Guidelines for the Global Fungal Red-Listing Initiative

The procedure

In brief, the procedure is as follows:

1. Anyone may suggest a species from different fungal groups to be evaluated, so long as it might qualify to be included in the IUCN's global Red List. That is, only species that potentially meet global Red List criteria should be suggested, such as species that are declining globally or are extremely rare. The proposer should include as much information as possible about the species including: its global distribution, status, trends, ecology, threats, suggested conservation actions, bibliography and preferably species images to facilitate a Red List evaluation.

2. Thereafter, anyone with knowledge of the species is encouraged to comment and provide additional information. This is a critical and important step in the process. Additional information and comments will be important in strengthening the proposal and the Red List. We hope and expect to receive many contributions.

Both the original proposal information and all subsequent comments will be displayed on the website for further comment.

3. Proposed species will be evaluated for the Red List by the appropriate IUCN fungal specialist group after sufficient time has elapsed for comments to be posted.

4. The preliminary outcome and motivation of their Red List evaluation will be posted on this site for comments. The proposer and all registered persons (including commenting persons) will be notified.

5. After consideration of any additional comments, species that fulfill IUCN's criteria to be globally Red listed will be suggested to IUCN for inclusion in the IUCN Global Red List.

Which species should be suggested?

The initial phase of this project continues until to the end of 2014. The aim is to evaluate as many fungal species from different fungal groups around the world as possible for inclusion on the IUCN's Global Red List during this time. Hence species that are sufficiently well known, with accepted taxonomy, and likely to be globally red-listed as threatened (VU-CR) or near threatened (NT), will be prioritized. This will further facilitate the development of conservation actions for fungi.

Species that are less known, and therefore likely to be classified as Data Deficient (DD), may also be suggested, but the primary focus of this initial phase will be on better known species. Without doubt, the major part of global fungal diversity is insufficiently known and deserves critical attention. A few DD

classified species may be included in this project. However, the target audience for this phase of the initiative is conservationists in the broad sense; politicians, active conservationists, landowners, NGOs, researchers and so forth. In order to demonstrate that fungal conservation is possible with present knowledge, the status, conservation needs and possibilities for improving the profile of each species needs documenting. Hence, it is important to primarily select more well-known species that can attract interest from larger audiences.

Proposed species should therefore potentially meet global Red List requirements including:

1. The population of the species has globally declined by at least 15% during the last 10 to 50 years or is expected to do so during the coming 10 to 50 years (the A-criteria of IUCN)

2. The species has a geographically restricted distribution globally (i.e. is present in one or only a few countries) and is declining (the B-criteria of IUCN)

3. This species has a very small population globally and is declining (the C-criteria of IUCN)

4. The species has a very small global population (< than 2000 reproducing fungal individuals) or is confined to very few and restricted areas (< 10 locations) (the D criteria of IUCN).

When considering the criteria above, the total global population of a species needs to be considered, i.e. both known and yet to be known localities. Decline of populations may indirectly be inferred from changes in both the amount and quality of appropriate habitat.

How to get started

1. Open your favourite web browser and go to http://iucn.ekoo.se/

2. Follow the instructions and Sign Up as a new user (you will then receive an e-mail with a confirmation link to complete your registration).

3. Sign in with your login details. Check the option "remember me" if you're not using a public computer.

4. Fill out and complete the User Profile form with your contact details.

How to add a species proposal

1. Choose "Add New Proposal" from the top menu.

2. Search and choose the species/taxon you want to propose for a global Red List assessment. If you can't find the taxonomic name you want to use:
    a. Click on the link "Try a full name search" and select "Search All names".
    b. Make a new name search and choose the species you want to propose.

c. If the name you want to use is still missing, please contact michael.krikorev@slu.se and provide the taxonomic name and details.

