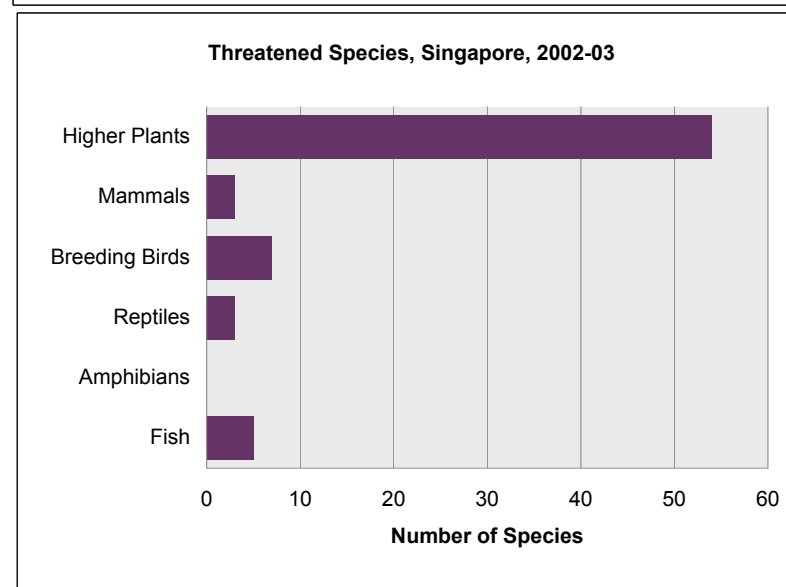
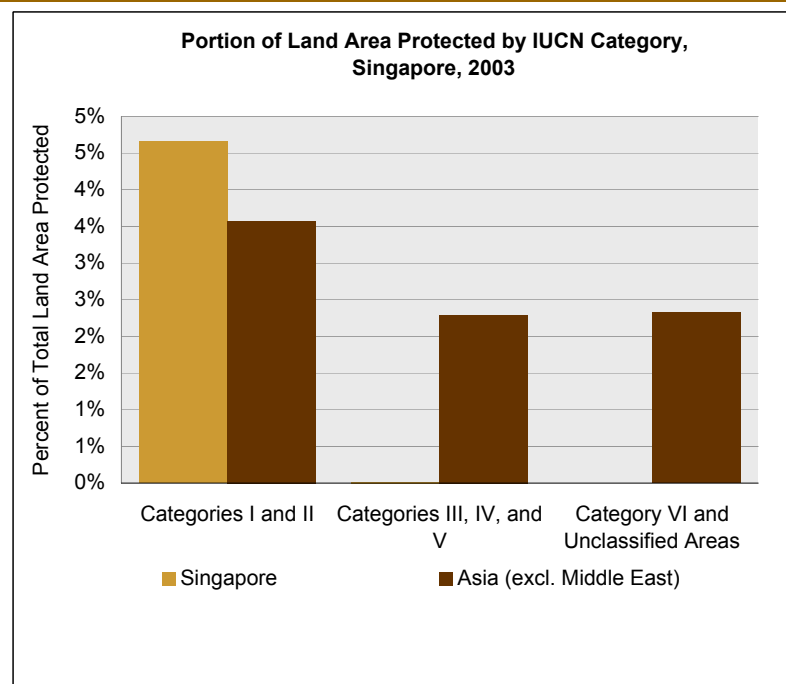




	Singapore	Asia (excl. Middle East)	World
Total Land Area (000 ha)	62	2,494,475	13,328,979
Protected Areas			
<i>Extent of Protected Areas by IUCN Category (000 ha), 2003:</i>			
Nature Reserves, Wilderness Areas, and National Parks (categories I and II)	3	89,140	438,448
Natural Monuments, Species Management Areas, and Protected Landscapes and Seascapes (categories III, IV, and V)	0	57,211	326,503
Areas Managed for Sustainable Use and Unclassified Areas (category VI and "other")	X	57,878	692,723
Total Area Protected (all categories)	3	204,229	1,457,674
Marine and Littoral Protected Areas {a}	1	21,995	417,970
Protected Areas as a Percent of Total Land Area, 2003 {b}	5.5%	8.3%	10.8%
Number of Protected Areas, 2003	4	5,761	98,400
Number of Areas >100,000 ha, 2003	X	295	2,091
Number of Areas > 1 million ha, 2003	X	X	243
Wetlands of International Importance (Ramsar Sites), 2002:			
Number of Sites	X	98	1,179
Total Area (000 ha)	X	5,641	102,283
Biosphere Reserves, 2002			
Number of Sites	X	55	408
Total Area (000 ha)	X	X	439,000
Number and Status of Species			
Higher Plants			
Total known species (number), 1992-2002	2,282	X	X
Number of threatened species, 2002	54	X	5,714
Mammals			
Total known species (number), 1992-2002	85	X	X
Number of threatened species, 2002	3	X	1,137
Breeding Birds			
Total known species (number), 1992-2002	142	X	X
Number of threatened species, 2002	7	X	1,192



