Forum

A downlist is not a demotion: Red List status and reality

David P. Mallon and Rodney M. Jackson

Abstract Assessments of biodiversity status are needed to track trends, and the IUCN Red List has become the accepted global standard for documenting the extinction risk of species. Obtaining robust data on population size is an essential component of any assessment of a species' status, including assessments for the IUCN Red List. Obtaining such estimates is complicated by methodological and logistical issues, which are more pronounced in the case of cryptic species, such as the snow leopard *Panthera uncia*. Estimates of the total population size of this species have, to date, been based on little more than guesstimates, but a comprehensive summary of recent field research indicates that the conservation status of the snow leopard may be less dire than previously thought. A revised categorization, from Endangered to Vulnerable, on the IUCN Red List was proposed but met some opposition, as did a recent, similar recategorization of the giant panda *Ailuropoda melanoleuca*. Possible factors motivating such attitudes are discussed. Downlisting on the IUCN Red List indicates that the species concerned is further from extinction, and is always to be welcomed, whether resulting from successful conservation intervention or improved knowledge of status and trends. Celebrating success is important to reinforce the message that conservation works, and to incentivize donors.

Keywords Cryptic, IUCN Red List, *Panthera uncia*, population estimate, snow leopard, species assessment

Regular assessments are required to track biodiversity status and trends, and inform decisions about where conservation interventions are most needed. Reliable assessments depend on standardized, objective and transparent procedures, supported by accurate and up-to-date information. The species is one of the fundamental components of biodiversity and the IUCN Red List of Threatened Species has become the globally accepted standard for providing an explicit, objective framework for assessing extinction risk and documenting the status of species (and infraspecific taxa). The Red List process incorporates a set of categories of threat (bands of extinction risk) and criteria with quantified thresholds (IUCN, 2012), accompanied by detailed guidelines on their application (IUCN Standards and Petitions Subcommittee, 2016).

Unbiased estimates of population density and abundance that incorporate uncertainty are essential components of any assessment of a species' status, including those for the Red List. Obtaining such estimates depends on systematic study design, adherence to rigorous sampling protocols, estimates of detectability, and adequate sample size, among other factors, to meet the assumptions of statistical tests; the frequent failure to meet these requirements has been documented by Singh & Milner-Gulland (2011). Logistical and methodological challenges can hinder calculation of estimates even for relatively large, diurnal species living in open terrain, such as mountain ungulates (Caprinae; Wingard et al., 2011) and the goitered gazelle *Gazella subgutturosa* and wild ass *Equus hemionus* in Mongolia (Kaczensky et al., 2015).

These challenges are magnified in the case of species that are more difficult to detect, such as the snow leopard *Panthera uncia*, an apex predator dwelling at naturally low densities in high-elevation environments with relatively low basal productivity in the Himalaya, Qinghai–Tibet Plateau and mountains of Central Asia. The snow leopard also has a crepuscular or nocturnal activity pattern, is reclusive in its habits and is rarely observed in the wild.

Until recently, published estimates of the global snow leopard population size have all been of the same order of magnitude: 3,350–4,050 (Fox, 1994); 4,080–6,500 (McCarthy & Chapron, 2003); 4,500–7,500 (Jackson et al., 2010), and 3,920–6,390 (Snow Leopard Working Secretariat, 2013); all are best considered to be guesstimates, based on expert opinion with varying but generally temporally increasing levels of information.

Despite the attributes that make the snow leopard a difficult subject to study in the field—or more likely in part because of them—it has become an iconic species, and a flagship for the high-mountain ecosystems it inhabits. Research and conservation programmes on the snow leopard and its habitats have expanded steadily in scope, volume and quality, especially since the publication of the first version of the Snow Leopard Survival Strategy (McCarthy & Chapron, 2003). The large quantity of information that has accumulated from this research is summarized in a publication containing contributions by nearly 200 experts

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in all fields of snow leopard research and conservation (McCarthy & Mallon, 2016).

Several facets of this recent research, notably in relation to population size, population density, lack of fragmentation, and conservation action, appear to indicate that the status of the snow leopard may be slightly less dire than hitherto believed. These include the results of a Rangewide Conservation Planning workshop held in Beijing in 2008, which was attended by a large number of regional and international experts. The workshop identified 69 Snow Leopard Conservation Units, using the methodology already employed successfully in planning for, among others, the jaguar *Panthera onca* (Sanderson et al., 2002) and the American crocodile *Crocodylus acutus* (Thorbjarnarson et al., 2006), and produced higher population estimates made at much finer scales, and in more sites than previously, on the basis of the experts' knowledge derived from wide-ranging field-based studies (McCarthy et al., 2016). Higher estimates for China were made on a similar basis by experts from each province within snow leopard range (Riordan & Shi, 2016). The results of field research projects gathered from widely separated sites, and utilizing more sophisticated technologies and statistical analyses (e.g. spatially explicit recapture models in camera-trapping, faecal genotyping, satellite collaring, and occupancy modelling) have generated more precise estimates of snow leopard density (Li, 2012; Shrestha et al., 2013; Jumabay-Uulu et al., 2014; Kachel, 2014; Sharma et al., 2014; Thinley, 2014; Alexander et al., 2016).

