SANBI
Biodiversity for Life
South African National Biodiversity Institute

National Sensitive Species List (NSSL) of 2018:

Summary of changes

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Glossary of terms

Term	Definition
National Sensitive Species List (NSSL)	A list of species that are vulnerable or potentially vulnerable to collecting, over-exploitation, commercial and/or medicinal use. The focus is to restrict access to species data and information where the dissemination of detailed information on wild populations could increase the risk of harmful exploitation.
Biodiversity Act	National Environmental Management: Biodiversity Act (NEMBA) 10 of 2004.
Threatened or Protected Species (ToPS)	Provide a national approach to sustainable use of species that were threatened with extinction. The focus is on activities that can be regulated using permits. This is also known as the National Environmental Management Biodiversity Act (NEMBA) listed species.
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	A global agreement among governments to regulate or ban international trade in species under threat. The focus is on international trade.
International Union for Conservation of Nature (IUCN) red-listing	Assess the conservation status of a species and the focus is on threats causing a high risk of extinction.
National Biodiversity Information System (NBIS)	A national system that will integrate a diverse set of information, stored in different locations and using multiple technologies, into a seamless, user-friendly and intuitive interface that will be used by SANBI's partners.

Introduction

The South African National Biodiversity Institute (SANBI) has prepared this report for the purpose of summarising the outcomes of the 2018 review of the previous 2010 sensitive species list. The 2010 National Sensitive Species List (NSSL) was drafted based on the opinion of experts and the information was collated on a spreadsheet, with limited evidence to support the expert opinions. The revision process that started in 2017 provided an update of the sensitive species list for animal taxa only and ensured greater integrity in the selection of sensitive species by including justification and evidentiary items for restricting access to these data. Only phase 1 of the two-phase process was completed in the review of plant taxa.

Background

- In 2010, SANBI commissioned a legal interpretation of the Biodiversity Act, the *National Environmental Management: Biodiversity Act, No. 10 of 2004* (NEMBA, 2004);

- Following the interpretation, SANBI developed a Biodiversity Information Policy Framework (SANBI, 2010a), that provided overarching principles and guidelines:
    - Intellectual Property Rights Policy (IPR), ensure IPR of data owners are not compromised (SANBI, 2010b).
    - Digital Access to Sensitive Data Taxon Policy aimed at protecting sensitive taxa (SANBI, 2010c)

- A National Sensitive Species List (NSSL) was published in 2010, all official yearly releases of these lists are available at http://hdl.handle.net/20.500.12143/7086;

- Due to limited resources and prioritisation SANBI was not able to publish the list annually;

- In 2012, it became clear that data requests supported by defensible evidence-based justifications were a challenge;

- In 2016, a stakeholder workshop was held, and consensus was reached on guiding principles and criteria for identifying sensitive species (SANBI, 2016);

- 2017 SANBI appointed a Review Committee to advise and consult on updating the list.
    - developed workflow, processes and protocols;
    - identified taxon experts;
    - held a workshop to engage with taxon experts;

- 2018 published a list of sensitive taxa for animals (evidence-based justifications accompanied by links to evidence) and a list of genera with associate candidate sensitive plant species;

- To ensure the list is continuously reviewed and updated as new data or information becomes available an open-access online platform was developed URL: http://nssl.sanbi.org.za/.

The listing process followed in 2010 and 2018

The first National Sensitive Species List was developed in 2010, with the intention being to revise the list annually. In 2010, a draft list of animal taxa were compiled from the 2007 Threatened or Protected Species (ToPS) listing and the plant taxon group list was compiled from the International Union for Conservation of Nature (IUCN) red-listing where species are threaten by hunting, collecting, harvesting and trade (biological resource use) and input was then invited from an expert group.

To help mitigate potential bias and ensure that listing of species was compiled in a transparent scientifically rigorous way, guiding principles and criteria for identifying sensitive species and open online platform was developed. The criteria used in the 2018 assessment include:

