist.org/documents/redlist_cats_crit_en.pdf

Guidelines for using the IUCN Red List Categories and Criteria, Version 9.0:
http://www.iucnredlist.org/documents/RedListGuidelines.pdf

Documentation Standards and Consistency Checks for IUCN Red List Assessments and Species Accounts, Version 1.1. This also contains a map defining the geographic extent of biogeographical realms:
http://www.iucnredlist.org/documents/RL_Standards_Consistency_1_1.pdf

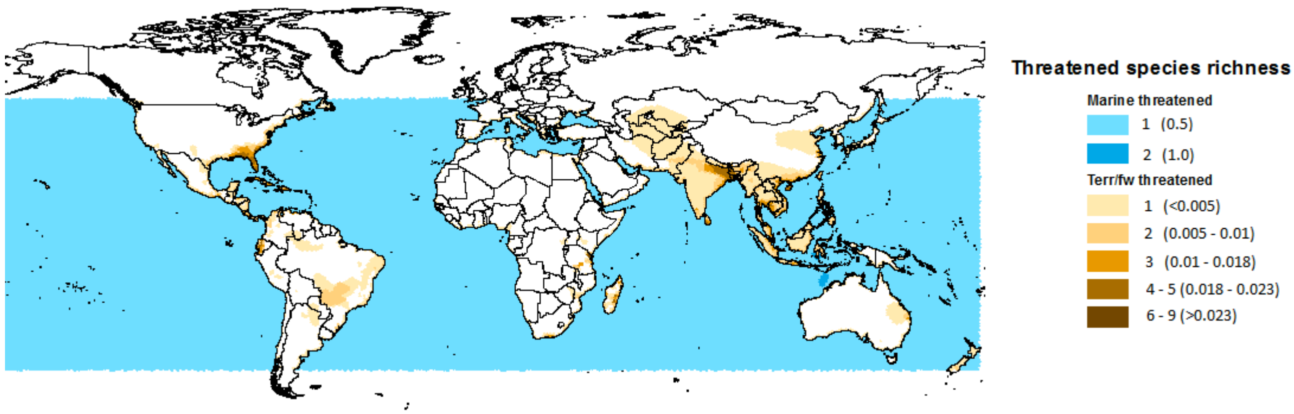
Information about the Red List Index: http://www.iucnredlist.org/about/publications-links#Red_List_Index

IUCN Red List Index Guidelines for the Sampled Approach:
http://static.zsl.org/files/iucn-rli-sampled-approach-guidelines-652.pdf

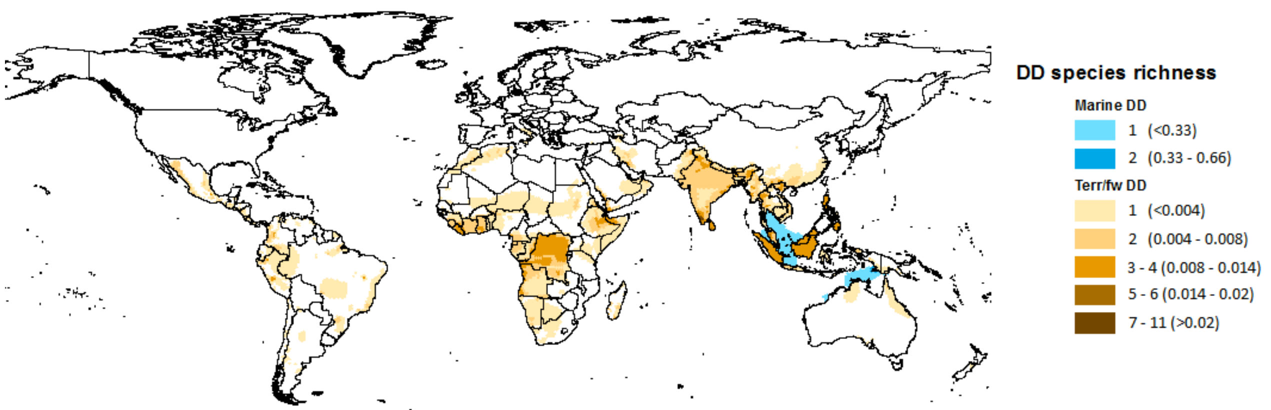
The geographic extent of biogeographical realms are defined as laid out in the Millennium Ecosystem Assessment, see Figure 1.3 in the following document link (or go to the Documentation Standards and Consistency Checks for IUCN Red List Assessments and Species Accounts, Version 1.1 document above):
http://www.maweb.org/documents/document.354.aspx.pdf