3. Follow the instructions and fill in the form details for each step below:

a. **Proposed status** (Yes/No)
Click on the "Yes"-button to propose the species for a red list assessment. This action will assign you as the "owner" (hereafter referred to as the *proposer*) of this species and its content. All other users are now prevented from editing the main content, but they are encouraged to make additional contributions and comments that can be of help to the assessors and the IUCN specialist groups that ultimately will evaluate all user contributions.

Briefly describe why the species should be considered for a global Red List assessment. This description will help the IUCN fungal specialist group in charge of the subsequent Red List evaluation to understand the arguments for the proposal.

Note. The knowledge of different species from different fungal groups and for different parts of the world varies largely. Both well-known and less known species may qualify to be evaluated. Provide as much information as possible. Based on the information provided, irrespective of how much is available, the species status will be determined and then evaluated for Red listing.

b. **Names and Taxonomy**
All suggested species should have well defined and accepted taxonomy and not be unresolved or under discussion. In this section you may add taxonomic notes, common names and change the IUCN specialist group assigned to this species. Based on the underlying taxa list, the specialist group is assigned by default, but errors may exist and users are encouraged to check and correct these during this step.

c. **Geographic range**
Describe as extensively as possible the known global geographic range of the species, including the terrestrial biome/biomes and geographical regions in which it occurs. You may do this in more general terms. Specify also the known distribution by selecting countries with known occurrences (past and present). These marked countries will be visualised on the global map and make it easier for examiners to comment on known distributions in additional countries. For the purpose of the global Red List, this rough description of the distribution of a species will be sufficient. Additional information, e.g. that a species only occurs in part of a country, may be included as free text. Further information on the status and trends in different countries should be included in the section, "Population and Trends".

d. **Population and trends**
   Describe the size and trend of the species' population at the global scale as interpreted from available information and knowledge. Explain and justify your nomination, preferably supported by references. You should also add regional status and trend descriptions country by country, if known. Naturally, the country wide information will be of better quality and we expect the subsequent global Red List evaluation to be largely based on a combined analysis of reported status and trends from different countries.

   Global Status: The aim is to get an estimate of total global populations and trends. Try to accomplish this by describing as extensively as possible in which parts of the world, in what habitat and at what frequency the species is estimated to occur. Is it a common, less common or rare species? Does it occur in a habitat that is common, less common or rare, and what is the trend regarding occurrence and quality of that habitat?

   Regional Status: Better information certainly exists in some countries and regions (e.g. Mediterranean and Northern Europe) than at the global level. The global Red List evaluation will generally be based on status reports from multiple countries or regions together with also take into account countries without status and trend reports, .

   The national status of a species may be determined by the known number of localities or an estimation of the likely total number of localities (this includes both known and yet to be known localities. Yet to be known localities could potentially be 10-1000 or more times than the known localities, depending on search effort and habitat frequency).

   If possible, report the likely average and range of number of genetically unique mycelia/locations. Is it typically 1, 10 or more?

   The trend of the population size may be inferred from how the availability of appropriate habitat has, is and will be developing in the region/country.

   Specify the length of the time period over which the change is compared. For different fungal life forms, the following periods are suggested/recommended if precise information in lacking (see Dahlberg & Mueller, 2011); ectomycorrhizal fungi 50 years; wood inhabiting fungi 20-50 years (depending on the durability of the tree species dead wood), litter-inhabiting fungi 20 years (waxcaps and other species of conservation interest in semi-natural grasslands up to 50 years), pathogens 10-100 years (depending on the species and its host).

e. **Habitat and ecology**
   Describe in as much detail as possible, the species habitat and ecology in free text.

First, classify the trophic mode (life form); parasitic, saprotrophic or mutualistic (mycorrhizal or lichen).

Second, describe the substratum/a or host plant/animal species that the species is associated with.

Third, describe the type of habitat or habitats of the species.

Be careful to clearly define whether the species occurs only on certain types of substrata and in certain types of habitats, e.g.