- Targeted exploitation – determine the extent to which species or their derivatives are actively targeted or known to be exploited (collected, traded, utilised). The response scale categories include:
    - **Small or insignificant** - wild individuals of the species are known to be exploited, collected, traded or utilised in a targeted manner, but utilisation is localised and/or affects only a small proportion of the wild population.
    - **Significant** - wild individuals of the species are known to be exploited, collected, traded or utilised in a targeted manner, and utilisation is widespread, affects the majority of wild populations and/or is causing rapid decline of the wild population.
    - **Managed** - the species is utilised, but utilisation is sustainably managed. I.e. the number utilised does not exceed the number produced by the wild populations - this should be examined on an annual basis.
    - **Uncertain** - No data exists yet showing that this species is exploited in the wild, however it has one or more relatives or look-alike species (found in South Africa or globally) that are known to be utilised. This species has a similar life form or other relevant traits to its exploited relative(s), making it highly likely that it would be exploited for the same purposes.
    - **None** - this species and its close relatives are not exploited, collected, traded or utilised in a targeted manner.
    - **Unknown**
- Population vulnerability – determines if the population is vulnerable or not, through the number of mature individuals, known subpopulations or range. The response scale categories include:
    - **Population is vulnerable:** size is <= 2500 mature individuals OR the number of known subpopulations is <= 5 OR range is <= 100km2 OR species at risk of localised extinctions
    - **Population is not vulnerable:** size is > 2500 mature individuals, AND the number of known subpopulations is > 5 AND range > 100km2
    - **Unknown**
- Regeneration potential – determine the population growth rate and recovery from exploitation. The response scale categories include:
    - This species has a **fast population growth rate**, and there is a good chance the wild populations will recover from exploitation.
    - This species has a **slow population growth rate**, or the growth rate varies depending on habitat, and there is a poor chance the wild populations will recover from exploitation OR a collector might feasibly harvest the entire extant population removing the chance of subsequent recruitment.
    - **Unknown**

A comparison summary of the two lists found that a total of 504 species were listed as sensitive in 2010 and excluding the plant taxon group that still needs to be assessed, 27 species were listed sensitive in 2018.

A NSSL Taxon Review Committee was appointed during the 2018 assessment to guide and support the listing process and support the Taxon Leads. Consideration was given to fair representation of the broader conservation partnership.

Table 1 provides a list of the nominated Taxon Leads that were appointed during the revision process. The content of this report is a summary from the Taxon Leads reports submitted at the end of the assessment in 2018 and is based on their best scientific and professional knowledge as well as available information. The role of the Taxon Lead in assessment of the NSSL was to:

- review the 2010 Sensitive Species list for previous listing;
- update the NSSL website with new information;
- ensure that all justifications and references were provided;
- where necessary, identify species experts that could assist with the review of the list;
- address any conflicting opinions on a listing;
- ensure that the listing of the specific taxa was completed; and
- draft a report upon completion of the listing process.

Taxa	Taxon Lead	Organisation
Marine Fish	Megan van der Bank	SANBI
Freshwater Fish	Martine Jordaan	CapeNature
Birds	Melissa Whitecross / Hanneline Smit Robinson	BirdLife
Reptiles	Krystal Tolley	SANBI
Amphibians	John Measey	University of Stellenbosch
Mammals	Matthew Child	SANBI
Spiders	Robin Lyle	Agricultural Research Council
Scorpions	Ian Engelbrecht	Private
Lepidoptera	Dave Edge	Private
Beetles	Riaan Stals	Agricultural Research Council
Plants	Tania Anderson	Private

Table 1: Taxon leads appointed in 2018 to assess the NSSL for South Africa

Summary of results for each taxon group

Each Taxon Lead was requested to submit a report detailing, the rationale for selecting a list of candidate species and the final list of sensitive species. Provide details of any species subjected to conflicting assessments, the arguments in defence of the respective assessments, the evidence and the final resolution and if no species within a specific group are considered sensitive, and a rationale explaining why no species are considered sensitive.

Table 2 provides a breakdown of the taxa assessed in 2010 and 2018 as well as the number of species assessed, the final number of sensitive species, not sensitive and incomplete assessments.

Taxa	2010 final number of sensitive species	Estimated total number of species per taxon group	2018 final number of sensitive species	Number of species assessed	Number of species listed as not sensitive per taxa	Number of incomplete assessments
Plants	224	20 500	0	0	0	1611
Beetles	124	30 000	0	33	33	33
Freshwater fish	0	140	0	0	0	0
Mammals	4	343	5	19	14	0
Scorpions	109	100	1	5	4	0
Marine fish	0	2 200[1]	0	0	0	0
Butterflies	10	800	5	143	138	0
Amphibians	0	125	0	0	0	0
Birds	6	722[2]	5	7	2	0
Spiders	0	2 300	1	4	3	0
Reptiles	23	500	10	51	41	0
Flies	3	-	-	-	-	-
Sea urchins	1	-	-	-	-	-
Total	**504**	**-**	**27**	**262**	**235**	

Table 2: Comparison of the final list of sensitive species for 2010 and 2018

Amphibians

A candidate list of frogs was compiled following a review of the previous 2010 list of sensitive species, see list below. The amphibian Taxon Lead noted however, that no amphibian species may be under threat of exploitation as no evidence exists that amphibian species listed on Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and ToPS are traded.

