

Table 1: Numbers of threatened species by major groups of organisms (1996–2008)

	Estimated Number of described species	Number of species evaluated by 2008	Number of threatened species in 1996/98	Number of threatened species in 2000	Number of threatened species in 2002	Number of threatened species in 2003	Number of threatened species in 2004	Number of threatened species in 2006	Number of threatened species in 2007	Number of threatened species in 2008	Number threatened in 2008, as % of species described	Number threatened in 2008, as % of species evaluated**
<b>Vertebrates</b>												
Mammals	5,488	5,488	1,096	1,130	1,137	1,130	1,101	1,093	1,094	1,141	21%	21%
Birds	9,990	9,990	1,107	1,183	1,192	1,194	1,213	1,206	1,217	1,222	12%	12%
Reptiles	8,734	1,385	253	296	293	293	304	341	422	423	5%	31%
Amphibians*	6,347	6,260	124	146	157	157	1,770	1,811	1,808	1,905	30%	30%
Fishes	30,700	3,481	734	752	742	750	800	1,171	1,201	1,275	4%	37%
<b>Subtotal</b>	<b>61,259</b>	<b>26,604</b>	<b>3,314</b>	<b>3,507</b>	<b>3,521</b>	<b>3,524</b>	<b>5,188</b>	<b>5,622</b>	<b>5,742</b>	<b>5,966</b>	<b>10%</b>	<b>22%</b>
<b>Invertebrates</b>												
Insects	950,000	1,259	537	555	557	553	559	623	623	626	0%	50%
Molluscs	81,000	2,212	920	938	939	967	974	975	978	978	1%	44%
Crustaceans	40,000	1,735	407	408	409	409	429	459	460	606	2%	35%
Corals	2,175	856	1	1	1	1	1	1	4	235	11%	27%
Arachnids	98,000	32	11	11	11	11	11	11	11	18	0%	56%
Velvet Worms	165	11	6	6	6	9	9	9	9	9	5%	82%
Horseshoe Crabs	4	4	0	0	0	0	0	0	0	0	0%	0%
Others	61,040	52	9	9	9	9	9	24	24	24	0%	46%
<b>Subtotal</b>	<b>1,232,384</b>	<b>6,161</b>	<b>1,891</b>	<b>1,928</b>	<b>1,932</b>	<b>1,959</b>	<b>1,992</b>	<b>2,102</b>	<b>2,109</b>	<b>2,496</b>	<b>0.20%</b>	<b>41%</b>
<b>Plants</b>												
Mosses	16,000	95	---	80	80	80	80	80	80	82	1%	86%
Ferns and allies	12,838	211	---	---	---	111	140	139	139	139	1%	66%
Gymnosperms	980	910	142	141	142	304	305	306	321	323	33%	35%
Dicotyledons	199,350	9,624	4,929	5,099	5,202	5,768	7,025	7,086	7,121	7,122	4%	74%
Monocotyledons	59,300	1,155	257	291	290	511	771	779	778	782	1%	68%
Green Algae	3,962	2	---	---	---	---	---	---	0	0	0%	0%
Red Algae	6,076	58	---	---	---	---	---	---	9	9	0%	16%
<b>Subtotal</b>	<b>298,506</b>	<b>12,055</b>	<b>5,328</b>	<b>5,611</b>	<b>5,714</b>	<b>6,774</b>	<b>8,321</b>	<b>8,390</b>	<b>8,448</b>	<b>8,457</b>	<b>3%</b>	<b>70%</b>
<b>Others</b>												
Lichens	17,000	2	---	---	---	2	2	2	2	2	0%	100%
Mushrooms	30,000	1	---	---	---	---	---	1	1	1	0%	100%
Brown Algae	3,040	15	---	---	---	---	---	---	6	6	0%	40%
<b>Subtotal</b>	<b>50,040</b>	<b>18</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>9</b>	<b>9</b>	<b>0.02%</b>	<b>50%</b>
<b>TOTAL</b>	<b>1,642,189</b>	<b>44,838</b>	<b>10,533</b>	<b>11,046</b>	<b>11,167</b>	<b>12,259</b>	<b>15,503</b>	<b>16,117</b>	<b>16,308</b>	<b>16,928</b>	<b>1%</b>	<b>38%</b>

