



2015 Annual Report

to the Environment Agency - Abu Dhabi



**Framework Support for Implementing
the Strategic Plan of the
IUCN Species Survival Commission**

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Framework Support for Implementing the Strategic Plan of the IUCN Species Survival Commission



هيئة البيئة - أبوظبي
Environment Agency - ABU DHABI

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Introduction

Simon N. Stuart, Chair, IUCN Species Survival Commission

The IUCN Species Survival Commission (SSC) received very generous support through a framework agreement from Environment Agency - Abu Dhabi (EAD) for a three-year period (2011-2013). The reports of the many activities supported through this funding over the years can be found online at the following links: [2011](#), [2012](#) and [2013](#). This framework agreement was renewed by EAD for 2014-2016, and the 2014 report can be found [here](#). This 2015 report is the second from the SSC under the new agreement. Under the Memorandum of Agreement signed in December 2013, it is stated that *“the funds will be used for the implementation of the SSC Strategic Plan, as adopted and agreed by the SSC Steering Committee in 2012. The funds will be allocated to particular items of work in the Strategic Plan at the discretion of the Chair of the SSC, in consultation with EAD and the Global Species Programme, focusing in particular on high-priority activities that are poorly funded from other sources”*. The Strategic Plan is detailed in Annex 1 of the Memorandum of Agreement, and the nineteen activities selected for funding in this second year were chosen based on this plan.

The Activity Reports that follow cover a very broad range of issues. EAD support has been instrumental in helping to launch or grow six major global initiatives within the SSC. These are on:

- Sustainable use and livelihoods
- Red List training
- Plant Red List assessments
- Reptiles Red List assessments
- Invasive species
- Species conservation planning

In addition to these, EAD support has also been given to: Red Listing work on amphibians, abalone and bumblebees; completing the work to develop the new IUCN Standard on Key Biodiversity Areas; developing the work on the SSC Guidelines Assessing the Vulnerability of Species to Climate Change; and advancing the Asian Species Action Partnership (focused on saving Critically Endangered terrestrial and freshwater vertebrates in Southeast Asia).

As is clear from all of the following reports, the implementation of this work is progressing very well. During 2015 we carried out an analysis of progress on all 414 targets in the SSC Strategic Plan, and I presented a very preliminary report on this in my introduction to the 2014 report last year. Here I present a fuller summary of the SSC's progress in implementing its strategic plan from January 2013 up to May 2015.

Background

The [IUCN Species Strategic Plan \(SSP\) 2013-2016](#) was adopted in September 2012 and is the Species Component Programme of the overall 2013-2016 IUCN Programme. The SSP was developed through a consensus-driven process and outlines the priorities and work of the Species Survival Commission (SSC), the Global Species Programme (GSP) and the Red List Partner (RLP) organizations during the current IUCN Quadrennium. The SSP was put together through multiple consultations, and in particular at the SSC Chair's Meeting in February 2012.

The SSP contains 36 Key Species Results (KSRs) and 416 time-bound Targets. Of the 36 KSRs, 27 fall under IUCN Global Result 1 (GR1) (Valuing and Conserving Nature), 3 fall under GR2 (Effective and Equitable Governance), and 6 fall under GR3 (Nature-based Solutions). The 36 KSRs are provided in Annex 1.

Methodology

In February-April 2015, a group of SSC members, GSP staff and RLPs assembled the data to measure progress against each of the 416 SSP Targets. The data collection was coordinated by the SSC Chair's Office. For each Target, the following was recorded:

1. A brief summary of progress (in the form of a narrative paragraph).
2. Codification of progress as follows:
 - a. Has implementation started (Y/N)?
 - b. Is implementation on target (Y/N)?
 - c. Is the Target likely to be achieved by 2016 (Y/N)?
3. If relevant, codification of reasons for delayed implementation as follows:
 - a. Are there funding constraints?
 - b. Are there personnel constraints
 - c. Was the Target too ambitious?
 - d. Were there technological challenges?
 - e. Did scientific complexity slow implementation?
 - f. Was it delayed by external factors?
 - g. Was implementation delayed by a mistake?
 - h. Is the Target no longer a priority?

On the basis of this coding, each Target was coded into one of the following six categories:

1. No longer a priority
2. Not started, unlikely to be completed by end of 2016
3. Started but delayed, likely to be completed by end of 2016
4. Started but delayed, unlikely to be completed by end of 2016
5. Not started, likely to be completed by end of 2016
6. Started, on schedule, likely to be completed by end of 2016.

Each of the 376 Targets that remains a priority was then scored as follows:

1. Not started, unlikely to be completed by end of 2016 – **score = 0**
2. Started but delayed, likely to be completed by end of 2016 – **score = 3**
3. Started but delayed, unlikely to be completed by end of 2016 – **score = 2**
4. Not started, likely to be completed by end of 2016 – **score = 3**
5. Started, on schedule, likely to be completed by end of 2016 – **score = 5**

Under each of the KSRs, the sum of the scores for each priority Target was computed to give a *KSR Performance Score*.

In order to understand SSP performance against *major areas of work*, each KSR was coded against the following categories (excluding KSRs 27 and 36 which contain no priority Targets, as explained later):

- Generating Knowledge (KSRs 1-12, 14, 26, 31)
- Planning for Species Conservation (KSRs 15-20)
- Developing and Influencing Policy (KSRs 13, 21-22, 28-30, 32-34)
- Communicating Species Conservation (KSR 23)
- Promoting Conservation Action (KSRs 24-25), and
- Influencing the Private Sector (KSR 35).

The match of each KSR to the *major areas of work* is not perfect (for example KSR13 Invasive Species has mainly elements on “Developing and Influencing Policy”, but includes some elements of “Generating Knowledge”. It would have been better to categorize each Target, rather than each KSR, to these *major areas of work*, but time has precluded this from being done. It is proposed that the report at the end of 2016 analyses the performance of the SSP Targets categorized according to the *major areas of work*. For this mid-term report, the analysis of performance of *major areas of work* is at the level of the KSRs.

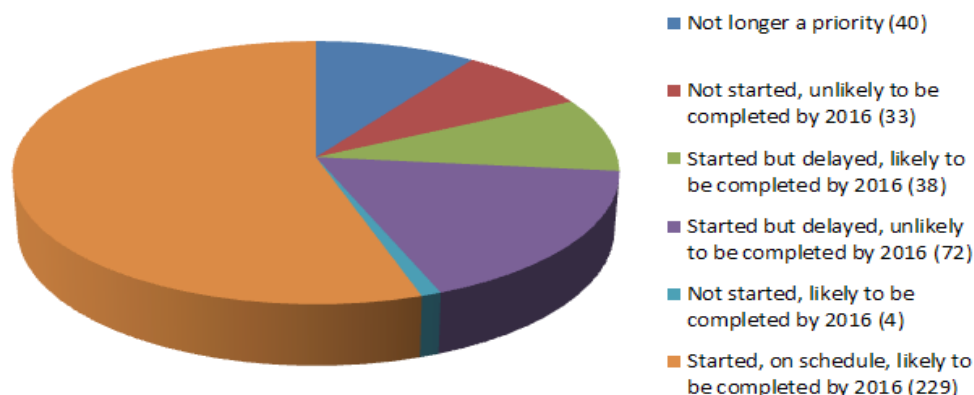
No attempt has been made to differentiate between the contributions of the SSC, GSP and the RLPs to the implementation of the SSP (except that the RLPs contribution just to KSRs 1-11), because in fact the implementation between these three entities is usually so intertwined that it make no sense to try to disentangle this. However, some comments are made below about performance on “staff-heavy” versus “staff-light” KSRs.

Overall summary of progress

The overall progress is shown in the figure immediately below. The headline finding is that we are on course to achieve 65% of the Targets and 72% of the Priority Targets by the end of 2016 (271 Targets in total).

Although there are 416 Targets, 40 of these are no longer considered to be priorities, and so performance is more usefully measured against 376 Priority Targets. A total of 147 Priority Targets are behind schedule, though work has started on 105 of these.

Of the 416 Targets, implementation is as follows:

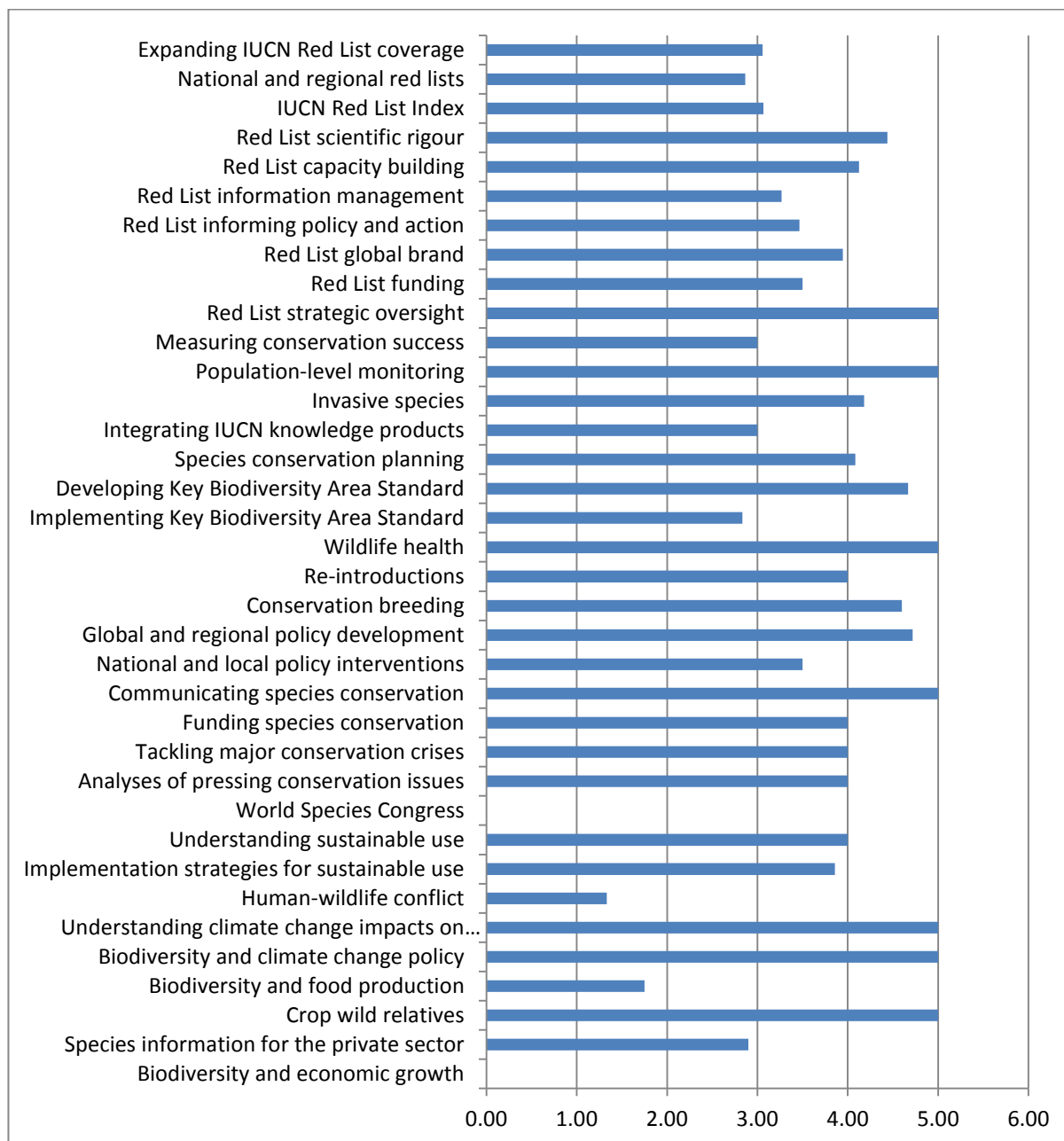


- 65% of Targets likely to be implemented by 2016;
- 72% of Priority Targets should be implemented by 2016;
- 147 Targets still a priority but behind schedule.

The figure below shows the Performance Scores for each KSR. The maximum possible Performance Score is 5.0 (that is, if work has started on every Target, it is on schedule, and it is likely to be completed by end of 2016). This is the case with seven of the Targets.

For two the Targets there has been no progress at all (KSR27 World Species Congress and KSR36 Biodiversity and Economic Growth), but neither of these is considered to be a priority any longer and so work on them has not proceeded.

Some other immediate observations can be made on these scores:



- For most KSRs, the score is greater than 3.0.
- Leaving aside the two KSRs that are no longer priorities, two KSRs have notably low scores: KSR30 Human-wildlife Conflict and KSR34 Biodiversity and Food Production. For both of these it has been very difficult to identify leadership for this work.
- Several Targets are very expensive to implement (notably KSR1 Expanding IUCN Red List Coverage, KSR3 IUCN Red List Index, and KSR6 Red List Information Management), and given this challenge, progress has been relatively good.

- The relatively poor performance on KSR17 Implementing the Key Biodiversity Area (KBA) Standard is inevitable given that it is dependent upon the completion of KSR16 Developing the KBA Standard.
- The level of ambition of the KSRs is almost certainly variable. Some of the Red List KSRs are particularly ambitious and detailed (especially KSR1, KSR2 and KSR3), whereas some others such as KSR12 Population-level Monitoring, KSR18 Wildlife Health, KSR23 Communicating Species Conservation, KSR 31 Understanding Climate Change Impacts on Biodiversity, KSR32 Biodiversity and Climate Change Policy, and KSR34 Crop Wild Relatives are somewhat more general and less ambitious (while not denying good progress on all of these).
- There has been some impressive progress on a number of KSRs, notably KSR4 Red List Scientific Rigour, KSR5 Red List Capacity-building, KSR13 Invasive Species, KSR15 Species Conservation Planning, KSR16 Developing the KBA Standard, KSR19 Reintroductions, KSR20 Conservation Breeding, KSR21 Global and Regional Policy Development, KSR24 Funding Species Conservation, KSR25 Tackling Major Conservation Crises, KSR26 Analysing Pressing Conservation Issues, and KSR28 Understanding Sustainable Use.
- It is proposed that KSR27 World Species Congress and KSR36 Biodiversity and Economic Growth be deleted from the SSP and hence from the reporting at the end of 2016. However, one key area of work, “Building Institutional Partnerships for SSC Specialist Groups”, is entirely missing from the SSP and needs to be added as a new KSR.

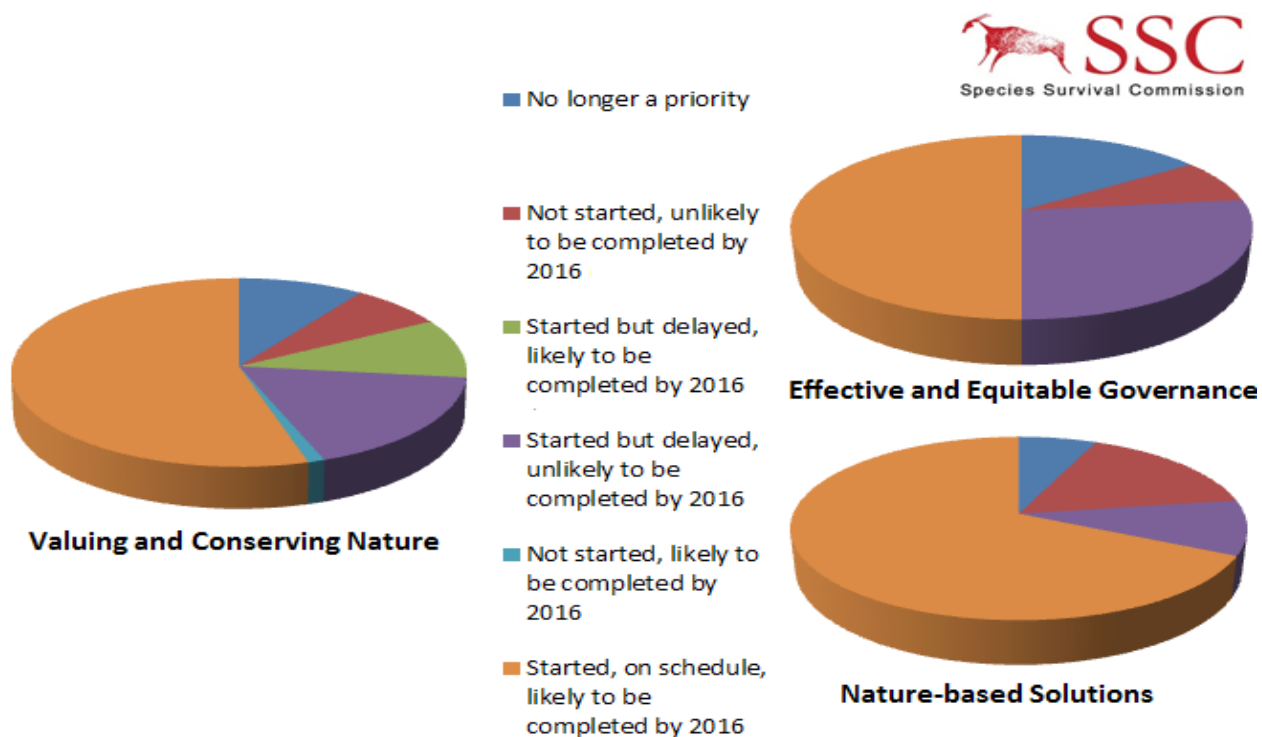
Progress by IUCN Key Result Areas

As mentioned above, the SSP includes KSRs and Targets that fall under all three of three IUCN Global Results.

However, the SSP is overwhelmingly focused on GR1 Valuing and Conserving Nature (27 KSRs, 357 Targets), rather than GR2 Effective and Equitable Governance (3 KSRs, 26 Targets) or GR3 Nature-based Solutions (6 KSRs, 31 Targets). As a consequence, comparing the performance of the SSP across these three GRs is not hugely meaningful, but is shown below in any case.

Performance on GR2 is perhaps slightly less good than for GR1 and GR3. Certainly, a higher proportion of Targets under GR2 are no longer considered to be a priority.

Comparative performance by IUCN Global Results:



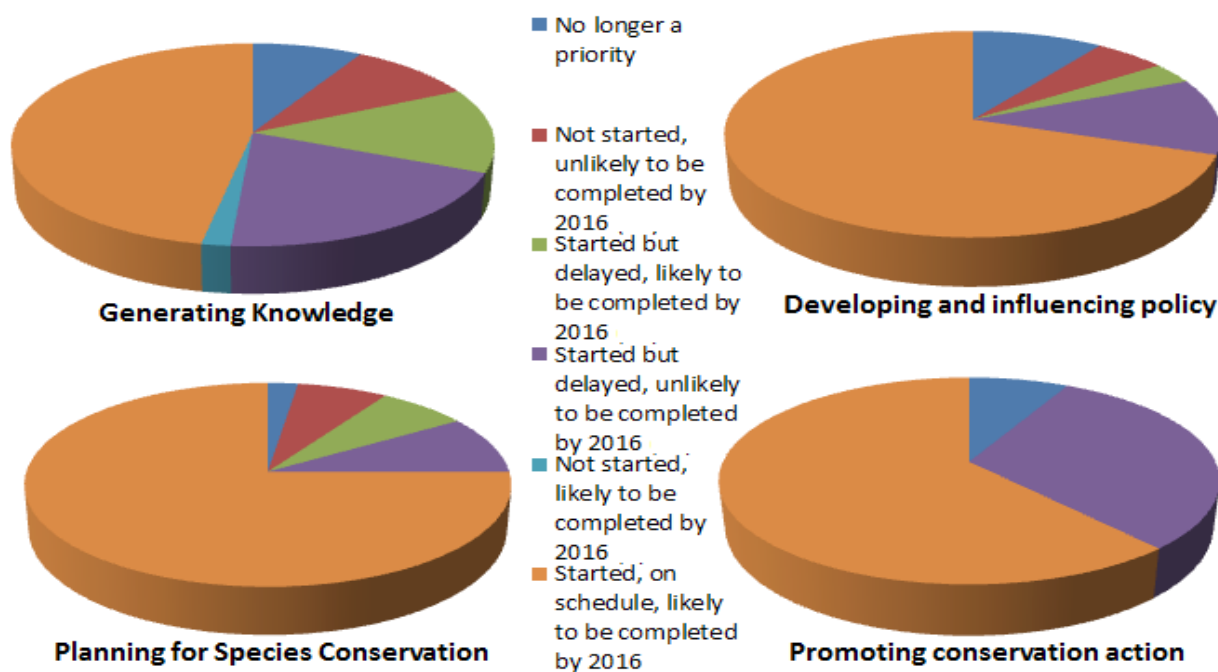
Progress by Major Work Areas

The results shown here are for four of the *major areas of work*:

- Generating Knowledge;
- Planning for Species Conservation;
- Developing and Influencing Policy; and
- Promoting Conservation Action.

For the other two (Communicating Species Conservation and Influencing the Private Sector), there was only one applicable KSR, each with rather few Targets, and so no meaningful analysis could be carried out).

Comparative performance in major areas of work:



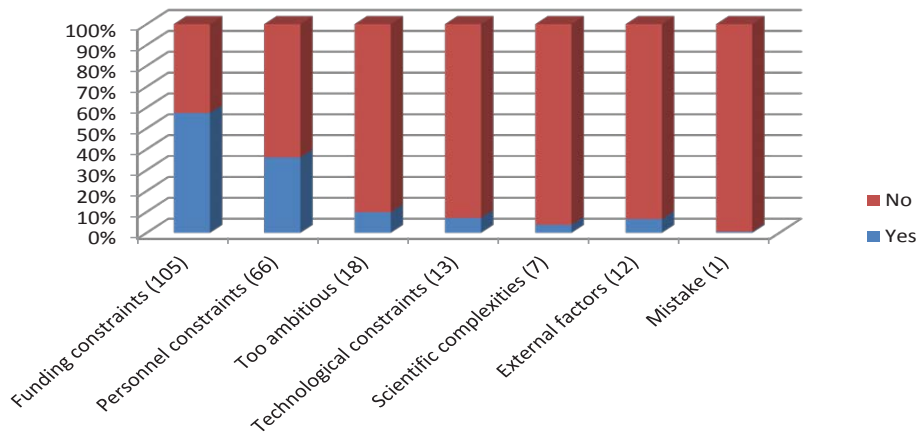
The performance against these *major areas of work* is quite variable, as can be seen in the figure above.

The following points can be made:

- Although Generating Knowledge is widely considered to be the bedrock of the SSC's, GSP's and RLP's work, surprisingly this is the area of work that has the least good performance in terms of achieving Targets. Indeed, it is the only *major area of work* for which Targeted-related work that has started, is on schedule, and is expected to be completed by 2016 scores less than 50%. This is probably partly a reflection of the fact that the Targets under these KSRs tend to be more ambitious than the others, and also that success with them depends on significant levels of funding to a greater extent than other KSRs. Put another way, KSRs 1-11 in particular depend on significant staff inputs from the GSP, which is directly dependent of the level of funding available to the GSP.
- The work on Planning for Species Conservation and on Developing and Influencing Policy is generally much less expensive than Generating Knowledge, and it is possible to run a higher percentage of this work through the SSC outside of IUCN budgets, hence the high rate of performance (though GSP inputs are still important).
- Conversely, the work on Promoting Conservation Action is overwhelmingly, though by no means entirely, dependent on GSP staff. The performance level is reasonably good, though not as high as Planning for Species Conservation and on Developing and Influencing Policy.

Reasons for Delayed Implementation

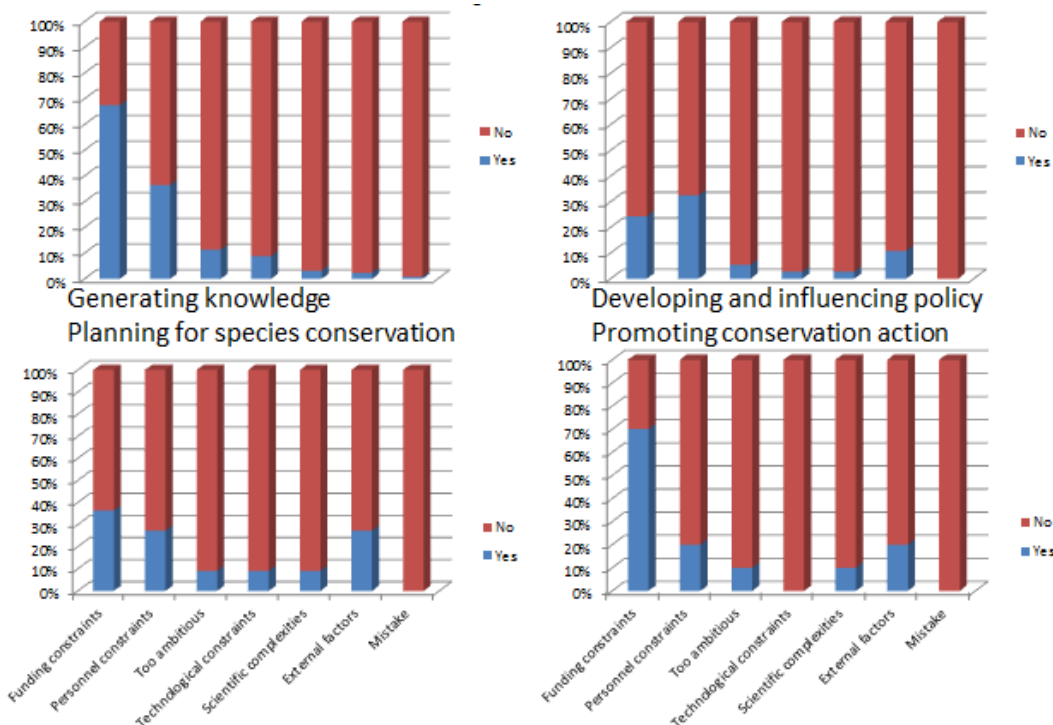
As mentioned above, the reasons for delayed implementation were recorded for all of the 147 Targets which are not on schedule. The results are given in the graph below.



These results do not include the Targets that are no longer considered to be a priority. Resource limitations are overwhelmingly the most common reason for delayed implementation, either because of shortage of funds and lack of appropriate people to lead the work. In most organizations these equate to the same thing, but this is not the case with the SSC where so much leadership time is given voluntarily outside regular budgets. For a relatively small number of Targets, delays have been caused by technological constraints (such as some of the information technology required for the Red List – KSR6), scientific complexities related to completing the work (such as some of the work on measuring conservation success – KSR11), or external factors (especially for some of the species conservation planning work). Rather surprisingly, apparent delays caused by the original target being unrealistically ambitious are rather uncommon.

The figure below shows the reasons for delayed implementation against four major areas of work. For the most part these follow the same patterns as for all Targets as a whole. Financial constraints are particularly important for Generating Knowledge and Promoting Conservation Action, as expected. Personnel constraints are more serious than financial constraints for Developing and Influencing Policy, again not surprising as this work is often more dependent on finding the right people to lead it than it is on funding. Work on Planning for Species Conservation seems to be more affected by external factors than others; an example is KSR17 Implementing that KBA Standard, which depends on completing KSR16 Developing the KBA Standard.

Comparative reasons for delayed implementation across major areas of work:



Conclusion

This analysis gives a very simple of progress with the SSP. It suffers from all the usual problems associated with self-assessment. Nevertheless it provides some helpful guidance on what needs to be done in order to improve performance by the end of 2016. Programme managers in the SSC and GSP will use it to plan priorities for the remainder of 2015 and for 2016 with a view to achieving as much of the SSP as possible by the end of 2016. It should be noted that, given that so much of the SSP is implemented voluntarily, progress is remarkably good.

It is very clear from the reports that follow that the most generous EAD support to SSC is one of the most important factors enabling the SSC to advance its work on some of our most important targets.

We are hugely grateful for this, and, on behalf of the entire SSC, I would like to express our deepest appreciation and thanks to the EAD, and especially to its Secretary General, HE Razan Khalifa Al Mubarak.



Simon N. Stuart



Activity Reports



Sustainable Use and Livelihoods Specialist Group

Rosie Cooney, Chair, IUCN CEESP/SSC Sustainable Use and Livelihoods Specialist Group (SULi)

Key achievements

- SULi led in the convening of an international symposium *Beyond Enforcement: Communities, Governance, Incentives and Sustainable Use in Combating Wildlife Crime*, in South Africa, in February 2015, working with a number of partners. This symposium brought together representatives of UN bodies, development agencies, community organisations, conservation NGOs, and researchers and developed path-breaking recommendations on the role of communities in combating global illegal wildlife trade (IWT).
- SULi influenced thinking, discussion and policy across a number of regional and international arenas on IWT, ensuring greater visibility in these debates of the local communities who live with wildlife.
- SULi developed an internationally relevant *Analytic Framework* for understanding how and where legal, sustainable wild resource trade can contribute to biodiversity conservation and to community livelihoods, working with the International Trade Centre (ITC) of the United Nations (UN).
- SULi played a key role in the development of the work of the international Collaborative Partnership on Wildlife (CPW), including the development and launch of factsheets to provide authoritative information on key topical wildlife management issues.