Species	Common name	IUCN status	ToPS status
Breviceps bagginsi	Bilbos rain frog	Near Threatened	Not listed
Breviceps branchi	Branch's rain frog	Data Deficient	Not listed
Breviceps fuscus	Black rain frog	Least Concern	Not listed
Breviceps gibbosus	Cape rain frog	Near Threatened	Not listed
Breviceps macrops	Desert Rain Frog	Near Threatened	Not listed
Breviceps sylvestris	Northern Forest Rain Frog	Near Threatened	Not listed
Hadromophryne natalensis	Natal Ghost Frog	Near Threatened	Not listed
Heleophryne hewitti	Hewitt's Ghost Frog, Hewitt's African Ghost Frog	Endangered	Not listed
Heleophryne orientalis	Eastern Ghost Frog	Least Concern	Not listed
Heleophryne purcelli	Purcell's Ghost Frog	Least Concern	Not listed
Heleophryne regis	Royal Ghost Frog	Least Concern	Not listed
Heleophryne rosei	Table Mountain Ghost Frog	Critically Endangered	Not listed
Hemisus guttatus	Spotted Snout-burrower, Spotted Burrowing Frog, Spotted Shovel-nosed Frog	Near Threatened	Not listed

[1] Van der Elst, R. 2018. *Marine Life of Southern Africa*. Available: http://www.enviropaedia.com/topic/default.php?topic_id=156 [2018, November 26].
[2] BirdLife. 2017. BirdLife South Africa Checklist of Birds in South Africa. Available: https://www.birdlife.org.za/media-and-resources/bird-checklists [2018, November 26]

Species	Common name	IUCN status	ToPS status
Vandijkophrynus robinsoni	Paradise Toad	Least Concern	Not listed
Xenopus gilli	Cape Platanna, Gill's Platanna	Endangered	Not listed

Table 3: Potentially traded amphibian species

Beetles

Most of the previously listed beetle names for 2010 were removed due to a species being common and not threatened by collection or both, there was a lack of information that these species are being targeted for collection, taxon names and classification were wrong and outdated and is some cases non-existent, taxa did not occur in South Africa or only known marginally while being widespread further north and nomenclatural issues. The three flies were also removed due to no empirical data.

Beetle genera considered for assessment in 2018 included *Colophon* with prima facie evidence of the exploitation on the black market partly because of their listing on CITES Appendix III, *Manticora* with evidence of being traded on the European beetle market and the perception that some species of the flightless 'monster tiger beetle' may be patchily or completely range-restricted, locally uncommon and slow breeders. *Ichnestoma* is also a potential candidate as they occur in small, isolated populations on hilltops through central South Africa. Females are flightless, and the adults are active only after enough rain and then only for one to two weeks per year. Their popularity among beetle collectors may present a level of exploitation. These elements could contribute to a degree of the species being vulnerable but must be objectively assessed.

Following an assessment in 2018, not all the information on the beetles have been published on the NSSL website. The reasons are as follows:

- *Oonotus sericeus* and *Oonotus rex* species have been assessed as 'not-sensitive', based on the criteria and the rules associated with the NSSL tool. The Taxon Lead argues that given the evidence, the species should have been classified as sensitive based on the threats and their habitats. Given this objection, the above-mentioned species have not been published.
- The 21 Colophon species have not been published as the evidence for trade information has not been captured on the system, see table 4 below.

Species	Common name	ToPS status 2015
Colophon stokoei	Stag Beetle	Endangered
Colophon whitei	White's Cape Stag Beetle	Endangered
Colophon westwoodi	Westwood's Cape Stag Beetle	Critically endangered
Colophon primosi	Primos's Cape Stag Beetle	Endangered
Colophon neli	Nel's Cape Stag Beetle	Endangered
Colophon montisatris	Swartberg Cape Stag Beetle	Critically endangered
Colophon endroedyi	Endrödy-Younga's Cape Stag Beetle	Critically endangered
Colophon cameroni	Cameron's Cape Stag Beetle	Endangered
Colophon thunbergi	Thunberg's Cape Stag Beetle	Critically endangered
Colophon oweni	Owen's Cape Stag Beetle	Critically endangered
Colophon cassoni	Stag Beetle	Endangered
Colophon berrisfordi	Berrisford's Cape Stag Beetle	Critically endangered
Colophon barnardi	Barnard's Cape Stag Beetle	Critically endangered
Colophon kawaii	Kawai's Cape Stag Beetle	Critically endangered

