The global influence of the IUCN Red List can hinder species conservation efforts

Ruben Dario Palacio[1], María Abarca[2], Dolors Armenteras[3], Ulises Balza[4], Luke J. Dollar[5,6], Graden Z.L. Froese[7], Bryan P. Galligan[8,9], Anthony J. Giordano[10,11], Jonah Gula[12], Andrew P. Jacobson[5], Włodzimierz Jędrzejewski[2], Igor Khorozyan[13], Alicia Mastretta-Yanes[14,15], Juan Sebastián Moreno[1,16], Tutilo Mudumba[17], Eric D. Nana[18,19], Adrián Naveda-Rodríguez[20], Pablo J. Negret[21,22,23], Guillermo Ortuño Crespo[24], Filipe C. Serrano[25], José E. Serrano-Villavicencio[26,27], K. S. Gopi Sundar[28], Evert Thomas[29], D. A. Villar[18], and Alice C. Hughes[30]

[1]Fundación Ecotonos, Cra 72 No. 13A-56, Santiago de Cali, Colombia
[2]Centro de Ecología, Instituto Venezolano de Investigaciones Científicas (IVIC), Caracas 1020-A, Venezuela
[3]Departamento de Biología, Facultad de Ciencias, Universidad Nacional de Colombia, Sede Bogotá. Cra. 30 45-03. Bogotá D.C. 111321, Colombia
[4]Centro Austral de Investigaciones Científicas (CADIC-CONICET). Houssay 200. Ushuaia, Argentina
[5]Department of Environment and Sustainability, Catawba College, Salisbury, NC USA
[6]Nicholas School of the Environment, Duke University, Durham, NC USA
[7]Nsombou Abalghe-Dzal Association (NADA), Makokou, Gabon
[8]Jesuit Justice and Ecology Network Africa, Nairobi, Kenya
[9]Department of Biology, Loyola University Chicago, Chicago, I.L., U.S.A
[10]S.P.E.C.I.E.S. - The Society for the Preservation of Endangered Carnivores and their International Ecological Study, Ventura, CA 93006
[11]The Center for Human-Carnivore Coexistence, Colorado State University, Fort Collins, CO 80524 USA
[12]Centre for Functional Biodiversity, School of Life Sciences, University of KwaZulu-Natal, Pietermaritzburg, South Africa
[13]Independent Consultant, Fuldaweg 14, Goettingen 37081, Germany.
[14]Consejo Nacional de Ciencia y Tecnología (CONACYT), Crédito Constructor, Benito Juárez, Ciudad de México, Mexico.
[15]Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO), Parques del Pedregal, Tlalpan, Ciudad de México, México.
[16]Departamento de Biología, Universidad del Valle, Calle 13 100-00, Cali, Colombia
[17]Department of Zoology, Entomology, and Fisheries Sciences, Makerere University Kampala, Uganda.
[18]Department of Biology, University of Oxford, Oxford, U. K.
[19]Institute of Agricultural Research for Development (IRAD), Cameroon
[20]Wildlife Conservation Society, Ecuador Program. Quito, Ecuador.
[21]The University of Queensland, School of Earth and Environmental Sciences, Qld 4072,

Australia
[22]The University of Queensland, Centre for Biodiversity and Conservation Science, Qld 4072, Australia
[23]University of Bern, Wyss Academy for Nature, Centre for Development and Environment, Institute of Geography, Bern, Switzerland
[24]IUCN World Commission on Protected Areas High Seas Specialist Group
[25]Departamento de Ecologia, Universidade de São Paulo, São Paulo, Brazil
[26]Departamento de Mastozoología, Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos, Lima, Peru.
[27]Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil
[28]Seva Mandir, Old Fatehpura, Udaipur, Rajasthan, India, 313001
[29]Bioversity International, Lima, Peru.
[30]School of Biological Sciences, University of Hong Kong, Hong Kong

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Abstract

The IUCN Red List of Threatened Species is an extinction risk assessment tool that has guided species conservation over the last five decades. However, as wildlife scientists and conservationists, we argue that its influence on the global conservation agenda can hinder effective species conservation efforts. Here, we review the limitations of the Red List and its misuse in priority setting, which can overlook local and regional contexts. This can result in improper allocation of conservation resources, especially in the Global South, where financial resources are limited. In particular, funds directed towards red-listed species may fail to address a broader range of conservation priorities. We also contend that extinction risk is insufficient for guiding conservation efforts and recommend broadening conservation planning and decision-making beyond reliance on the Red List. Thus, for a more inclusive and decentralized approach, we summarize guidelines for guiding species conservation at appropriate ecological, spatial, and taxonomic scales. Finally, we encourage more collaborative efforts and stakeholder engagement for the setting of conservation priorities and efficient funding allocation.