It is unlikely that a higher population estimate could be attributed entirely to an increase in snow leopard numbers; rather, it is probably attributable to more studies having been conducted across a broader range of habitats, with greater precision achieved by improvements in study design, sampling protocols and technology. The trend in increasing population estimates across sites and/or over time suggests that early estimates of snow leopard population size reflected the difficulty in detecting the species.

A further positive point to emerge is that the snow leopard's global range has remained largely unfragmented (e.g. Riordan et al., 2016). There are few obvious natural or man-made barriers, other than perhaps some major river valleys and a few border fences, respectively, and many rivers in the snow leopard's range freeze in winter, facilitating movement and dispersal. Habitat contiguity has also been reported at the national level, such as across extensive landscapes in Nepal (Ale et al., 2016), northern Pakistan (Ud Din et al., 2016) and the Sanjiangyuan region of Qinghai, China (Li, 2012; Liu et al., 2016). There seems little, at least in theory, to prevent an individual snow leopard or its offspring from dispersing from the eastern Himalaya along the 2,500 km length of this range to the Karakoram and Pamir mountains and thence north-east along the Tien Shan or east along the Kun Lun mountain ranges (Fig. 1).

The snow leopard still faces a variety of threats, both ongoing, such as retaliatory killing, habitat degradation (at least locally), poaching and illegal trade, and emerging, notably climate change and large-scale infrastructure development, both of which are expected to intensify. Equally, conservation programmes focused on the snow leopard and its habitat have expanded, including measures such as confiscation of firearms in western China (Harris, 2008) and other anti-poaching initiatives, improved livestock corrals to reduce human–wildlife conflict (Mohammad et al., 2016), designation of new protected areas, rural livelihood programmes, capacity-building and awareness raising initiatives, as well as two global planning frameworks for snow leopard conservation (Snow Leopard Working Secretariat, 2013; Sanderson et al., 2016). Transboundary programmes have increased in scope in recognition of the fact that snow leopards range on both sides of the mountain ridges that so often form international borders (Rosen & Zahler, 2016). For comprehensive reviews of threats and conservation measures see Jackson et al. (2010), Snow Leopard Network (2014) and chapters in McCarthy & Mallon (2016).

The scope and severity of these threats, and the intensity and effectiveness of conservation projects all vary across regions. Experts at the 2008 Beijing workshop assessed snow leopard populations as being stable or increasing in 48% of the 69 Snow Leopard Conservation Units and decreasing in 22%, with no information for 30% of units (McCarthy et al., 2016). Although it is difficult to capture an overall trend, there is a general lack of evidence of a significant continuing decline in the global snow leopard population.

The requirement to reassess the IUCN Red List status of the snow leopard for the Global Mammal Assessment that began in 2014 provided an opportunity to review the new information against the IUCN Red List Criteria. Based on this new information, and technical issues that emerged over the previous assessment, a categorization of Vulnerable was proposed, representing a change from the current Endangered status (Jackson et al., 2008). One might intuitively expect the change to a lower Red List category to be welcomed, as it indicates a greater distance from extinction, yet this proposal met strong resistance within some parts of the snow leopard conservation community. Some comments received during the assessment process concerned interpretations of the data, or highlighted the precautionary principle, but others were opposed in principle to a change in category, with several suggesting that 'this is not the right time to downlist' and doing so 'sends the wrong message'.

Somewhat similar reactions accompanied the recent change in status of the giant panda *Ailuropoda melanoleuca* from Endangered to Vulnerable (Swaisgood et al., 2016). Although this change was principally a result of determined efforts by the Chinese authorities to protect and restore

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Fig. 1 The global distribution (shaded) of the snow leopard *Panthera uncia*. (Courtesy of Panthera, Wildlife Conservation Society, Snow Leopard Network, and Snow Leopard Trust)

forests in panda range, the decision nonetheless caused some controversy and disagreement (Swaisgood et al., 2016, 2017).

The Red List process is designed to operate by applying the criteria and thresholds objectively to the best available data, then assigning the most appropriate category, not by starting out with a prior intention to uplist or downlist, or with a predetermined category. Disagreements and misunderstandings seem widespread and are of a different nature to the several misapplications of the Red List categories and criteria documented by Collen et al. (2016).

It is interesting to examine what motivates these apparently counter-intuitive attitudes. It is inevitable that species listed in the highest categories of threat will have a more prominent profile than those in other categories, and the terms Critically Endangered and Endangered reflect an appropriate sense of urgency. It seems, however, that a high threat category sometimes becomes conflated with desirable status, instead of the more logical converse, leading in turn to an insidious shift towards the Endangered and Critically Endangered categories being viewed as something to be retained or attained. Whether the terms themselves contribute to such views, in a way that more neutrally worded labels would not, is arguable. As a corollary, the lowest Red List category, Least Concern, is sometimes misinterpreted as 'of no concern', when of course all species are of some concern, in the broadest sense. A further consequence is that a transfer to a lower category of threat may then be viewed wrongly as a demotion and something to be resisted, not as a target to be achieved.