Species	Common name	ToPS status 2015
Colophon izardi	Izard's Cape Stag Beetle	Endangered
Colophon haughtoni	Haughton's Cape Stag Beetle	Endangered
Colophon nagaii	Stag Beetle	Endangered
Colophon switalae	Stag Beetle	Endangered
Colophon struempheri	Stag Beetle	Endangered
Colophon deschodti	Stag Beetle	Endangered
Colophon eastmani	Eastman's Cape Stag Beetle	Endangered

Table 4: Colophon species not published as the evidence for trade information is not currently available

The Critically endangered ToPS status is indigenous species facing an extremely high risk of extinction in the wild in the immediate future and Endangered is any indigenous species facing a high risk of extinction in the wild in the near future, although they are not a critically endangered species.

Birds

Based on the 2015 Eskom Red Data Book of Birds (Taylor *et al.,* 2015) and the understanding of the ecology, rarity, endemism and behaviours of each of the chosen species, a list of birds whose data sensitivity should be taken into consideration was compiled and analysed against the NSSL sensitivity analysis process. Of the seven species than underwent data sensitivity analyses five species were sensitive. BirdLife further proposed that any bird species which are confirmed breeding endemics or near-endemics that are currently listed under any of the IUCN 'Threatened' categories at either a regional or global scale be considered for sensitised data analysis, especially of their specific breeding sites/grounds. South Africa has 76 bird species listed under regional and/or global threatened categories. Of these, 20 species are breeding endemics or near-endemics to southern Africa.

Butterflies

The 2012 butterfly conservation assessment published by Mecenero *et al*. (2013) and not yet published results from the 2017 butterfly conservation assessments were studied to determine the population vulnerability of species. The regeneration potential of the listed species were inferred to have a slow population growth rate as the species are specialist, either in the biotope occupied (altitude; climate; aspect; slope; geology), or restricted to a single larval host plant and/ or vegetation type (Mucina and Rutherford, 2006). In addition, many of the South African taxa have specific ant and other insect associations (Heath and Claassens, 2003). Autecologically they are density dependent, because they can exceed the site's carrying capacity in several ways either there is not enough host plant; not enough ant nests; not enough scale insects, etc. (Edge, 2005). Most of the Lepidoptera taxa are not utilised or exploited, except for (infrequent) scientific sampling to obtain DNA for phylogenetic studies or for doing morphological studies e.g. genitalia dissections. However, there are certain larger showier taxa whose congeners are targeted by overseas collectors such as *Charaxes* and *Papilio* genera. Of the 165 candidate species, 143 were assessed using the NSSL sensitivity analyses and five were listed as sensitive.

Freshwater fish

It has been noted that except for *Nothobranchius ranchovi*, *N. furzeri* and *N. orthonotus*, no freshwater fish in South Africa is generally under threat of harmful exploitation. While some larger species are targeted by subsistence and recreational angler groups, these species are generally abundant and widespread and not at risk of over-exploitation. Most recreational anglers also practice catch and release of native freshwater fish species. In the case of range-restricted or rare species, especially smaller-bodied species, there may be potential consumptive use for the ornamental fish trade. At present however there is no evidence of this (apart from above-mentioned species) as the ornamental fish trade is dominated by exotic species. In general, the main threats to native freshwater fish in South Africa are the presence of piscivorous non-native fish species, the loss of habitat through unsustainable land use practices and potentially climate change effects.

Mammals

As mammals are highly mobile in time and space, making data available would not necessarily translate into increased risk of exploitation. However, as many larger species are restricted by fences in either protected areas or ranches, there are species for which, if data were to be made public, this could foreseeably aid poachers to pinpoint search efforts. The 2016 IUCN red-listing of mammals (Child *et al.,* 2016) was used to compile a list of candidate species and source information. Whiting *et al.* (2011) was consulted for information on traditional medicine and trade. Any species for which population size <10,000 or occurs in area of occupancy is <2500 km^2 where opportunistic harvesting may make local identified subpopulations more vulnerable to exploitation were included in the candidate list. Any species not subject to exploitation of any kind or where opportunistic poaching occurs but exists in large, well-managed populations over extensive areas were not added to the candidate list. Of the 88 candidate species, 19 were assessed and five were listed as sensitive. Based on the NSSL criteria, the rhinoceros was assessed as a non-sensitive species due to their large population and high regeneration potential but having access to the data could certainly increase poaching effort as rhinos are restricted to fenced reserves and are easily detected. Further investigation into adding various criteria to address the underlying detection probability and intensity of poaching effort will be completed and the necessary system changes scheduled.