Introduction

The IUCN Red List of Threatened Species (https://www.iucnredlist.org), hereafter the "Red List", is an extinction risk assessment tool that has informed and catalyzed species conservation for over five decades (Betts et al. 2020). The Red List has been instrumental in improving species conservation status and guiding their recovery (Hoffmann et al. 2010; Grace et al. 2021) while playing a major role in decision-making, policy implementation, planning, funding, and research (Rodrigues et al. 2006; Betts et al. 2020; Hoffmann et al. 2008). The Red List aims to compile the best possible information on the conservation and threat status of species, in a laudable effort to become the "barometer of life" (Stuart et al. 2010). However, Red List assessments cover a very small fraction of life on Earth. At present, only 150,000 species have been assessed (IUCN 2023), making less than 10% of about 2 million described species (Bánki et al. 2023). This percentage dwindles dramatically when considering recent estimates of global biodiversity, with the number of animal species exceeding 50 million alone (Li & Wiens 2023).

The Red List has categorized 42,100 species as threatened (IUCN 2023), yet over a million species are potentially facing extinction based on conservative estimates (IPBES 2019). This number could be much larger given that undescribed species can have a higher extinction risk (Liu et al. 2022). Furthermore, some assessed species could already be threatened, but reassessments have not been undertaken, which are recommended every 10 years (IUCN 2016). For instance, in the marine realm, over 40% of top-fished species have outdated assessments (Miqueleiz et al. 2022). Overall, 28% of assessments have already been declared outdated (IUCN 2023), potentially undermining the long-term use of the Red List (Rondinini et al. 2014).

Thus, while the Red List has undoubtedly been a major undertaking, we argue that as a standalone tool, it cannot provide an accurate, timely, and repeated assessment of the world's threatened species. Furthermore, we assert that relying solely on the Red List is not sufficient for guiding conservation efforts, despite its influence on conservation planning and decision-making. Hence, in this review, we delve into (a) rethinking the role of the IUCN Red List (b) the methodological drawbacks of the Red List (c) the limitations of the Red List categories and criteria (d) shortcomings of the assessment process, (e) recommendations for assessing extinction risk beyond the Red List and (f) guidelines to broaden species conservation and the setting of conservation priorities.

Rethinking the role of the IUCN Red List

The Red List underpins some of the most influential conservation mechanisms and initiatives at the global scale, such as the identification and designation of Key Biodiversity Areas (KBA Standards and Appeals Committee 2022). Notably, the Red List index is the headline indicator for the species component of Goal A in the Kunming-Montreal Global Biodiversity Framework (KM-GBF) of the Convention of Biological Diversity (`https://www.cbd.int/gbf/`). This influence on the global conservation agenda can lead to downstream consequences such as the selection of conservation priorities, even though it was not explicitly designed to do so (IUCN 2012; IUCN Standards and Petitions Committee 2022; Mace et al. 2008).

The conservation prioritizations driven by the Red List are often realized through funding allocation from governments, NGOs, and other global stakeholders (Wilson et al. 2009), where funds are directed to species based on their threat status on the Red List (Miller et al. 2013; Betts et al. 2020). For instance, major organizations such as the Rainforest Trust or the Mohamed Bin Zayed Species Conservation Fund typically give priority to species listed as Critically Endangered (CR) or Endangered (EN). Furthermore, newer initiatives, such as the EDGE Protected and Conserved Area Fund and the Indianapolis Zoo Saving Species Challenge, also require target species to be listed in threatened categories of the Red List. Other funders, such as the North American Pangolin Consortium Grant, require endorsements from IUCN Specialist Groups.

Although well intended, such international funding can direct conservation actions that erase local context and conflict with those identified by regional experts (Melick et al. 2012; Isbell et al. 2023), overlooking or undermining more pressing conservation efforts based on localized assessments (McShane 2003; Smith et al. 2009). This is particularly concerning in the Global South, where financial resources are limited. In contrast, the Red List has less influence on prioritization in high-income economies such as North America and Europe (Lim et al. 2023), where conservation strategies such as the US Endangered Species Act and the EU Birds and Habitats Directives are designed, implemented, and funded internally.