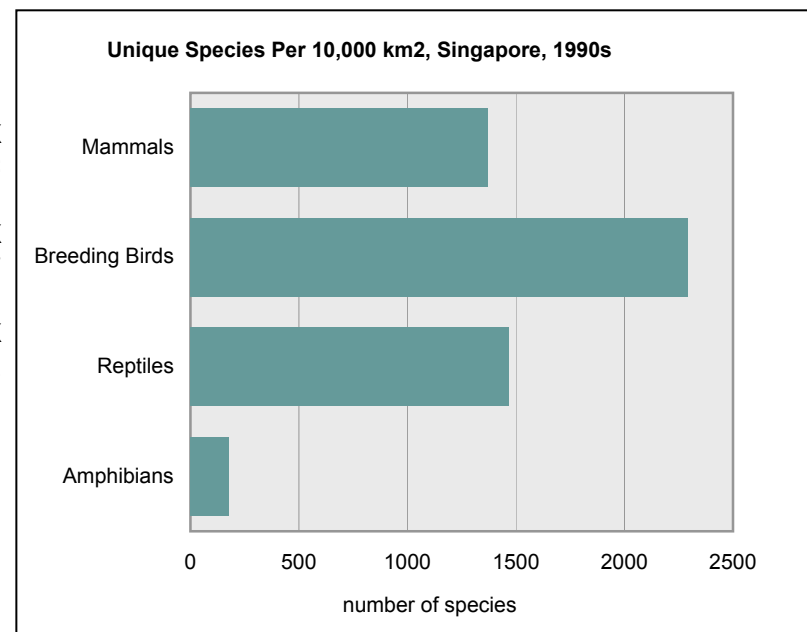
View more Country Profiles on-line at <http://earthtrends.wri.org>

Biodiversity and Protected Areas-- Singapore

Number and Status of Species, continued	Singapore	Asia (excl. Middle East)	World
Reptiles			
Number of Total Known Species, 1992-2003	91	X	X
Number of threatened species, 2002	3	X	293
Amphibians			
Number of Total Known Species, 1992-2003	11	X	X
Number of threatened species, 2002	X	X	157
Fish			
Number of Total Known Species, 1992-2003	131	X	X
Number of threatened species, 1992-2002	5	X	742

Legal Trade in Selected Wildlife and CITES {c} Status

Year CITES Ratified	X	
Net International Legal Trade Reported by CITES, 2000 (number) {d}		
Live Lizards	52	40,679
Live Snakes	1,474	-42,773
Live Primates	0	-19,366
Live Parrots	5,484	-136,381
Lizard Skins	-60,843	-435,164
Snake Skins	-202,857	-1,074,698
Crocodile Skins	-38,208	147,615
Wild Cat Skins	3	-44,221



Footnotes:

- Marine and littoral protected areas are not included in the "Total Area Protected" above.
- Includes IUCN categories I-V. Marine and littoral protected areas are excluded from these totals.
- CITES is an acronym for the Convention on International Trade in Endangered Species of Wild Fauna and Flora.
- Positive numbers represent net imports; negative numbers represent net exports. Regional figures are the sum of country-level trade statistics, therefore, these numbers include trade between countries in the same region.

View more Country Profiles on-line at <http://earthtrends.wri.org>

Biodiversity and Protected Areas—Sources and Definitions

Protected Areas

Total Land Area is reported by the Food and Agriculture Organization of the United Nations (FAO). The area of inland water bodies is included in the total.