Marine fish

There was no listing of marine fish in 2010 and the assessment in 2018 also produced no sensitive species. The marine experts do not believe that restricting access to the locality data through the NSSL process will lead to a reduction of exploitation of marine fish. The information is already available and published through the Department of Forestry and Fisheries. The listing of marine fish on ToPS and CITES provides adequate tools to manage the resource.

Plants

The plant taxa provided a challenge as it had over 6000 species that could be considered candidate species. This large number presented a problem as it would require resources and time that could not be accommodated within the 2018 assessment. The approach for identifying candidate plant species was managed in two phases: the first phase was the drafting of a list of candidate genera that may contain species that would meet the NSSL criteria, and a second phase of undertaking the

assessment of the reduced list of sensitive plant species. A list of candidate plant genera with their associated species to be considered for assessment were compiled as follows:

- Reviewed the content of the 2010 sensitive species list,
- consulted with expert horticulturalists, specialists and botanists determine whether each genus in the preliminary candidate genera list:
  a) has a collectable growth form,
  b) has all its species readily available on the market,
  c) has species with wild forms that are in demand despite them being readily available commercially, and
  d) is entirely removed and/or killed during wild collecting.
- recorded the expert opinions of the persons consulted and evidence to support these
- opinions;
- added any genera that may have been omitted from the preliminary list to the list of
- candidate genera;
- addressed any conflicting opinions on a genus; and
- compiled a list plant genera that may contain sensitive species

This information is seldom found in publications; hence the knowledge of experts is vital. The 2018 list of candidate sensitive genera contained 154 plant genera and 1611 plant species that need to be assessed to form part of the second phase. The information on the sensitive plant genera is not included into the tool but added as downloadable file on the NSSL website. The reasons are:

- The list represents the genera and potential species. The spreadsheet is only available for the genera with a brief explanation on the reason as to why it must be evaluated. Therefore, the current content does not comply with the NSSL listing criteria for inclusion into the tool.
- It will be premature to list the candidate species before the final review of the candidate species for assessment has been completed.

The full species level assessment for the plants must be undertaken as soon as possible and published on the NSSL site.

Reptiles

In compiling a list of candidate species, a species had to meet at least one of the following four criteria, i) the species is threatened, ii) in trade (legal or illegal), iii) the distribution size < 100km^2 and iv) listed on ToPS. 95 candidate species met these criteria and a second filter was implemented that calculated the number of times a species met all four criteria, results as follows:

- No species met all four criteria;
- Species that met three of the four criteria were considered priority (14 species) and were assessed using the NSSL criteria sensitivity analyses;
- Species that met two of the criteria were considered maybe sensitive (37 species) and were assessed;
- Species counted once were not considered with 11 exceptions. These 11 are tallied up as part of the 37 species that scored 2. The exceptions: these species only had a score of 1, but they are known to be illegally traded and it is suspect in high numbers. These species were upweighted to a score of 2.

Of the 51 species of reptiles assessed with the sensitivity criteria, ten species are sensitive.

Spiders and Scorpions

The previous 2010 assessment included 109 scorpion names, while spiders were omitted entirely. The scorpions were included based on the genera that were listed on ToPS at the time, but the list included several invalid synonyms and unpublished manuscript names. The 2018 assessment aimed to resolve these issues by removing the previously listed names entirely and identifying those species which might be threatened by collecting should locality data for those species be made publicly available. These included both spiders and scorpions from families or genera that are known to be traded with some regularity, and which have relatively small distributions and hence potentially small populations. This preliminary screening of species for assessment was based on the experience and expert opinion of the assessors. Of the four species of spiders assessed, one species is sensitive (*Ceratogyrus paulseni*) and of the five species of scorpions that underwent sensitivity analyses, one species is sensitive (*Opistophthalmus ater*).

Protocols and Workflows

During the 2018 assessment process NSSL Protocols and Workflow documents were drafted and adopted, these are available at http://hdl.handle.net/20.500.12143/7086. The purpose of the NSSL Protocols is to define the process by which the sensitive species must be listed. The Protocols therefore allows for a consistent and defensible manner to define, publish, approve and review sensitive species.