A more pragmatic motivation can result from some donors restricting funding to species in the highest Red List categories. A subsequent transfer to a lower category may remove eligibility for funding, with consequences for existing conservation programmes. It is true that successful conservation action that leads to improved Red List status may well lead to a reduction or withdrawal of the very funding that brought about the success. However, funding decisions made on such a basis are not an intrinsic feature of the IUCN Red List but derive from donors' use of the Red List categories in their application procedures. IUCN Red List assessments are used, inter alia, to inform listings on the Appendices of CITES and the Convention on Migratory Species, and in National Biodiversity and Strategy and Action Plans, official lists of protected species, national legislation, and conservation priority-setting exercises at global, regional and local scales. In addition, the Red List Index (Butchart et al., 2005) is used to monitor progress on the Convention on Biological Diversity Aichi Biodiversity Targets, and the United Nations Sustainable Development Goals. The wide range of applications at policy, planning and practical levels underlines the need for rigorous application of the Red List process. Clearly, however, assessments based on subjective considerations or special interests undermine the objectivity of the system and risk distorting priorities and diverting resources away from where they are most needed.

As far as Red List categories are concerned, lower means safer (and therefore preferable), and the highest categories

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of threat (Critically Endangered, Endangered and Vulnerable) indicate a serious, unfavourable situation that needs urgent action. A reassignment to a lower category of threat on the Red List, even as in the case of the recategorization of the snow leopard from Endangered (very high risk of extinction in the wild) to Vulnerable (high risk of extinction in the wild), as defined in IUCN (2012), should always be viewed as positive, even though the change may appear modest and the species remains imperilled. This is true when the change is made based on better information, and more especially when it is a result of the implementation of conservation measures. Species transferred to a lower category of threat usually remain conservation-dependent, so a move to a lower category does not in any way imply that a weakening of conservation or research efforts is warranted. In fact, continued funding and effort are vital to mitigate key and emerging threats and prevent the species from reverting to a previously higher threatened status.

In view of the misapprehensions, it may be helpful to accompany downlists, especially of high-profile species, with appropriate messages that emphasize the good news, the role played by successful action where relevant, and the need to continue, not relax, conservation efforts to consolidate the new status. Downlists on the Red List indicate conservation success and it is important to celebrate these events to reinforce the message to donors, governments and the public that conservation works (e.g. Hoffmann et al., 2015) and that further investments are worthwhile. The IUCN Green List that is currently under development will provide a further focus for such positive messaging. Similar considerations apply in situations where new information or improved estimates show a less threatened or less rare situation.

Application of more sophisticated non-invasive survey techniques, especially camera trapping, has already greatly increased the number of detections of other cryptic species (e.g. Rowcliffe et al., 2008; Linkie et al., 2013), including felids (e.g. clouded leopard *Neofelis nebulosa* in Nepal; Ghimrey & Acharya, 2017), demonstrating range extensions or higher density or abundance. These examples of good news along with downlisting as a result of conservation action all contribute directly to a conservation optimism narrative (Balmford, 2017).

Selecting among many competing conservation priorities for resources and funding is a complex task, and extinction risk (as measured through the IUCN Red List) is widely and understandably used as a pointer or in a simple triage exercise. In doing so, it is important to avoid unduly incentivizing the higher Red List categories. One relatively straightforward step would be for donor agencies to amend their eligibility criteria to include species whose Red List status has improved as a result of positive action.

The Red List is not intended to serve as the sole means of setting conservation priorities (IUCN, 2012). If a long-term aim is to conserve species in dynamic, fully functioning ecosystems across landscape scales, then priorities should be set on a comprehensive basis, as appears to be highlighted, for example, by the Global Snow Leopard Ecosystem Protection Program (Snow Leopard Working Secretariat, 2013). In the main example cited here, the persistence of the snow leopard is intimately linked to an adequate prey base and healthy montane habitats that also provide grazing for livestock on which local communities depend for their livelihoods. The species also plays an integral role in maintaining ecosystem function and services and is rightly considered to be emblematic of its unique environment. Taken together, these provide a more strategic and sustainable basis for the conservation of the snow leopard than reliance on a single label.

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Biographical sketches

David Mallon has been working on snow leopards since 1987. He has worked extensively in the Himalaya and Central Asia, with snow leopards and ungulates, and on other conservation matters. He served as Chair of the Snow Leopard Network during 2012–2014. Rodney Jackson was the first scientist to radio-collar snow leopards, in the 1980s. He has nearly 40 years of experience working in South and Central Asia, particularly on snow leopard conservation, and is the founder and Director of the Snow Leopard Conservancy.

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