The Sustainable Use and Livelihoods Specialist Group (SULi) is a cross-commission Specialist Group of the IUCN Commission on Environmental, Economic and Social Policy (CEESP) and the Species Survival Commission (SSC).

Its strategic approach is designed to contribute to the Mandates of both Commissions and to the broader Programme of IUCN.



SULi Sustainable Use
and Livelihoods
Specialist Group

SULi's **mission** is:

Promote both conservation and local livelihoods through enhancing equitable and sustainable use of wild species and their associated ecosystems.

SULi's long term **goals** are:

- Unsustainable uses of biodiversity are stopped or made sustainable;
- The rights, interests and priorities of indigenous and local rural communities are respected and upheld in relation to sustainable use of wild resources;
- The importance of sustainable use of wild resources in meeting major conservation and sustainable development challenges is recognised.

SULi's **priorities for action** are:

- Improve understanding and guidance on *management* of use of wild resources;
- Enhance equitable and effective *governance* of use; and
- Increase understanding of *trade and markets* for wild products and their implications for conservation and livelihoods.

These goals and priorities are pursued through work across a number of thematic areas as set out below.

1. Understanding wildlife trade and its conservation and livelihood impact

Exploring the role of communities in combating wildlife crime

Wildlife crime, or illegal wildlife trade (IWT), is currently at the top of the international conservation agenda, and with good reason. A surge in poaching for international trade is ravaging populations of iconic animals like rhinos and elephants and a host of lesser-known species of wildlife are also being decimated, such as pangolins, some birds, reptiles, primates, medicinal plants and timber species.

However, the role of the local communities who live close to wildlife is currently being largely overlooked in the global policy responses to this threat.

SULi's major activity in this period was convening an international symposium called "Beyond Enforcement: Communities, Governance, Incentives and Sustainable Use in Combating Wildlife Crime", which took place in February 2015, with the following partners:

- The International Institute of Environment and Development (IIED);
- TRAFFIC;
- The Austrian Ministry of the Environment; and
- The ARC Centre for Excellence in Environmental Decisions at the University of Queensland (see Box 1 for more details).

Box 1. International Symposium BEYOND ENFORCEMENT: COMMUNITIES, GOVERNANCE, INCENTIVES AND SUSTAINABLE USE IN COMBATING WILDLIFE CRIME

Muldersdrift, South Africa
February 2015

SULi, IIED, TRAFFIC, Austrian Ministry of the Environment, CEED



SULi was the lead organiser of this [international symposium](#), which brought together over 70 researchers, community representatives, government officials, UN agencies and NGOs from five continents. The meeting was opened by the South African Minister of Environmental Affairs (pictured below) and attended by representatives of key international organisations, including the Convention on Biological Diversity, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (GIZ), and the United Nations Development Programme (UNDP).

The symposium explored analyses and case studies from around the world on communities and wildlife crime, including the drivers and motivations for IWT, the limitations of enforcement-driven responses alone, the economics of IWT, and many positive examples of successful community-based interventions that led to strong community support for conservation, community engagement in enforcement, and reduced poaching levels.

The symposium generated a set of key conclusions and recommendations, which SULi and partners are now taking forward in a number of policy and decision-making arenas. The symposium was generously supported by United States Agency for International Development (USAID), Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) and the Austrian Ministry of the Environment.



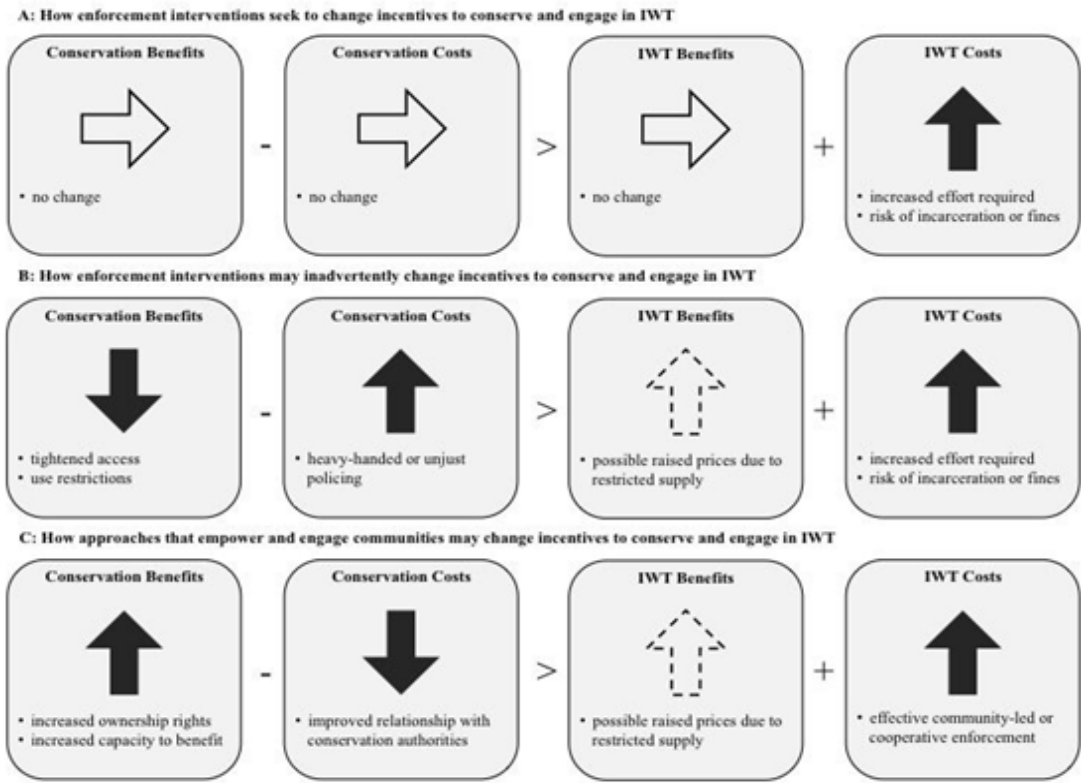
Left: The symposium organising team, drawn from many organisations and all, except Nick Ahlers, SULi members: Max Abensperg-Traun, Nick Ahlers, Rosie Cooney, Dilys Roe, Diane Skinner, Duan Biggs, Dan Challender, Holly Dublin and Mike Murphree. Right: Dilys Roe of IIED and SULi Chair Rosie Cooney meet Minister Edna Molewa, South Africa's Minister of Environmental Affairs. © Kim Gordon EPA.

Since this symposium, work on this topic has focused on four overlapping areas:

- Gathering and synthesising **regional experience** and “lessons learned”: while the symposium highlighted above was international and presented experiences from five continents, it was strongly weighted toward East and Southern Africa. There is a strong need to gather experience from the very different patterns of poaching and contexts of conservation across the diverse regions where IWT is a serious conservation and development problem. GIZ, the Austrian Ministry of the Environment and USAID are generously supporting the development of a regional workshop for West and Central Africa, to be held in partnership between IIED, TRAFFIC and IUCN SULi in Cameroon in February 2016 in Limbe, Cameroon. This workshop has had extremely strong interest from the region and will include representatives from government agencies, indigenous groups and networks, development agencies, major conservation NGOs, and academics from the region and beyond. Initial preparations are likewise underway for a regional workshop for Asia, working with IIED, TRAFFIC, Fauna and Flora International and the ICCA Consortium (Indigenous territories and local Community Conserved territories and Areas).
- Developing **thinking and theory** on when and how community-level interventions are likely to reduce poaching and illegal wildlife trade. SULi members and partners developed a conceptual paper drawing on the key lessons from the Muldersdrift symposium and have submitted it to a leading conservation journal. SULi and partners have further developed a detailed **Theory of Change** to help guide planning and delivery of IWT interventions. A draft form has been published as an IIED Discussion Paper; this was presented at an academic symposium at the University of Kent, and an academic paper has been submitted to a leading conservation journal. An IIED Briefing Paper is currently being prepared for publication in February 2016.

Box 2. To poach or protect? How IWT interventions can change incentives facing local communities

This diagram is taken from a paper drawing on lessons and case studies from the Beyond Enforcement international symposium of February 2015 and submitted in late 2015 to a leading journal. It is built on a key insight emerging from the meeting – that wildlife is more likely to be conserved where net benefits (financial and non-financial) to individuals in local communities of retaining it are greater than the net benefits of engaging in IWT. This figure examines how interventions to combat IWT – particularly those based narrowly on “top-down” enforcement and those built on community engagement – can affect these costs and benefits.



The key messages are that a preoccupation with top-down enforcement alone might be compromising the possibilities for exploring fruitful and complimentary pathways that engage and support communities, and risk undermining anti-IWT efforts by alienating or disenfranchising local residents in source areas of illicit wildlife goods.

- Promoting **regional engagement and field testing** of community-based approaches. Efforts are underway to raise funding to implement and test the Theory of Change (TOC) at field sites, focused currently on East and Southern Africa. Working with IIED, the IUCN East and Southern Africa Regional Office (ESARO), and the SSC African Elephant Specialist Group, this included: a) convening a workshop at the IUCN Eastern and Southern African Regional Conservation Forum in October 2015 to secure input and interest in the initiative from IUCN Members, Commissions, and Specialist Groups working in the region; b) developing a proposal to implement and test the TOC at two sites in Kenya; and c) developing a concept for USAID Programme to Combat Wildlife Trafficking in Southern Africa.
- Engaging with **policy and decision-makers** to increase understanding. Messages and insights from this symposium have been taken forward to key international and regional intergovernmental meetings on IWT, including a special briefing in the European Parliament on the role of communities in combatting wildlife crime held by SULi, IIED, TRAFFIC and the European Bureau for Conservation and Development (EBCD) in June (generously supported by GIZ); and the development of a joint IUCN SULi/UNDP side-event at the CITES Standing Committee meeting (held January 2016).

2. Enhancing conservation and livelihood benefits of sustainable and legal trade

Wildlife trade is a major component of the livelihood strategies for many poor communities in rural and remote areas, and trade can provide important incentives for people to support and engage in conservation. However, many wildlife species are vulnerable to over-harvest and excessive trade, and much trade is illegal, unsustainable and/or poorly governed. Currently there is very poor understanding of when and under what circumstances wildlife trade is likely to lead to positive conservation and livelihood outcomes, when it is not, and how to create the conditions to favour the former.

SULi worked in partnership with the UN International Trade Centre (ITC) to produce *Conservation and Livelihoods: An Analytic Framework for Understanding Impacts of International Wildlife Trade* (authors Rosie Cooney, Dilys Roe, Simon Milledge, Michael t'Sas-Rolfes from SULi, Katarina Nossal and Alexander Kasterine from ITC, and Douglas Macmillan from the Durrell Institute for Conservation and Ecology (DICE) at the University of Kent), published and widely disseminated in May 2015.



This report provides a framework for better understanding and assessing the impact of trade in wildlife products on conservation and local livelihoods. It explores the role of interrelated factors of relevance to particular species and their habitat, governance settings, the supply chain structure and the nature of the end market. SULi aims to take this analytical tool forward and encourage its use within a number of contexts, including the CITES and its Livelihoods Working Group. It was presented to relevant communities in a number of forms, such as at the University of Kent DICE symposium on wildlife trade in June 2015; in the margins of the World Trade Organization (WTO) Ministerial in Nairobi in December 2015; and in a side-event at the CITES Standing Committee in January 2016. A publication is under preparation.

Captive breeding or cultivation of species for trade is one approach often used to reduce illegal harvest from the wild, but results are very mixed, with little understanding of the factors that lead to positive or negative outcomes.

SULi is working with colleagues at the University of Lancaster, the University of Queensland and TRAFFIC in developing a project concept for increasing understanding of the conservation and livelihood implications of captive breeding for trade through case studies and a workshop and is currently seeking funding opportunities.

In China, bears are farmed to produce bile for use in Traditional Chinese Medicine, but the impact of this practice on the ongoing poaching of wild populations is unclear. SULi is participating in a process led by the State Forestry Administration of China and IUCN (led by the SSC Bear Specialist Group) to examine the impact of bear farming on poaching of bears for the bear bile trade, following up on a Resolution from the IUCN World Conservation Congress in Jeju in 2012.

3. Sustainable wildlife management

SULi's work on sustainable wildlife management aims at ensuring that use of wildlife populations is sustainable in ecological terms, while enabling a sustained flow of human benefits. Key areas of activity are outlined below.

Improving international understanding and coordination on Sustainable Wildlife Management (SWM)

SULi is leading for IUCN in the Collaborative Partnership for Wildlife (CPW), a body established under the Convention on Biological Diversity. SULi has played an important role in the development and the work of this body. SULi is contributing extensively to development of a CPW factsheet series – authoritative information summaries on topical and important global wildlife management issues. A series of six to ten factsheets is planned. SULi co-led the development of a factsheet on SWM and human-wildlife conflict, launched at the World Forestry Congress in Durban in September, and is a major contributor to a forthcoming one on hunting and SWM. SULi and ResourceAfrica convened a workshop as part of the Wildlife Forum at the Food and Agriculture Organization (FAO) of the UN's World Forestry Congress in Durban, focused on community-based wildlife management.

The CPW, with FAO taking the lead, is also developing a project on *Criteria and indicators for sustainable wildlife management: a key step towards a global certification system*. This project seeks to address a key gap in promoting and improving SWM – the lack of a clear and agreed set of criteria and indicators for gauging whether its objectives are being achieved. SULi is working with FAO and other CPW partners to develop this, along with a number of other CPW projects.

Conservation and sustainable use of saker falcon

SULi is involved with efforts to conserve the saker falcon, as part of the Saker Falcon Task Force (STF) established under the Convention on the Conservation of Migratory Species of Wild Animals (CMS).

Working closely with the International Association for Falconry and Conservation of Birds of Prey (IAF) and the CMS-STF Secretariat, SULi members' engagement (led by Robert Kenward) has included:

- Leading development and building of the new Stakeholder (Trust-building) Portal (launched March 2015);
- Having several SULi members sit on the Steering Committee;
- Engagement with drafting of the Saker Falcon Global Action Plan; and
- Provision of analysis on current saker falcon populations, trends in trapping, and advice on how the STF can best engage with trappers to improve monitoring of populations and sustainability of harvest and trade.

Seal management and policy

SULi, working collaboratively with the SSC Pinniped SG, has led a global study of seal management and policy. The study was commissioned by the International Fur Federation; the primary objective was to survey range state policy and management responses to growing and/or abundant seal populations. This unprecedented study brings together a wealth of information and analysis, and will provide a valuable resource to those concerned with seal conservation, management, and sustainable use globally. The report has been completed and is in the publication process.

Wild meat

Globally, particularly in the tropics and subtropics, millions of people rely on wild animals as an important source of protein and fat. However, hunting, trapping and snaring for "bushmeat" is driving declines of many species, including primates and predators. Over 2015, SULi has sought to support increasing understanding of the conservation impacts of the use of wildlife for meat and how it can be made more sustainable.

- SULi supported and provided technical input into an FAO-led study on wild meat in southern Africa, with Panthera and the Zoological Society of London (ZSL)/Wildlife Conservation Society (WCS) Rangeland Programme for Cheetah and Wild Dog as further partners, carried out by SULi member Peter Lindsey and published by FAO in late 2015. Its insights fundamentally inform SULi's approach to legal and illegal hunting in the regional and elsewhere.
- SULi members also contributed to a publication led by Center for International Forestry Research (CIFOR) colleagues focused on the complex conservation consequences of the transition from wild meat to industrialised meat, and the role of wild meat in future sustainable food systems. This is in review in a leading conservation journal.
- SULi is partnering in a major initiative in North America, the [Wild Harvest Initiative](#), led by Shane Mahoney, SULi Vice-Chair for North America. Even in some developed regions wild meat makes an enormous – but poorly understood and typically overlooked – contribution to meeting food needs. This study aims to assess and quantify the

contribution that hunting makes to supplying the food needs, particularly of rural people. The study was launched in 2015 and is expected to continue to expand in coming years.

Trophy hunting

Trophy hunting continues to be a focus of activity for SULi, given its conservation and livelihood importance in certain contexts, the evident failures of management in many situations, and the sustained attacks it is currently facing world-wide. The impacts of airline bans on trophy transport, increased European Union (EU) scrutiny of trophy imports leading to a number of suspensions of trophy imports, state level bans on trophy imports in the United States (US) increasingly enacted or under review, are likely to be dramatic, with early and currently primarily anecdotal information from the field indicating these may reduce benefits to local communities, increase human-wildlife conflict and associated poaching, and reduce management budgets.

SULi's focus is working to seek to maintain and improve benefits for both conservation and local livelihoods from trophy hunting, including through strengthening the rights of indigenous and local communities to manage and benefit from their wildlife. SULi works to publicize and highlight the SSC [Guidelines on Trophy Hunting as a Tool to Create Conservation Incentives](#). It should be noted that IUCN is opposed to so-called "canned" hunting, where animals are hunted in confined areas without the opportunity to escape. "Canned" hunting is of particular relevance to lions in certain places.

Following the illegal shooting of the lion "Cecil" in Zimbabwe on 1 July, SULi and others in the SSC have been involved in communicating some of the complexities of the issues surrounding trophy hunting, and how these relate to conservation and livelihoods. Rosie Cooney posted this [blog](#) on 31 July, and Mike Hoffmann, SSC Senior Scientific Officer, spoke on National Public Radio about it.

As well as pursuing relevant initiatives under the CPW (see above) on this subject, SULi is currently:

- Influencing policy and policy-relevant discussions, including through engagement with tourism constituencies;
- Contributing to the early stages of development of an SSC Situation Analysis on the impacts of trophy hunting on conservation and livelihoods;
- Developing a briefing paper aimed at decision-makers highlighting the need for decisions that limit or ban trophy hunting (e.g., through import bans) to understand the role that hunting is playing in specific contexts, and identify and implement alternative approaches that achieve the same goals before passing such decisions;
- Participating in early discussions on the feasibility of a certification scheme for hunting that could operate to support good practice examples, in a manner analogous to certification initiatives in other extractive activities (fisheries, aquarium trade, wild plant trade, timber trade, etc).

3. Supporting integration of Traditional Knowledge into assessment and management of wild species

Indigenous and traditional knowledge (TK) and understanding of wild species and ecosystems is being lost in many cultures, and is often not recognised or validated in western science-based approaches to conservation and development. Stronger recognition of the role of TK is both important for more effective conservation approaches and to strengthen the role of indigenous and local communities in management and governance. This is closely related to sustainable use, given indigenous and local communities' strong cultural and livelihood reliance on use of wild species.

SULi is currently focused on integrating consideration of TK into assessments for the IUCN Red List of Threatened Species. SULi has consulted on and finalised a discussion paper on this subject, convened or co-convened discussions at the IUCN Oceania Regional Conservation Forum in July and at the SSC Leaders' Meeting in September, and worked with the IUCN Global Social Science and Economics Unit to prepare an initial draft of guidance for integrating TK in assessment.

4. Improving sustainable use and livelihood benefits in small-scale and recreational fisheries

The main focus of SULi's engagement on fisheries is small-scale fisheries, with a particular focus on strengthening participatory governance and management as a basis for sustainable use. SULi (led by Vivienne Solis) participated in a number of FAO meetings to provide technical input into the finalization of the FAO's new *Guidelines on Small Scale Fisheries*, which will be a key document for our future work in this area.

The focus has now turned to implementation of these guidelines. SULi is now working with the IUCN Commission on

Ecosystem Management's Fisheries Expert Group developing plans to work with FAO on implementation, and specifically on three priorities:

- How to achieve sustainable use;
- The integration of traditional/local knowledge into management (see below); and
- Fisheries governance.

SULi is working with individuals and organisations across the IUCN "family" to promote reflection and improved understanding of these topics, including at the 2016 IUCN World Conservation Congress.

SULi has established a working group on recreational fisheries, which as an initial task has provided input into the development of the draft *SSC Guidelines on Recreational Fishing of Threatened Species* to be finalised and published in 2016.

5. International policy and dialogue

SULi participates in many international and regional policy arenas to pursue its objectives, including a number mentioned above, such as CITES, the FAO, and the CPW.

In 2015 SULi led the development of proposals for six events at the IUCN World Conservation Congress in Hawaii in 2016, with a wide range of partners from within and outside IUCN, on a number of critical topics:

- Communities and wildlife crime;
- Hunting;
- Improving local benefits from high-value trade chains;
- Exploring tensions and synergies between animal rights, animal welfare, and conservation;
- Integrating TK and science; and
- Community-based wild resource management.

All of these proposals were successful as "Workshop" or "Knowledge Cafes", and SULi is a partner in a number of other successful proposals including on integrating TK into fisheries management. These events represent important opportunities to raise awareness, synthesise evidence from across different contexts, develop partnerships, and map out future work.

6. Building the SULi network and vision

SULi membership has steadily increased over this period. Membership qualifications are stringently reviewed to ensure members have excellent expertise and experience. The SULi newsletter *SULiNews* is produced at 4 monthly intervals, and includes high quality reports and reviews from members and non-members around the globe. *SULiNews* receives generally excellent or very good ratings by readers by its built-in review system. The SULi website has been further developed in 2015, but currently requires considerable attention to improve relevance and functionality. As it is housed in the IUCN website, which is soon to be re-built, this work will be undertaken as soon as the latter is complete.

In the later stages of 2015, considerable time has been put into reviewing progress and laying the groundwork for refining and sharpening SULi's goals for the next Quadrennium (2016-2020). Based on the experience gained in the first years of SULi's operation (2012-2015), we aim to establish a limited set (3-4) of specific outcomes that we seek to achieve over this period, allowing us to focus our efforts and resources most effectively.

Red List Training and the IUCN Red List of Threatened Species

Caroline Pollock and Craig Hilton-Taylor, IUCN Red List Unit (RLU)

Key Achievements in Red List Training

- A major increase (almost 65%) in the number of people enrolled on the online IUCN Red List Training course.
- Major progress in developing French and Spanish versions of the online Red List exam.
- In 2015, 86 people passed the default-level exam, and 7 passed the advanced exam.
- There were 38 certified Red List Trainers now actively providing training by the end of 2015, surpassing the target of 35.
- Eight IUCN Red List Assessor Training events held in 2015, involving 195 participants.

Key Achievements in 2015 Red List updates

- Over 4,900 assessments submitted and published in three updates of the *IUCN Red List of Threatened Species*TM.
- Taxonomic coverage of plants and marine fishes on the IUCN Red List increased by over 1,000 species each; the Red List now includes 20,755 plants and 7,454 marine fishes.
- Fungi assessments began to flow into the IUCN Red List.
- In 2015, the IUCN Red List website received over 4 million visitors and 22.5 million page views.
- The IUCN Red List achieved online scientific publication status, with stand-alone PDF documents and unique Digital Object Identifier (doi) references in place for all current Red List assessments, making them permanently retrievable and easier to cite.
- Automated assessment submission system released in the Species Information Service (SIS).

Background

The *IUCN Red List of Threatened Species*TM has a strong reputation as an objective and reliable source of biodiversity information and is used by governments, conservation organizations, the private sector, and regional and national Red Lists to inform their decision-making and action-planning processes. It is vital that IUCN Red List assessments remain objective and have a scientific basis to ensure that they guide appropriate actions to prevent extinctions and conserve the integrity and diversity of nature. To achieve this, it is essential that high-quality Red List training is easily available to scientists around the world.

Throughout 2015, funds generously provided by Environment Agency – Abu Dhabi (EAD) have allowed the RLU to provide Red List training, expand the number of certified Red List Trainers, provide technical support to the global Red List Trainer network, and make good progress in developing an improved online Red List Training course. Thanks to this support, understanding of the IUCN Red List Categories and Criteria and the Red List assessment process continues to improve, thus increasing the level of high-quality data being fed into the IUCN Red List and regional and national Red Lists.

There are three main components to the Red List Training initiative:

- IUCN Red List Assessor training curriculum
- IUCN Red List Trainer certificate course
- Online IUCN Red List training course

The IUCN Red List training curriculum was developed in 2011-2012. The Red List Trainer certificate course and the online Red List training course and were both released in 2013. French and Spanish versions of the online course were released in 2014, along with the final exam (in English only). In 2015, our main focus for Red List Training was to further extend the accessibility of training materials to non-English speakers, and to increase the number of certified Red List Trainers.

Online IUCN Red List Training Course

The [online IUCN Red List training course](#) was released in 2013 and is hosted by The Nature Conservancy (TNC) on their ConservationTraining.org website alongside 11 other conservation-relevant courses. Staff in TNC have confirmed that the Red List course is one of the busiest in their catalogue and that people often move on to other courses hosted on their website after completing Red List course modules.

The full course includes seven modules, containing 23 lessons. In 2015, 682 new users registered for at least one of the seven course modules, bringing the total number of people enrolled on the course (over the period 2013-2015), to 1,930 (Figure 1), an increase of almost 65%.

Number of people enrolled on the IUCN Red List Course
(31 December 2014 - 31 December 2015)

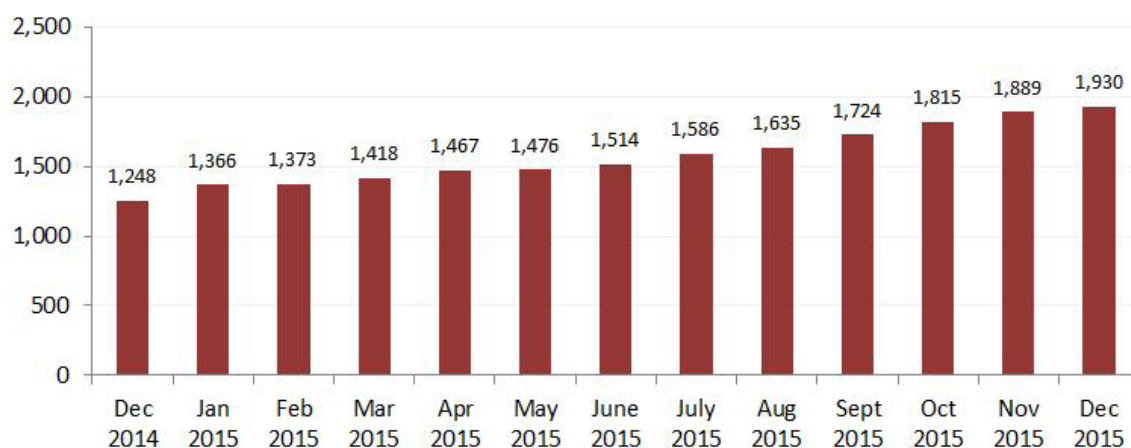


Figure 1. Total number of people enrolled on the online IUCN Red List Training Course in 2015. Individuals are counted only once for this figure, even where they are enrolled on >1 module. Across the year, 682 people enrolled on the course.

Many people enrolled on the course use it to refer to one or two modules to help learn what the IUCN Red List is and why it is a useful tool, or to refresh their memories about specific aspects of the IUCN Red List. Most of the course lessons include a series of questions designed to test the student’s understanding of the lesson. To complete the lesson successfully, a score of at least 70% is required for the end-of-lesson test. In 2015, 61 people successfully completed all six modules for the Global Assessor course, 54 people successfully completed all four modules for the Regional Assessor course, and 45 people successfully completed all seven modules in the online course (Table 1).

• People successfully completing the online Red List Training course		
	2015	2013-2015
Global Assessor course	61	191
Regional Assessor course	54	178
Global & Regional Assessor course	45	154

Table 1. People completing all lessons in the online Red List Training course with a score of 70% or more in 2015 and since the course was released (2013-2015). Global Assessor course = modules 1-6 (21 lessons); Regional Assessor course = modules 1-3 & 7 (18 lessons); Global & Regional Assessor course = modules 1-7 (23 lessons).

The geographic distribution of course users reveals that most of the people currently enrolled on the course are based in Europe (particularly UK, Spain and Italy), North America, South America (particularly Colombia and Ecuador), India, South Africa, and Australia (Figure 2).