The NSSL Protocols serves to:

- Ensure focus is maintained on the NSSL objectives,
- Ensure that all participants understand the process and their roles and responsibilities,
- Eliminate any subjective, digressive or biased listing,
- Promote focussed, substantive and in-depth discussions and debate, and
- Build a Community of Practice to build and expand the skills base.

The purpose of the NSSL Workflow Definitions is to define the series of tasks necessary for adding, updating, maintaining and publishing content on the NSSL website (http://nssl.sanbi.org.za). The intention is to define the processes where tasks and information are passed from one role player to the next, within a defined set of guidelines.

In addition, the workflow definitions will ensure:

- credibility in the NSSL process,
- acceptable quality content is published,
- compliance with the SANBI policies and process that relate to the NSSL, and
- reputational integrity between SANBI and the conservation partners.

NSSL website

The NSSL website review was completed at the end 2017. The focus of the review was to assess the website workflow and functionality supporting the workflow process as well as implement the suggestion made by participants at the NSSL Consultation Workshop, 18 and 19 August 2016 and the NSSL Assessors Workshop, 1 November 2017. The website changes were completed and fully tested prior to taxon expert data entry beginning in earnest from mid-November 2017. The implications of

ongoing development to the NBIS architecture were also considered, as in future the NBIS is likely to provide services such as a taxonomic backbone to the NSSL website.

Feedback from the 2016 and 2017 workshop participants was used to draft the issues list for the website, hosted on GitHub (https://github.com/SANBIBiodiversityforLife/ssp). This list was supplemented with issues identified in testing by the project consultants. The total number of website fixes total 80 with 74 fixed. The remainder are small non-critical issues.

Lessons learnt

1. The timing of the 2018 review (September 2017 – February 2018) was identified as a challenge for the successful execution of the project:
   - The NSSL coincided with the final work on the 2018 National Biodiversity Assessment. Many SANBI teams and contributing partner organisation were completing their input into the process. They were bound and committed through formal agreements. The NSSL was thus tapping in the capacity of the same scientist for input.
   - The NSSL project coincided with the field work period. Spring and summer are critical period for fieldwork and thus impacted on the availability of scientist.
   - The academic year was coming to an end, requiring academics to focus on year-end assessments and other related administrative actions.
   - It was also the summer holiday period where people usually take long end-of year breaks.
2. The NSSL criteria do not uniformly apply to all taxa. There are specific instances where the criteria must be reviewed to ensure that it is suitable for the specific taxa being assessed. The review needs to use the identified species as case studies to re-asses the criteria and to make recommendations for improvement and refinement. The appraisal will need to consider the process of non-detrimental findings in trade of ToPS species to ensure that there is no overlap between the two processes.
3. Formal engagements with the partner organisations are required. The engagement must specify the services needed, the timeframes, the quality standards and the supporting resources.
4. Dedicated capacity is needed for the ongoing management of the NSSL project as well as the technical support of the website and content. These are not specific jobs, but roles that can be performed.
5. The exact nature of the expected contributions from the scientists with the review of the list must be documented.

Recommendations for the next review / assessment process

1. A coordinated call for Taxon Leads and Contributing Scientist must be made. The aim of which is to appoint a Taxon Lead and at least 3 Contributing Scientists for each taxon group. A young scientist should be included as one of the three Contributing Scientists. This call will be accompanied by a Terms of Reference and a clear indication of available resources.
2. Support the continued updating of the NSSL content with a specific focus on updating information on the beetles, freshwater fish, reptiles and birds.
3. Suggested improved features made during the 2018 assessment, however, not implemented due to the scope need to be implemented.

4. Suggested refinements made during the 2018 assessment however not implemented due to time constraints.

Conclusion

The success of the review completed in 2018 was due to the contribution of scientists drawn from SANBI and the conservation partnerships. This success was due to the overwhelming positive response from the various external conservation partner organisations to contribute towards the success of the project.

The workshop on 1 November 2017 was successful in that it galvanised the NSSL concept, allowed the project participants time to engage with the online tool and allowed for rich debate on the practical implementation through to the philosophical underpinnings of assessing species as sensitive. The physical engagement of people in the same space allows for richer rigorous debate and a much easier approach to consolidating concepts, objectives and actions.

The active review of the NSSL criteria by the contributing scientists is a major success factor. The scientists applied the NSSL criteria to the respective taxa and identified potential areas of improvement. This is seen as a success due to the feedback that lead to further refinement of the principles, logic, criteria and the tool. With in-depth consultation and empirical evidence, the impact on species vulnerable to poaching can be reduced.

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