S4. Species richness of threatened and Data Deficient reptiles in the sample.
A) threatened species in the sample ($N_{terr/fw}$ = 221; N_{marine} = 2); B) Data Deficient species in the sample ($N_{terr/fw}$ = 313; N_{marine} = 3).

A

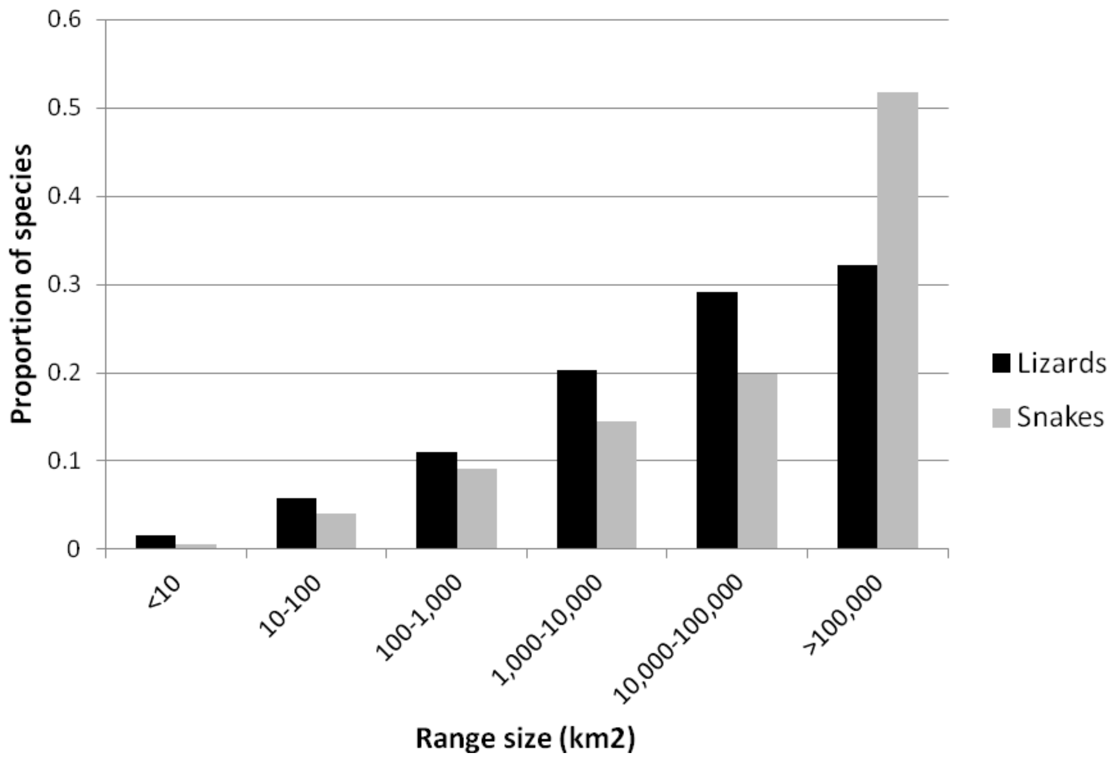


B



S5. Histogram of the proportion of all non-Data Deficient lizards and snakes by range size category (terrestrial species only).

Snake ranges in the sample were larger than the ranges of lizards, which may have contributed to the fact that proportionally more lizards were classed as threatened than snakes. Over half of terrestrial snake species had ranges of more than 100,000 km^2, while comparatively more lizards fell into the smaller range classes than snakes.



S6. Additional References in Supplementary Material

IUCN Standards and Petitions Subcommittee, 2011. Guidelines for Using the IUCN Red List Categories and Criteria. Version 9.0. Prepared by the Standards and Petitions Subcommittee. Download: http://www.iucnredlist.org/documents/RedListGuidelines.pdf.

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