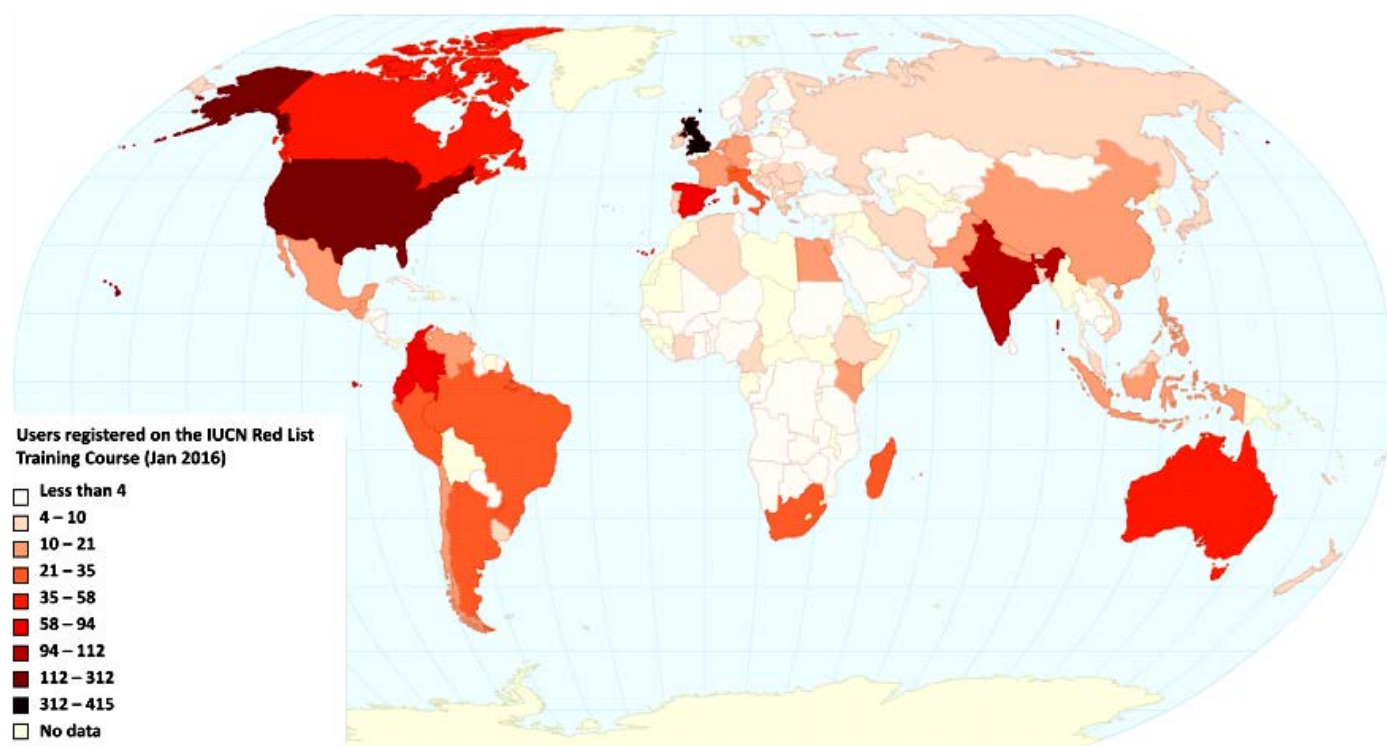


Figure 2. Geographic spread of people enrolled on the IUCN Red List Training Course (January 2016). Top 15 countries (and number of people enrolled on the course): United Kingdom (415); USA (312); India (112); Colombia (94); Ecuador (83); Spain (80); Canada (58); Australia (53); Brazil (35); Italy (34); South Africa (34); Argentina (33); Peru (30); Madagascar (27); Switzerland (25).

In 2015, the RLU also worked with a professional translator to develop French and Spanish versions of the final course exam. Development of these is well underway and the RLU envisages release of these exams in early 2016 (see the section *Translation of IUCN Red List Training Materials*, Page 28).

IUCN Red List Exam

The final course exam involves answering 25 questions that are randomly selected from a series of ‘question banks’ containing 290 questions on the various topics covered in the course. The default pass mark for the exam is 75% (this applies to most course users). Assessment project management teams and Red List Trainers must pass an advanced-level exam, with a score of $\geq 90\%$. Red List Authority Coordinators and assessment project staff in Red List Partner organizations are strongly encouraged to pass the online exam.

In 2015, 141 people completed the default level exam; 86 of them passed the exam (i.e., a pass rate of 61%), bringing the total number of people who have passed the online exam to 146 since its release in April 2014 (Figure 3). Most people pass the default exam by their 3rd attempt. Eleven people completed the advanced exam in 2015, with 7 people achieving a pass (i.e., a pass rate of 63%), bringing the total number of people who have passed the advanced exam to 25 since April 2014 (Figure 3). Most people pass the advanced exam by their 2nd attempt.

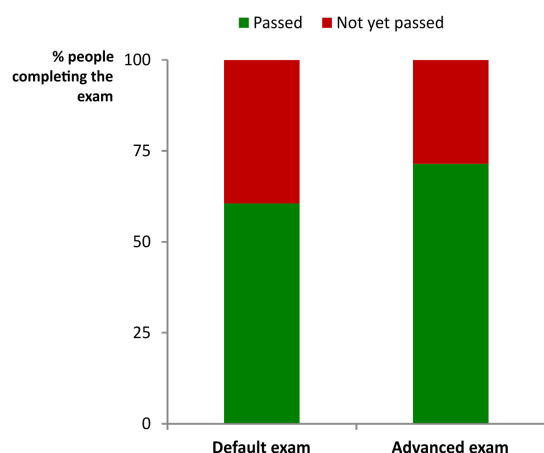


Figure 3. Percentage of people passing the online Red List exam (green) and those who have not yet passed (red) over the period April 2014 to end of December 2015. Pass mark for the default exam is $\geq 75\%$ and $\geq 90\%$ for the advanced exam. For the default exam, 241 people completed the exam and 146 people passed (April 2014-Dec 2015); in 2015 alone, 141 people completed the default exam and 86 people passed (61% pass rate). For the advanced exam, 35 people completed the exam and 25 people passed (April 2014-Dec 2015); in 2015 alone, 11 people completed the advanced exam and 7 people passed (63% pass rate).

IUCN Red List Trainers



Participants in the 4th IUCN Red List Trainers workshop, Cambridge, UK (22-24 July 2015).

In 2015, we surpassed our target of 35 certified Red List Trainers by the year 2016.

The fourth IUCN Red List Trainer workshop was held on 22-24 July 2015, resulting in another seven people receiving their Red List Trainer certificates.

Accounting for people who have moved on to new positions and are no longer being available to provide Red List Training on a regular basis, by the end of December 2015 there were 38 active certified Red List Trainers, including 21 IUCN SSC Specialist Group members, seven staff from Red List Partner organizations; eight IUCN Global Species Programme staff members; and six trainers based in IUCN Regional Offices (Figure 4).

Active Red List Trainers

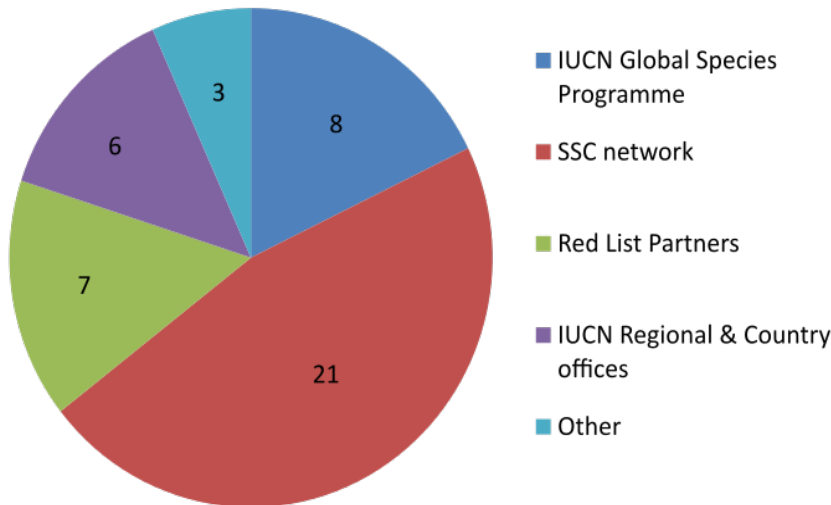


Figure 4. Certified Red List Trainers representation within different parts of the Red Listing network. Some trainers represent more than one part of the network (e.g., a trainer may be both a member of an SSC Specialist Group and a member of staff for a Red List Partner), therefore the sum total of figures within each part of the chart is greater than the current total of 38 active Red List Trainers.

Since April 2014, it has been compulsory for all certified IUCN Red List Trainers to pass the advanced level online exam. By the end of 2015, 26 trainers (68% of the active certified trainers) have passed the exam. The remaining Red List Trainers are being reminded on a monthly basis that they need to pass the exam.

IUCN Red List Assessor Training Workshops

Certified Red List Trainers facilitated eight IUCN Red List Assessor Training workshops around the world in 2015, involving 195 participants (Figure 5a). These workshops provided Red List training for global assessment projects (e.g., training for IUCN SSC Shark Specialist Group members in preparation for reassessing the world’s shark species); IUCN regional assessment projects (e.g., training for assessors who will contribute to the European Commission (EC) LIFE project ‘Establishing a European Red List of Bryophytes, Pteridophytes, Saproxyllic Beetles, Terrestrial Molluscs and Vascular Plants’); national Red List projects (e.g., a workshop in Estonia to highlight the importance of national Red Lists and to train for 25 scientists in preparation for the Estonian national Red List process); and for participants at the International Congress on Conservation Biology (ICCB).

Participants in the IUCN Red List Assessor Training workshop held in Tallinn, Estonia (28 September - 01 October 2015).



In previous annual reports, we presented numbers of Red List Training sessions and people trained since 2011. These previous reports included some short sessions outlining the IUCN Red List Categories and Criteria during Red List assessment workshops. The purpose of those workshops was to assess species rather than provide in-depth training.

Figures 5b and 6 show the adjusted figures for actual number of Red List Assessor Training Workshops held since 2011 (39 workshops involving 858 participants). Since 2013 (when the Red List Trainer certificate course was introduced), these training workshops have been facilitated by certified Red List Trainers.

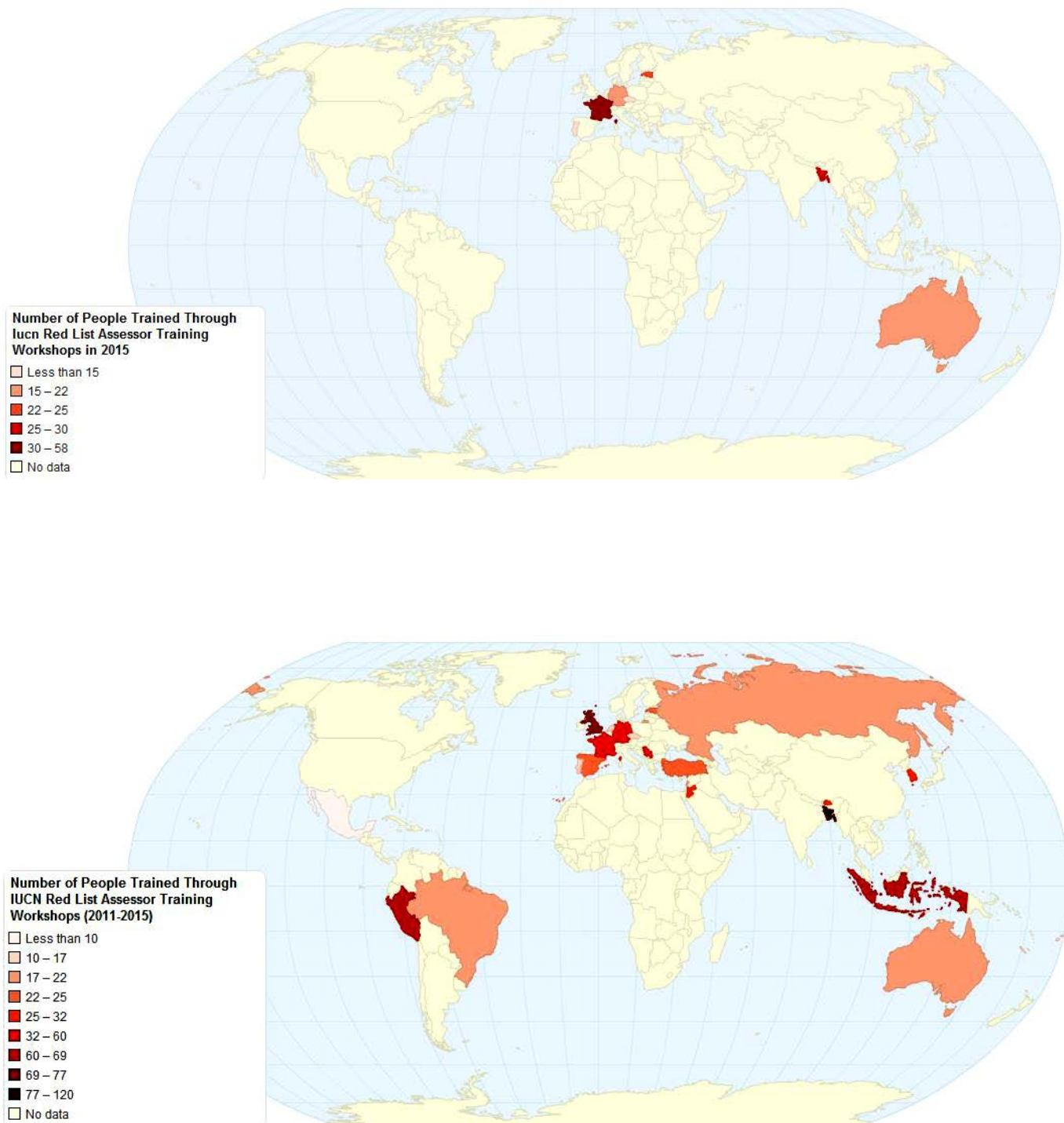
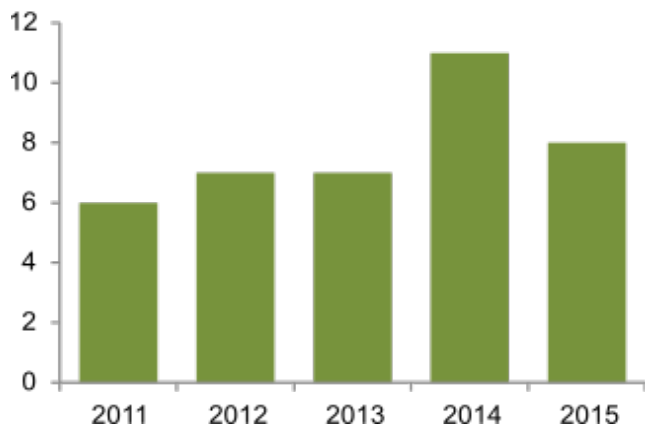


Figure 5 a (top) and Figure 5 b (bottom). Geographic distribution of IUCN Red List Assessor Training workshops held (a) in 2015, and (b) since 2011.

Number of IUCN Red List Assessor Training Workshops held each year



Number of people trained through IUCN Red List Assessor Training Workshops (2011–2015)

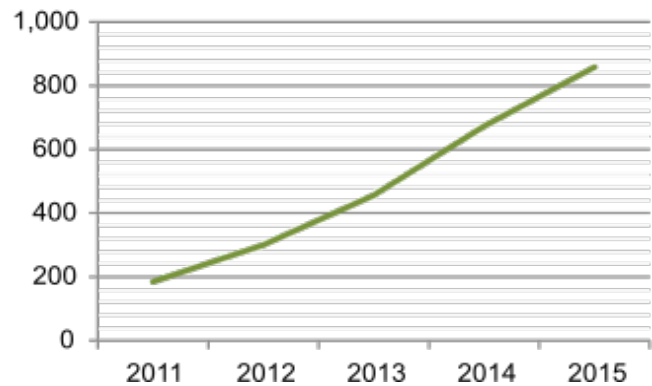


Figure 6. Number of IUCN Red List Assessor Training workshops held each year and number of people trained since 2011.

Translation of IUCN Red List Training Materials

French and Spanish Translations

Throughout 2015, the RLU worked with a consultant translator to translate all 290 questions in the online Red List exam into French and Spanish. Due to long delays in receiving final translations from the consultant, it was not possible to release the French and Spanish versions of the exam in 2015.

However, all of the translated questions that were received were transferred to a format suitable for the online course and were uploaded into the course structure. The final translations have now been received (in January 2016). The final task to complete for these is to check the uploaded questions for any errors and fix these before making the translated exams live. This work will be completed before June 2016.

French and Spanish versions of all presentations for the IUCN Red List Assessor Training workshop into French and Spanish were made available to Red List Trainers in 2015.

The *Guidelines for Using the IUCN Red List Categories and Criteria* is an extremely important guidance document that assessors must refer to when preparing assessments for publication on the IUCN Red List. It is a technical document, and therefore requires careful translation into non-English languages. This document is also updated each year.

Since this document was first translated into French and Spanish (in early 2014), it has been updated once and it is also due for a major revision in early 2016. With these major revisions in mind, updated translations have been postponed until early 2016, when version 12 of this guidance document will become available.

Arabic Translations

Efforts to update and verify Arabic translations of the *IUCN Red List Categories and Criteria* and the *Guidelines for Using the IUCN Red List Criteria at Regional and National Levels* in 2015 were unsuccessful due to the consultant who was hired to complete the translation failing to meet the deadlines set for this work.

In early April 2015 it became clear that the consultant would not manage to complete these translations; therefore the contract has had to be terminated. A replacement translator was identified and a new contract for this work was drawn up in December 2015. The revised deadline for completing these translations is now mid-March 2016.

Red List Training: Next Steps for 2016

In 2016, the RLU will continue to work toward Result 5 of the Red List Strategic Plan (IUCN Red Listing capacity built through expanding training programmes), building on the work that has already been completed. This will include:

- Holding at least one Red List Trainer workshop (currently scheduled for April 2016).
- Continuing to monitor Red List Assessor Training workshops being facilitated by certified Red List Trainers.
- Maintaining regular contact with Red List Trainers and continuing to update the shared training folder with new materials (case studies, etc).
- Releasing the French and Spanish versions of the Red List exam.
- Reviewing all Red List Training materials, including all three language versions of the online course and training workshop materials, to ensure these are in line with updated guidelines and to identify and address any issues.
- Completing and releasing the French and Spanish versions of the updated *Guidelines for Using the IUCN Red List Categories and Criteria*.
- Completing and publishing the Arabic version of the *IUCN Red List Categories and Criteria* and the *Guidelines for Application of the IUCN Red List Criteria at Regional and National Levels*.

Updates to the IUCN Red List in 2015

Each year, IUCN aims to publish at least two updates of the IUCN Red List. In 2015, EAD funding helped the RLU to complete three updates, resulting in an increase in the number of assessed species from 76,199 (22,413 threatened) to 79,837 (23,250 threatened) (Figure 7).

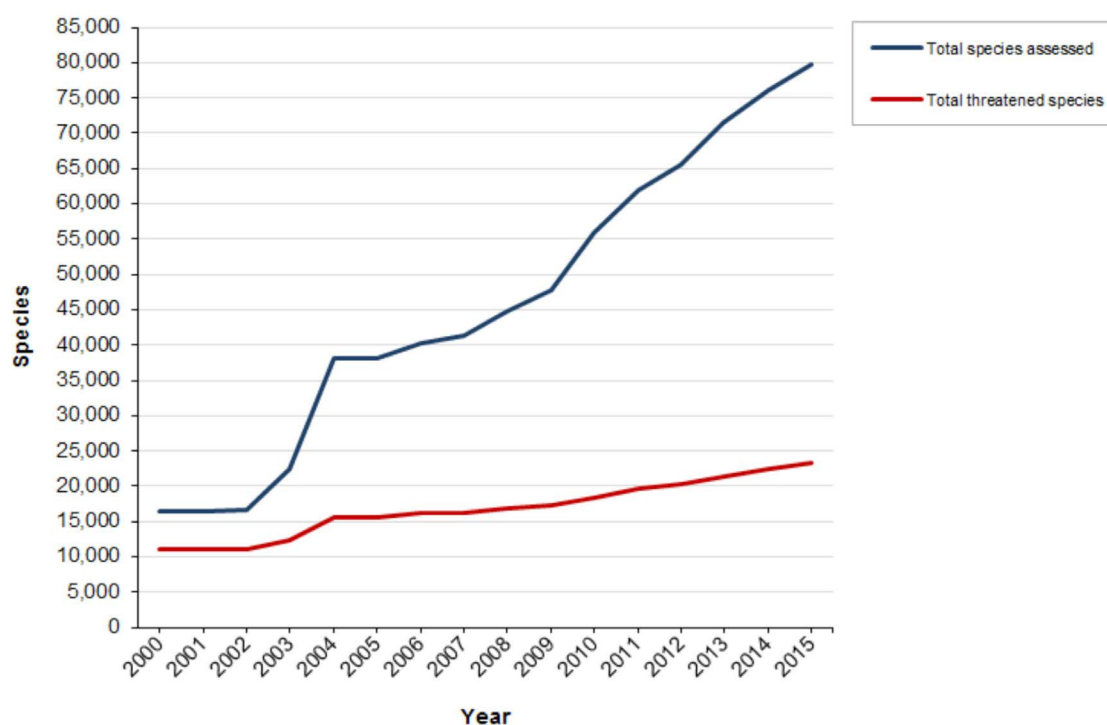


Figure 7. Increase in number of assessments published on the IUCN Red List (2000-2015).

Along with updating assessments for species that are already on the Red List (reassessments), the main focus of these updates continues to be on expanding taxonomic coverage on the IUCN Red List, particularly of groups identified under Key Result 1 of the Species Strategic Plan. In 2015, 4,904 species assessments were submitted and published on the IUCN Red List; 3,680 of these were new additions (first-time assessments).

The majority of the new additions to the IUCN Red List in 2015 were marine fishes (1,985 species) and plants (1,024 species). The IUCN Red List now includes global assessments for 20,755 plant and 7,454 marine fish species.

2015 also saw the first assessments from the [Global Fungal Red List Initiative](#) being published on the IUCN Red List.

For many years fungi have been hugely under-represented on the Red List; until 2015, only 5 species assessments were included. Thanks to EAD funding, the RLU was able to provide training and technical support to assessors working on the Global Fungal Red List Initiative and in 2015, 29 first-time assessments were added. This is a modest start, but the RLU fully expects to receive several hundred fungi assessments over the next couple of years.

The fungi assessments were highlighted in one of the three media releases that accompanied each of the 2015 Red List updates.



The fungus *Leptonia carnea* is found only in coastal Redwood forests in California. Logging and increasing drought stress on the trees it relies upon for its survival are threatening this species. It entered the IUCN Red List as Vulnerable in 2015. © Christian Schwarz www.scmycoflora.org

Other highlights from the 2015 media releases included the status of marine fishes in the Caribbean and in the East Central Atlantic, the detailed reassessment of the Polar Bear confirming sea ice loss as its most serious threat, successful conservation efforts leading to Iberian Lynx and Guadelupe Fur Seal moving to lower Red List categories, increased threats to several large mammal species from hunting and habitat loss, complete assessments for tropical Asian slipper orchids, release of the first complete assessment of European marine fishes highlighting 7.5% of them being under threat of extinction, and release of European regional assessments for birds highlighting 13% of them being threatened due to habitat loss and the effects of climate change.



The Ocean Sunfish (*Mola mola*) has a wide range, occurring in warm and temperate zones of all oceans, but the population is in decline because of overfishing and bycatch. © Paul Nicklen (CC BY-NC-ND 2.0) <https://creativecommons.org/licenses/by-nc-nd/2.0/>



Iberian Lynx (*Lynx pardinus*) was downlisted from Critically Endangered to Endangered in 2015, thanks to ongoing conservation efforts. © A. Rivas



Green Keel-bellied Lizard (*Gastropholis prasina*) entered the IUCN Red List as Near Threatened in 2015.
© Torsten Kunsch



Tornier's Cat Snake (*Crotaphopeltis tornieri*) entered the IUCN Red List as Least Concern in 2015.
© Stephen Zozaya (CC BY-NC 2.0) <https://creativecommons.org/licenses/by-nc/2.0/>



Known from only two localities in Lao and Viet Nam, the Laos Knobby Newt (*Tylototriton notalis*) entered the IUCN Red List as Vulnerable in 2015. © Bryan L. Stuart



Hennis' Paphiopedilum (*Paphiopedilum hennisianum*) is a very rare and threatened slipper orchid from the Philippines. It entered the IUCN Red List as Endangered in 2015. © Dalton Holland Baptista (CC BY-SA 3.0) <https://creativecommons.org/licenses/by-sa/3.0/deed.en>

IUCN Red List website traffic and data downloads

In 2015, the IUCN Red List website received over 4 million visitors and 22.5 million page views. Users also have the opportunity to export the results of any searches they carry out on the website, and in 2015 there were 8,300 downloads of these search results (tabular downloads).

Along with users being able to download tabular data, they can also download spatial data, either for individual species directly or through the [Spatial Data Download](#) page where spatial data for multiple species can be downloaded (e.g., spatial data for all mammals). The RLU has been tracking these spatial data downloads, and in 2015 there were 47,000 spatial data downloads (including data for individual species and bulk-data downloads) comprising over 77 million records.

Main Dataset	Specific Group(s)	Descriptions and species lists
Mammals ↓ 709MB	Marine Mammals ↓ 370MB	Includes mammal families for seals, sea lions and walrus, whales, dolphins and porpoises, manatees and dugongs.
	Terrestrial Mammals ↓ 339MB	Excludes mammal families for seals, sea lions and walrus, whales, dolphins and porpoises, manatees and dugongs.
Amphibians ↓ 222MB	Tailless Amphibians ↓ 200MB	Species from the order Anura as a shapefile.
	Tailed Amphibians ↓ 21MB	Species from the order Caudata as a shapefile.
	Caecilian Amphibians ↓ 1.2MB	Species from the order Gymnophiona shapefile.
Birds		BirdLife International is the IUCN Red Listing Authority for birds and maintains the most up to date information on global bird distributions. To request a copy of the shapefiles of species range maps for threatened birds, please visit the BirdLife Data Zone .
Reptiles ↓ 219MB (not comprehensive)	Sea Snakes ↓ 42MB	Sea-snake spatial data includes the true sea-snakes, mud-snakes and file snakes as a shapefile.
Marine Fish ↓ 1.5GB (not comprehensive)	Angelfish ↓ 54MB	Species from the family Pomacanthidae .
	Combtooth Blennies ↓ 297MB	Species from the family Blenniidae .
	Bonefishes and Tarpons ↓ 23MB	Species from the family Albulidae, Elopidae and Megalopidae .
	Butterflyfish ↓ 110MB	Species from the family Chaetodontidae .
	Damselfish ↓ 12MB	Species from the family Pomacentridae .
	Groupers ↓ 115MB	Species from the family Epinephelidae .
	Pufferfish ↓ 136MB	Species from the family Tetraodontidae .
	Sea Bream and Porgies ↓ 129MB	Species from the family Sparidae .
	Surgeonfish, Tangs and Unicornfish ↓ 105MB	Species from the family Acanthuridae .
	Wrasse ↓ 396MB	Species from the family Labridae .
Tunas and Billfishes ↓ 160MB	Species from the family Istiophoridae, Scombridae and Xiphiidae .	
Marine Groups	Cone Snails ↓ 416MB	The ranges are available as a single shapefile for all cone snail species (family Conidae).
	Corals ↓ 1.2GB	The ranges are available as three shapefiles via families for all warm water reef-building coral species.
	Lobsters ↓ 216MB	The ranges are available as a single shapefile for lobster species from the families: Enoplometopidae, Glypheidae, Nephropidae, Palinuridae, Polychelidae and Scyllaridae .
	Mangroves ↓ 107MB	The ranges are available as a single shapefile for plant species considered to form part of the mangrove ecosystem .
	Sea Cucumbers ↓ 216MB	The ranges are available as a single shapefile for all commercial sea cucumber species (class Holothuroidea).
	Seagrasses ↓ 52MB	The ranges are available as a single shapefile for all seagrass species .

Screenshot of part of the spatial data download page on the IUCN Red List website, showing some of the datasets that can be downloaded.

IUCN Red List achieves online scientific publication status

In October 2015, the IUCN Red List joined the growing list of open access online scientific publications with its own International Standard Serial Number (ISSN 2307-8235).

All current global Red List assessments published on the IUCN Red List can now be downloaded as stand-alone PDF documents, each with its own unique Digital Object Identifier (doi) reference, making them permanently retrievable and easier to cite. This is a major step forwards for the IUCN Red List.

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Screenshot of the Red List website home page showing the ISSN number at the bottom of the page.

Automated submissions process released in SIS

Assessments for publication on the IUCN Red List are compiled, stored and managed in the online Species Information Service (SIS) database.

In recent years, major progress was made in developing and releasing an automatic integrity check system to check for missing information in assessments before these are submitted for publication.

In 2014 and 2015, a system was also developed to allow SIS users to submit assessments to the RLU directly within SIS. The submissions system is now available to SIS users and was demonstrated to the SSC network during the IUCN SSC Leaders' Meeting (September 2015) in Abu Dhabi. Some work on fine-tuning of the permissions system to assign access to the submissions process to appropriate SIS users and to produce clear guidelines on using the submissions system is required, but the system is now available and is working.