Given this context, threatened species on the Red List, particularly charismatic ones, attract more funding and scientific attention than non-threatened species (Trimble & Van Aarde 2010; Smith et al. 2012; Brambilla et al. 2013). Consequently, conservation efforts and research have mainly targeted a few selected species on the Red List (Martín-López et al. 2011). This creates a cycle of underfunding for many species (Hochkirch et al. 2021) and prevents actions to support their persistence or recovery. We acknowledge that conserving threatened species on the Red List could benefit co-occurring organisms and their habitats (Cox et al. 2022). However, it is important to carefully evaluate and justify their use as "umbrella" species rather than assuming it (Roberge & Angelstam 2004; Seddon & Leech 2008; Wang et al. 2021). In addition, less charismatic species or those perceived as uncharismatic, such as invertebrates or parasitic species, should also be considered for conservation efforts given their key roles in ecosystem functioning (Eisenhauer et al. 2019; Carlson et al. 2020; Hughes et al. 2021).

Overreliance on the Red List to select conservation priorities can also lead to misuse or exploitation (Campbell

2012). This can occur by elevating the threat status of a species (Godfrey & Godley 2008), opposing downlistings to maintain funds (Mallon & Jackson 2017), or elevating populations and subspecies to the species level, where they are placed in threatened categories (Thomson et al. 2021). Such situations can create a sense of urgency and fundraising opportunities due to the "high-profile" status of the Red List, which would be mitigated if species conservation was less dependent on a single system of threat categorization (Soberon & Medellín 2007).

In summary, the global influence of the Red List and its misuse in decision-making (Lunney 2017; Possingham et al. 2002) can constitute a priority-setting 'pitfall trap' (Martín-López et al. 2011) in which funds and other resources are disproportionately allocated to a small number of species that have been assessed, are threatened, and are charismatic. This is exacerbated by the globalization of conservation (Chapin 2004; Rodriguez et al. 2007), the concentration of power in centralized authorities, and the dominance of conservation priorities set by high-income economies and large conservation organizations (Wyborn & Evans 2021).

Methodological drawbacks of the IUCN Red List

We are not the first to express concerns about the Red List (Master 1991; Mrosovsky 1997; Webb & Carrillo 2000; Soberon & Medellín 2007; Keith 2009; Campbell 2012; Lovari 2020) with controversies arising from inaccurate assessment of different species, including high-profile examples such as sea turtles (Mrosovsky 2003; Godfrey & Godley 2008; Campbell 2012) and primates (Nijman 2004; Thomson et al. 2021).

The Red List was designed as a quantitative system to evaluate the relative risk of species extinction (Mace et al. 2008). However, species assessments are often based on expert opinion, which may be biased or subjective (Keith 2009; Hayward et al. 2015; de Oliveira Caetano et al. 2022). For instance, a recent study revealed that the threat categories of stork species (family Ciconiidae) were based on unfounded assumptions regarding their ecology and natural history and not scientific evidence (Gula et al. 2023). The utility of the Red List has also been questioned for entire groups of organisms, such as invertebrates (Cardoso et al. 2011), which constitute the majority of animal species on Earth (Bánki et al. 2023). In fact, the Red List is currently biased towards terrestrial vertebrates, the first group of species that was evaluated (Mace et al. 2008). This group has over 90% of described species assessed, in contrast to only 2% of invertebrates, 0.5% of fungi and protists, and 15% of plants, although some groups, such as gymnosperms, have almost complete assessments (IUCN 2023).

Even within groups of species that have been more comprehensively assessed, Red List assessments can also underestimate the number of threatened species and current extinction rates (Ocampo-Peñuela et al. 2016; Ramesh et al. 2017; Stévart et al. 2019; Cowie et al. 2022; Régnier et al. 2009; de Oliveira Caetano et al. 2022; Peng et al. 2023). In addition, one in six species on the Red List is listed as Data Deficient (DD), and half of them could be threatened (Borgelt et al. 2022). These DD species are frequently neglected in conservation efforts, and have been recommended for reassessment (Cazalis et al. 2023). For many species, assessments of specific threats have been inconsistent (Branco et al. 2021; Gula et al. 2023), or may not be adequately captured (Sonter et al. 2022). This can lead to unreliable analysis of the conservation status of many taxonomic groups. An illustrative example is the production of global maps of species threats (Harfoot et al. 2021). These maps have limited conservation value (Tulloch et al. 2015) because they do not consider local context and knowledge (Wyborn & Evans 2021).

