BOX 3.2 The IUCN Red List System

The IUCN Red List System, a systematic listing of species in threat of extinction, was initiated in 1963 to be used in conservation planning efforts around the globe. Over time, hundreds of scientists have worked to create listing criteria that have been carefully defined to be maximally useful as a diagnostic tool to help establish extinction risk over all taxa. Species are assigned to one of nine categories, which indicate their threat status or their status in the review process (Figure A). These categories are defined as follows:

Extinct (EX)

A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed extinct when exhaustive surveys in known and expected habitat, at appropriate times (diurnal, seasonal, annual) to the taxon's life cycle and life form, throughout its historic range have failed to record an individual.

Extinct in the Wild (EW)

A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity, or as a naturalized population (or populations) well outside the past range, and there is no reasonable doubt that the last individual in the wild has died, as outlined under EX.

Critically Endangered (CR)

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A–E in Table A for Critically Endangered species, and is therefore facing an extremely high risk of extinction in the wild.

Endangered (EN)

A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A–E for Endangered (see Table A) and is therefore facing a very high risk of extinction in the wild.

Vulnerable (VU)

A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A–E for Vulnerable (see Table A) and is therefore facing a high risk of extinction in the wild.

Near Threatened (NT)

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered, or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

Least Concern (LC)

A taxon is deemed Least Concern when it has been evaluated against the criteria and it neither qualifies for the previously described designations (Critically Endangered, Endangered, Vulnerable, or Near Threatened), nor is it likely to qualify in the near future. Widespread and abundant taxa are included in this category.

Data Deficient (DD)

A taxon is Data Deficient when there is inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution, population status, or both. Every effort is made to use this category as a last resort, as this is not a category of threat, but only indicates more information is needed to make a status determination.

Not Evaluated (NE)

A taxon is Not Evaluated if it is has not yet been evaluated against the criteria.

Assignment to one of the three threatened categories (CR, EN, or VU) is made on the basis of a suite of quantitative standards adopted in 1994 that relate abundance or geographic range indicators to extinction risk (see Table A). The different criteria and their quantitative values (A–E) were chosen through extensive scientific review, and are aimed at detecting risk factors across the broad diversity of species that must be considered (IUCN 2001).Qualification under any of the criteria A–E is sufficient for listing; however, evaluations are always made as completely as possible for use in evaluating changes in status over time, and for conservation planning purposes. Thus, the status of a taxon will be evaluated according to most of these criteria, as

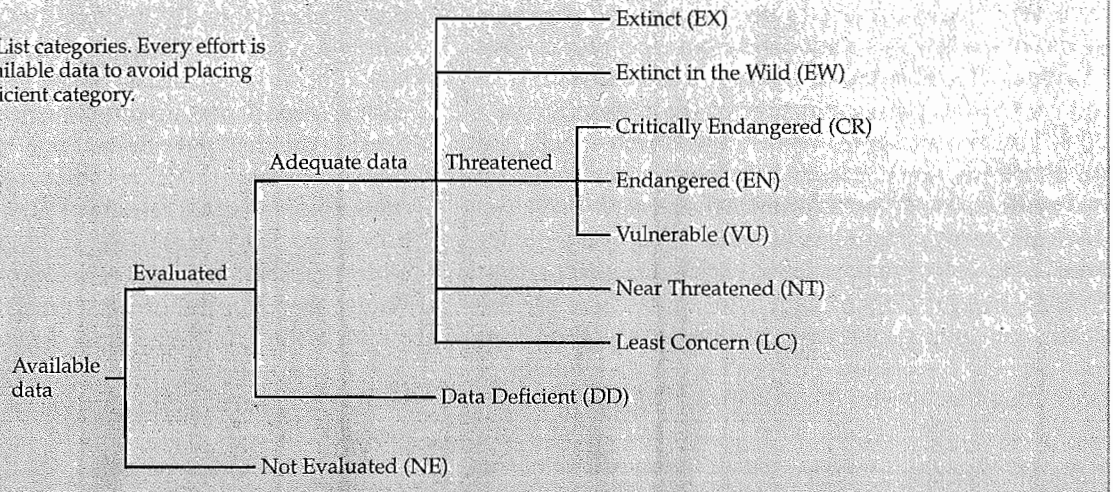

Figure A IUCN Red List categories. Every effort is made to employ all available data to avoid placing species in the Data Deficient category.

far as is possible given current knowledge.

A major advance in risk evaluation, the Red List criteria require efforts to place quantitative bounds on our knowledge, and explicitly allow for uncertainty. The assignments to category are not assignments of priority, but rather a reflection of our current best judgment of how great the risk of extinction is for this species, given the best available information at present. All species on the list must be reevaluated at least once every ten years.

In addition to quantifying risk of extinction, the Red List compiles data on the nature of the threats to the species. These evaluations are useful for initial efforts to conserve the threatened species, and in aggregate can guide efforts to reduce threatening processes.

TABLE A *Overview of Criteria (A–E) for Classifying Species as CR, EN, or VU in IUCN Red List*

Criterion	Critically Endangered (CR)	Endangered (EN)	Vulnerable (VU)	Qualifiers
A.1				
Reduction in population size	>90%	>70%	>50%	Over 10 years or 3 generations in the past where causes are reversible, understood, and have ceased
A.2–4				
Reduction in population size	>80%	>50%	>30%	Over 10 years or 3 generations in the past, future, or combination, where causes are not reversible, not understood, or ongoing
B.1				
Small range (extent of occurrence)	<100 km^2	<5000 km^2	<20,000 km^2	Plus two of (a) severe fragmentation or few occurrences (CR = 1, EN = 2–5, VU = 6–10), (b) continuing decline, (c) extreme fluctuation
B.2				
Small range (area of occupancy)	<10 km^2	<500 km^2	<2000 km^2	
C				
Small and declining population	<250	<2500	<10,000	Mature individuals, plus continuing decline either over a specific rate in short time periods, or with specific population structure or extreme fluctuations
D.1				
Very small population	<50	<250	<1000	Mature individuals
D.2				
Very small range	—	—	<20 km^2 or <5 locations	Capable of becoming CR or EX within a very short time
E				
Quantitative analysis	>10% in 100 years or 3 generations	>20% in 20 years or 5 generations	>50% in 100 years	Estimated extinction risk using quantitative models, e.g., population viability analyses

Source: IUCN 2001.

rine, 2981 freshwater, and 13,657 terrestrial species are considered endangered, and recorded extinctions are similarly apportioned.

For the most complete evaluated taxa, amphibians and gymnosperms stand out as particularly threatened (see Table 3.2). Cycads, an ancient group of gymnosperms, are especially vulnerable, with 52% endangered. The true level of threat is undoubtedly higher than these estimates due to the large number of Data Deficient rankings: 1290 amphibians (23%), 360 mammals, 78 birds and 77 gymnosperms all are too poorly known to be ranked, but certainly some of these are endangered.

Among mammals, ungulates, carnivores, and primates are particularly at risk mostly due to habitat degradation and overexploitation (Baillie et al. 2004). Albatrosses, cranes, parrots, pheasants, and pigeons are particularly threatened among the birds due to bycatch, habitat loss, the pet trade, and direct exploitation (Birdlife International 2004). Amphibians appear to be at greatest risk of extinction, with a high fraction of these species listed as critically endangered (21%; IUCN 2004). A wide variety of threats affect amphibian populations throughout the world, many of which exert synergistic effects on these sensitive animals; these threats