Submissions Queue

Batch Update

Species Name	Status	Date Submitted	Submitted By	Publication Target	For Publication
Plants_Madagascar_Orchids_Kew (6) -- 2015-12-16					
Bulbophyllum b...	submitted_status	16 Dec 2015, 4:25 PM UTC	Craig Hilton-Ta...	Unset	Unset
Angraecum co...	submitted_status	16 Dec 2015, 4:25 PM UTC	Craig Hilton-Ta...	Unset	Unset
Brachycorythis ...	submitted_status	16 Dec 2015, 4:25 PM UTC	Craig Hilton-Ta...	Unset	Unset
Aerangis macr...	submitted_status	16 Dec 2015, 4:25 PM UTC	Craig Hilton-Ta...	Unset	Unset
Calanthe mada...	submitted_status	16 Dec 2015, 4:25 PM UTC	Craig Hilton-Ta...	Unset	Unset
Cynorkis gigas	submitted_status	16 Dec 2015, 4:25 PM UTC	Craig Hilton-Ta...	Unset	Unset
SUBMISSIONS_2016.1_Aphodinae_non_Med_endemic_GLOBAL (1) -- 2015-12-10					
Aphodius hyxos	submitted_status	10 Dec 2015, 9:33 AM UTC	Catherine Sayer	Unset	Unset
SUBMISSIONS_2016-1_Plants_Canada_Aq_Plants (599) -- 2015-11-11					
Carex gynandra	submitted_status	11 Nov 2015, 4:08 PM UTC	Caroline Pollock	Unset	Unset
Carex scabrata	submitted_status	11 Nov 2015, 4:08 PM UTC	Caroline Pollock	Unset	Unset
Cyperus eragr...	submitted_status	11 Nov 2015, 4:08 PM UTC	Caroline Pollock	Unset	Unset
Subularia aqua...	submitted_status	11 Nov 2015, 4:08 PM UTC	Caroline Pollock	Unset	Unset
Carex sartwellii	submitted_status	11 Nov 2015, 4:08 PM UTC	Caroline Pollock	Unset	Unset
Neobeckia aqu...	submitted_status	11 Nov 2015, 4:08 PM UTC	Caroline Pollock	Unset	Unset
Carex sterilis	submitted_status	11 Nov 2015, 4:08 PM UTC	Caroline Pollock	Unset	Unset
Carex prairea	submitted_status	11 Nov 2015, 4:08 PM UTC	Caroline Pollock	Unset	Unset
Carex prasina	submitted_status	11 Nov 2015, 4:08 PM UTC	Caroline Pollock	Unset	Unset
Impatiens noli-t...	submitted_status	11 Nov 2015, 4:08 PM UTC	Caroline Pollock	Unset	Unset
Carex simulata	submitted_status	11 Nov 2015, 4:08 PM UTC	Caroline Pollock	Unset	Unset

Expand All Collapse All Show Per Page: all Page 1 of 1 Displaying 1 - 653 of 653

Screenshot of the submissions queue in SIS.

Case Study: The IUCN Red List of Threatened Species receives SCB Distinguished Service Award

In August 2015, the IUCN Red List Committee received a Distinguished Service Award from the Society of Conservation Biology (SCB) during the 27th International Congress on Conservation Biology in Montpellier, France. The SCB Distinguished Service Award recognizes individuals, groups or institutions for distinguished service in any field associated with conservation biology and whose work has furthered the SCB mission, which is to “advance the science and practice of conserving the Earth’s biological diversity”.

In accepting the award, Mike Hoffmann (Senior Scientist to the IUCN’s Species Survival Commission and Chair of the IUCN Red List Committee) paid tribute to the early pioneers of the IUCN Red List, to those who conceived and developed the IUCN Red List Categories and Criteria, to the expert members of the SSC, to the contributions of the Red List Partner institutions, and to the staff of the RLU.

The IUCN Red List has evolved considerably since its very early beginnings. More than just a list of species and their status, the IUCN Red List has become one of the world’s most powerful conservation tools, providing information and analyses on the status, trends and threats to species to inform and catalyse action for biodiversity conservation. In the last decade alone, the number of species assessments on the IUCN Red List has trebled, including major groups such as amphibians, cacti, reef-building corals, sharks, and freshwater crabs. Further species groups are on the way, with a goal to assess a total of 160,000 species by 2020, all the while keeping current assessments up to date.



Mike Hoffmann accepts the SCB Distinguished Service Award on behalf of the IUCN Red List Committee (August 2015) (photo copied from the SCB website: <http://conbio.org/publications/scb-news-blog/scbs-2015-service-award-winners>).



Institutions represented in the IUCN Red List Partnership.

Representatives from the IUCN Red List network present at the 27th International Congress on Conservation Biology proud of the SCB's recognition of the internationally important role played by the IUCN Red List. © Mike Hoffmann



Reptiles on the IUCN Red List

Philip Bowles, Coordinator, IUCN SSC Snake and Lizard Red List Authority

Neil Cox, Manager, IUCN-CI Biodiversity Assessment Unit (BAU)

Key achievements

- Reptile assessment workshops were completed in 2015 for the Caribbean (excluding Cuba and the Netherlands Antilles).
- Reptile assessments for Venezuela were completed in March 2015.
- Assessments were published for the reptiles of New Guinea, together with the first published South American assessments covering species occurring in Colombia, Peru and Amazonia.
- Reviews were completed, for publication in the first Red List update in 2016, for the reptiles of mainland South America (excluding Brazil).
- Funding was successfully obtained to hold a workshop to assess the reptiles of Central Asia in April 2016.

The Global Reptile Assessment: Summary of Progress to Date

- 4,340 reptile assessments have been published since 2004; 255 of which published in 2015.
- Review has been completed for approximately 1,700 additional reptile species with finalized assessments, is underway for an additional 350 species, and is planned in 2016 for a further 1,000 species.
- Global assessments have been published for all sea turtles, sea snakes and chameleons, and for most iguanas.

Background

With over 10,300 known species, reptiles (lizards, snakes, turtles, crocodiles and the New Zealand tuatara) are thought to be the most diverse group of terrestrial vertebrates, but in the absence of a completed global assessment the group as a whole remains poorly-known, lacking information on the distributions and conservation status of each species. Information on threats to the world's reptiles consequently lags behind that available for birds, mammals and amphibians, all of which have completed global Red List assessments for each known species.

The Global Reptile Assessment (GRA) is currently underway, with assessments published for approximately 42% of the world's recognised reptile species. Approximately 2,500 further species have complete draft assessments, almost a third of these representing assessments completed in 2015, covering regions of the world whose reptiles have been assessed but which have not yet completed the rigorous review process required prior to final publication on the Red List, or which are awaiting publication in the first Red List update of 2016.

2014 was an extremely productive year for the reptile assessments, with no fewer than six workshops (five region-focused, and one taxonomic workshop focused on completing the global assessment of chameleons). This workshop schedule allowed little time for reviewing the resulting assessments, and as a result much of 2015 was devoted to conducting in-depth reviews of the assessments that resulted from these workshops. In addition to this effort, a workshop was held between 20-24 July to assess the reptiles of the Caribbean with the exception of Cuba and the former Netherlands Antilles, and a small-scale meeting was held in March 2015, with remote support from Phil Bowles, to complete reptile assessments for Venezuela. The final New World assessment, for the reptiles of Cuba, got underway in November, with remote assessment for the 15 species found in the ABC Islands planned for early 2016.



Reptile Assessment Workshops

Key achievements

- A workshop was held during 2015 to assess the reptiles of the Caribbean (Figure 1). Phil Bowles attended as a facilitator.
- Phil Bowles provided logistical support, including finalising species lists, for this workshop and, remotely, for assessments of the reptiles of Venezuela and Cuba.
- Funding proposals were submitted to support assessment workshops for the reptiles of Central Asia and, unsuccessfully, the lizards of China. Planning has been underway for the Central Asia assessment since September 2015.

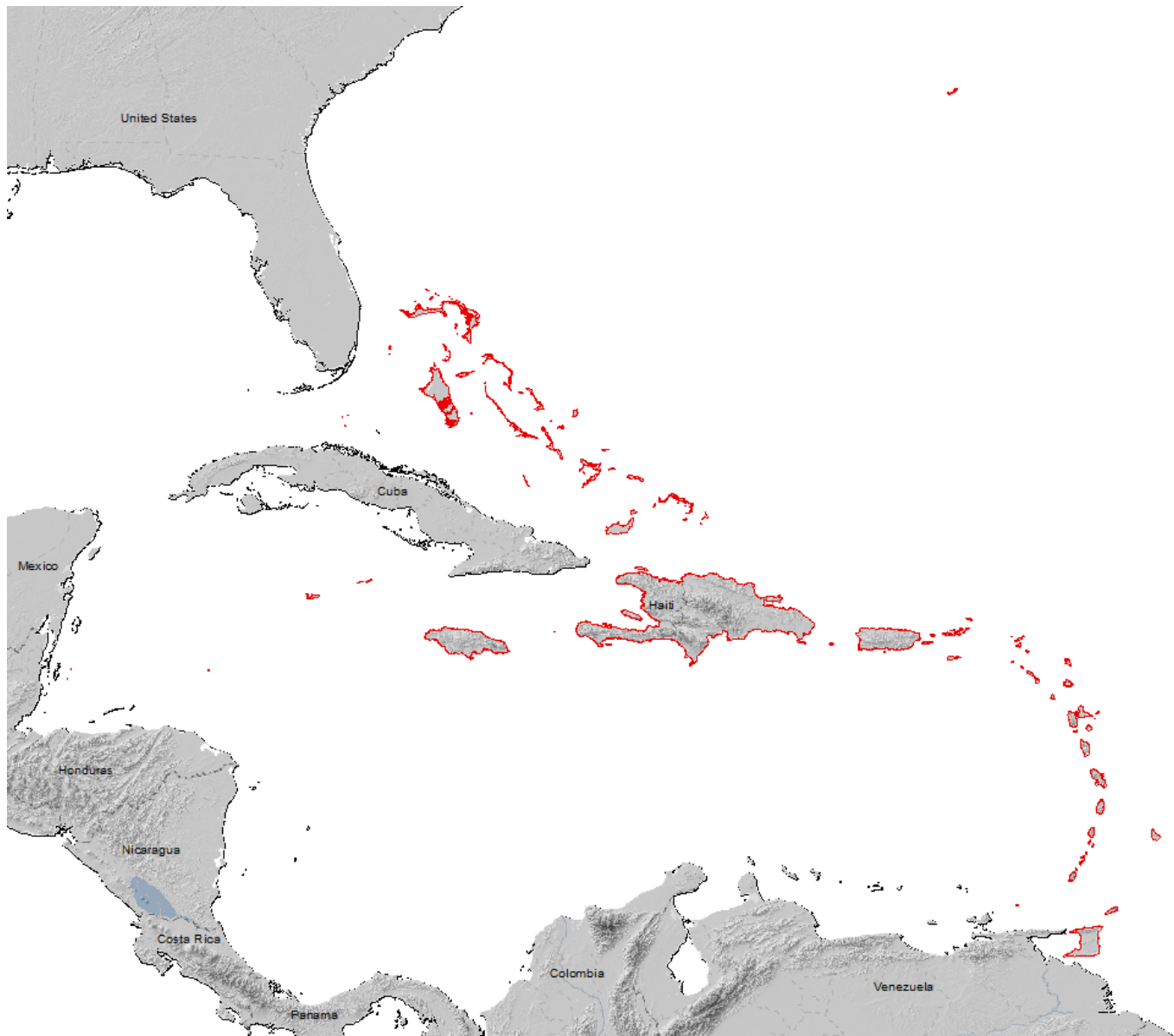


Figure 1. Area covered by the Caribbean reptile assessment workshop in July 2015.

With generous support for staff time provided by Environment Agency – Abu Dhabi, Phil Bowles provided facilitation and logistical support for a NatureServe-organised workshop to complete Red List assessments for the reptiles of the Caribbean.

Due to the expertise available, this workshop excluded Cuba (152 species) and the former Netherlands Antilles Aruba, Bonaire and Curaçao (15 species), while islands belonging to mainland territories in North, Central and South America had already been assessed as part of previous assessment workshops. The remaining assessments, of 455 species,

represented all terrestrial snakes and lizards (other than iguanas, assessed separately by the SSC Iguana Specialist Group) found in the Bahamas, the Cayman Islands, Hispaniola, Jamaica, the Lesser Antilles, Puerto Rico, the Virgin Islands, and Trinidad and Tobago.

Phil Bowles acted as facilitator for the Lesser Antilles with 103 species (the most diverse of the assessed regions other than Hispaniola). Preliminary results collated after the workshop suggest that the Lesser Antilles hosts an extremely high proportion of threatened species, due to the small size of the islands to which many species are endemic and widespread threats from exotic mongoose, and ongoing habitat loss outside the main island of Guadeloupe and the relatively well-preserved Dominica. At least six species were determined to be Extinct (Figure 2).

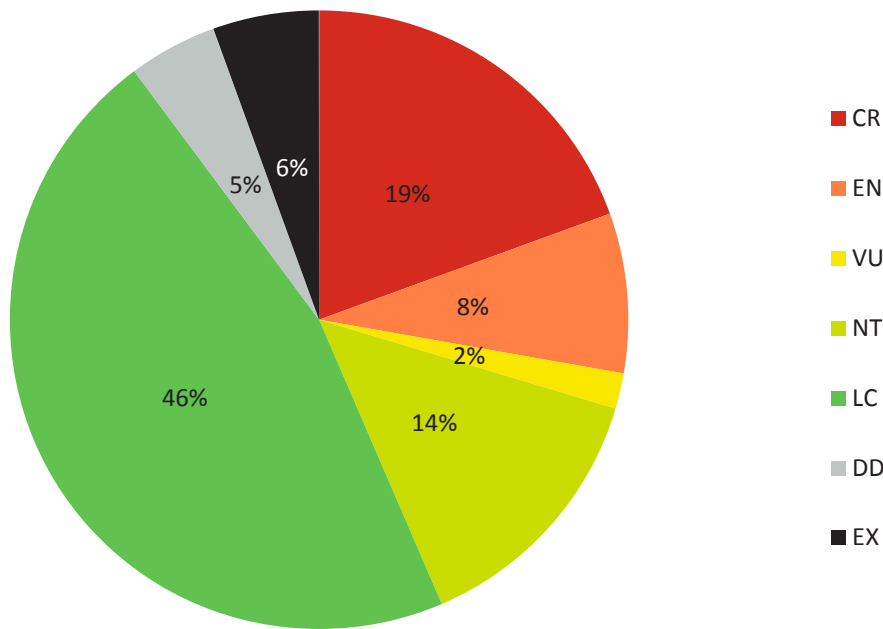


Figure 2. Proportion of species provisionally listed in each Red List Category in the Lesser Antilles.



Workshop Support and Species Lists

In support of the ongoing reptile assessments of the Neotropics, Phil Bowles identified Venezuelan species not fully assessed as part of the 2014 workshops due to time constraints, in advance of a small NatureServe-arranged meeting in March 2015 with Venezuelan specialists. Phil also prepared a species list for the reptiles of Chile, liaising with Chilean specialists to ensure that this was up to date, in advance of a NatureServe workshop on the reptiles of Chile, held in May 2015.

Phil Bowles provided remote logistical support for these assessments, which were prepared by NatureServe's team, and organised the review process following the workshops, which is detailed in the following section.



Funding applications and Workshop Preparation

Funding from Environment Agency – Abu Dhabi was critical in supporting the Global Reptile Assessment through reviews of the results of the 2014 workshop and through enabling Phil Bowles to support the NatureServe workshops in the New World, which had no provision for funding taxonomic support or post-workshop reviews. No funding was, however, available to support new assessment workshops in other parts of the world.

During 2016 Phil prepared funding applications to a new donor, the Trust for Mutual Understanding (TMU) in New York, and to the Ocean Park Conservation Foundation in Hong Kong. The latter application, to assess the lizards of China, was rejected, as was a proposal drafted by Neil Cox to assess the reptiles of Wallacea.

The former donor has a particular interest in supporting work that fosters collaboration between institutions based in the United States and the republics of northern Eurasia, most of which were part of the former Soviet bloc. As part of the Global Reptile Assessment a gap had already been identified in capacity (outside the Viper Specialist Group, which is well-represented in this region) to assess the reptiles of Central Asia, a region encompassing the entirety of TMU's area of interest. Additionally, Red List accounts had been prepared some time previously for the 174 species found in this region with a view to using the online reptile assessment forum as a venue for assessment, something which proved unfeasible following the issues identified in the 2015 report.

The application to host an assessment workshop for the reptiles of Central Asia (Figure 3), using an existing collaboration with the Zoological Institute of the Russian Academy of Sciences in St. Petersburg, was approved and matching funds were obtained – with the assistance of IUCN staff who already have a working relationship with the fund – from the Mohammed bin Zayed Species Conservation Fund in September. Invitations were sent out to key specialists identified for this region by the end of the year, and logistics discussed with the Zoological Institute. Logistical arrangements are ongoing in early 2016, with the workshop dates set for 4-8 April.

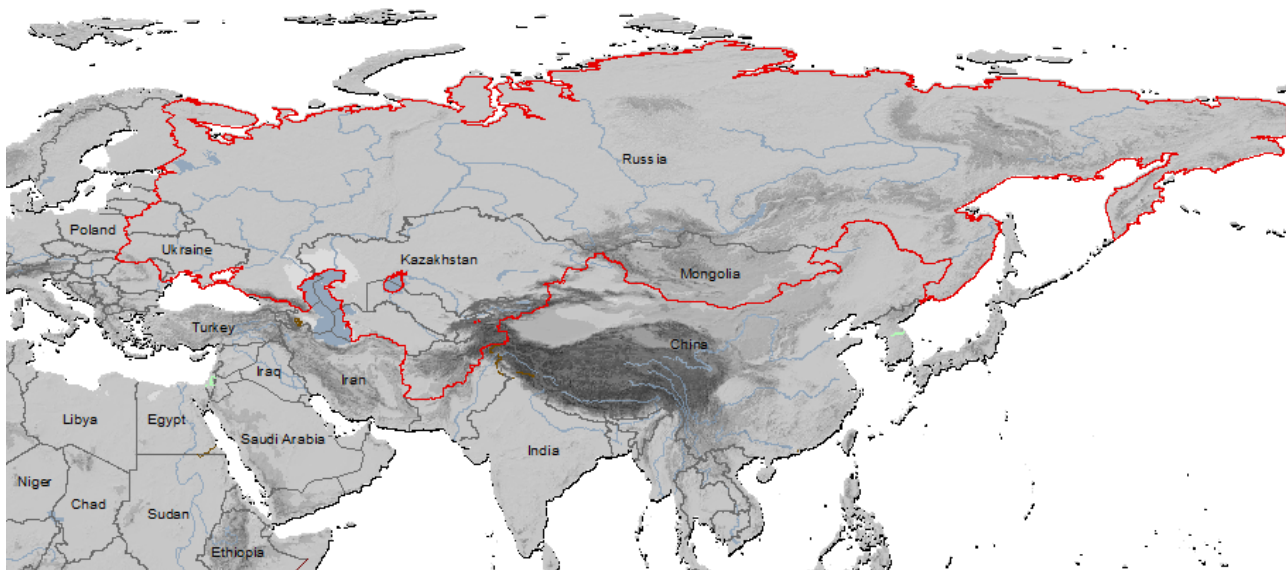


Figure 3. Map showing the area covered by the Central Asia workshop planned for April 2016.

Red List Submissions and Review

- 153 snake and lizard species from New Guinea were added to the Red List following review.
- 109 snake and lizard species from Colombia, Peru and Amazonia were added to the Red List following review
- 1,275 snake and lizard species from mainland South America reviewed by the first week of 2016 and planned for submission by 24 March 2016.
- 17 chameleon species added to the Red List as a joint project between the Biodiversity Assessment Unit and the SSC Chameleon Specialist Group.

Following the intended completion of the Global Chameleon Assessment in 2014, 17 additional chameleon species – representing both new descriptions and the 7 Cameroonian species still outstanding in 2014 due to liaison with specialists – were submitted to the Red List in 2015, following review by Phil Bowles of the Biodiversity Assessment Unit (BAU) and Krystal Tolley of the SSC Chameleon Specialist Group. As a result, only the species restricted to South Africa – part of a broader South African assessment whose publication has been held up for some years – remain outstanding.

Also in time for the second Red List update of 2015, reviews were completed for the reptiles of New Guinea following the 2014 workshop. 153 species were submitted to the Red List and have now been published; review of the monitor lizards is being finalised by the recently-established SSC Monitor Lizard Specialist Group.

Liaison with NatureServe was ongoing throughout the year, and the second half of 2015 (following the Caribbean workshop) was largely devoted to finalising reviews of the reptiles of South America. This was a highly complex undertaking, due to these assessments having been undertaken across several workshops (with the same species often treated by more than one), data from the Brazilian national assessments being unavailable at the time of the reviews, and the limited resources NatureServe had available until the middle of the year to digitise the associated distribution maps. Additionally, the review process identified over 500 significant queries for follow-up with specialists.

As a result the first submission of South American species to the Red List was relatively modest, with a combined total of 109 submitted for Colombia, Peru, and Amazonia. By the first week of 2016, every species of snake and lizard in mainland South America outside Brazil – excluding descriptions postdating the assessment workshops – had completed this review process, although numerous queries remain for follow-up prior to the first Red List update of 2016, and this follow-up (initiated with able support from a BAU intern, Anna Kilponen, in the final quarter of 2015), is ongoing.

Eleven additional species were published in 2015, ten from the East Africa assessment and representing species with outstanding review queries that were not resolved in time for the 2015 submission, and one from Mauritius.



Species List and Account Preparation

Discussions regarding the possibility of one or two Australian reptile assessment workshops, led by Simon Stuart, were ongoing throughout 2015. During this process it emerged that the Australian national process was reaching a stage where it would be an unnecessary duplication of effort to hold independent Red List workshops prior to the completion of the Australian assessments. Simon and Neil Cox are due to liaise with the Australian assessment organisers in February 2016 to discuss further progress.

In the meantime Phil Bowles prepared an up to date species list of Australian reptiles, and was supported by BAU interns Megan Glenn and Anna Kilponen in drafting preliminary Red List accounts for this country. This work was not complete when Megan's and Anna's internships ended, but made a valuable contribution that will accelerate progress on the eventual Australian assessment, as this is the largest region still outstanding for the Global Reptile Assessment.

Megan, who has French language skills, also prepared draft accounts based on a French-language field guide to the reptiles of Gabon; while this area hosts only 98 species, it represents a significant contribution towards preparing for the Central African assessment.

Publications

The publications referred to in the 2014 report, a checklist of the reptiles of Colombia and an analysis of the threat status of reptiles in Tanzania, are presently both in review (the former in *Zootaxa*, the latter in *Biological Conservation*). The latter is planned for a special issue of this journal focusing on the conservation of African reptiles, and Phil Bowles is also a co-author in a further paper – led by Krystal Tolley and focusing on data gaps in African reptiles – submitted for consideration for this issue.

A further checklist paper, on the reptiles of Ecuador, is a likely product of the 2014 Northern Andes workshop, and like the Colombian paper will reflect an active collaboration between the workshop assessors, NatureServe, and Phil Bowles in providing data and clarifying taxonomic issues.

A further proposed paper, the first national checklist of the reptiles of Sudan and South Sudan led by Phil Bowles, remains outstanding as the review process for the Horn of Africa assessments has not yet been completed, due in part to higher-priority projects taking precedence and in part to difficulty in obtaining sufficient data on recent and ongoing threats to species in Somalia to complete these assessments.

Ongoing and Future Activities

The immediate priority for the Global Reptile Assessment is to bring the long-running collaboration with NatureServe to a successful conclusion. This includes ensuring the mainland South American species are included in the first Red List update of 2016, subsequently completing reviews of the Caribbean and Brazilian species for submission later in the year, and providing information on necessary new and reassessments for the reptiles of North America, last assessed nearly a decade ago.

The successful completion of the Central Asia assessment workshop is a high priority, and it is envisaged that it will strengthen the collaboration between IUCN and specialists and institutes in the north Eurasian region.

As funding was not identified or successfully obtained for other outstanding areas in 2016, completion of the GRA by the end of this year is no longer a realistic goal, while the duration of the Australian national process is also likely to influence the final timeline for completion.

Phil Bowles developed a general strategic plan for completion of the GRA in 2015, although an associated timeline was not feasible for the above reason. A key priority, in addition to sourcing financial support, will now be to compile accounts for all outstanding species globally, so that once funding becomes available workshops can more rapidly be organized and completed.

Equatorial Anole (*Anolis aequatorialis*), Mindo, Ecuador.



© Philip Bowles

Tortoises and Freshwater Turtles on the IUCN Red List

Anders G.J. Rhodin, Coordinator, IUCN SSC Tortoise and Freshwater Turtle Red List Authority

Peter Paul van Dijk, Co-Chair, IUCN SSC Tortoise and Freshwater Turtle Specialist Group

Key achievements

- The process of finishing the back-log of draft assessments for tortoises and freshwater turtles was continued.
- The Tortoise and Freshwater Turtle Specialist Group (TFTSG) membership was successfully engaged to take a more active role in preparing assessments.
- The Red List protocols were improved to provide increased professionalism and formal publication of web-based Red List assessments.



Background

Tortoises and freshwater turtles have featured in the IUCN Red List process from its inception, and are currently understood to be among the most threatened groups of species. The last comprehensive global assessment of tortoises and freshwater turtles was in 1996, using the previous 3.0 Red List Criteria, and without recording assessments that did not fall in the 'Threatened' categories. Assessments have since been carried out using the Version 3.1 criteria for all regions of the world except Central America and the Caribbean.

Nearly all IUCN Red List global assessments for freshwater turtles and tortoises from Asia, North America, Europe and Madagascar have been entered into the Species Information Service (SIS) database and accepted into the IUCN Red List website. Draft assessments have been prepared for the turtle species of Africa, Australia and South America, and many of these have now also been entered into the SIS database. Draft assessments generally are at the same or greater levels of threat than assessments currently in the Red List. A total of 382 freshwater turtle and tortoise assessments (covering ca. 325 species, several separate subspecies, and a few regional populations) are currently in the SIS database, with varying degrees of completeness. Several of these assessments are currently up to date on the IUCN Red List, but of the 325 recognized turtle and tortoise species, approximately 260 need updating (either as reassessments or initial assessments).

The Red List at present contains assessments for 225 tortoise and freshwater turtle species, of which 129 (57.8%) are listed in the Threatened categories. Of the world's 328 total species, 8 are Extinct, and draft assessments indicate that 161 species (50.3%) warrant listing in the Threatened categories. With about half of all currently extant chelonian species threatened, updating and completing the Red List assessments for the world's tortoise and freshwater turtle species is a priority.

Activities and Results – 2015

The former TFTSG Chair, Anders Rhodin, has taken on the responsibility of TFTSG Red List Authority (RLA) Coordinator, while previous Red List Focal Point and current TFTSG Co-Chair, Peter Paul van Dijk, is focusing on researching and drafting assessments and entering data into the (SIS) database. The TFTSG RLA Coordinator and the TFTSG Co-Chair have been contracted to produce and review assessments for these 260 species for formal submission to the Red List by the end of April 2016. The generous contribution of the EAD is gratefully acknowledged as enabling these developments.

The formal review process within the TFTSG to produce finalized assessments for publishing on the IUCN Red List is currently in progress, being led by the TFTSG RLA Coordinator. An initial interim target date for the production of 130 finalized assessments by April 2015 was unfortunately not met due to other commitments, but is currently in active progress. However, we anticipate final completion of the 260 assessments by late 2016.

A renewed effort has been made to engage the TFTSG membership in preparing and reviewing draft assessments, with more success, and a number of new or updated assessments are in the final stages of approval and submission. Two African tortoise species assessments were finished and published on the 2015 Red List (including the Critically Endangered (CR) Geometric Tortoise, *Psammobates geometricus*) and several other species have been updated and reviewed in conjunction with other experts. Special emphasis and extensive effort was also placed on updating the assessments of the several species and subspecies of Galapagos Giant Tortoises, but this evolved into an extended exercise of delicate political and professional diplomacy and the assessment are still under continued review. Moreover, a re-assessment session for the Central American River Turtle (*Dermatemys mawii*, CR, last assessed 2006) is scheduled for the Hicatee Symposium (Belize, 25-26 February 2016) and the species will likely be included in the next IUCN Red List update.



In addition, distribution maps for all ca. 325 turtle and tortoise species have been prepared by Anders Rhodin, edited by the TFTSG membership, and published by the TFTSG Turtle Taxonomy Working Group in their 2014 checklist of turtles of the world as part of the *Conservation Biology of Freshwater Turtles and Tortoises* monograph project. These GIS maps are based on Hydroshed cell occurrences, analogous to how the distribution of African and other freshwater taxa is mapped in the Red List, and we are in the process of incorporating these maps into

global Red List assessments. All these Red List-focused activities occur in synergy with the annual production of a detailed Checklist of the world's turtles, with full synonyms, distribution data and conservation status summaries. The current 2014 Checklist, prepared by the TFTSG's Turtle Taxonomy Working Group, provides an invaluable foundation for taxonomy and distribution data used in the respective Red List accounts, and is freely available on the web: <http://www.iucn-tftsg.org/checklist/>. An updated and revised 2016 checklist is currently in draft stage and projected to be published by mid-year.