An important concern over the Red List is its focus on evaluating the global risk of species extinction, where only 2% of the assessments are from subspecies, varieties, and populations (IUCN 2023). This can discourage actions to halt local population declines and known regional extirpations (Palacio et al. 2020), stressing the need for extinction risk assessments below the species level (Thakur et al. 2018), which has also been recognized by the population target (maintaining populations of at least 500 individuals) within the KM-GBF. In addition, 33% of species placed in non-threatened categories of the Red List have been found to be declining in abundance (Finn et al. 2023).

The Red List can overlook population losses for non-threatened and widespread species where extinction rates may vary regionally (Jędrzejewski et al. 2017). For example, the Andean condor (*Vultur gryphus*) was uplisted from Near Threatened (NT) to Vulnerable (VU) in 2020, despite decades of extirpations in its northern range (Restrepo-Cardona et al. 2022). Furthermore, in the Andes, over a quarter of subspecies could be at risk of extinction (Palacio & Clark 2023). In Africa, the Marabou Stork (*Leptoptilos crumenifer*) remains a common species through the East and South, but appears to be on the verge of extinction in West Africa, a fact that was overlooked until recently (Gula & Barlow 2022). In the marine realm, wide-ranging species such as tunas and billfishes often experience range contractions before abundance is reduced to extinction risk thresholds (Worm & Tittensor 2011; Burgess et al. 2017).

In essence, the global conservation status of common species on the Red List can remain unchanged despite strong declines in abundance, possibly delaying action until they are close to extinction. In conservationist Rosalie Edge's words: "*The time to protect a species is while it is still common. The way to prevent the extinction of a species is never to let it become rare*" (Emergency Conservation Committee 1934).

Limitations of the IUCN Red List Categories and Criteria

The current categories and criteria (version 3.1) were established more than 20 years ago (IUCN 2012) and methodological revisions have been suggested (Cazalis et al. 2022). At present, the Red List clearly needs to utilize new technologies, data availability, and modern quantitative methods that were not available when its categorization system was first developed.

Criterion B [Geographic Range] is the most commonly used criterion for classifying species into threatened categories (Marsh et al. 2023), which requires updating. This criterion employs simple spatial metrics that indirectly calculate species range sizes (Gaston & Fuller 2009) and is poorly correlated with species risk of extinction (Marsh et al. 2023). In contrast, contemporary methods, such as species distribution models (Peterson et al. 2018) and GIS approaches (Palacio et al. 2021; Hughes et al. 2021) allow the direct estimation of the species' Extent of Suitable Habitat (ESH), also called Area of Habitat (AOH). The AOH is a more informative metric for assessing extinction risk (Brooks et al. 2019), and remote sensing technologies permit the evaluation of its trend over time, quality, or degradation (Jacobson et al. 2019).

Similarly, criteria A, C, and D are based on population parameters (IUCN 2012), which are typically not estimated using standardized methods (Keith 2009). Consequently, the reported abundances and population trends for some species are often "guesstimates" (Mallon & Jackson 2017) and can be misleading (Fox et al. 2019; Wilson et al. 2011). In the oceans, criterion A [Population size reduction] is only of limited value for assessing the level of depletion and exploitation rate of fish stocks and could benefit from integrating new parameters from fisheries sources (Millar & Dickey-Collas 2018; Miqueleiz et al. 2022). The quantitative criterion E encourages population viability analyses and can indicate species' probability of extinction. However, to date, it has only been used for four species (IUCN 2023) and should be more broadly applied (Cazalis et al. 2022). Additionally, we suggest incorporating effective population size whenever possible (Schmidt et al. 2023), which is also a headline indicator within the Kunming-Montreal Global Biodiversity Framework.