**NOTES:**

1) \*It should be noted that for certain species endemic to Brazil, it has not yet been possible to reach agreement on the Red List Categories between the Global Amphibian Assessment (GAA) Coordinating Team, and the experts on the species in Brazil. The 2004-2008 figures for Amphibians displayed here are those that were agreed at the GAA Brazil workshop in April 2003. However, in the subsequent consistency check conducted by the GAA Coordinating Team, many of the assessments were found to be inconsistent with the approach adopted elsewhere in the world, and a "consistent Red List Category" was also assigned to these species. The "consistent Red List Categories" are yet to be accepted by the Brazilian experts; therefore the original workshop assessments are retained here. However, in order to ensure comparability between results for amphibians with those for other taxonomic groups, the data used in various analyses (e.g., Baillie *et al.* 2004; the Global Amphibians web site) are based on the "consistent Red List Categories". Therefore, figures for Amphibians in Table 1 above will not completely match figures that appear in other analyses.

2) \*\*Apart from the mammals, birds, amphibians and gymnosperms (i.e., those groups completely or almost completely evaluated), the figures in the last column are gross over-estimates of the percentage threatened due to biases in the assessment process towards assessing species that are thought to be threatened, species for which data are readily available, and under-reporting of Least Concern species. The true value for the percentage threatened lies somewhere in the range indicated by the two right-hand columns. In most cases this represents a very broad range. For example, the true percentage of threatened insects lies somewhere between 0.07% and 50%. Hence, although 39% of all species on the IUCN Red List are listed as threatened, this figure needs to be treated with extreme caution given the biases described above.

3) The number of described and evaluated mammals excludes domesticated species like sheep (*Ovis aries*), goats (*Capra hircus*), Dromedary (*Camelus dromedarius*), etc.

4) Mosses include the true mosses (Bryopsida), the hornworts (Anthocerotopsida), and liverworts (Marchantiopsida); while the ferns and allies include the club mosses (Lycopodiopsida), spike mosses (Sellaginellopsida), quillworts (Isoetopsida), and true ferns (Polypodiopsida).

5) Seaweeds are included in the green algae (Chlorophyta), red algae (Rhodophyta), and brown algae (Ochrophyta).

6) Threatened species are those listed as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU).

7) The numbers and percentages of species threatened in each group **DO NOT** mean that the remainder are all not threatened (i.e., are Least Concern). There are a number of species in many of the groups listed as Near Threatened or Data Deficient (see Tables 3a and 3b). These figures also need to be considered in relation to the number of species evaluated as shown in column two (see note 2 above).

8) The plant figures **DO NOT** include species from the 1997 IUCN Red List of Threatened Plants (Walter and Gillett 1998) as those were all assessed using the pre-1994 IUCN system of threat categorization. Hence the figures for numbers of threatened plants are very much lower when compared to the 1997 results. The results from this Red List and the 1997 Plants Red List should be combined together when reporting on threatened plants.

**Sources for Numbers of Described Species:**

**Mammals** – From Wilson and Reeder (2005; see <http://www.bucknell.edu/msw3/>), with deviations based on new revisions and published papers that have appeared since the accounts in Wilson and Reeder (2005) were compiled and largely up until 31 December 2007, but there are a few exceptions where new species published early in 2008 were included. In cases where there are alternative taxonomic treatments, the Global Mammal Assessment coordinating team working with the relevant IUCN SSC Specialist Group has advised on which treatment to follow.

**Birds** – BirdLife International. 2008. The BirdLife checklist of the birds of the world, with conservation status and taxonomic sources. Version 1. Available from [http://www.birdlife.org/datazone/species/downloads/BirdLife\\_Checklist\\_Version\\_1.zip](http://www.birdlife.org/datazone/species/downloads/BirdLife_Checklist_Version_1.zip) [xls zipped 1 MB]. Accessed: 28 September 2008.

**Amphibians** – From Frost, D.R. 2008. *Amphibian Species of the World: an Online Reference. Version 5.2 (15 July, 2008)*. Available at: <http://research.amnh.org/herpetology/amphibia/index.php>. Accessed: 28 September 2008.

**Reptiles** – Based on the figures (as of February 2008) provided by *The Reptile Database* compiled by Peter Uetz and Jakob Hallermann. Available at: <http://www.reptile-database.org>. Accessed: 28 September 2008.

**Fishes** – Based on Froese, R. and Pauly, D. (eds). 2008. *FishBase*. World Wide Web electronic publication. [www.fishbase.org](http://www.fishbase.org). version (07/2008). Accessed: 28 September 2008.

**Insects** – Estimates of the number of insects in the world vary from about 751,000 to more than 1 million, but the most commonly cited figure is 950,000 (see discussion in Chapman, A. 2005 (updated April 2007) *Numbers of Living Species in Australia and the World*. Available at: <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/03-02-groups-invertebrates.html#insecta>. Accessed 28 September 2008).