In addition, a new checklist and review of the world's recently extinct turtles has also been prepared by the TFTSG's Turtle Extinctions Working Group, and was published last year. This major analysis of extinction patterns affecting turtles and tortoises during the global rise and spread of humanity, dating back to the Pleistocene, has shed light on the historical and current patterns of chelonian exploitation and the notable vulnerability of terrestrial and insular taxa. Understanding and documenting these patterns of past presence and current loss of these animals in their ecosystems informs our ongoing conservation efforts on protecting surviving taxa and providing new impetus for ecological restoration efforts and the importance of terrestrial tortoises as ecosystem engineers.

Both Anders Rhodin and Peter Paul van Dijk have also been active on the IUCN Red List Committee, with Rhodin instrumental in initially proposing and then helping to shepherd significantly improved IUCN Red List publishing protocols to fruition, and also helping to launch them at the SSC Leaders' Meeting in Abu Dhabi in September 2015. Specifically, the creation of DOI-designated archivable and downloadable permanent PDF's of all Red List assessments was initiated, thereby further professionalizing and establishing the permanence of web-based Red List assessments as scientific publications in the public realm.



Future activities

The top priority of the project is to finalize the draft assessments for tortoises and freshwater turtles that have emerged from recent Red Listing workshops and sessions for Sub-Saharan Africa, Southern South America, the Galápagos Islands, as well as the assessments of the large tropical river turtles of South America and Asia.

The next priority is the few remaining North American species and the Australian taxa, after which a round of updating the existing assessments for Asia and the Mediterranean is planned.

In parallel, a workshop or other process to assess Central America and the Caribbean species, the last remaining region whose turtles have not been comprehensively assessed, is envisaged for later in 2016, subject to arranging a suitable venue and available funding being raised for this.

A wild small juvenile Leopard Tortoise (*Stigmochelys pardalis*) in Hwange NP, Zimbabwe; this widespread African species was assessed as Least Concern in 2015. © Anders Rhodin



The Chaco Side-necked Turtle (*Acanthochelys pallidipectoris*) from Paraguay; this range-restricted freshwater turtle species has been assessed as Endangered, due to be published on the Red List in early 2016. © Thomas and Sabine Vinke



Amphibians on the IUCN Red List

Jennifer Luedtke, Coordinator, IUCN SSC Amphibian Red List Authority

Key achievements

- An additional US\$88,000 of funding was raised.
- 218 species were submitted for publication on the IUCN Red List.
- The assessment update for East Africa, New Zealand and Canada was completed.
- The amphibian taxonomy in IUCN's Species Information Service (SIS) was updated; this was a huge task which now makes it possible to undertake improved planning for completing the reassessment of all amphibian species.
- Four new programme officers and two new volunteers joined the Central Coordination Team.



Efforts to complete the 10-year update of amphibians on the IUCN Red List increased dramatically during the March 2015-January 2016 period thanks to the continued support of the Environment Agency – Abu Dhabi and additional support from new institutional partners. Herein we report on the developments, activities and outputs of the SSC Amphibian Red List Authority (ARLA).



Fundraising

The ARLA Southeast Asia Working Group received support of \$15,000 from Honolulu Zoo to continue the employment of ARLA intern, Timothy Cutajar, for three days per week over the course of four months. In addition to the 70 species he is working on under the grant from the Australian Museum Foundation, he will be completing 100 additional species assessments.

Funding from the MacArthur Foundation has been secured by the IUCN Biodiversity Assessment Unit to support the reassessment of amphibians in Colombia and Ecuador in 2015-2016. The funding (\$40,000) is part of a larger project to assess freshwater taxa in the tropical Andes of South America.

Detroit Zoological Society provided a small grant (\$5,000) in mid-2015, enabling the ARLA to update over 50% of Malagasy amphibians by contracting Programme Officer, Duncan Sharp, and facilitating a workshop at the Zoologische Staatssammlung in Munich, Germany. Part of this funding will also enable the ARLA to enter into a new partnership with the Universidad de San Francisco de Quito in Quito, Ecuador with the goal of supporting the update of amphibian assessments in Ecuador and the wider tropical Americas.

Meetings and other initiatives

The 2015 *Amphibian Conservation Research Symposium* (Cambridge, UK; 11-12 April) was attended by Jennifer Luedtke, Programme Officers Louise Hobin and Duncan Sharp, and former ARLA intern Lucy Coals. Jennifer Luedtke gave a keynote on the IUCN Red List of Threatened Species and the Global Amphibian Community.



Amphibian Conservation Research Symposium participants



Workshop participants, Honolulu Zoo

As part of their contribution to Red Listing Southeast Asian amphibians, Honolulu Zoo also hosted Jennifer Luedtke and IUCN SSC Director of Specialist Group Partnerships, Kira Mileham, at their Honolulu site on 22-25 October.

They provided a brief IUCN Red List training course, several workshops and brainstorming sessions on conservation and the zoo community.

This was also an opportunity to meet one of their amphibian keepers who is now working one day per week as a Southeast Asia Programme Officer for the Amphibian Specialist Group.

Outputs and workshops

The ARLA submitted a total of 218 species for publication on the IUCN Red List during 2015. This included a complete update of the amphibians of New Zealand and Canada.

An assessment workshop for the amphibians of Chile took place from 8-10 July and was facilitated by Ariadne Angulo and Mariella Superina.

An assessment workshop took place at the Zoologische Staatssammlung in Munich, Germany from 22-27 November 2015 and was facilitated by Jennifer Luedtke and Louise Hobin. The diversity and uniqueness of amphibian species in Madagascar makes the country a focal point for research, which generates not only new information on known species, but dozens of new species descriptions every year. Threats to amphibians in Madagascar are severe and careful attention to this part of the world is required. During the workshop 142 species were assessed, but 126 species remain (mostly Least Concern). The ARLA is pursuing further funding to complete this important region.

Over the course of 2015, several one-day assessment workshops took place at the Natural History Museum (NHM), London, UK to complete the update of East African amphibian species. Jennifer Luedtke and Louise Hobin worked with one of the Amphibian Specialist Group Regional Co-Chairs, Simon Loader, at each of these workshops. In addition to consulting the published resources at the NHM, other experts were consulted through email and Skype calls; caecilian experts Dave Gower and Mark Wilkinson, who are based at NHM, were also available for the updating of species for which they have expertise.

At the end of January 2016, the ARLA completed the huge task of completely updating the amphibian taxonomy of IUCN's SIS (Species Information Service). This enables the ARLA to better plan its activities for the remainder of the IUCN Quadrennium and, ultimately, the completion of the 10-year update. From February 2016 onward, the ARLA will be conducting monthly updates of the taxonomy to ensure it is working with the most recent information and number of recognized species.

Membership and Partnerships

The ARLA Central Coordination team has grown thanks to the support of two new partners. The Museo delle Scienze in Trento, Italy (MUSE) accepted a proposal to host a full-time ARLA Programme Officer: Elena Garollo began her 12-month contract in October 2015. A joint agreement between Texas A&M University and Global Wildlife Conservation in Austin, USA (GWC) has provided another full-time Programme Officer: Kelsey Neam began her 12-month contract in November 2015.

Publications

A book on the amphibians of Africa is being prepared for publication in 2016. The ARLA has directly contributed to the development of the chapters on Madagascar and East Africa. The update of African amphibian assessments has been critical to this process.

Central Coordination Team

The Central Coordination Team continued to grow, as detailed above, by the addition of Programme Officers Elena Garollo and Kelsey Neam. Two new volunteers came on board as well: Steve Best in March 2015 and Vera Hugues Salas in January 2016. Due to a lack of funding, Programme Officer Duncan Sharp left us in October after six very successful months with the ARLA.



Jennifer Luedtke



Louise Hobin



Elena Garollo



Kelsey Neam

Highlighting a threatened species

Philautus cardamonus

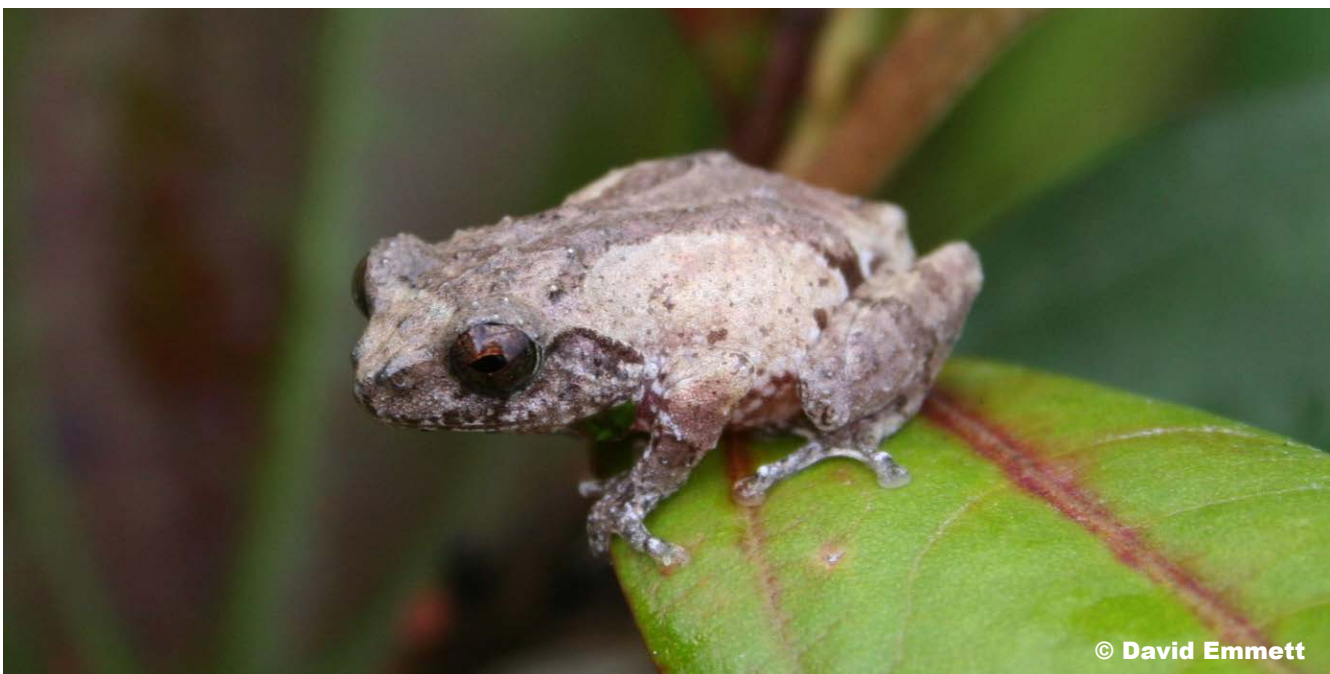


© David Emmett

This species is currently known only from the Phnom Samkos Wildlife Sanctuary in the Cardamom Mountains of Cambodia. It lives in montane evergreen forest and is thought to breed by direct development.

A major cause of habitat loss in the Cardamom Mountains – including within Phnom Samkos Wildlife Sanctuary – is the illegal harvesting of certain tree species for the refinement of safrole oil – a precursor to the production of illicit narcotics including methylenedioxymethamphetamine (known commonly as ecstasy).

Thankfully, the majority of *Philautus cardamonus*' range is at higher elevations where this has little effect. There are proposals for dams, mines and logging in and around protected areas in southwestern Cambodia, which are expected to have some negative impacts on this species' population and the quality of its habitat.



© David Emmett



Chiromantis nongkhorensis © Philip Bowles



Oreolalax sterlingae © Jodi J. L. Rowley

Abalone on the IUCN Red List

Howard Peters, Coordinator, IUCN SSC Mollusc Red List Authority (Cone Shells)

Key achievements

- The first phase of the IUCN SSC abalone assessment was successfully launched
- The agreed taxonomy to be used in the assessment was defined
- The literature review was started



Background

Abalone are marine gastropod molluscs of the genus *Haliotis*, of the family Haliotidae. Known also as ormers in the (English) Channel Islands, perlemoen in South Africa and paua in New Zealand, abalone have a temperate oceanic distribution, although they are absent from many regions, most notably the Pacific coast of South America and the Atlantic coast of North America.

Fifty-six true species have been described together with a further 19 subspecies (Geiger & Owen, 2012). For thousands of years abalone have been prized primarily for their meat, but also for their shells, the nacre of which is used for ornamentation including jewellery and inlay for boxes and musical instruments. The exceptionally strong plate structure of their shells is contributing to research into novel materials, in particular for body armour (Lin & Meyers, 2005; Salinas & Kisailus, 2013). This assessment will research all species of abalone, with the first phase focussed on eleven species endemic to Australia.

Project relevance

Human consumption together with easy accessibility in shallow waters are having serious consequences for abalone populations around the globe. This is exacerbated by poaching, with steep declines from illegal, unreported and unregulated (IUU) fishing which, in some regions such as South Africa, is largely controlled by organised criminal gangs tied to the drugs trade with links to the Far East, the final destination for much of the meat (De Greef & Raemaekers, 2014). The South African abalone, *H. midae*, was listed on Appendix III of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 2007, but this was reversed in 2010 by the South African government. Consequently, there are no abalone protected under CITES and only two species currently listed on the IUCN Red List, namely the Critically Endangered black abalone (*H. cracherodii*) and the Endangered pinto abalone (*H. kamtschatkana*) both from Pacific North America. The white abalone (*H. sorenseni*) – the first marine invertebrate to be listed under the US Endangered Species Act (ESA) as threatened throughout its range – has not yet been assessed for the IUCN Red List, but it will be under this project. Even though there is an expanding aquaculture sector, demand for wild-caught abalone continues unabated in many regions of the globe.

Activities of 2015

The final quarter of 2015 saw the commencement of our global abalone assessment for the IUCN Red List. The taxonomy for all species was defined and loaded onto Species Information Service (SIS) together with images generously provided by Buzz Owen, the leading photographer of abalone, and, with Daniel Geiger, author of the definitive work (Geiger & Owen, 2012).

The first phase of the draft assessment, eleven species endemic to Australia, was started with a target for completion by the end of the first quarter 2016. These include three species actively gathered by commercial fishers, primarily for export. Although individual state fishery authorities set annual quotas for both commercial and recreational fishing that are closely monitored and controlled, substantial declines in Catch per Unit Effort (CPUE) over recent years in a number of fishery zones indicate that the current level of fishing pressure is likely to lead to reduced recruitment (Mundy *et al.*, 2015). This is compounded by the activities of criminal gangs who operate in a similar manner to those plaguing South Africa, although to a lesser intensity. Threats from fishing, both legal and illegal, are not the only risk confronting abalone: an outbreak of Abalone Viral Ganglioneuritis (AVG) released from an aquaculture facility in Victoria in 2005 devastated wild stocks that still suffer from the effects (Mayfield *et al.*, 2011), underscoring the hazards of accidental discharges into the marine environment.

Research on the effects of projected changes in sea-surface temperature and ocean acidification caused by the uptake of carbon dioxide (CO₂) from the atmosphere, showed that abalone larvae, exposed to the new environment, were unable to accrete aragonite onto the larval surface inhibiting survival to the juvenile stage (Byrne *et al.*, 2011). This would indicate that unless there is a major reversal in the rate of change to ocean chemistry, over the long term all species of abalone may eventually be lost. In Australia, where many species are restricted to the southern coastal margins, opportunities for further migration south as waters warm, are limited.

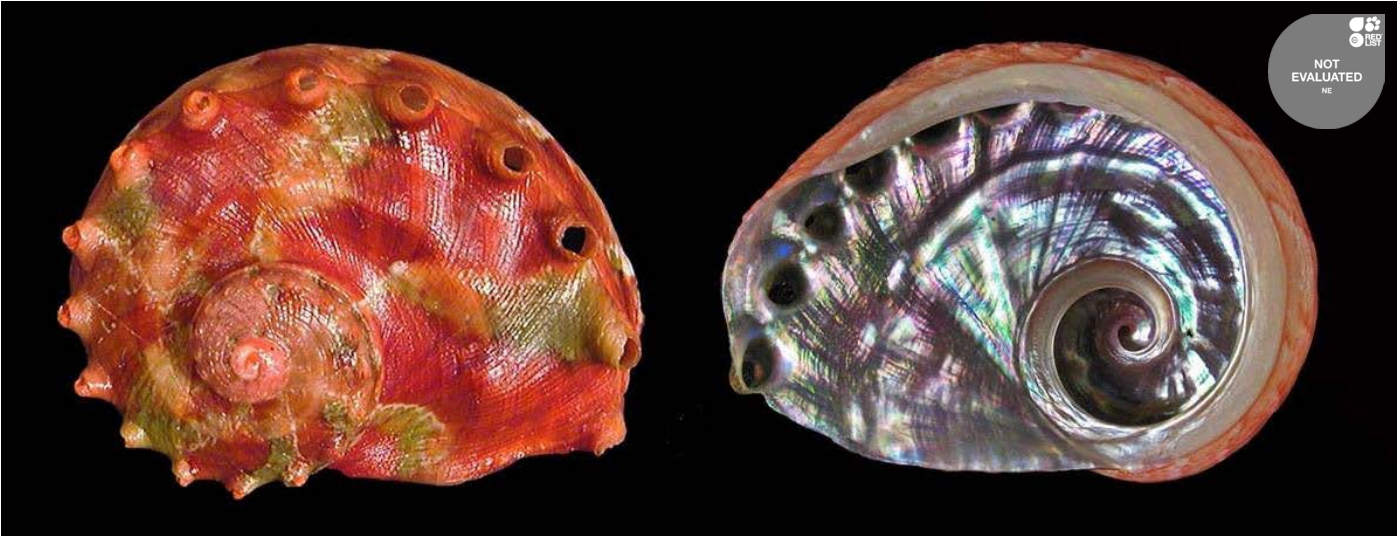
References

- Byrne, M., Ho, M., Wong, E., Soars, N. A., Selvakumaraswamy, P., Shepard-Brennand, H., Dworjanyn, S.A, Davis, A.R. (2011). Unshelled abalone and corrupted urchins: development of marine calcifiers in a changing ocean. *Proceedings of the Royal Society B: Biological Sciences*, 278 (1716), 2376–2383. <http://doi.org/10.1098/rspb.2010.2404>
- De Greef, K., & Raemaekers, S. (2014). South Africa's Illicit Abalone Trade: An Updated Overview and Knowledge Gap Analysis. Cambridge, UK: Traffic International.
- Geiger, D. L., & Owen, B. (2012). *Abalone Worldwide Haliotidae*. ConchBooks, Hackenheim.
- Lin, A., & Meyers, M. A. (2005). Growth and structure in abalone shell. *Materials Science and Engineering: A*, 390(1-2), 27–41. <http://doi.org/10.1016/j.msea.2004.06.072>
- Mayfield, S., McGarvey, R., Gorfine, H. K., Peeters, H., Burch, P., & Sharma, S. (2011). Survey estimates of fishable biomass following a mass mortality in an Australian molluscan fishery. *Journal of Fish Diseases*, 34(4), 287–302. <http://doi.org/10.1111/j.1365-2761.2011.01241.x>
- Mundy, C., Mayfield, S., Gorfine, H., & Liggins, G. (2015). Blacklip Abalone. *Status of Key Australian Fish Stocks Reports 2014*, 81–145.
- Salinas, C., & Kisailus, D. (2013). Fracture mitigation strategies in gastropod shells. *Jom*, 65(4), 473–480. <http://doi.org/10.1007/s11837-013-0570-y>



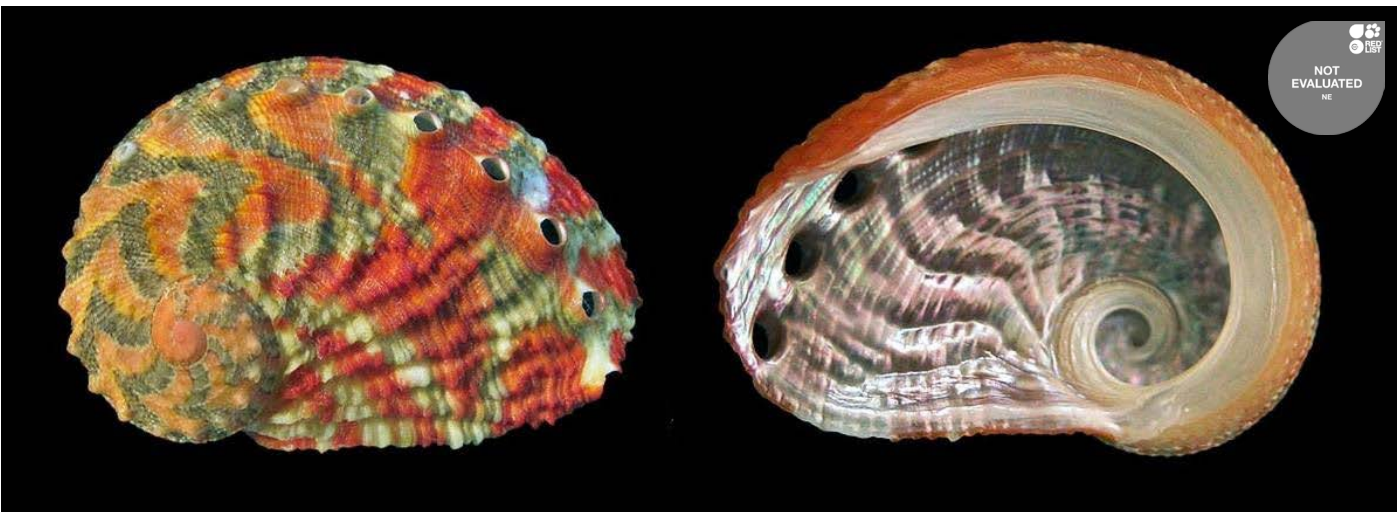
Haliotis rubra rubra Leach, 1814 (Australia) © Buzz Owen

NOT EVALUATED
NE



Haliotis brazieri Angas, 1869 (Australia) © Buzz Owen

NOT EVALUATED
NE



Haliotis clathrata Reeve, 1846 (Indo West-Pacific) © Buzz Owen

ENDANGERED
EN



Haliotis kamtschatkana kamtschatkana Jonas, 1845 (Pacific North America) © Buzz Owen

Bumblebees on the IUCN Red List

Sarina Jepsen, Deputy Chair, IUCN SSC Bumblebee Specialist Group and Xerces Society Endangered Species Program Director

Rich Hatfield, Coordinator, IUCN SSC Bumblebee Red List Authority and Xerces Society Senior Conservation Biologist

Key achievements

- The IUCN SSC Bumblebee Specialist Group (BBSG) has evaluated the extinction risk of all 79 species of bumblebees from North America, Mesoamerica and South America using the IUCN Red List Criteria and completed written assessments for each species.
- Forty-five species assessments from the New World have been published on the IUCN Red List to date, and the remaining 34 species assessments have been submitted to the IUCN Red List and will be published during the first update in 2016.
- Approximately one-quarter of the bumblebees in the New World are in an IUCN threatened category – from Near Threatened to Critically Endangered.
- In the New World five species are listed as Critically Endangered, and three of those species are cuckoo bumblebees.
- One-fifth of New World species are listed as Data Deficient, underscoring the need for future survey work to better understand the distribution and habitat of these important pollinators.

Report of Activities in 2015

The BBSG has evaluated the extinction risk of all 79 species of bumblebees from North America, Mesoamerica and South America using the IUCN Red List Criteria and completed written assessments for each species.

Forty-five species assessments from the New World have been published on the IUCN Red List to date, and the remaining 34 species assessments have been submitted to the IUCN Red List and will be published during the first update in 2016. To complete each assessment, we have produced maps of the distribution of each species and compiled information on taxonomy, distribution, population status, habitats and ecology, use and trade, threats, conservation actions, and rationale for assigning each Red List Category (Figures 1 and 2) for all 79 bumblebee species of the New World, and entered that information into the IUCN Species Information Service (SIS).



In composite, approximately one-quarter of the bumblebees in the New World are in an IUCN Red List Category from Near Threatened to Critically Endangered. In the New World five species are listed as Critically Endangered, and three of those species are cuckoo bumblebees, meaning that they rely upon another species of bumblebee to reproduce. Although this finding is new, it is not surprising, since cuckoo bumblebees are dependent upon other bumblebees to serve as hosts, and some of the most threatened cuckoo bees co-occur with host species that are also threatened with extinction.

Another conclusion from this work is that more than half of the species of bumblebees in South America have relatively poorly understood ranges and are listed as Data Deficient – yet threats related to habitat loss and climate change are known.

IUCN Red List Category for Bumblebees of the Americas

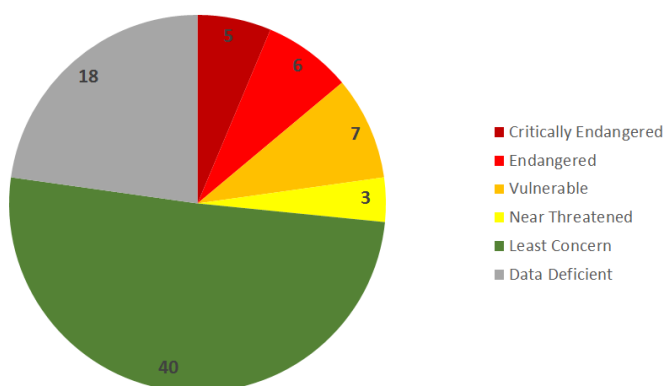


Figure 1. Pie chart depicting the number of bumblebee species in each IUCN Red List Category in North, Meso-, and South America.

Many of the species that are poorly understood have relatively narrow historical ranges and, if patterns from North and Meso-America hold, may be experiencing undocumented declines.

A priority for further work will be to conduct regional surveys throughout South America to better understand the distributions of these important animals.

In order to complete assessments of the extinction risk of bumblebees in Mesoamerica and South America, the BBSG conducted a Red Listing Workshop in Spring of 2015 as part of the Mesoamerican Congress on Native Bees in San Cristóbal de las Casas, Chiapas, Mexico for nine members of the BBSG from Mesoamerica and two members of the BBSG from South America. The BBSG Red List Authority and Xerces Society Conservation Biologist Rich Hatfield, BBSG Chair Dr. Paul Williams, and

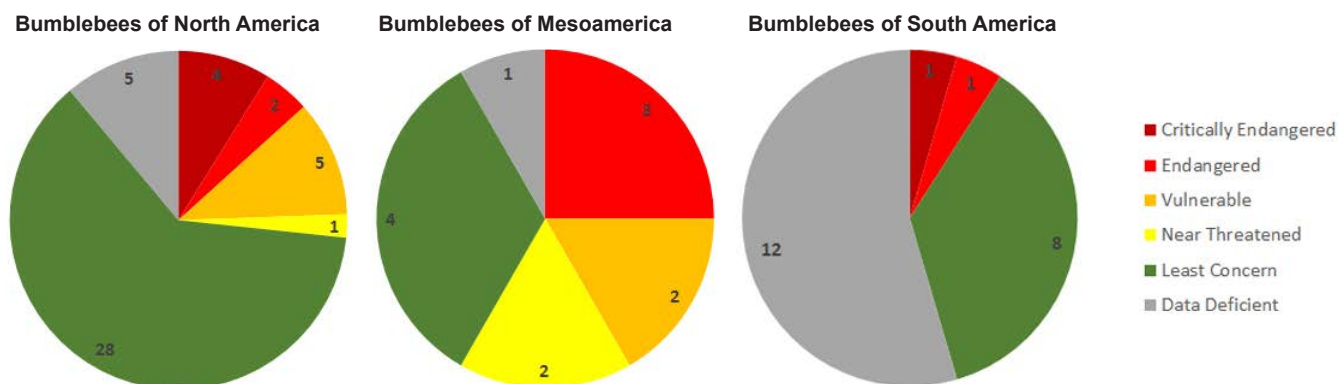


Figure 2. Pie charts indicating the number of species listed in each IUCN Category for each region of the New World.

SSC Chair's Office staff member Jennifer Luedtke led the Red Listing workshop.

Since that workshop, the members of the BBSG from Mesoamerica, working in cooperation with the Xerces Society, the BBSG Chair, and other members of the BBSG, have published nine bumblebee assessments from that region. The remaining three species assessments have been submitted to the IUCN for final review and publication. The members of the BBSG from South America, working in cooperation with Xerces Society staff and other BBSG members, have published one bumblebee assessment, and the remaining 21 species have been submitted to the IUCN for final review and publication.