In addition to the issues with each criterion, the categories and criteria do not account for simultaneously operating threats (Greenville et al. 2021), which may vary across species ranges, populations, and habitat levels (Santini et al. 2019). Also, critical factors such as landscape connectivity, genetic diversity, and population adaptation to different niches are not explicitly considered in the Red List (Pilot et al. 2006; Willoughby et al. 2015; Breiner et al. 2017; Schmidt et al. 2023), even though they are critical for species and population persistence (Lindborg & Eriksson 2004; Lorenzana et al. 2020). Hence, the Red List is currently insufficient to inform species-specific decisions on protecting populations and their genetic diversity (Schmidt et al. 2023).

Shortcomings of the red listing process

Beyond the limitations of the Red List categories and criteria, the assessment process has several shortcomings. It is heavily reliant on a few Red List assessors, where the expert selection process is run through invitations that might favor academic networks with similar biases and exclude conservationists and other local professionals (Tomasini 2018). Critically, many assessors require more time, expertise, and funding to complete thorough assessments. Assessors are almost entirely volunteers and lack funding; thus, a more standardized process likely requires increased recognition and support, as authoring Red List assessments is secondary to grants and scientific publications. Within this context, it is challenging to reflect regional or local threats to species survival. In fact, integrating local data into Red List assessments is a long overdue process (Rodríguez et al. 2000). We suggest the red listing process should seek knowledge sources in non-English languages (Chowdhury et al. 2022), gray literature (Haddaway & Bayliss 2015), and citizen science databases, among other streams of knowledge. Such sources can be essential repositories of context-dependent information, and may increase the effectiveness of conservation interventions (Amano et al. 2021) and species recovery (Hu et al. 2019).

Furthermore, we believe that it is crucial for the Red List to address systemic barriers to participation and decision-making (Soares & et al. 2023). The assessment process requires wider consultations and should improve its alignment with local realities (Tomasini 2018). This will require the support of regional initiatives for assessments (Bachman et al. 2019), increasing equal collaboration with experts (Armenteras 2021), strengthening national and regional capacities for conservation (Zhang et al. 2023), and communicating with researchers and partner networks (Böhm et al. 2022; Cazalis et al. 2023) to enhance the integration and coordination among conservation stakeholders (Echeverri et al. 2023). This likely involves diversifying how information is incorporated using a broader user base, more inclusive modes of review, and at a faster pace. A successful example of this approach is the recently implemented Brazilian biodiversity extinction risk assessment system (SALVE; `https://salve.icmbio.gov.br`), which periodically opens public consultation with Brazilian citizens and non-assessor scientists to contribute to the assessment of extinction risk of national species, resulting in a steady stream of online curated evaluation data in which each contributor is credited.

Fortunately, for some species assessments, the Red List has successfully used improved assessment processes with broad participation, which should be adopted more widely. For instance, the leopard (*Panthera pardus*) and the Persian leopard (P. *p. tulliana*) have been assessed with range-wide cooperation of scientists and experts under the umbrella of the IUCN/SSC Cat Specialist Group (Breitenmoser et al. 2022). We also commend the Species Conservation Cycle (Assess-Plan-Act-Network-Communicate) initiated by the IUCN (Rodríguez et al. 2022), the Reverse the Red program to mobilize national networks and empower communities, and the Centers for Species Survival (CSS) to allow investments in conservation to reach teams of local experts and professionals.

Extinction risk beyond the IUCN Red List

Even if the Red List is substantially improved, we posit that a single standard of extinction risk assessment cannot be effectively implemented for all taxa, especially those with complex life cycles, such as various groups of plants and invertebrates (Cardoso et al. 2011; Knapp 2011; Bergamini et al. 2019). Instead, we believe that it is paramount to consider specific approaches to analyze the extinction risk of different groups of organisms at appropriate ecological, spatial, and taxonomic scales (Anderson & Maldonado-Ocampo 2011; Ennen et al. 2020; Rodríguez-Caro et al. 2023). For instance, reconciling fisheries status with extinction risk remains a challenge in the oceans. While previous studies have shown alignment between the IUCN Red List and fisheries status indicators of commercially exploited species (Davies & Baum 2012), inconsistencies remain prevalent across commercially targeted marine species, and diminish the importance of using other available resources (e.g., the FishBase Vulnerability Index; (Miqueleiz et al. 2022)).

