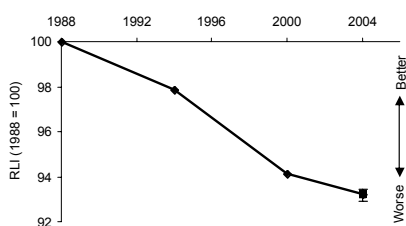


- Red List Indices (RLIs) are robust and powerful tools for measuring biodiversity loss – they are already being used to track progress towards the 2010 target.
- RLIs illustrate the relative rate at which sets of species change in overall threat status (i.e. projected relative extinction risk), based on population and range size and trends as quantified by IUCN Red List categories.
- RLIs are based on the number of species in each IUCN Red List category, and the number changing categories between assessments as a result of genuine improvement or deterioration in status.
- RLIs show a fairly coarse level of resolution, but for fully assessed taxonomic groups they are highly representative, being based on information from a high proportion of species worldwide.
- The RLI for the world's birds shows that their overall threat status has deteriorated steadily during 1988–2004. A preliminary RLI for amphibians for 1980–2004 shows similar rates of decline.
- By 2010, RLIs will be available for at least mammals, birds, amphibians and cycads, plus first assessments for reptiles, fish, freshwater molluscs, dragonflies, palms and legumes.
- A sampled index is being developed, based on a stratified sample of species from a broad suite of major taxonomic groups, realms and ecosystems. This will provide trends in extinction risk more representative of all biodiversity.

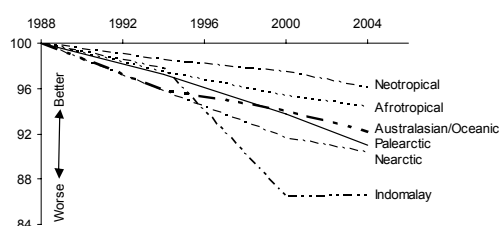
## How are Red List Indices calculated?

1) For species assessed in two consecutive assessments, the total numbers of species in each Red List category in the earlier assessment (excluding Data Deficient, Extinct and Possibly Extinct) are multiplied by a category weight (NT=1, VU=2, EN=3, CR=4, EW=5), and these are summed to give a total score for the assessment. (2) Over the time period between assessments the net number of genuine changes (losses and gains) in each category is calculated, multiplied by the category weight and summed to give the % change in the total score. (3) The index value of the previous assessment (set to 100 for the first assessment: 1988 for birds and 1980 for amphibians) is then scaled up or down by this % change to give the new value. Error bars show the estimated degree of error associated with the most recent index value owing to time-lags before genuine status changes are detected. For amphibians, categories for 1980 were retrospectively assigned by considering information on the spread of disease, habitat degradation and loss, the introduction of alien invasive species and population trends. A conservative approach was adopted, and category changes were only recorded as having taken place when the evidence was considered to be strong.

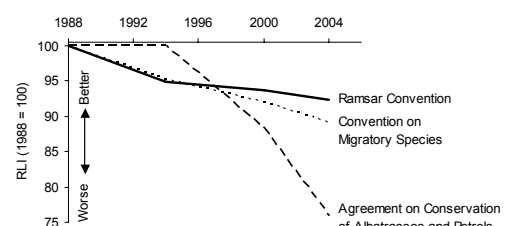
The RLI for birds shows that there has been a steady and continuing deterioration in the threat status (projected extinction risk) of the world's birds between 1988 and 2004, with an overall change in the index value of -6.90% over this period. This is equivalent to about 10% of species (in categories NT to CR) deteriorating in status sufficiently to be uplisted one category between 1988 and 2004. Disaggregating the RLI shows that the threat status of birds has deteriorated worldwide with a more-or-less similar rate and proportional extent in most biogeographic realms. The Indomalayan realm shows a steeper rate of deterioration during the 1990s, owing to the intensifying destruction of forests in the Sundaic lowlands of Indonesia, which led to many species being uplisted owing to rapid population declines. RLIs for sets of species relevant to three international treaties highlight the recent dramatic deterioration in the status of albatrosses and large petrels. This is closely linked to the expansion of commercial longline fisheries, which causes incidental mortality of albatrosses and other seabirds when they get caught on baited hooks and drown.