Our Approach

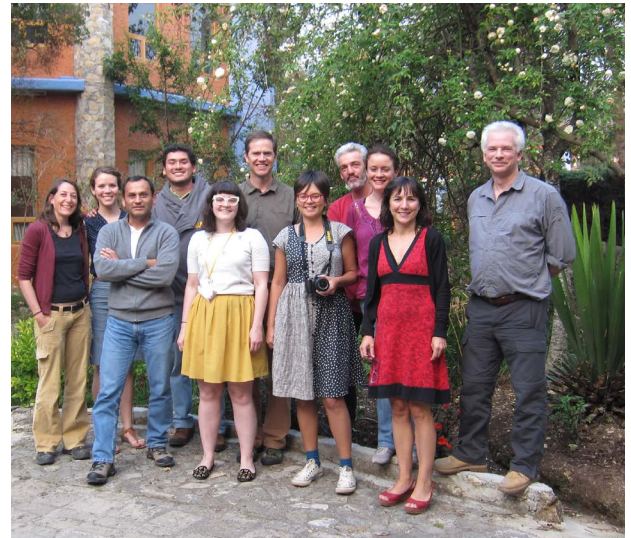
In North America, we used a database of nearly 300,000 electronic North American bumblebee records assembled from approximately 150 academic, research, citizen science, and private collections, and on the basis of this we evaluated changes over the past decade in each species' extent of occurrence (EOO), persistence, and relative abundance. We used the results of these analyses to apply the IUCN Red List Criteria and assign Red List Categories to 46 species of North American bumblebees. We invited peer-review of the analytical methods and application of the IUCN Red List Criteria from the Chair and the 20 North American members of the BBSG and adjusted our analyses and/or interpretation of those analyses based on that feedback. We have also coordinated with bumblebee specialists in Mesoamerica to obtain all available distribution information for the six species that occur in both North and Meso-America. Using this information, we evaluated the entire geographic range of these species.

In Mesoamerica, the BBSG compiled a database of over 20,000 electronic records of bumblebees, including an extensive survey effort undertaken by Rémy Vandame and his team at the El Colegio de la Frontera Sur (ECOSUR) since 2013 to document the current range of Mesoamerican bumblebees. With assistance from the Xerces Society, the Mesoamerican BBSG applied the methods developed for the North American assessments to conduct robust quantitative assessments on the twelve species of bumblebees endemic to that region.

In South America, the BBSG compiled the knowledge of several bumblebee experts throughout South America to evaluate the status of the 22 species of bumblebees endemic to that region. Despite considerable effort, little is known about many of the species, especially those with historically small or remote ranges. It is clear that a concerted effort is needed to document the current

distribution and conservation status of these important animals. This is especially true as some evidence suggest that additional species, such as *Bombus bellicosus*, which is currently listed as Data Deficient, may be in peril. This species has undergone dramatic declines in the northern part of its range in Brazil, but very little is known about its distribution in the remainder of its range in Paraguay, Uruguay, and Argentina – making a global assessment of its status nearly impossible. One species from South America that is well-documented, and has experienced dramatic declines, likely due to the introduction of two non-native bumblebees, is *Bombus dahlbomii* (Red List Category: Endangered).

Despite some challenges, we, along with help from our BBSG partners, have now produced maps and compiled information on taxonomy, distribution, population status, habitats and ecology, use and trade, threats, conservation actions, and rationale for assigning each Red List Category for 79 New World species of bumblebees and entered that information into SIS. All of these assessments have either been published, or submitted to the IUCN Red List Unit for final review. Forty-five of these assessments were published by the end of 2015, and the remaining thirty-four assessments will be published in the first update to the Red List in 2016.



Red Listing Meeting of the IUCN Bumblebee Specialist Group in Chiapas, Mexico.



The Red-belted Bumblebee (*Bombus rufocinctus*), native to North America. © Rich Hatfield, the Xerces Society

Below (Table 1), we list each of the 79 New World bumblebee species, its Region, the IUCN Red List Category, and whether its assessment has been published on the Red List or submitted to the IUCN for publication.

Table 1. Red List status, category, and region of the 79 species of bumblebees that are currently recognized in the New World. Note that some species occur in multiple regions, but are affiliated with the region in which the majority of their range occurs in this table.

Genus	Species	Region	Status	Red List Category
<i>Bombus</i>	<i>affinis</i>	North America	Published	Critically Endangered
<i>Bombus</i>	<i>appositus</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>auricomus</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>kirbiellus</i>	North America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>bifarius</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>bimaculatus</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>bohemicus</i>	North America	Draft Submitted	Critically Endangered
<i>Bombus</i>	<i>borealis</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>caliginosus</i>	North America	Published	Vulnerable
<i>Bombus</i>	<i>centralis</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>citrinus</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>crotchii</i>	North America	Published	Endangered
<i>Bombus</i>	<i>cryptarum</i>	North America	Draft Submitted	Least Concern
<i>Bombus</i>	<i>distinguendus</i>	North America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>fervidus</i>	North America	Published	Vulnerable
<i>Bombus</i>	<i>flavidus</i>	North America	Draft Submitted	Least Concern
<i>Bombus</i>	<i>flavifrons</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>fraternus</i>	North America	Published	Endangered
<i>Bombus</i>	<i>frigidus</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>griseocollis</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>huntii</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>navigi</i>	North America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>impatiens</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>insularis</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>jonellus</i>	North America	Draft Submitted	Least Concern
<i>Bombus</i>	<i>melanopygus</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>mixtus</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>morrisoni</i>	North America	Published	Near Threatened
<i>Bombus</i>	<i>neoboreus</i>	North America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>nevadensis</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>occidentalis</i>	North America	Published	Vulnerable
<i>Bombus</i>	<i>pennsylvanicus</i>	North America	Published	Vulnerable
<i>Bombus</i>	<i>perplexus</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>polaris</i>	North America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>rufocinctus</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>sandersoni</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>sitkensis</i>	North America	Published	Least Concern

Table 1 (continued).

Genus	Species	Region	Status	Red List Category
<i>Bombus</i>	<i>suckleyi</i>	North America	Published	Critically Endangered
<i>Bombus</i>	<i>sylvicola</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>ternarius</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>terricola</i>	North America	Published	Vulnerable
<i>Bombus</i>	<i>vagans</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>vandykei</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>intrudens</i>	North America	Draft Submitted	Critically Endangered
<i>Bombus</i>	<i>vosnesenskii</i>	North America	Published	Least Concern
<i>Bombus</i>	<i>brachycephalus</i>	Mesoamerica	Published	Endangered
<i>Bombus</i>	<i>digressus</i>	Mesoamerica	Draft Submitted	Near Threatened
<i>Bombus</i>	<i>diligens</i>	Mesoamerica	Draft Submitted	Near Threatened
<i>Bombus</i>	<i>ephippiatus</i>	Mesoamerica	Published	Least Concern
<i>Bombus</i>	<i>haueri</i>	Mesoamerica	Published	Endangered
<i>Bombus</i>	<i>macgregori</i>	Mesoamerica	Published	Least Concern
<i>Bombus</i>	<i>medius</i>	Mesoamerica	Published	Vulnerable
<i>Bombus</i>	<i>mexicanus</i>	Mesoamerica	Published	Vulnerable
<i>Bombus</i>	<i>pullatus</i>	Mesoamerica	Published	Data Deficient
<i>Bombus</i>	<i>steindachneri</i>	Mesoamerica	Published	Endangered
<i>Bombus</i>	<i>trinominatus</i>	Mesoamerica	Published	Least Concern
<i>Bombus</i>	<i>weisi</i>	Mesoamerica	Draft Submitted	Least Concern
<i>Bombus</i>	<i>atratus</i>	South America	Draft Submitted	Least Concern
<i>Bombus</i>	<i>baeri</i>	South America	Draft Submitted	Least Concern
<i>Bombus</i>	<i>bellicosus</i>	South America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>brasiliensis</i>	South America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>brevivillus</i>	South America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>coccineus</i>	South America	Draft Submitted	Least Concern
<i>Bombus</i>	<i>dahlbomii</i>	South America	Published	Endangered
<i>Bombus</i>	<i>ecuadorius</i>	South America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>excellens</i>	South America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>funebri</i>	South America	Draft Submitted	Least Concern
<i>Bombus</i>	<i>handlirschi</i>	South America	Draft Submitted	Least Concern
<i>Bombus</i>	<i>hortulanus</i>	South America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>melaleucus</i>	South America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>morio</i>	South America	Draft Submitted	Least Concern
<i>Bombus</i>	<i>opifex</i>	South America	Draft Submitted	Least Concern
<i>Bombus</i>	<i>robustus</i>	South America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>rohweri</i>	South America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>rubicundus</i>	South America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>rubriventris</i>	South America	Draft Submitted	Critically Endangered
<i>Bombus</i>	<i>transversalis</i>	South America	Draft Submitted	Least Concern
<i>Bombus</i>	<i>tucumanus</i>	South America	Draft Submitted	Data Deficient
<i>Bombus</i>	<i>vogti</i>	South America	Draft Submitted	Data Deficient

Project relevance

Pollinators are essential to our environment, providing the critical service of pollination to nearly 80% of the world's flowering plants, including one-third of the world's food crops. Furthermore, many of the vitamins and micronutrients that contribute to human nutrition—such as vitamin C—are predominately found in plants that require insect pollination. In North America, there are more than 4,000 native bee species, but the native bumblebees are the only species group that has been studied sufficiently to be able to understand which species are threatened and which are stable. Prior to this project, regional reports indicated that some species of North American bumblebees had undergone recent, dramatic declines. There were also some reports of declines in native bumblebees in South America, but there had been no analysis of the conservation status of all New World bumblebees. These assessments can now form the basis for a framework of conservation measures, research direction, and policy changes to mediate the identified threats to bumblebees, and improve the habitat necessary for species recovery.

The process of using the IUCN assessments to improve the bumblebee conservation landscape has already begun in North America. Using the results from our IUCN analysis, the Xerces Society has been reaching out to state departments of wildlife advocating for protection for the North American species considered threatened by the IUCN. Twenty-six states that received our IUCN status assessments and recommendations have listed at least one bumblebee species as a Species of Greatest Conservation Need in their updated State Wildlife Action Plans (Figure 3). This status makes those bumblebees eligible for federal funding for conservation projects related to research, restoration, and management. In addition to State Wildlife Action Plans, these IUCN assessments have been used to support the listing of bumblebees as Sensitive Species on three National Forests – an important conservation status for imperiled animals of federal land – and for endangered species listings in the Canadian provinces of Ontario and British Columbia. These combined factors have affected bumblebee conservation at a continental scale, and will continue to do so as the status of these essential pollinators is recognized by policy-makers, scientists, and the general public.

To further raise awareness about the importance of this work and its conclusions, we plan to present the results of these assessments at the International Congress of Entomology in Orlando, FL, and to the Meeting of the Canada/Mexico/U.S. Trilateral Committee for Wildlife and Ecosystem Conservation and Management in Ontario, Canada in 2016.

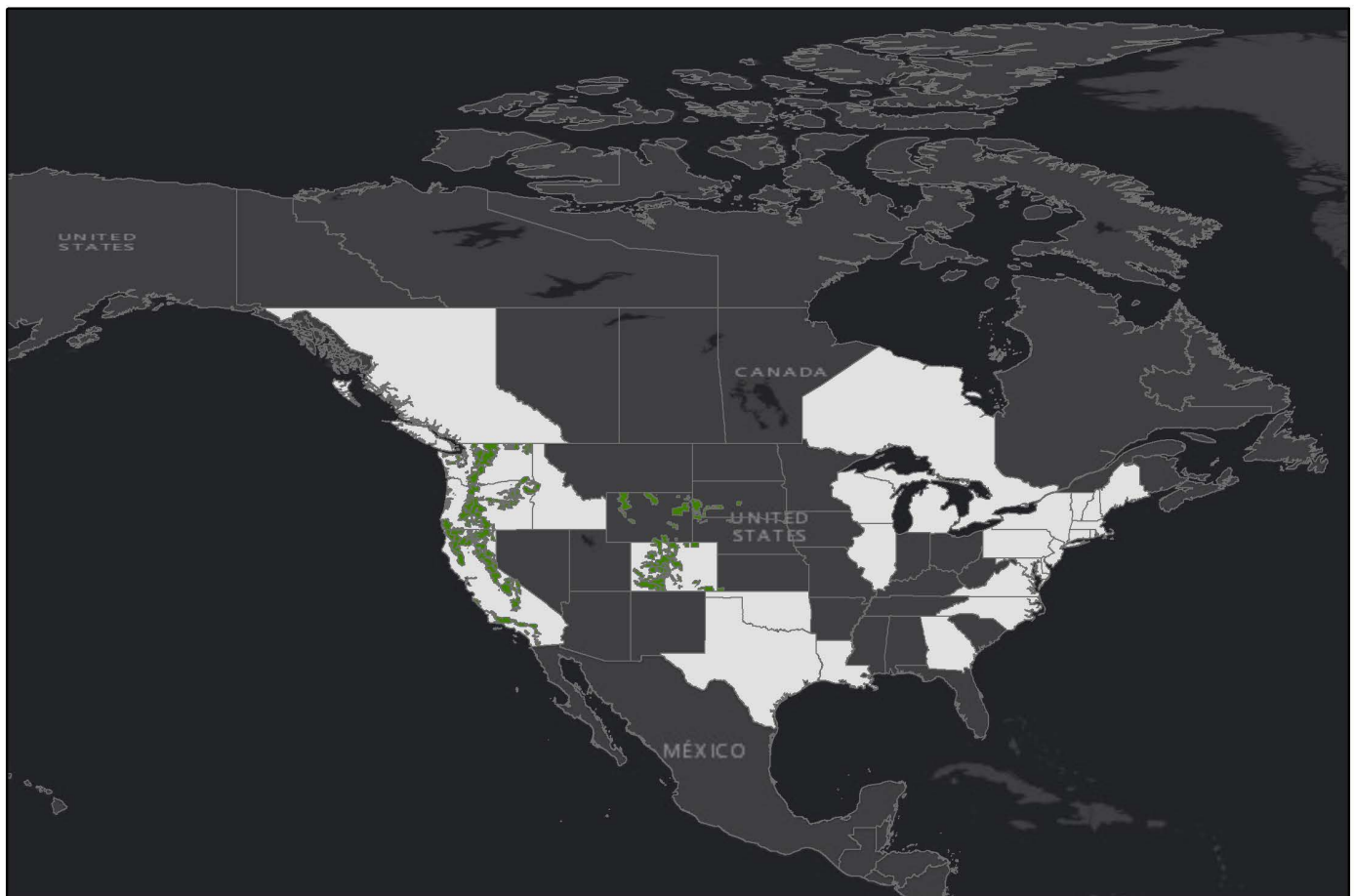


Figure 3. Map depicting the conservation benefits of IUCN Red List assessments. Bumblebees in States/Provinces colored in light gray have received significant state or provincial status. Areas colored green are USDA Forest Service Regions that list bumblebees as sensitive species.

Case Study: *Bombus dahlbomii*

Bombus dahlbomii, the only native bumblebee of temperate forests in the Patagonia region of South America, was listed on the IUCN Red List as Endangered in November of 2015.

Bombus dahlbomii has declined by 54% from its historic range in the past 10 years.

The decline is linked to pathogens infection from managed European bumblebees.

Introduction of two species of managed European bumblebees into Chile began in 1993 and 2006 for crop pollination, and both species become widely established in this region. Where non-native bumblebees have established, the native *Bombus dahlbomii* has declined extensively.

Justification for IUCN Red List Status of Endangered

This species is assessed as Endangered based on an inferred reduction of the population of 54% in the last ten years, and a strong and continuing decline in the population size in the last ten years as a result of known, ongoing and irreversible causes (A2) according to an index of abundance appropriate for the taxa (b), a reduction in the EOO, and as a result of the effects of introduced taxa (e) as several published reports suggest that pathogens introduced from non-native introduced bumblebees is an ongoing and increasing threat to this species (Figure 4).

IUCN BBSG Managed Bumblebee Policy statement

Recognizing the serious risks posed by transport of bumblebees for commercial pollination to *Bombus dahlbomii*, as well as other species, the BBSG issued the following statement (available at www.iucn.org/bumblebees):

The global trade in bumblebee colonies for crop pollination, most notably of the European species *Bombus terrestris*, has resulted in the establishment of this bumblebee species far from its native range, for example in Japan, Chile and Argentina. Invasive, non-native bumblebee species pose multiple risks to native species, including: competition, hybridization resulting in loss of locally adapted ecotypes, and introduction of non-native bee diseases. There is evidence that parasites from commercial bumblebees may have been irreversibly introduced to Japan, North America and South America, with potentially profound impacts on native bumblebees.

The IUCN BBSG considers that the commercial movement and deployment of bumblebees for pollination should be governed by the precautionary principle to prevent unintended harm. Local bumblebee species and subspecies should be targeted for commercial development and produced within their native ranges. All commercial bumblebees should be thoroughly screened for parasites by both producers and independent regulators. All use of commercial bumblebees should be controlled to eliminate the risk of escape from greenhouses.

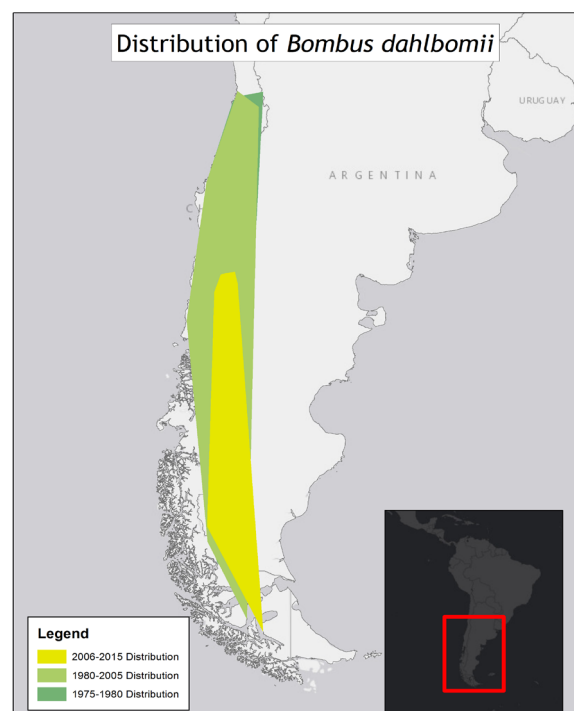


Figure 4. Range map for *Bombus dahlbomii* showing a progression of range declines - likely due to the southward expansion of introduced non-native bumblebees.

The White Shouldered Bumblebee (*Bombus appositus*), native to western North America. © Rich Hatfield, the Xerces Society



LEAST CONCERN
LC



The Western Bumblebee (*Bombus occidentalis*), native to western North America. © Rich Hatfield, the Xerces Society



VULNERABLE
VU





Sanderson Bumblebee (*Bombus sandersoni*) visiting Azalea, Highlands, North Carolina.
© Clay Bolt | www.claybolt.com





Cameroonian Plants on the IUCN Red List

Martin Cheek, Royal Botanic Gardens, Kew

Jean Michel Onana, Co-Coordinator, IUCN SSC Central African Plant Red List Authority

Key achievements

- A new initiative has been launched to assess key endemic plant species in Cameroon for their IUCN Red List status.
- In 2015, a total of 122 new assessments for Cameroonian plants were published on the IUCN Red List.



Activities

Cameroon is reputed to have the highest plant species diversity per degree square of any tropical African country. Among its most important sites for plants are two that are especially noteworthy: the densely forested Mount Cameroon; and the Kupe-Bakossi Mountains. These have the highest number of documented plant species present in any centre of diversity in tropical Africa, in both cases above 2,300 species. A total of 7,850 species have been documented from Cameroon (Onana 2011), of which 814 were assessed as threatened in the first plant Red Data Book published for any tropical African country (Onana & Cheek 2011).

An example of an endemic plant species to Cameroon is *Coffea montekupensis*, which is a pink-flowered understorey forest shrub from the slopes of Mount Kupe in the south-western region of the country. Another example is *Belonophora ongensis*, which occurs in lowland evergreen forests west of Mount Cameroon.

Further inland along the Cameroon mountain line, are the Bamenda Highlands which are densely populated, and for that reason have largely been cleared of their original forests, 96.5% of which are estimated to have been lost. The surviving forest fragments on the Bamenda Highlands are steadily shrinking in size as they are cleared. *Chassalia laikomensis*, *Oxyanthus okuensis* and *Psychotria moseskemei* are examples of plants that depend on these fragments for their continued existence.

During 2015 there was steady progress at the Royal Botanic Gardens, Kew in loading assessments into the IUCN Species Information Service (SIS) system, adjusting them and reviewing them for publishing on the IUCN Red List. Among the main families covered were the Balsaminaceae and Begoniaceae, both of which have many locally endemic species at risk, primarily as a result of forest clearance for small-holder agriculture, industrial plantation agriculture, and, in recent years, mining activities.

The June update of the IUCN Red List saw publication of 12 *Begonia* taxa which had been worked on by Lucia Lopez Poveda in late 2014. In a workshop at Kew 6-17 July 2015, a further 110 taxa were processed by Craig Hilton-Taylor and Jean Michel Onana, which were published in the November release, a total of 122 taxa being published on the IUCN Red List in 2015.

In 2016 the Rubiaceae will be targeted by the same team. Best known for coffee and quinine, this family has higher species diversity in tropical African forests than any other. Ranging from herbs to timber trees, species of this family especially dominate the shrub layer of forests. Numerous new species to science were discovered in field surveys in Cameroon prior to the writing of the Red Data Book and many of these are localised and threatened.

References

Onana J.-M. (2011). The vascular plants of Cameroon. A taxonomic check list with IUCN assessments. In: Onana J.M. (ed.) Flore du Cameroun 39. IRAD-National Herbarium of Cameroon. Hobbs the Printers. UK. 195 p.

Onana J.M. & Cheek M. (2011) Red Data Book of the flowering plants of Cameroon: IUCN global assessments: Royal Botanic Gardens, Kew and IRAD-National Herbarium of Cameroon. Kew Publishing. London. 578 p.



Brachystephanus giganteus (syn. *Oreacanthus man-
nii*) © Cheek et al. 2000, The Plants of Mount
Oku and The Ijim Ridge, Cameroon.





Freshwater Plants on the IUCN Red List

Richard Lansdown, Chair, IUCN SSC Freshwater Plant Specialist Group

Melanie Bilz, Coordinator, IUCN SSC Freshwater Plant Red List Authority

Key achievements

- The first ever lists of all recognized taxa in the genus *Isoetes* and in the families Podostemaceae and Hydrostachyaceae have been completed;
- A special publication on the taxonomy and phylogeny of the subgenus *Batrachium* is being prepared.
- A total of 400 Red List assessments on species from Canada and the Andes have been completed.
- Red List assessments of charophytes known to be a conservation concern are being prepared.
- A conservation strategy for the Starfruit was prepared.

The Freshwater Plant Specialist Group (FPSG) was established in 2012 with the support of the Fondation Tour du Valat and Plantlife. Currently the FPSG has 163 members in 65 countries.

The FPSG exists to promote and further the conservation of wetland-dependent plants and the habitats upon which they depend. To do this we need to identify which species, estimated to be at least 30,000 worldwide, are truly dependent upon wetlands; review their status against the IUCN Red List Criteria; and then address their conservation needs.



Five subgroups have been established within the FPSG:

Isoetes

Organised by Angelo Troia. The subgroup has prepared the first ever global list of recognised taxa in the genus *Isoetes* which will be submitted for publication in early 2016. This list will provide the basis for Red Listing of the entire genus, which will be a key step towards developing a conservation strategy for the genus.

Podostemaceae (plus Hydrostachyaceae)

Organised by Tom Philbrick. The subgroup has prepared the first ever global list of recognised taxa in the Podostemaceae and Hydrostachyaceae. This list will provide the basis for Red Listing of the entire genus, which will be a key step towards developing a conservation strategy for these species.

Ranunculus* subgenus *Batrachium

Organised by Jose Antonio Molina Abril. Members of this subgenus often represent the most important vegetation in wetland systems. They are used as indicators of a range of parameters affecting wetlands and many are cited in international and national legislation. However the subgenus presents one of the most challenging taxonomic issues and the naming of most taxa is unclear.

There is an urgent need to resolve the taxonomic issues to inform and support the conservation of wetlands throughout much of the northern hemisphere. The subgroup is in the process of coordinating contributors to prepare special publication on the taxonomy and phylogeny of the subgenus as a first step toward developing a conservation strategy.

Charophytes

Organised by Nick Stewart and Michele Casanova. Charophytes represent a large group within aquatic plants, they are the best known algae and are the subject of extensive research. The subgroup is preparing Red List assessments for the taxa which they know to be of conservation concern as a priority.

Non-marine halophytes

Organised by Hossein Akhani. This subgroup has been established to fill the gap between the FPSG, the Mangrove SG and the Seagrass SG. The FPSG will provide support, information and anything else that may help for the work carried out by the subgroup.

In 2015 the membership of the FPSG increased significantly, including representation from most of the countries in South America.

We produced the first Species Conservation Strategy (SCS) for Starfruit (*Damasonium alisma*) a mainly western European species which is facing extinction due to loss of traditional habitat management practices. This SCS was approved by the IUCN Species Conservation Planning Sub-Committee. Work carried out by Richard Lansdown and Ioannis Bazos, with support from MAICh, on *Callitriche* resulted in a major revision of its status and the preparation of a SCS.

We also completed a global review of the threats to species dependent upon wetlands to inform the work of the SSC Freshwater Conservation Sub-Committee. This review involved compiling information from more than 30 Specialist Group Chairs or RLAs; it is hoped that once it has been incorporated into the work of the Sub-Committee, it will be published to raise the profile of wetland conservation worldwide.

Also in 2015, a page on the FPSG was established on the IUCN website and Richard Lansdown established a personal website which includes extensive information on the work of the FPSG.

The main aims of the FPSG for the coming year are to find the small amount of funding needed to enable the global wetland-dependent plant database to be made available on the internet and to establish a global Red List Index on freshwater wetland plants to inform wetland conservation worldwide.

Achievements by FPSG members include:

Red List Assessments

We have prepared another 400 Red List assessments for freshwater plants from Canada and the Tropical Andes. The IUCN Freshwater Biodiversity Unit (FBU) has a project to prepare Red List assessments of the freshwater plants of Madagascar coordinated by Missouri Botanic Garden who are working with Hery Lisy Ranarijaona on this. They have developed a list of freshwater species to assess.

Conservation

- Conservation strategy for *Stratiotes aloides* in Austria - Karl-Georg Bernhardt.
- Collection of endangered wetland plants in Austria for *ex situ* conservation - Karl-Georg Bernhardt.
- Establishing a network of experts and researchers working on aquatic bryophytes for studies on the ecology, distribution and conservation of fluvial bryophyte communities at the European scale - Freshwater bryophyte ecology group, Oporto University.
- Contributing to the "LIFE charcos" project (Life12/NAT/PT/997) for conservation of Mediterranean temporary ponds (3170*): adding some ponds not yet listed in their data base - U. Schwarzer.
- Assessment of the conservation status of the Brazilian Aquatic Flora (CNCFlora Program) - C.P. Bove and the Aquatic Plant Laboratory team of the National Museum of the Federal University of Rio de Janeiro (NMFU), Brazil.
- Contribution to the French National Conservation Action Plan for *Luronium natans* and follow-up work - François Pinet; François also aims to complete the survey of *L. natans* in the forested areas of the south of the Parc Naturel Regional de la Brenne (PNRB).
- Finalising a synthesis of information on *Marsilea quadrifolia* and continuing research into the conservation of *Caldesia parnassifolia* in the PNRB - F. Pinet.
- James Karimi has become a member of the WWF Italy task force on biodiversity and protected areas.

Survey and Research

- National survey of charophytes in Austria - Karl-Georg Bernhardt, Universität für Bodenkultur, Austria
- Research into the aquatic ecosystems of Bhojwetland (Bhopal), with records of 17 angiosperms and 37 algae - H.K. Goswami.
- Continuing mapping of water plant species (www.flora-on.pt Portuguese Botanical Society) - U. Schwarzer
- Continuing the documentation of the recently discovered and unprotected pools in bedrock exposures in the Lagoa area in the Algarve - U. Schwarzer.
- Inventory of the aquatic and wetland plants of Rio de Janeiro State, Brazil based on scientific collections and intensive field work - C.P. Bove and the Aquatic Plant Laboratory team of the NMFU.
- Gisla Jairam-Doerga is carrying out mapping and documentation of the aquatic plants of Suriname (mostly Northern Suriname), including herbarium collections stored in the National Herbarium of Suriname.
- Research into adaptations of *Cyperus fuscus* to environmental dynamics - Karl-Georg Bernhardt.
- François Pinet aims to study *Utricularia* in the PNRB including assessment of populations of *Utricularia minor* and *U. bremii* and research into the identity of an as yet unidentified *Utricularia* taxon.

Publications

- Publication of the procedures from the XXth Cryptogamic Botany Symposium, including 5 paper contributions, also 3 papers presented at conferences, 3 articles and a Global Biodiversity Information Facility (GBIF) data-set on the bryophyte collection of Porto Herbarium (PO) published - Freshwater bryophyte ecology group, Oporto University.