Extinction risk assessments should be conducted using a combination of variables and integrative approaches of multiple factors (Button & Borzée 2021), preferably with statistical modeling frameworks (Pollock et al. 2020). For instance, spatially explicit assessments based on the exposure and sensitivity to local threats have effectively assessed the conservation status of tree species (Fremout et al. 2020; Ceccarelli et al. 2022; Gaisberger et al. 2022), and can be modified for wider use. We recommend that extinction risk assessments should include multiple dimensions of biodiversity (Brum et al. 2017), such as functional traits (Griffith et al. 2023), regional habitat threats (Tanalgo et al. 2022), evolutionary distinctiveness (Isaac et al. 2007; Gumbs et al. 2023)and current genetic diversity (Schmidt et al. 2023). Furthermore, it is imperative to explicitly account for climate change impacts that have thus far been proven difficult to incorporate into the Red List (Akçakaya et al. 2006; Peng et al. 2023; Trull et al. 2017).

Nevertheless, for most species, the paucity of data may not allow a thorough assessment of their risk of extinction. In this case, it is critical to acknowledge data gaps and limitations, as inaccurate assurance of confidence can also hamper conservation efforts and decision-making. Thus, we suggest that it is critical that assessments make their reasoning more transparent and express levels of confidence in a way similar to IPBES assessments. Critically, extinction risk alone should not be used to guide conservation efforts, as it does not account for species' ecological functions (Brodie et al. 2018) or their relative ecological importance (Natsukawa & Sergio 2022). Rather, conservation efforts should be a part of a comprehensive priority-setting process (Collen et al. 2016; Miller et al. 2006). Hence, biological and social considerations need to be considered for conservation practice whenever possible (Shi et al. 2005), such as culturally important species (Reyes-García et al. 2023), resource allocation, logistical and financial trade-offs, and the potential for success (Joseph et al. 2009).

Broadening species conservation efforts

Biodiversity conservation is governed by a plurality of values (IPBES 2022). These values, as well as the power-laden processes that legitimize them, should be openly addressed for effective conservation efforts (Shackleton et al. 2023; Beck et al. 2021). Thus, the influence of the Red List on the global agenda precludes alternative viewpoints, cultures, regional intricacies, and human communities that will ultimately achieve on-the-ground species protection. Moreover, even if the Red List can be applied at national and regional scales (Brito et al. 2010), it risks limiting conservation effectiveness if adopted uncritically, for example, by overlooking nationally endemic species (Kraus et al. 2023) categorized as Least Concern (LC).

Thus, instead of top-down approaches, we suggest broadening species conservation efforts, where planning and decision-making are rooted in local contexts and integrated across spatial scales (Chaplin-Kramer et al. 2022). Furthermore, it is imperative to incorporate and center the expertise, voices, and perspectives of diverse conservationists, indigenous peoples, and local communities across geographies, including the Global South, in decision-making (Ocampo-Ariza et al. 2023). Recognizing local knowledge, both traditional and scientific (Braga-Pereira et al. 2022), is also key to developing meaningful indicators of conservation priorities adapted to local and regional realities. For example, a land–sea–people management plan for the Haida Gwaii archipelago in Canada was developed by a multicultural working group consisting of indigenous leaders of the Haida Nation, government agencies, and academics, responding to technically rigorous indicators consistent with the political and cultural values of the Haida Nation and the socio-ecological complexity of the local context (Muhl et al. 2022).

More inclusive processes, such as the Haida Gwaii management plan, could help to diversify governance (Vierros et al. 2020; Spalding et al. 2023), while also meeting the criteria of international agreements such as the Kunming-Montreal Global Biodiversity Framework. The species component aims to halt human-induced extinctions of "known threatened species" (i.e., those listed as threatened in the Red List) and to reduce extinction risk tenfold. While commendable, the Red List as a sole indicator might preclude an effective gauge of progress for preventing species extinctions (Hughes et al. 2021) and highlights the need for more efficient biodiversity monitoring (Gonzalez et al. 2023).

Furthermore, we also call attention to maintaining an appropriate balance of priorities between conservation measures, scientific research, and monitoring (Buxton et al. 2021). Arguably, more resources are needed to adequately monitor the population trends and threats for most species (Gonzalez et al. 2023). For wide-ranging, migratory, and marine species, region-wide, transboundary efforts that involve data collection and biodiversity assessment at the population level are required (Roberson et al. 2021; Dunn et al. 2019). We suggest that increased collaboration, synergies (Oberhauser et al. 2017), and bottom-up approaches (Wyborn & Evans 2021) are needed to allow the participation of all relevant stakeholders, mobilize resources and funding more effectively, and provide more diverse criteria to assay priorities for species conservation across scales.