Extent of Protected Areas by IUCN Category

View full technical notes on-line at http://earthtrends.wri.org/pdf_library/data_tables/Bio2_2003.pdf

An IUCN Management Protected Area is defined by IUCN as "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means." As of Summer 2003 a World Database on Protected Areas (WDPA) consortium has been working to produce an improved and updated database available in the public domain. Summary information presented in the WDPA, of which UNEP-WCMC is the custodian, includes the legal designation, name, IUCN Management Category, size in hectares, location (latitude and longitude), and the year of establishment for over 100,000 sites. IUCN categorizes protected areas by management objective.

All calculations for the analyses were performed by WRI using the WDPA GIS point file containing all nationally-designated protected areas, joined with a corresponding table showing area in hectares (provided by UNEP-WCMC). Due to variations in consistency and methodology of collection, data on protected areas are highly variable among countries. Some countries update their information with greater regularity; others may have more accurate data on extent of coverage. Many countries have an underreported number and/or extent of protected areas within their borders.

Nature Reserves, Wilderness, Areas, and National Parks (categories I and II) include all land area protected in the following IUCN categories:

Category Ia. Strict nature reserve: A protected area managed mainly for scientific research and monitoring; an area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species.

Category Ib. Wilderness area: A protected area managed mainly for wilderness protection; a large area of unmodified or slightly modified land and/or sea retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.

Category II. National park: A protected area managed mainly for ecosystem protection and recreation; a natural area of land and/or sea designated to: (a) protect the ecological integrity of one or more ecosystems for present and future generations; (b) exclude exploitation or occupation inimical to the purposes of designation of the area; and (c) provide a foundation for spiritual, scientific, educational, recreational, and visitor opportunities, all of which must be environmentally and culturally compatible.

Natural Monuments, Species Management Areas, and Protected Landscapes and Seascapes (categories III, IV, and V) include all land area protected in the following IUCN categories:

Category III. Natural monument: A protected area managed mainly for conservation of specific natural features; an area containing one or more specific natural or natural/cultural features that is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities, or cultural significance.

Category IV. Habitat/species management area: A protected area managed mainly for conservation through management intervention; an area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.

Category V. Protected landscape/seascape: A protected area managed mainly for landscape/seascape conservation and recreation; an area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological, and/or cultural value, and often with high biological diversity.

Areas Managed for Sustainable Use and Unclassified Areas (category VI and "other") include some protected areas not classified by IUCN and: Category VI. Managed mainly for the sustainable use of natural ecosystems. These areas contain predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while also providing a sustainable flow of natural products and services to meet community needs.

Marine and Littoral Protected Areas (MPAs) include marine protected areas, littoral protected areas, and protected areas with both marine and littoral components. All are assigned an IUCN category (I-VI), although MPAs are excluded from the totals listed above. IUCN defines a Marine Protected Area as: "any area of intertidal or subtidal terrain, together with its overlying water and associated flora and fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment." These marine protected areas include areas that are fully marine and areas that have only a small percentage of intertidal land. Many MPAs have large terrestrial areas. The extent of the marine portion of most protected areas is rarely documented. The degree of protection varies from one country to another, and may bear little relationship to the legal status of any site. "Littoral" is defined as any site which is known to incorporate at least some intertidal area.

Protected Areas as a % of Total Land Area is calculated by dividing the total land area protected under IUCN Categories I-V by the total land area in a country (see above for complete definitions). Marine and Littoral protected areas are excluded from this calculation.

Data for the **Number of Protected Areas**, **Number of Areas >100,000 ha**, and **Number of Areas > 1,000,000 ha** include areas classified in IUCN categories I-V. Marine and littoral protected areas are not included here.

Number and Area of Wetlands of International Importance, or Ramsar Sites, are defined under the Wetlands Convention, signed in Ramsar, Iran, in 1971. The Convention on Wetlands is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. In order to qualify as a Ramsar site, an area must have "international significance in terms of ecology, botany, zoology, limnology or hydrology." See http://www.ramsar.org/key_criteria.htm for a full listing of the selection criteria. View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=174&theme=7

Number and Area of Biosphere Reserves are terrestrial and coastal/marine environments that have been internationally recognized under the Man and the Biosphere Programme of the United Nations Educational, Scientific, and Cultural Organization (UNESCO). These sites have been selected for their value to conservation and are intended to foster the scientific knowledge and skills necessary for promoting sustainable development. Each reserve must contain a diverse, natural ecosystem large enough to be an effective conservation unit. Some Biosphere Reserves are shared by two or more countries, but the land area presented here corresponds to the portion of the shared Biosphere Reserve in that country only. View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=437&theme=7

Sources

United Nations Environment Programme - World Conservation Monitoring Centre (UNEP-WCMC). World Database on Protected Areas (WDPA) Version 6. Compiled by the World Database on Protected Areas Consortium. Cambridge, U.K., August, 2003.