- Revision of a monograph on aquatic biodiversity, with particular reference to degradation of sexual organs in *Chara* species and decline in *Scenedesmus* biodiversity in increased polluted waterbodies - Freshwater bryophyte ecology group, Oporto University.
- Publications on the biology, management and conservation of Bhoj Wetland in Bhopal and on two invasive species, *Lantana camara* and *Hyptis suaveolens* - H.K. Goswami.
- 2 publications on the reproductive biology and conservation of Podostemaceae – Podostemaceae subgroup.
- Paper presented at the V Brazilian Congress on Marine Biology, 17-21 May 2015 on decreasing populations of *Halophila decipiens* in Rio de Janeiro, Brazil - C.P. Bove and the Aquatic Plant Laboratory team of the NMFU.
- Accounts of the conservation status of following families in press in the Journal of Botanical Garden of Rio de Janeiro (Rodriguésia): Cabombaceae, Ceratophyllaceae, Haloragaceae, Hydrocharitaceae, Hydroleaceae, Juncaginaceae, Mayacaceae, Menyanthaceae, Nymphaeaceae, Potamogetonaceae, Rhizophoraceae, Typhaceae - C.P. Bove and the Aquatic Plant Laboratory team of the NMFU.
- Klaus van de Weyer has contributed to publication of a guide to German charophytes: Arbeitsgruppe Characeen Deutschlands (Hrsg.) 2016 Armleuchteralgen - Die Characeen Deutschlands. Springer Spektrum as well as a number of scientific articles and reports.

Public awareness and education

- Briófitas (musgos) - Há vida no parque! – Talk and excursion in an urban green area open to the public with guest investigators and bryologists - Freshwater bryophyte ecology group, Oporto University.
- Organization of the XX Cryptogamic Botany Symposium in Oporto, 22-25 July 2015 - Freshwater bryophyte ecology group, Oporto University.
- Floristic Diversity of Killies habitats in the South American savannahs – Talk to the Portuguese Association of Kilifilia – C.P. Bove and the Aquatic Plant Laboratory team of the NMFU.
- Diversity and Conservation of Natural Heritage: the Aquatic Plants - Talk to a community of African's slavers descendents (Quilombola) – C.P. Bove and the Aquatic Plant Laboratory team of the NMFU.

Conservation of the Starfruit (*Damasonium alisma*)

Since 2013 we have been researching the conservation of Starfruit (*Damasonium alisma*), including preparation of an ecological profile, a number of small research projects, and the preparation of a global conservation action plan as the first in a series to be published by the FPSG.

The Starfruit has two distribution centres; a western area from England south through France to Portugal and probably to Italy and an eastern area from the eastern Ukraine through southern Russia to western Kazakhstan and possibly south as far as Turkey. It naturally occurs in complexes of wetlands supporting dynamic metapopulations, in which plants may not grow in every population each year but every year a similar number of populations will include plants. For a metapopulation to function something must enable dispersal of seed. Starfruit seed probably travel on the pelt of large herbivores, as well as being carried internally or externally by ducks. The decline in movement of animals between waterbodies, particularly in southern England, will also have contributed to the decline of this species. Unfortunately metapopulations have broken down in England and throughout much of France with healthy metapopulations only known in a few areas in western France.



Typical habitat for the Starfruit involves small field ponds in heathland or cattle-grazed unimproved pasture or poached areas within the draw-down zones of large waterbodies, although in western France it occurs in poached gateways and tracks which are deeply inundated in winter. It has also been recorded from ponds in arable fields, a seasonally inundated pit created by sand extraction, inundated tractor ruts, ditches and streams, but all of these appear to be sub-optimal. As is the case with a number of mud-plant species, the Starfruit shows no particularly strong relationship with soil types, soil chemistry, substrate type or the nutrient status of the water in which it occurs, although it is possible that it is adapted to naturally eutrophic water bodies on acid substrates. The most important stage in the life-cycle of the Starfruit is the seed bank because it occurs in habitats which are constantly either undergoing seral succession toward closed vegetation or subject to a process such as poaching or ploughing which suppresses perennial vegetation and arrests seral succession. Little is known about the seed-bank behaviour of the Starfruit, except that whilst it can certainly show extremely long seed dormancy, it is also likely that many seed are lost from the seed bank each year. There is some evidence to suggest that predation, particularly grazing of the developing fruit, may influence the survival of this species, but the effects are likely to be insignificant compared to those of habitat loss and degradation.

There have been extensive efforts to restore and introduce populations of Starfruit to sites in England, including mechanical and manual digging out of substrate, hand-pulling vegetation, planting and introduction of seed. In most cases, at best, these have resulted in a short period of recovery or growth of plants but none have had any long-term success. There is an urgent need for a programme of research and action to attempt to halt and reverse the decline in Starfruit populations. This needs to include clarification of the species status in southern France, Portugal, Italy, Ukraine, Russia, Kazakhstan and Turkey; research into the factors enabling persistence of self-sustaining populations in the core of its range, seed bank behaviour and the effects of different management practices, particularly more intensive poaching of ponds and opening up habitat than has been practised to-date, as well as establishment of a practical and effective monitoring protocol throughout the range of the species.

Callitriche pulchra formerly thought to be restricted to a few ponds on the island of Gavdos, south of Crete and the Cyrenaica region of Libya, found new to Cyprus and in more than 100 ponds on Gavdos. © R.V. Lansdown



Madagascar Plants on the IUCN Red List

Barbara Goettsch, Plants for People, IUCN Red List Unit, Global Species Programme

Key achievements

- A total of 231 Malagasy plant assessments were published on the IUCN Red List.
- 72% of Malagasy plant species with published assessments are under threat.
- A further 449 assessments have been processed.
- 500 assessments ready to be processed for publication.



Background

Madagascar is one of the main centres of plant diversity in the world with close to 12,000 species, of which an estimated 70-80% occur there and nowhere else in the world.

A wealth of information and assessments on close to 2,000 Malagasy plant species had been gathered in the past in the Data Entry Module (DEM) system which was the old version of IUCN's online database, Species Information Service (SIS). This information was in need of being migrated into SIS and updated in order to be published on the IUCN Red List of Threatened Species.

During 2014-2015 staff from the Global Species Programme (GSP) completed the hard task of migrating the records from the old DEM system to the new SIS system, making sure that all the taxonomy was compatible, and editing the assessments to current IUCN standards. Many of these assessments were lacking basic information, such as the threats affecting them and also the use and trade information.

The GSP has been working very closely with the IUCN SSC Madagascar Plant Specialist Group (MPSG) in order to complete the assessments. In March 2015 a review workshop was convened in Antananarivo, Madagascar, to complete the species assessments with the help of members of the MPSG (Picture below).



Madagascar expert Red List workshop, including the Chair, Jeannoda Vololoniaina (one in from the right), many members of the IUCN SSC Madagascar Plant Specialist Group and Global Species Programme staff. © Barbara Goettsch

During the workshop a total of 449 species were reviewed by 20 Malagasy plant experts from four institutions, including Missouri Botanical Garden and Royal Botanic Gardens, Kew (Pictures below).

Malagasy orchid experts reviewing the conservation status of species during the workshop.
© Barbara Goettsch



Malagasy plant experts reviewing the conservation status of species during the workshop.
© Barbara Goettsch



Results

The kind contribution of Environment Agency – Abu Dhabi (EAD) has enabled us to process 449 plant assessments from Madagascar, of which 231 have been already published on the IUCN Red List of Threatened Species, and a further 269 will be published in the next update of the IUCN Red List in 2016.

A further 500 assessments have been reviewed by the MSPG and will be checked for consistency to be published on the Red List in 2016.

From the 231 plant species assessments so far published, 72% are threatened with extinction, with 25% of species assessed as Critically Endangered, 37% as Endangered and 10% as Vulnerable (Figure 1). Only 1% of species are categorised as Data Deficient (Figure 1).

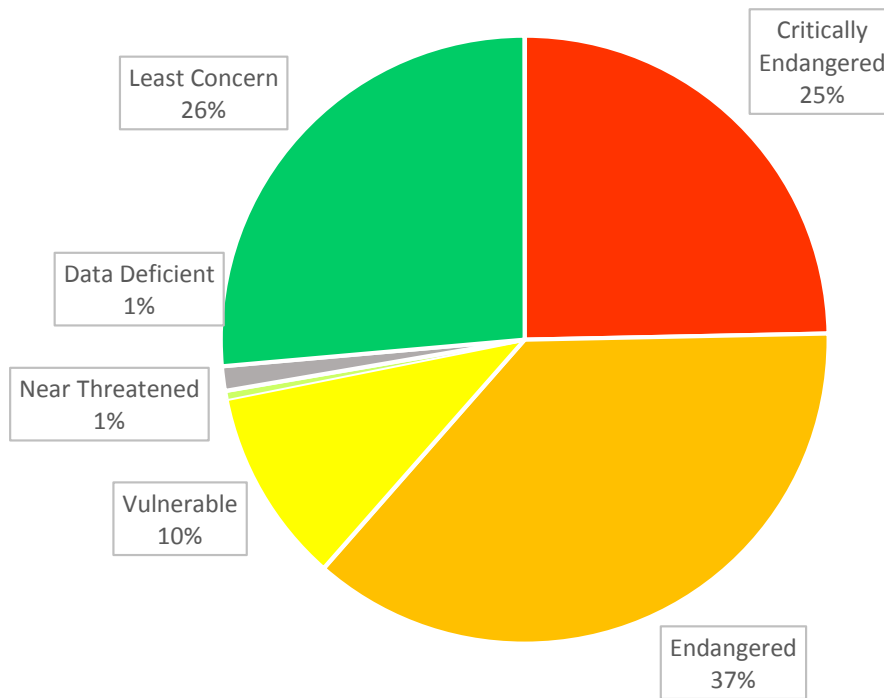


Figure 1. Percentage of Madagascar plant species in each of the IUCN Red List Categories (n =231 species).

Thanks to the generous contribution of EAD, in 2016 we will process and publish 769 Malagasy plant species assessments on the IUCN Red List of Threatened Species.

Palms on the IUCN Red List

Barbara Goettsch, Plants for People, IUCN Red List Unit, Global Species Programme
William Baker, Chair, IUCN SSC Palm Specialist Group, Royal Botanic Gardens, Kew
Luis R. Gonzalez Torres, Chair, IUCN SSC Cuban Plant Specialist Group
Raul Verdecia, Palm expert, IUCN SSC Cuban Plant Specialist Group
Ernesto Testé Lozano, Junior Associate, IUCN SSC Cuban Plant Specialist Group
Thomas Couvreur, IUCN SSC Palm Specialist Group

Key achievements

IUCN Red List assessments of Cuban palms

- We assessed the status of all taxa (43) in the genus *Coccothrinax*.
- We assessed the status of species (12) in the genus *Copernicia*.
- We assessed the status of the other 18 species of 9 genera (*Bactris*, *Colpothrinax*, *Gaussia*, *Hemithrinax*, *Prestoea*, *Pseudophoenix*, *Roystonea*, *Sabal* and *Thrinax*).
- Nine orchid experts from Cuba received training on Red Listing during the workshop to review the assessments of Cuban palms.

IUCN Red List assessments of African palms

- Preliminary assessments for 56 African palms have been carried out.
- Occurrence data has been gathered for all African palm species.
- A volunteer student has been trained on the application of the IUCN Red List Categories and Criteria.

Palms constitute the third most widely used plant family by humans in the tropics after legumes and grains. Palms in many cases are critical elements for human livelihoods, providing a wide variety of goods and products. Their leaves are used as fibre for thatch roofs, rugs, baskets, hats and many other crafts; the stems are used as wood for construction. Oils can be extracted from the pulp or kernel of palms; these oils are economically important and are used widely across the food and cosmetics industry. Also, the fruits and centre of the stems of many palm species are edible. In addition, these plants are sought as ornamentals with hundreds of species being commercialized all over the world. Palms are a key component of tropical forests, not only because of their abundance in terms of number of species and individuals, but for their importance as a food source for wild fauna.

Many characteristics of these plants make them highly susceptible to extinction, such as their slow growth rate (many of them take 25 years or more to reach reproductive maturity) and the high levels of extraction they experience. Even though there are many reasons to believe these plants can be highly threatened with extinction, to date only 550 of the 2,585 known palm species have been globally assessed for the IUCN Red List of Threatened Species.

With the kind contribution of Environment Agency – Abu Dhabi (EAD) and in close collaboration with the IUCN SSC Palm Specialist Group (PSG) and Cuban Plant Specialist Group (CPSG), we are assessing palms in one of the most diverse centers, Cuba, and also all species occurring in the African continent.

IUCN Red List assessments of Cuban palms

by Luis R. Gonzalez Torres, Raul Verdecia and Ernesto Testé Lozano

Background

Cuba is the richest palm hotspot in the Caribbean with over 80 species in 14 genera recorded to date, almost all of which are endemic. It includes major palm radiations, such the genera *Coccothrinax* and *Copernicia*. To date, the majority of Cuban palms have undergone preliminary assessment by the CPSG. The kind contribution of EAD will help to mobilize these assessments for publication on the IUCN Red List and to carry out the necessary field work to complete the assessment of some palm species, e.g. *Roystonea violacea*, *Hemithrinax compacta*, *Coccothrinax acunana* and *Copernicia fallaensis*.



Hemithrinax compacta is in need of further field research in order to assess its conservation status. Here seen in cultivation. © Scott Zona.

In November 2015, an expert workshop was convened in Varadero, Matanzas, Cuba, to assess the conservation status of Cuban palms. We here present the preliminary results.



Members of the Cuba Plant Specialist Group assessing the conservation status of palms at the workshop.

Summary results of Red List assessments

The preliminary results of the Red List workshop assessment for Cuban palms show that 62% of the taxa are threatened with extinction and only 25% of Cuban palms are not threatened. One species, *Roystonea stellata* Leon, is Extinct (Figure 1).

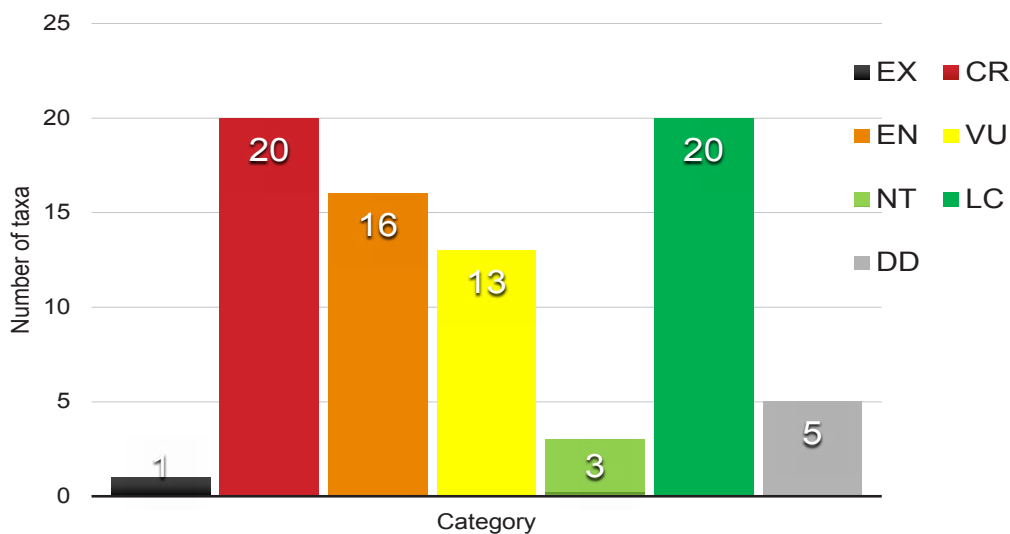


Figure 1. Number of Cuban palm species in each IUCN Red List Category.

The genus *Coccothrinax* is the most diverse genus of palms in Cuba and the one with the higher number of threatened species. In total it accounts for 32 threatened taxa (Figure 2). *Copernicia* accounts for a further six threatened taxa.

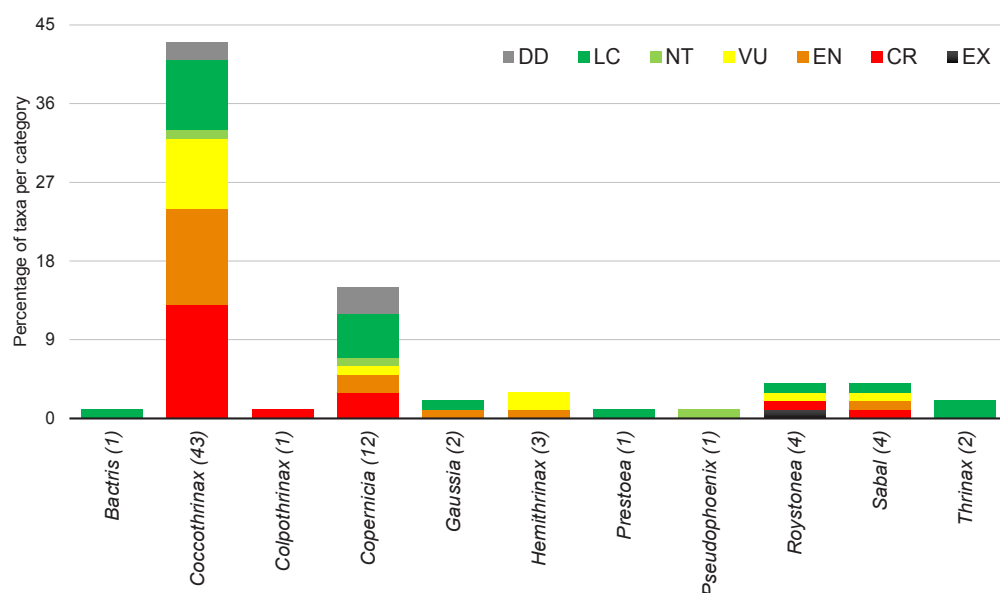


Figure 2. The threatened status of Cuban palms by genera. The number of taxa per genus is indicated in parenthesis.

Major threats to Cuban palms

Deforestation, fires, habitat fragmentation, species invasions and livestock are the main threats to Cuban palms affecting more than 33% of the taxa native to the island. Overexploitation is also a major threat for 23 taxa (Figure 3).

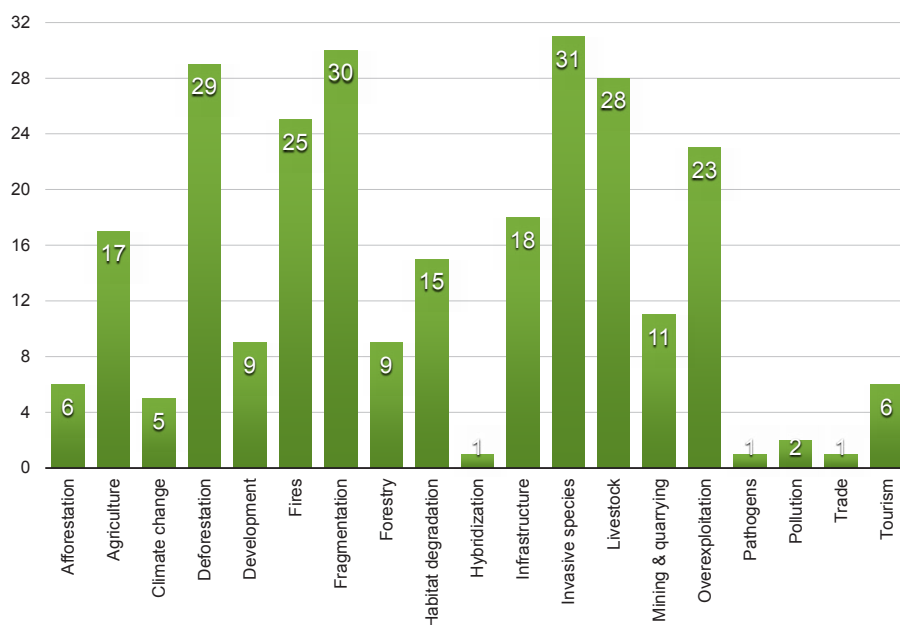


Figure 3. Main threats to Cuban palms.

Next steps

1. Cuban palm assessments will be entered on the IUCN Species Information Service (SIS).
2. Fieldwork will be conducted to complete the information on the following species *Roystonea violacea* (June 2016), *Hemithrinax compacta* (May 2016), *Coccothrinax acunana* (May 2016) and *Copernicia fallaensis* (February 2016).

IUCN Red List assessments of African palms

by Thomas Couvreur

During the first phase of the project to assess all 65 species African palms, we built capacity by training Ariane Cosiaux at a Red List Assessors Training Workshop ran by the IUCN's Global Species Programme in Brussels. She is responsible for helping with the African palm Red List assessments.

Spatial data were gathered for all species using a new Africa-wide database of plant species occurrences (RAINBIO). With the extracted distribution information for all palm species, the basic IUCN parameters to assess extinction risk were generated: extent of occurrence, area of occupancy, number of unique collections, number of locations as well as distribution maps (cf Figure 1). A preliminary status was then computed for all species (under criterion B) in order to help prioritize the assessments. For that we used a new R package called ConR (Dauby, Debaluwe, Stévant & Couvreur, in prep).

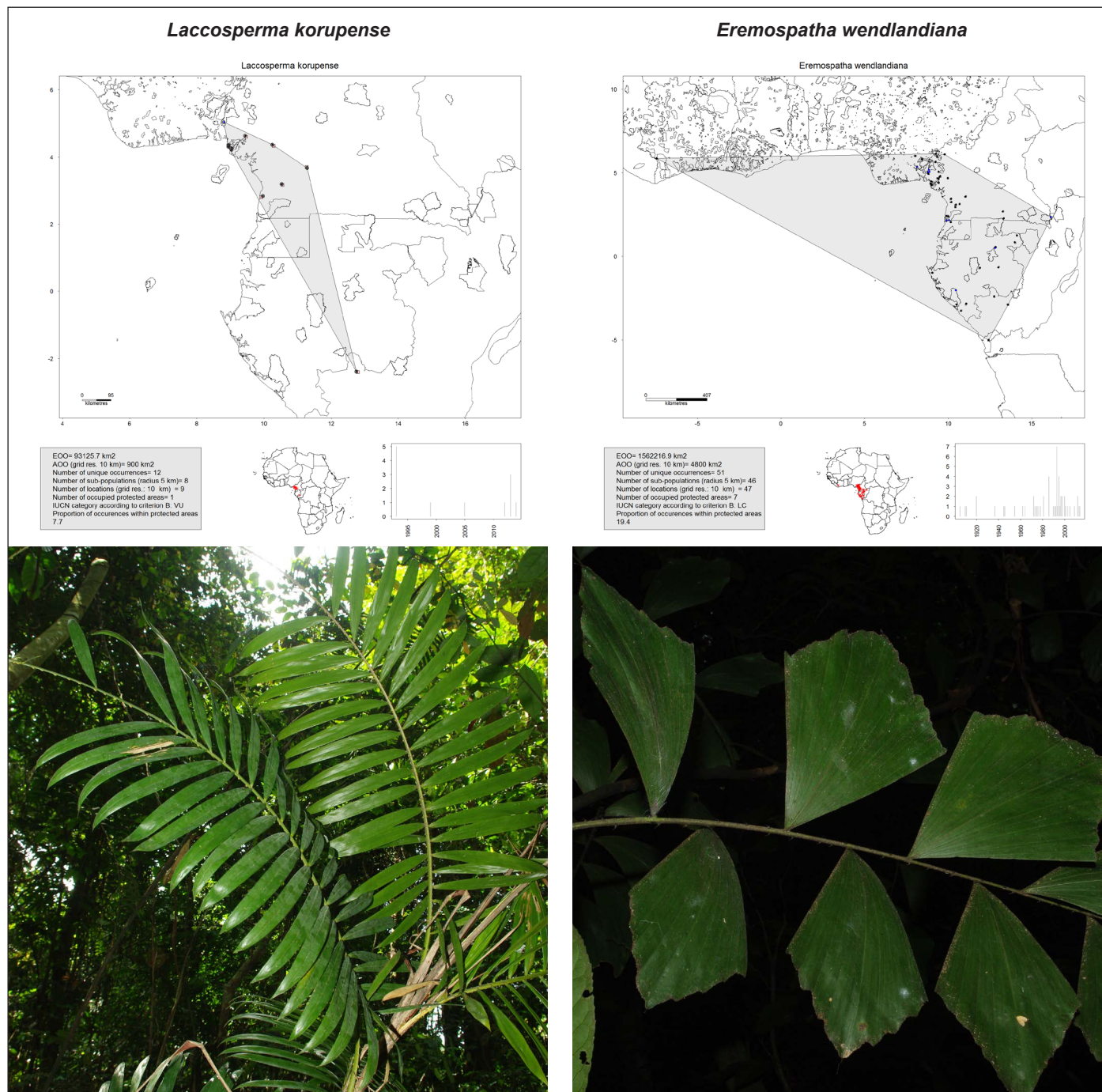


Figure 1. Two examples of our preliminary assessment for African palms. The top figures show the raw output of the ConR package for two selected species. These figures are then used to undertake the full assessments for each species. The bottom two figures are photos of each selected species. *Laccosperma korupense* (which is provisionally Vulnerable) and *Eremospatha wendlandiana* (which is provisionally Least Concern).

The **preliminary** results (Figure 2) of this analysis suggest that a single species is potentially Critically Endangered (*Dypsis pembana*) and 6 Endangered (but these are raw results, and more work needs to be done to confirm the status).

Ariane also undertook a few field trips across Cameroon (using other funding) to increase her understanding of palms in the field.

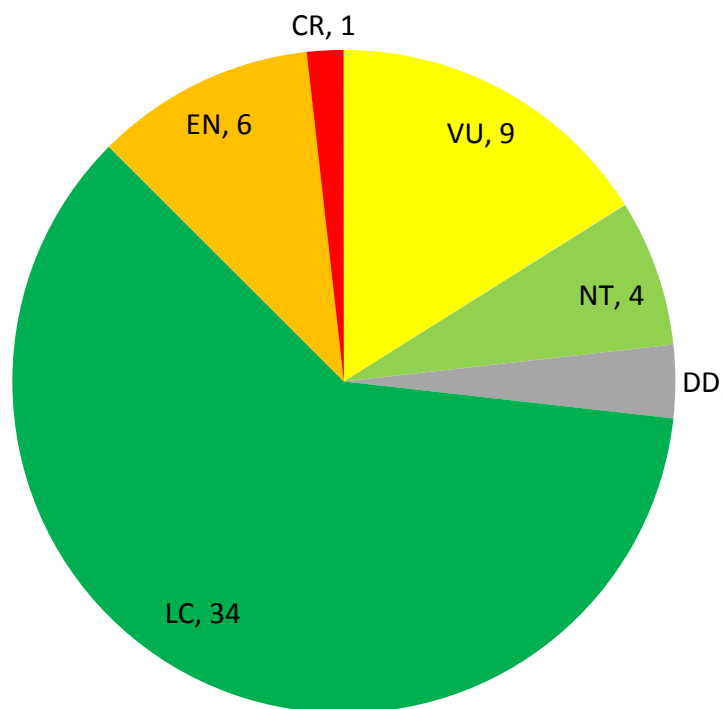


Figure 2. Preliminary assessment of African palms based on the RAINBIO database.

The next phase will be to start writing the full assessments for the highest priority species (provisionally Critically Endangered and Endangered species) and concluding with the Least Concern ones.

Ariane plans to visit the Royal Botanic Gardens, Kew in May 2016 for 1-2 weeks in order to check and finalize her assessments. She will also present her results at the European Network of Palms Specialists in May.

Crop Wild Relatives on the IUCN Red List

Shelagh Kell, Coordinator, IUCN SSC Crop Wild Relative Red List Authority

Nigel Maxted, Co-Chair, IUCN SSC Crop Wild Relative Specialist Group

Laura Rhodes, University of Birmingham

Key achievements

- The Crop Wild Relative Specialist Group has undertaken preliminary IUCN Red List assessments of 267 global priority crop wild relative species – species harbouring genetic diversity which may be critical for future food security and sustainable development.
- Preliminary analysis reveals that around 6% of these species are known to be threatened and worryingly that 30% are Data Deficient, highlighting the lack of data available, especially concerning population information such as size, status and trends.
- Further research to increase the knowledge base for crop wild relatives is vital in order to define and implement the complementary and strategic conservation actions required to ensure the availability of these resources for crop improvement.

Summary

Crop wild relatives (CWR) are wild plant species related to the many socio-economically important crops cultivated across the world for food, forage, fodder, beverages, food additives, oils, fibres, medicinal products, ornamentals and timber, and which contain a wide pool of genetic diversity of value for crop improvement. CWR are therefore an important resource for the maintenance of food security and for safeguarding the world's agricultural-based economy. However, despite their recognized value, the conservation of CWR has been largely neglected, in part due to the disconnection between the agencies responsible for the conservation of plant genetic resources for food and agriculture, and those responsible for the conservation of wild plant populations in general or the habitats in which they grow.

There is an imperative to develop and implement a comprehensive global strategy for complementary (*in situ* and *ex situ*) conservation of the most valuable CWR genetic resources because historically these taxa have fallen between the conservation priorities of both the agricultural and conservation communities. One step in this process is to ascertain the Red List status of global priority CWR in order to increase our knowledge of the status of *in situ* populations, raise the profile of CWR on the biodiversity conservation agenda, and to inform conservation planning.