Box 1. Summary of recommendations for guiding species conservation efforts

1. *Assessing Extinction Risk beyond the Red List*

- Conduct spatially-explicit assessments at the population level [1, 2, 3]
- Develop integrative approaches of multiple relevant factors [4]
- Use modern statistical modeling frameworks [5]
- Include multiple dimensions of biodiversity [6] such as functional traits [7], evolutionary distinctiveness [8, 9] and current genetic diversity [10]
- Incorporate climate change impacts [11, 12, 13.]

2. *Assessment Process*

- Support regional initiatives for extinction risk assessments [14]
- Communicate with researchers and partner networks [15, 16]
- Increase equal collaboration with local and regional experts [17]
- Enhance integration and coordination among conservation stakeholders [18]

3. *Setting Conservation Priorities*

- Consider species' ecological functions [19] and relative ecological importance [20]
- Include social considerations such as culturally important species [21]
- Define frameworks for resource allocation and logistical and financial trade-offs [22, 23]
- Evaluate the potential for success of the prioritizations [24]
- Recognize and make explicit ethical values to inform priority setting through community dialogue and co-produced indicators [25]

4. *Decision-making*

- Root decision-making in local contexts [26]
- Incorporate and center the expertise, voices, and perspectives of diverse conservationists, indigenous peoples, and local communities in decision-making [27]
- Recognize local knowledge, both traditional and scientific [28]
- Balance priorities between conservation measures, scientific research, and monitoring [29]
- Increase collaboration, synergies [30], and bottom-up approaches [31]

[1] Fremout et al. 2020 [2] Ceccarelli et al. 2022 [3] Gaisberger et al. 2022 [4] Button & Borzée 2021 [5] Pollock et al. 2020, [6] Brum et al. 2017, [7] Griffith et al. 2023 [8] Isaac et al. 2007 [9] Gumbs et al. 2023 [10] Schmidt et al. 2023 [11] Akçakaya et al. 2006; [12] Trull et al. 2017 [13] Peng et al. 2023 [14] Bachman et al. 2019 [15] Böhm et al. 2022 [16] Cazalis et al. 2022 [17] Armenteras 2021 [18] Echeverri et al. 2023 [19] Brodie et al. 2018 [20] Natsukawa & Sergio 2022 [21] Reyes-García et al. 2023 [22] Salzer & Salafsky 2006 [23] Wiedenfeld et al. 2021 [24] Joseph et al. 2009 [25] Muhl et al., 2022 [26] Chaplin-Kramer et al. 2022 [27] Ocampo-Ariza et al. 2023 [28] Braga-Pereira et al. 2022 [29] Buxton et al. 2020 [30] Oberhauser et al. 2017 [31] Wyborn & Evans 2021

Concluding Remarks

The Red List has demonstrated a positive impact on the conservation of threatened species, and we are not advocating its removal. Rather, we argue that it should be understood as "a" and not "the" tool for evaluating species extinction risk (Vié et al. 2008; Betts et al. 2020). Other systems for quantifying extinction risk have been proposed (e.g., (Baumsteiger & Moyle 2017)), some might be more appropriate in different jurisdictions (Soberon & Medellín 2007), and others are already in place, such as the New Zealand Threat Classification System categories (`https://nztcs.org.nz`). Importantly, new developments in assessing extinction risk should incorporate better quantitative methods to make use of the wealth of biodiversity data sources and methodological advances whenever possible.

Even if correctly assessed, extinction risk itself or lists of threatened species are insufficient for guiding conservation efforts (Possingham et al. 2002; Lunney 2017; Virtanen & Moilanen 2023). Additional considerations including social, biological, and ecological factors should be considered when seeking solutions, making decisions, and planning conservation activities. Therefore, it is crucial for governments, funding agencies, NGOs, and decision-makers to broaden perspectives when setting conservation priorities, rather than relying solely on extinction risk categorizations.

As a way forward, we propose shifting from globally threatened species as a major funding requirement. Instead, we suggest conducting priority-setting exercises with the cooperation and involvement of local, regional, national experts and stakeholders to decide on the financing of species conservation projects. This will foster more collaboration and participation to ensure resources are allocated where they matter the most, in the places where direct conservation actions are actually implemented.

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