United Nations Educational, Scientific, and Cultural Organization (UNESCO). 2002. Man and the Biosphere Reserves Directory. Paris: UNESCO. Available on line at: <http://www.unesco.org/mab/wnbr.htm>.

The Ramsar Bureau. 2002. *List of Wetlands of International Importance*. Gland: The Ramsar Bureau. Available online at: <http://ramsar.org/sitelist.pdf>.

Number and Status of Species

Known Species

The **Number of Known Species** refers to the total number of known, described, and recorded species in a given country. Total numbers for all species groups include both endemic and non-endemic species (a species that is found in a particular region and nowhere else is said to be endemic to that region). Numbers may also include introduced species. Figures are not necessarily comparable among countries because taxonomic concepts and the extent of knowledge about actual species numbers vary. Country totals of species are underestimates of actual species numbers.

The number of **Known Plants** include vascular plant species (flowering plants, conifers, cycads and fern species), but do not include mosses. **Known Mammals** exclude marine mammals. **Known Birds** include only birds that breed in that country, not those that migrate or winter there. The number of **Known Fish** include both freshwater and marine species.

Data are collected by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) from a variety of sources, including, but not limited to: national reports from the convention on biodiversity, other national documents, independent studies, and other texts. Data are updated on a continual basis as they become available; however, updates vary widely by country. While some countries (UNEP-WCMC estimates about 12) have data that were updated in the last 6 months, other species estimates have not changed since the data were first collected in 1992.

The complete UNEP-WCMC dataset from which **Known Species of Mammals, Birds, Plants, Reptiles, and Amphibians** were extracted represents only about 2% of the total species of the world. As a result, the numbers reported here are vast underestimates of the actual species worldwide. Mammals and birds are better known and represented than other taxonomic groups. Invertebrates in the kingdom *Animalia*, the kingdom *Protista*, and the kingdom *Monera* are not included in these country profiles.

Data on **Known Species of Mammals, Birds, Plants, Reptiles, and Amphibians** are based on a compilation of available data from a large variety of sources. They are not based on species checklists. Data have been collected over the last decade without a consistent approach to taxonomy. Additionally, while the number of species in each country does change, not all countries are updated systematically, and some data may not reflect recent trends.

Threatened Species

The **Number of Threatened Species** for include "all full species categorized at the global level as Critically Endangered, Endangered or Vulnerable." Sub-species, introduced species, species whose status is insufficiently known, and species whose status has not been assessed are excluded.

Threatened species are classified in one of 3 categories:

1. Critically Endangered: includes species facing an extremely high risk of extinction in the wild in the immediate future.
2. Endangered: includes species that are not "Critically Endangered" but are facing a very high risk of extinction in the wild in the near future
3. Vulnerable: includes species facing a high risk of extinction in the wild in the medium-term future.

For each threat category, five criteria A-E are used to classify species in one of the three categories mentioned above:

- A- Declining population
- B- Small population and decline or fluctuation
- C- Small population size and decline
- D- Very small population/very restricted distribution
- E- Quantitative analysis (e.g. Population Viability Analysis)

Data on threatened species are compiled and maintained by the IUCN in their Red List of Threatened Animals and the World List of Threatened Trees. Generally, the information presented in the current IUCN Red List represents an accumulation of knowledge derived from previously published Red Lists. In some cases, assessments are the product of group discussion, but often they represent the judgement of individual Specialist Group members. In order to ensure greater accuracy and transparency in the listing process, a peer review system of Red List Evaluators was initiated. Designated Red List Authorities are responsible for ensuring that all species they are responsible for are documented and re-assessed at regular intervals. For more detailed information please refer to the original source at: http://www.redlist.org/info/categories_criteria2001.html.