* naturally formed coarse dead wood from fire,

* dead branches on pines older than 200 years,

* seminatural grassland with a low level of anthropogenic nitrogen deposition that has not been subjected to fertilization, and

* predominantly or exclusively occurring in old-growth forests that not have been subjected to clearcutting. Try to provide references for the statements.

Add additional information of the ecology of the species.

Information based on both field-experience and publications is appropriate. Document information sources.

Optionally, you may add habitat preferences according to the self explanatory IUCN Habitats Classification Scheme

f. **Threats**
    Describe as extensively as possible the threats in free text. This may be based on data or other knowledge that a species population have changed over time. Changes in population sizes will typically be based on knowledge of the availability and quality of the species' substratum/habitat, both historically and in the future. This information may be complemented with changes in observational records over time, accounting for differences in search activity and how well known the species is. References for statements are preferred (e.g. from books, preferably scientific articles but also other papers and personal knowledge). For species that have been nationally Red Listed, accompanying criteria documentation can be one source of information.

    Optionally add classifications according to the IUCN Threats Classification Scheme

g. **Conservation Actions**
    This section is very important. Thorough, considered and well documented actions that are likely to result in improved conditions for the species is a conservation priority. An

example of a recommended actions is to conserve the natural grassland where species of conservation interest grow.

Include both more general actions needed to take place, e.g. protection of old growth forests and veteran trees in general or more prescribed burns to take place as well as more detailed actions if available, e.g., ensure no fertilization to take place on semi-natural grasslands. Optional - add classifications according to the [IUCN Conservation Actions Classification Scheme](#)

h. Research needed

When appropriate, identify and describe research questions that are needed to improve the status of the species that could realistically be achieved within the next five years.

Optional - add classifications according to the [IUCN Research Needed Classification Scheme](#)

i. Bibliography

List of references (published and unpublished, including www-addresses, personal field-experiences and personal communications) that you have referred to in your description of the species and others that may be used for the assessment and the supporting documentation.

Text citations can be given in two ways; (a) with a date in parentheses, e.g. "as demonstrated by Jones (1986)"; (b) with the names and date in parentheses, e.g. "according to recent findings (Jones 1986, Chernov & Matveyeva 1997)". Please note the chronological order of references.

Where you make use of more than one paper by the same author and year, use (Jones 1993a, 1993b).

Where a paper has more than two authors, use the form (Chernov *et al.* 2002).

The reference list should be arranged alphabetically by surname. Where the first author is referred to more than once, the order should be as follows:

(a) **Single authors**. Where more than one reference is given for a single author the publications should be listed chronologically.

(b) **Two authors**. References, for which there are two authors should be arranged first alphabetically, then chronologically; for text citations, use both authors' names and the year.

(c) **Three or more authors**. References with three or more authors should be arranged chronologically. For text citations use the surname of the first author, *et al.*, and the year.

Chernov, Y.I. 1995. Diversity of the Arctic terrestrial fauna. In: F.S. Chapin, III, and C. Körner (eds.). Arctic and Alpine Biodiversity: Patterns, Causes and Ecosystem Consequences, pp. 81-95. Springer-Verlag, Berlin.

Chernov, Y.I. 2002. Arctic biota: taxonomic diversity. Zool. Zhurn. 81(12): 1411-1431. [In Russian with English summary].

Chernov, Y.I. & Matveyeva, N.V. 1997. Arctic ecosystems in Russia. In: F.E. Wielgolaski (ed.). Ecosystems of the World, pp 361-507. Elsevier, Amsterdam.

If titles are in languages other than English, please use English titles of summaries **if given in the paper** and add e.g. "[In Russian with English summary]." Do not translate titles yourself.

Cite other online references like this: "Title of Webpage," Name of Corporation or Institution Running the Webpage, accessed date OR last modified date, webpage URL. For example: "Harvard College Admissions," Harvard University, last modified April 3, 2011, http://www.admissions.college.harvard.edu/apply/forms.