**Crustaceans** – The estimated number of described species of Crustacea in the world varies from 30,000 to 67,000 but the best estimate is 40,000 (see discussion in Chapman, A. 2005 (updated April 2007) *Numbers of Living Species in Australia and the World*. Available at: <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/03-02-groups-invertebrates.html#crustacea>. Accessed 28 September 2008).

**Molluscs** – From Bouchet (2007). (For further discussion on the numbers of molluscs, see Chapman, A. 2005 (updated April 2007) *Numbers of Living Species in Australia and the World*. Available at: <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/03-02-groups-invertebrates.html#mollusca>. Accessed 28 September 2008).

**Corals** – Corals fall under the Phylum Cnidaria and are primarily in the Class Anthozoa, although there are some in the Class Hydrozoa. The number of described species reported here are for species typically regarded as 'corals' and are largely based on Spalding *et al.* (2001) (Alcyonarian corals); and Cairns (1999) (Scleractinian corals). The remainder of the cnidarians, anemones, jellyfish, etc., are treated under other.

**Arachnids** (spiders, scorpions, etc) – Estimates of the number of described arachnids vary from 60,000 to 96,711, but the best estimate of 98,000 is higher than these figures (see discussion in Chapman, A. 2005 (updated April 2007) *Numbers of Living Species in Australia and the World*. Available at: <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/03-02-groups-invertebrates.html#arachnida>. Accessed 28 September 2008).

**Velvet Worms** – The number of described species of Onychophora (velvet worms) would appear to be around 165 (for further details see discussion in Chapman, A. 2005 (updated April 2007). *Numbers of Living Species in Australia and the World*. Available at: <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/03-02-groups-invertebrates.html#onychophora>. Accessed 28 September 2008).

**Horseshoe Crabs** – Horseshoe crabs are placed on the Red List under the traditional class "Merostomata" which excludes the fossil sea scorpions; only four species are extant today (see <http://en.wikipedia.org/wiki/Merostomata> for further details).

**Others** – This is a miscellaneous group of invertebrate species that have been assessed for the IUCN Red List. The total number of described species is based on the estimated totals from the following groups from which the assessed species come: Annelida - segmented worms (15,000), Cnidaria - anemones, jellyfish, etc. but excluding the corals which are treated separately (6,825), Echinodermata - starfish (7,000 species), Myriapoda - centipedes and millipedes (12,215) and Platyhelminthes - flat worms (20,000). (For further details on the numbers in these groups see: Chapman, A. 2005 (updated April 2007). *Numbers of Living Species in Australia and the World*. Available at: <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/03-02-groups-invertebrates.html>. Accessed 28 September 2008).

**Mosses** – Based on information provided by Chapman, A. 2005 (updated April 2007). *Numbers of Living Species in Australia and the World*. Available at <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/03-03-groups-plants.html#bryophyta>. Accessed 28 September 2008.

**Ferns and allies** – Based on information provided by Chapman, A. 2005 (updated April 2007). *Numbers of Living Species in Australia and the World*. Available at <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/03-03-groups-plants.html#ferns>. Accessed 28 September 2008.

**Gymnosperms** – Based on Donaldson (2003), Farjon (2001) and Mabberley (1997). Chapman (2005) also follows this figure, for discussion see <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/03-03-groups-plants.html#gymnosperms>.

**Dicotyledons and monocotyledons** – Based on Inorne (2002), but see Mabberley (1997); Schmid (1998); Govaerts (2001, 2003); Bramwell (2002); and Scotiano and Wortley (2003) for alternative views on the numbers of seed plant species.

**Lichens** - The figure of 10,000 from Groombridge and Jenkins (2002) appears to be too low, so the number described is now based on information provided by Chapman, A. 2005 (updated April 2007). *Numbers of Living Species in Australia and the World*. Available at: <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/03-04-groups-others.html#lichens>. Accessed 28 September 2008.

**Mushrooms** - Number of mushroom-forming fungi based on Kirk *et al.* (2001) (see Tree of Life web site: <http://tolweb.org/tree/phylogeny.html>. Accessed: 28 September 2008).

**Green (Chlorophyta), Red (Rhodophyta) and Brown (Ochrophyta) Algae** – From Guiry, M.D. and Guiry, G.M. 2008. *AlgaeBase*. World-wide electronic publication, National University of Ireland, Galway. <http://www.algaebase.org>. Accessed on 28 September 2008.