Data on **threatened species of mammals, birds, plants, reptiles, and amphibians** underestimate the total number of threatened species in these groups worldwide. To date, threatened species assessments have been undertaken for 100% of described birds and mammals, for less than 15% of described reptiles and amphibians, and for less than 10% of described fish. For plants, threatened species assessments have been undertaken for less than 1% of described mosses, less than 72% of Gymnosperms, less than 5% of Dicotyledons, and less than 2% of Monocotyledons. Beyond the group of described species, there are many species that have yet to be described and whose status is yet unknown. Data on threatened species is better represented for mammals and birds than for other taxonomic groups. Far-ranging species, such as some marine species, may not be well-documented in the country data.

Sources

United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC). 2002-2003. *UNEP-WCMC Species Database*. Cambridge, U.K.: UNEP-WCMC. Web site: <http://www.unep-wcmc.org>.

International Union for Conservation of Nature and Natural Resources (IUCN). 2002. *2002 IUCN Red List of Threatened Species*. IUCN: Gland, Switzerland. Available on-line at: <http://www.redlist.org/info/tables/table5.html>; <http://www.redlist.org/info/tables/table1.html>.

Legal Trade in Selected Wildlife and CITES Status

Year CITES ratified indicates the year that a country has either *signed* or *ratified* The Convention on International Trade in Endangered Species of Wild Fauna and Flora. By signing the treaty, a state recognizes the authentic text, intends to complete the procedures for becoming legally bound by it, and is committed not to act against the treaty's objectives before ratification. Ratification (or its equivalents of acceptance, approval, or accession) binds the state to observe the treaty. Depending on a country's system of governance, signing the treaty may be simply an executive decision while ratification requires legislative approval. CITES is an international agreement to ensure that the survival of wild animals and plants is not threatened by international trade. It has been in force for almost 30 years; today, it accords varying degrees of protection to more than 30,000 species of animals and plants, whether they are traded as live specimens, fur coats, or dried herbs. CITES is legally binding on countries that have joined the Convention, and provides a framework to be respected by each Party, which has to adopt its own domestic legislation to make sure that CITES is implemented at the national level. More information is available at <http://www.cites.org>.

View full technical notes on-line at http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=632&theme=7

Net International Legal Trade Reported by CITES is the balance of imports minus exports of selected wildlife and wildlife products from the spectrum of wildlife and wildlife products for which export, re-export, and import permits are issued. Net exports are shown as negative, and all figures are for trade reported for the year 2000. Data on net exports and net imports as reported by CITES correspond to legal international trade and are based on permits issued, not actual items traded. Figures may be overestimates if not all permits are used that year. In addition, some permits issued in one year are used at a later date. For these reasons, numbers of exports and imports may not match exactly for any given year. Regional values represent the sum of intra-regional and inter-regional trade for all countries in a given region, and is not limited to the sum of exports into and out of a region. World totals show the total number of exports, since calculating the balance of trade for the world would have canceled all figures. About 25,000 species of plants and 5,000 species of animals are listed under CITES; many species groups are not listed.

Live Lizards include the net number of import, export, and re-export permits issued in the year 2000 for individuals from all *Sauria* and *Rhynchocephalia* species listed under the CITES treaty, while **Lizard Skins** represent the net number of permits issued for whole skins for these groups of species. **Live Snakes** include the net number of permits issued in the year 2000 for individuals from all *Serpentes* species listed under the CITES treaty, while **Snake Skins** represent the net number of permits issued for whole skins for these groups of species. **Live Primates** include the net number of permits issued in the year 2000 for individuals of all monkeys, apes, and prosimians listed under the CITES treaty. **Live Parrots** include the net number of permits issued in the year 2000 for individuals of all *Psittaciformes* species listed under the CITES treaty. Crocodylian skins represent the number of permits issued in the year 2000 for whole skins belonging to individuals of *Crocodylia* species that are listed under the CITES treaty. Cat skins represent the number of permits issued in the year 2000 for whole skins belonging to individuals of *Felidae* species that are listed under the CITES treaty.

Sources

Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) Secretariat. *List of Contracting Parties*. Available on-line at: <http://www.cites.org/eng/parties/alphabet.shtml> (United Nations Environment Program, Nairobi, Kenya, May 2002).

United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC). Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) annual report data, WCMC CITES Trade Database (UNEP-WCMC, Cambridge, U.K., July 2002).