RLI for the world's birds



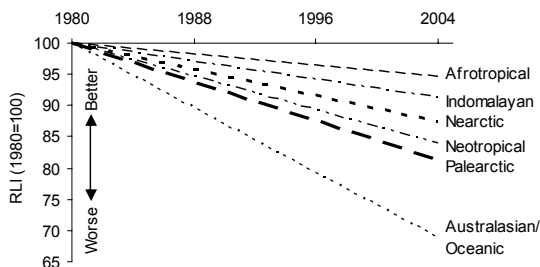
RLI for birds in different biographic realms



RLI for birds covered by three international treaties

## A preliminary Red List Index for the world's amphibians

A preliminary RLI for amphibians shows that their threat status has deteriorated substantially since 1980, to an extent equivalent to c.30% of species (in categories from NT to CR) being uplisted by one category. The rate of deterioration is likely to have been underestimated because a conservative approach was adopted in identifying genuine deteriorations. Furthermore, 23% of amphibians are listed as Data Deficient, and with better information many of these may well prove have undergone serious declines through this period. Amphibians in the Australasian/Oceanic realm have shown the steepest deterioration in status, followed by those in the Palearctic and Neotropical realms. The decline in the Palearctic realm is largely driven by the increasing levels of exploitation of amphibians in China over the period, while the steep decline in the Neotropical and Australasian/Oceanic realms largely reflects the impacts of the fungal disease chytridiomycosis.



Preliminary RLI for amphibians in different biogeographic realms

## Interpreting RLIs in terms of the 2010 target

How can the RLI be interpreted in relation to the CBD's target of reducing the rate of loss of biodiversity by 2010? The IUCN Red List criteria are based on absolute population or range size, rates of decline in these values, or both. These criteria are used to assign species to IUCN Red List categories that can be ranked according to relative projected extinction risk, and the RLI is calculated from changes between these categories. Hence RLI values relate to the rate at which species are slipping towards extinction at particular points in time. To show that the 2010 target has been met, the RLI must therefore show a positive trend. A downward trend, even if becoming less steep, shows that the slide of species towards extinction is accelerating, not slowing down. The negative trends in the RLI values for birds and amphibians thus show that in 2004 we are losing biodiversity at an increasing rate, at least as far as these groups are concerned.

- ☺ RLIs are highly representative, being based on assessments of a high proportion of species in a taxonomic group across the world including those that are rare, localised, or difficult to survey.
- ☹ RLIs show fairly coarse temporal resolution of status changes because of the broad nature of Red List categories. The size, trend or distribution of populations may have to undergo quite substantial changes before crossing the criteria thresholds to qualify for a higher or lower IUCN Red List category, and hence before changing the RLI value.
- ☺ RLIs complement population trend-based indices: the former are derived from (potentially) cruder data that can be collected for nearly all species in a taxonomic group, the latter are based on much more detailed information that can only be collected for a small (and often biased) subset of species.
- ☹ Time-lags owing to delays before status changes are detected by assessors are a small and decreasing problem for birds. The uncertainty they give to the 2004 RLI value is 0.21–0.37%: a small and acceptable margin of error.
- ☺ RLIs can be calculated at global, regional and (in many cases) national scales

The taxonomic coverage of the IUCN Red List is rapidly expanding. By 2010, RLIs will be available for birds, amphibians, mammals and cycads. Other groups that will have been completely assessed for the first time include reptiles, fish, freshwater molluscs, dragonflies, palms and legumes. However, regularly repeated complete assessments are currently only possible for better-known species groups. To address this, a **sampled RLI** is being developed based on a stratified sample of species from a broad suite of major taxonomic groups, including mammals, birds, reptiles, amphibians, fish, insects, spiders, crustaceans, molluscs, plants, algae and fungi. Species will be representative of all biogeographic realms and ecosystems. It is intended that preliminary results will be available by 2010. This will provide a global index of extinction risk which will be more representative of all biodiversity.

### Further information:

Butchart *et al.* 2004 (*PLoS Biol.* 2(12): e383); Butchart *et al.* (in press; *Phil. Trans. Roy. Soc. Lond.*);  
Stuart *et al.* (2004) *Science* 306: 1783–1786; Baillie *et al.* (2004) *2004 IUCN Red List*;  
contact [stuart.butchart@birdlife.org](mailto:stuart.butchart@birdlife.org) or see [www.birdlife.org](http://www.birdlife.org), [www.globalamphibians.org](http://www.globalamphibians.org) and [www.iucnredlist.org](http://www.iucnredlist.org)