In the first comprehensive assessment of the threatened status of CWR, 572 European species in 25 economically important crop gene pools/groups were assessed (Bilz *et al.* 2011, Kell *et al.* 2012). Species endemic to the region (183) are published in



Aegilops cylindrica © Pavol Elias



the IUCN Red List of Threatened species, but to date these are the only global Red List assessments of CWR published, apart from a relatively small number of species that have been assessed in the context of projects focusing on the assessment of wild plant species at national, regional or taxonomic levels, rather than because of their particular value as CWR. In the current project, IUCN Red List assessments of global priority CWR species have been undertaken as a component of the Plants for People initiative—the first comprehensive global assessment of these important socio-economically species. Here, we report on the preliminary results of the assessment of 267 species¹. Seventeen species (6.3%) were found to be threatened, while 60.7% were assessed as Least Concern (LC) and a further 29.6% as Data Deficient (DD).

Threatened species are in urgent need of conservation actions, while monitoring and management of species in decline is critical regardless of their Red List status. The research highlighted the lack of data available for many CWR species, especially concerning population information such as size, status and trends.

Further research to increase the knowledge base for CWR is vital in order to define and implement the complementary and strategic conservation actions required to ensure the availability of these resources for crop improvement for future food security.

¹The assessments are currently under review in preparation for publication.

Crop wild relative species assessed

The sample of 267 species was selected from the 1,667 taxa in 108 genera contained in the Harlan and de Wet CWR Inventory (Vincent *et al.*, 2013)—an inventory of globally important CWR taxa. Eighteen genera were selected from this list of 108 genera and the 546 CWR taxa within these genera were then filtered, including taxa on the basis of three criteria:

1. Taxa that were not already being assessed in the context of other global Red List projects;
2. Taxa that are included in Annex 1 of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA – FAO, 2001);
3. Excluding sub-specific taxa and hybrids (the IUCN Red List in any case does not cover hybrids).

The families and genera containing the 267 species assessed and the crops to which the species are related are shown in Table 1. Note that the final list of species is contained in 21 genera due to issues of nomenclature².

Table 1. Families and genera containing the 267 CWR species assessed and the crops to which the species are related.

Family	Genera	Crops to which the assessed are related
Alliaceae	<i>Allium</i>	Onion (<i>Allium cepa</i>)
		Chinese scallion (<i>A. chinense</i>)
		Welsh onion (<i>A. fistulosum</i>)
		Leek (<i>A. porrum</i>)
		Garlic (<i>A. sativum</i>)
		Chives (<i>A. schoenoprasum</i>)
		Chinese chives (<i>A. tuberosum</i>)
Anacardiaceae	<i>Mangifera</i>	Mango (<i>Mangifera indica</i>)
	<i>Pistacia</i>	Pistacio (<i>Pistacia vera</i>)
Aquifoliaceae	<i>Ilex</i>	Yerbe maté (<i>Ilex paraguariensis</i>)
Asparagaceae	<i>Asparagus</i>	Asparagus (<i>Asparagus officinalis</i>)
Compositae (Asteraceae)	<i>Helianthus</i>	Sunflower (<i>Helianthus annuus</i>)
Leguminosae (Fabaceae)	<i>Lupinus</i>	White lupin (<i>Lupinus albus</i>)
		Blue lupin (<i>L. angustifolius</i>)
		Sandplain lupin (<i>L. osentinii</i>)
		Yellow lupin (<i>L. luteus</i>)
		Andean lupin (<i>L. mutabilis</i>)
	<i>Medicago</i>	Alfalfa/Lucerne (<i>Medicago sativa</i>)
		Barrel medic (<i>M. truncatula</i>)
	<i>Vicia</i>	Monantha vetch (<i>Vicia articulata</i>)
		Bitter vetch (<i>V. ervilia</i>)
		Faba bean (<i>V. faba</i>)
		Narbon bean (<i>V. narbonensis</i>)
		Hungarian vetch (<i>V. pannonica</i>)
		Common vetch (<i>V. sativa</i>)
	<i>Vigna</i>	Adzuki bean (<i>Vigna angularis</i>)
		Black gram/Urdu bean (<i>V. mungo</i>)
		Mung bean (<i>V. radiata</i>)
		Bambara groundnut (<i>V. subterranea</i>)
		Rice bean (<i>V. umbellata</i>)
		Cowpea (<i>V. unguiculata</i>)
Gramineae (Poaceae)	<i>Aegilops</i>	Wheat (<i>Triticum aestivum</i>)
	<i>Avena</i>	Common Oat (<i>Avena sativa</i>)
	<i>Eleusine</i>	Finger/African Millet (<i>Eleusine coracana</i>)
	<i>Hordeum</i>	Barley (<i>Hordeum vulgare</i>)
	<i>Pennisetum</i>	Pearl Millet (<i>Pennisetum glaucum</i>)
Rosaceae	<i>Malus</i>	Apple (<i>Malus pumila</i>)
	<i>Amygdalus</i>	Almond (<i>Prunus dulcis</i>), Apricot (<i>P. armeniaca</i>), Sweet cherry (<i>P. avium</i>), Sour cherry (<i>P. cerasus</i>), Myrobalan plum (<i>P. cerasifera</i>), Plum (<i>P. domestica</i>), Japanese plum (<i>P. salicina</i>), Peach (<i>P. persica</i>)
	<i>Armeniaca</i>	
	<i>Cerasus</i>	
	<i>Padus</i>	

² The genus *Prunus* was split into *Amygdalus*, *Armeniaca*, *Cerasus* and *Padus*.

Preliminary Red List status

Of the 267 CWR species preliminarily assessed under this project, 17 (6.3%) are threatened (Critically Endangered (CR) – two species; Endangered (EN) – nine species; Vulnerable (VU) – six species) and eight Near Threatened (NT). One species, *Mangifera casturi* Kosterm., was previously known from the wet climate area around Banjarmasin in Indonesia but has been identified as Extinct in the Wild (EW) in previous assessments (Walter and Gillett, 1998). As no evidence to contradict this could be found, this category is maintained and the species is now only thought to be found in cultivation. The majority (60.7% or 162 species) were assessed as Least Concern (LC), and a further 29.6% (79 species) as Data Deficient (DD). A summary of these results is presented in Table 2 and Figure 1. Table 3 lists the species assessed as threatened, Near Threatened (NT) or Extinct in the Wild (EW).

Table 2. Summary of numbers of CWR within each IUCN Red List Category

IUCN Red List Category	No. species
Extinct in the Wild (EW)	1
Critically Endangered (CR)	2
Endangered (EN)	9
Vulnerable (VU)	6
Near Threatened (NT)	8
Least Concern (LC)	162
Data Deficient (DD)	79
Total evaluated species	267

The proportion of threatened species (6.3%) is a minimum estimate of threat. A more realistic view may be considered if those species that are no longer extant in the wild or those for which we do not have sufficient data (EW and DD species) are excluded (Bilz *et al.*, 2011). With these conditions and assuming that the proportion of threatened species is consistent within the DD group, at least 9.1% of the CWR species assessed may be considered as globally threatened.

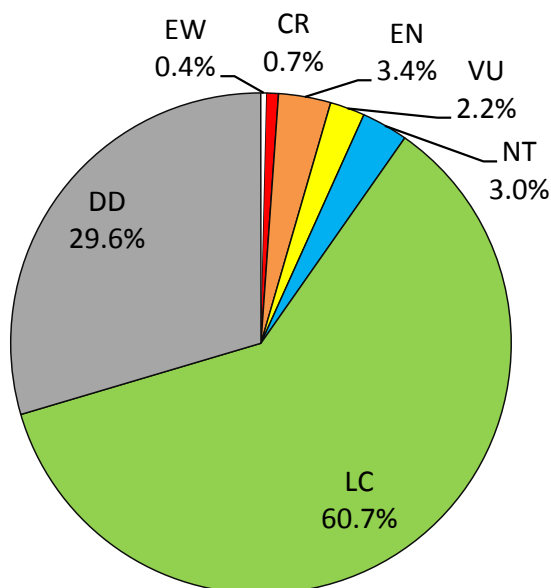


Figure 1. Red List status of the 267 CWR species assessed.

Table 3. CWR species assessed as Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU) and Near Threatened (NT).

Family	Species	Category	Criteria
ANACARDIACEAE	<i>Mangifera casturi</i>	EW	NA
LEGUMINOSAE	<i>Vigna monantha</i>	CR	B1ab(iii)
ROSACEAE	<i>Prunus murrayana</i>	CR	D
ANACARDIACEAE	<i>Mangifera austro-indica</i>	EN	B1ab(iii,iv,v)
ANACARDIACEAE	<i>Mangifera dongnaiensis</i>	EN	A2c
ANACARDIACEAE	<i>Mangifera minutifolia</i>	EN	B1ab(ii,iii)+2ab(ii,iii)
ANACARDIACEAE	<i>Pistacia mexicana</i>	EN	A2c
ASPARAGACEAE	<i>Asparagus kiusianus</i>	EN	B1ab(iii,iv,v)
LEGUMINOSAE	<i>Vicia hyaeniscyamus</i>	EN	B1ab(iii,iv)+2ab(iii,iv)
LEGUMINOSAE	<i>Vicia kalakhensis</i>	EN	B1ab(iv)+2ab(iv)
LEGUMINOSAE	<i>Vigna keraudrenii</i>	EN	B2a(i-v)
ROSACEAE	<i>Malus komarovii</i>	EN	B1ab(iii)
ANACARDIACEAE	<i>Mangifera andamanica</i>	VU	B1ab(iii)
ANACARDIACEAE	<i>Mangifera collina</i>	VU	B1ab(iii)
ANACARDIACEAE	<i>Mangifera flava</i>	VU	B1ab(i,ii,iii)+2ab(i,ii,iii)
ANACARDIACEAE	<i>Mangifera pentandra</i>	VU	B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)
COMPOSITAE	<i>Helianthus paradoxus</i>	VU	A2c
LEGUMINOSAE	<i>Vicia tigridis</i>	VU	D2
ALLIACEAE	<i>Allium roylei</i>	NT	VU A2(d)
COMPOSITAE	<i>Helianthus anomalus</i>	NT	VU B1ab(iii,v)+2ab(iii,v)
COMPOSITAE	<i>Helianthus exilis</i>	NT	EN B2ab(iv,v)
GRAMINEAE	<i>Hordeum guatemalense</i>	NT	EN B2a
LEGUMINOSAE	<i>Vicia esdraelonensis</i>	NT	VU B1ab(i, iii)
LEGUMINOSAE	<i>Vicia qatmensis</i>	NT	EN B1ab(i-iv)+2ab(i-iv)
ROSACEAE	<i>Amygdalus texana</i>	NT	VU B1ab(iv)
ROSACEAE	<i>Prunus maritima</i>	NT	B2a

Major threats to CWR

Threats were recorded for 54% (144) of the species assessed. The number of threats per species ranges from one to 25, with an average of six. 'Housing and urban areas' (103 species), 'livestock farming and ranching' (85 species), and 'logging and wood harvest' (79 species) were the most frequently recorded threats to these species (Figure 2).

However, a relatively low proportion of species affected by these threats were assigned a threatened status, while for some other threats the proportion of affected species that are threatened is much higher (e.g., eight of the 15 species affected by the establishment of wood and pulp plantations, two of the four species impacted by dams and water management/use, and 20 of the 47 species affected by the cultivation of annual and perennial non-timber crops).

While this suggests that these threats are more likely to result in a high species extinction risk, care must be taken when interpreting threats data such as these because most species are subject to more than one threat at any given time and the cumulative effect of different combinations of these may produce different effects.

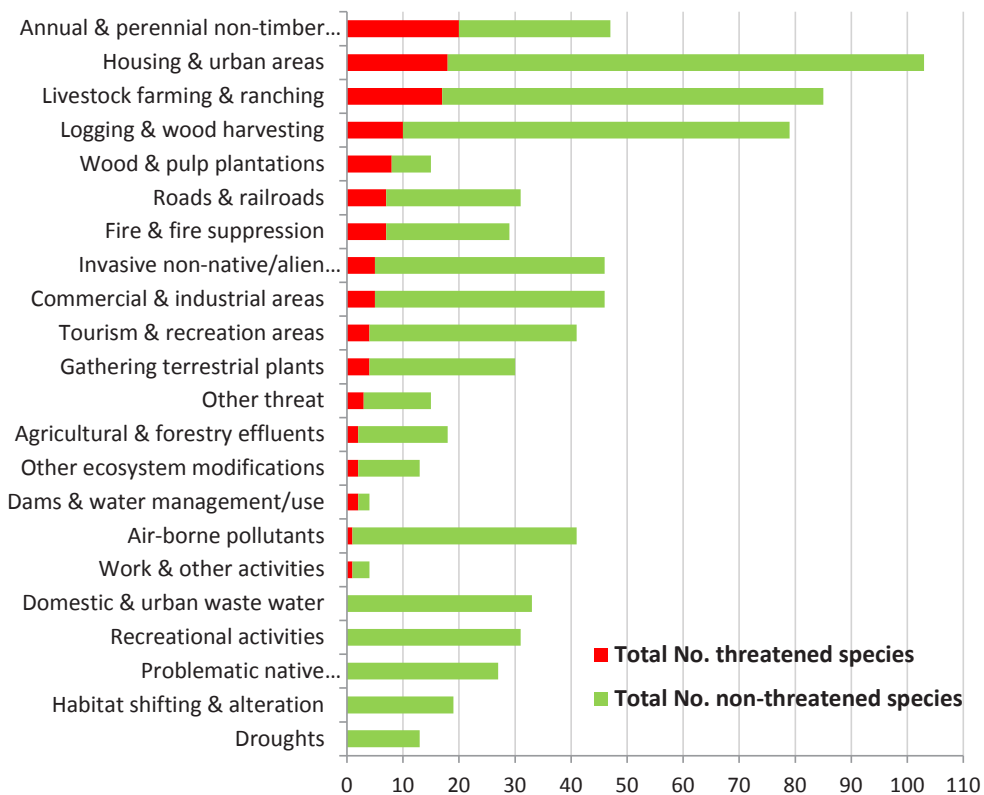


Figure 2. The most common, ongoing threats to CWR on a global scale (only threats recorded more than ten times are included).

Population trends

Population trends are ‘stable’ for 54.5% of the species, the majority of which were classified as Least Concern (LC). However, one threatened species, *Helianthus paradoxus* (Vulnerable – VU) is considered to have a stable population, while four species with stable population trends were assessed as Data Deficient (DD). Only three species have an increasing population trend and all of these were assessed as Least Concern (LC). Population trends are unknown for 81 species (30.5%), 61 of which were classified as Data Deficient (DD), while decreasing population trends were recorded for 37 species (13.8%). Of these, 40.5% were assessed as threatened or Near Threatened (NT), while 37.8% were globally assessed as Data Deficient (DD) and only 10.8% as Least Concern (LC). These results are summarized in Figure 3.

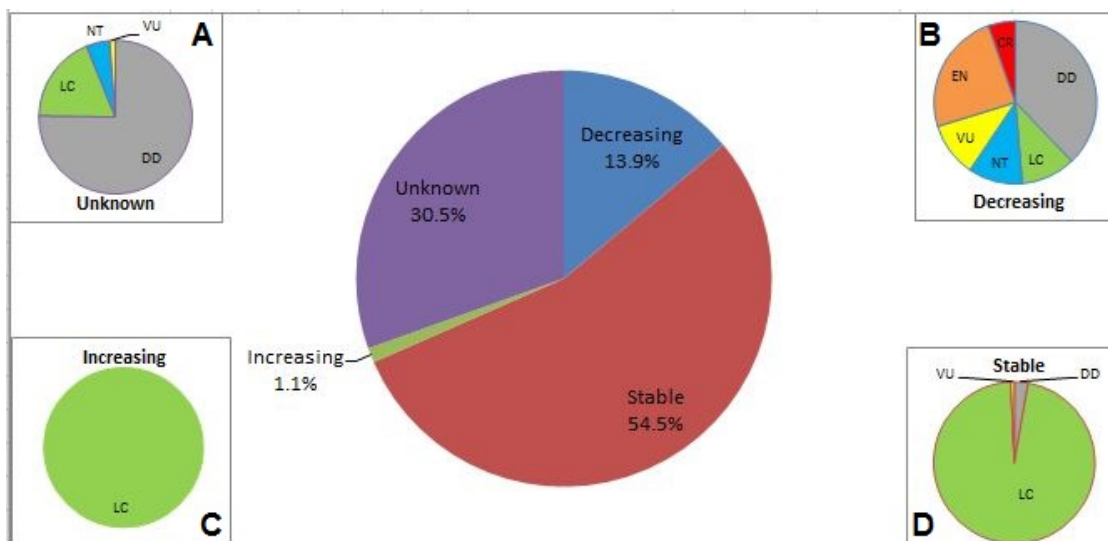


Figure 3. Population trends of the CWR species assessed (central pie chart). Proportional representation of Red List Categories for species classified as having A) an unknown global population trend, B) a decreasing global population trend, C) an increasing global population trend, or D) a stable global population trend.

Implications of the results

Red List assessments are not meant to be used on their own to prioritize conservation actions but are a highly effective tool when used in conjunction with knowledge of other factors such as ecological and cultural attributes of the conservation target, financial cost and availability of funds, effective use of resources (financial and otherwise), and predicted success and sustainability of conservation actions. The results of the assessment of this initial sample of globally important CWR offer a valuable contribution to strategic, holistic conservation planning. Furthermore, the supporting documentation gathered for the assessments is invaluable to inform conservation planning of individual species.

The results also highlight gaps in our knowledge of CWR which need to be addressed. Population data were the most difficult to source, and while sufficient information was often available to calculate extent of occurrence (EOO), estimations of area of occupancy (AOO) were difficult or impossible to establish for many CWR species as good quality, comprehensive occurrence data are often lacking. More research, including *in situ* fieldwork and data collection is an important implication for those species assessed as Data Deficient (DD), especially given that some of these are known to be suffering from population or habitat decline. CWR species suffering declines should have management and monitoring put in place wherever possible, even when assessed as Least Concern (LC), as these species could potentially become threatened if negative population trends continue to be disregarded. The threatened and Near Threatened (NT) species are all exposed to a unique mélange of threats and occur in various different habitat types with dissimilar biological requirements, thus leading to potentially conflicting management needs. However, in most cases more general recommendations for active CWR conservation include population monitoring and management *in situ* alongside collection of germplasm resources for complementary *ex situ* conservation to facilitate future use by plant breeders and other stakeholders.

With these general recommendations in mind, some high priority CWR species requiring complementary (*in situ* and *ex situ*) conservation actions based on the results of these assessments were identified (Table 4).

Table 4. CWR species requiring complementary conservation actions based on their Red List Categories, decline in extent and/or quality of habitat, and decline in population size.

Species	Red List Category	Criteria	<i>Ex situ</i> ?	<i>In situ</i> ?
<i>Vigna monantha</i>	CR	B1ab(iii)	Y	Y
<i>Prunus murrayana</i>	CR	D	Y	Y
<i>Mangifera dongnaiensis</i>	EN	A2c	Y	Y
<i>Mangifera minutifolia</i>	EN	B1ab(ii,iii)+2ab(ii,iii)	Y	Y
<i>Malus komarovii</i>	EN	B1ab(iii)	Y	Y
<i>Mangifera austro-indica</i>	EN	B2ab(i,ii,iii,iv,v)	Y	Y
<i>Pistacia mexicana</i>	EN	A2c	Y	Y
<i>Vigna keraudrenii</i>	EN	B2ab(i,ii,iii,iv,v)	Y	Y
<i>Vicia hyaeniscyamus</i>	EN	B1ab(iii,iv)+2ab(iii,iv)	N	Y
<i>Vicia kalakhensis</i>	EN	B1ab(iv)+2ab(iv)	Y	Y
<i>Asparagus kiusianus</i>	EN	B1ab(iii,iv,v)	Y	Y
<i>Mangifera andamanica</i>	VU	B1ab(iii)	Y	Y
<i>Mangifera pentandra</i>	VU	B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)	Y	N
<i>Mangifera flava</i>	VU	B1ab(i,ii,iii)+2ab(i,ii,iii)	Y	Y
<i>Mangifera collina</i>	VU	B1ab(i,ii,iii)	N	N
<i>Helianthus paradoxus</i>	VU	A2c	N	Y
<i>Allium roylei</i>	NT		Y	N
<i>Helianthus anomalus</i>	NT		N	Y
<i>Helianthus exilis</i>	NT		Y	N
<i>Amygdalus texana</i>	NT		Y	N
<i>Mangifera quadrifida</i>	LC		N	N
<i>Hordeum secalinum</i>	LC		N	Y
<i>Mangifera minor</i>	LC		Y	Y
<i>Hordeum comosum</i>	LC		N	Y
<i>Mangifera applanata</i>	DD		Y	Y

Table 4 (continued).

Species	Red List Category	Criteria	Ex situ ?	In situ ?
<i>Vigna hosei</i>	DD		Y	N
<i>Vicia assyriaca</i>	DD		Y	N
<i>Pistacia weinmannifolia</i>	DD		Y	Y
<i>Eleusine intermedia</i>	DD		Y	Y
<i>Amygdalus minutiflora</i>	DD		Y	Y
<i>Amygdalus mira</i>	DD		Y	Y
<i>Amygdalus pedunculata</i>	DD		Y	N
<i>Armeniaca mandshurica</i>	DD		Y	Y
<i>Cerasus pseudocerasus</i>	DD		Y	Y
<i>Cerasus serrula</i>	DD		Y	N
<i>Malus chitralensis</i>	DD		Y	Y
<i>Prunus bifrons</i>	DD		Y	N
<i>Medicago papillosa</i>	DD		Y	N

Next steps

The SSC Crop Wild Relatives Specialist Group (CWRSG) is aiming to publish IUCN Red List assessments of all species included in the Harlan and de Wet Inventory and is continuing with this work with an initial focus on the highest priority crop complexes in terms of their value for food security. However, further resources are needed to complete the extensive work necessary for the hundreds of species requiring assessment.

Continuous reassessment of all CWR species will be necessary at regular intervals. IUCN (2001) recommends reassessment every ten years or when important information concerning threat and extinction risk becomes available, especially for Data Deficient (DD) species. Where possible, the establishment of sustainable monitoring and management for these species would prove useful as this would facilitate evaluation of trends over time and these species could be added to the Red List Index (RLI) where these trends would serve as indicators for the diversity of CWR as a set of species (Bubb *et al.*, 2009).

References

- Bilz, M., Kell, S.P., Maxted, N. and Lansdown, R.V. (2011) *European Red List of Vascular Plants*. Luxembourg: Publications Office of the European Union. http://ec.europa.eu/environment/nature/conservation/species/redlist/downloads/European_vascular_plants.pdf
- Bubb, P.J., Butchart, S.H.M., Collen, B., Dublin, H., Kapos, V., Pollock, C., Stuart, S. N. and Vié, J-C. (2009) *IUCN Red List Index – Guidance for National and Regional Use*. Gland, Switzerland: IUCN.
- FAO (2001) *International Treaty on Plant Genetic Resources for Food and Agriculture*. Food and Agriculture Organization of the United Nations. Available online: www.planttreaty.org/
- IUCN (2001) *IUCN Red List Categories and Criteria: Version 3.1*. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK. www.iucnredlist.org/technical-documents/categories-and-criteria
- Kell, S.P., Maxted, N. and Bilz, M. (2012) European crop wild relative threat assessment: knowledge gained and lessons learnt. In: Maxted, N., Dulloo, M.E., Ford-Lloyd, B.V., Frese, L., Iriondo, J.M., Pinheiro de Carvalho, M.A.A. (eds.) *Agrobiodiversity Conservation: Securing the Diversity of Crop Wild Relatives and Landraces*. CAB International, Wallingford. Pp. 218–242.
- Vincent, H., Wiersema, J., Kell, S., Fielder, H., Dobbie, S., Castaneda, N., Guarino, L., Eastwood, R., León, B. and Maxted, N. (2013) A prioritized crop wild relative inventory to help underpin global food security. *Biological Conservation* 167, 265–275.
- Walter, K.S. and Gillett, H.J. (eds.) (1998) *1997 IUCN Red List of Threatened Plants*. Compiled by the World Conservation Monitoring Centre. IUCN – The World Conservation Union, Gland, Switzerland and Cambridge, UK, pp. 862.

Carnivorous Plants on the IUCN Red List

Robert Cantley, Chair, IUCN SSC Carnivorous Plant Specialist Group

Charles Clarke, Coordinator, IUCN SSC Carnivorous Plant Red List Authority

Marcel van den Broek, Communications Officer, IUCN SSC Carnivorous Plant Specialist Group

Key achievements

- Assessed and submitted for review the remaining 70 previously unassessed species of *Nepenthes* pitcher plants. This completes assessments for all 160 species in the genus.
- Assessments continue to be entered into the Species Information Service (SIS) for species in genera of carnivorous plants other than *Nepenthes*.
- A Red Listing workshop has been planned and scheduled for early August 2016. Funding is now secured through a successful online campaign. Eminent volunteer specialists have been selected and invited.
- A direct conservation action was initiated at a high-level, in a bid to prevent the imminent extinction of *Nepenthes suratensis*.
- Overall membership has been increased by over 50% and public awareness raised by the creation and careful maintenance of several new Facebook Pages.
- By the end of 2015 we had a general membership of 112 with 7 actively engaged Specialist members.

Introduction

2015 was the SSC Carnivorous Plant Specialist Group (CPSG)'s most active year to date, mainly due to the generosity of the ever-increasing number of volunteer experts, who continue to donate, their time and expertise to further the goals of the CPSG in various ways.

At the end of 2014 we set ourselves a challenging set of targets for 2015, which include the first three items in the list below, and expanded with items four and five as the year progressed.



1. Continue to assess the conservation status of all species of carnivorous plants. Priority was given to completion of assessments of the 70 species of *Nepenthes*, pitcher plants which were still unassessed. This is the genus perceived as being generally under the highest levels of threat and therefore in most need of assessment efforts.
2. Assist and encourage other organizations to help prevent imminent extinction events, or help to reduce and maybe reverse population decline in species assessed as Critically Endangered. Where other organizations cannot be found to carry out necessary conservation action, the CPSG might initiate direct conservation action.
3. Continue to increase the CPSG membership and raise public awareness through social media networking. At the beginning of the year, 70 of the 160 validly described species of *Nepenthes* still remained to be assessed for the IUCN Red List. Assessments of the balance 70 species to be completed and submitted to the IUCN Red List and ready for review by end 2015.
4. A concerted and sustained fund-raising campaign would be mounted to cover the costs involved with completing assessment of all carnivorous plants, including those Data Deficient species located in remote and inaccessible areas.
5. A Red Listing workshop is scheduled to be held at the Royal Botanic Gardens, Kew in August 2016.



1. Completion of Red List assessments on all 70 remaining species of *Nepenthes* tropical pitcher plants

This particularly challenging goal was coordinated by the CPSG's Red List Authority Coordinator Charles Clarke and was only made possible due to the generosity of the Environment Agency – Abu Dhabi, to whom we extend our heartfelt thanks.

Assessments have been entered into the Species Information Service (SIS) and await final review before publication on the Red List website. In all, 70 previously unassessed species were assessed in 2015 (Table 1). The entire genus of 160 validly described *Nepenthes* species has now been assessed for the IUCN Red List.

Nepenthes species assessed in 2015

Table 1. *Nepenthes* species assessed for the IUCN Red List in 2015 as DD= Data Deficient; LC= Least Concern; NT= Near Threatened; VU= Vulnerable; EN= Endangered; CR= Critically Endangered.

Species	Red List Category	Species	Red List Category
<i>abalata</i>	DD	<i>lingulata</i>	CR
<i>abgracilis</i>	DD	<i>macfarlanei</i>	LC
<i>alba</i>	LC	<i>macrophylla</i>	CR
<i>appendiculata</i>	LC	<i>masoalensis</i>	CR
<i>armin</i>	LC	<i>maxima</i>	LC
<i>barcelonae</i>	EN	<i>merrilliana</i>	LC
<i>beccariana</i>	DD	<i>micramphora</i>	DD
<i>bellii</i>	DD	<i>mindanaoensis</i>	LC
<i>benstonei</i>	LC	<i>mollis</i>	DD
<i>bokorensis</i>	VU	<i>negros</i>	DD
<i>burkei</i>	VU	<i>pantaronensis</i>	DD
<i>ceciliae</i>	VU	<i>peltata</i>	DD
<i>chang</i>	DD	<i>petiolata</i>	VU
<i>cid</i>	DD	<i>platychila</i>	LC
<i>copelandii</i>	LC	<i>pulchra</i>	VU
<i>cornuta</i>	DD	<i>ramos</i>	DD
<i>distillatoria</i>	VU	<i>robcantleyi</i>	VU
<i>epiphytica</i>	DD	<i>rosea</i>	DD
<i>extincta</i>	DD	<i>samar</i>	DD
<i>eymae</i>	LC	<i>saranganiensis</i>	DD
<i>fusca</i>	LC	<i>sibuyanensis</i>	VU
<i>glabrata</i>	LC	<i>smilesii</i>	LC
<i>glandulifera</i>	DD	<i>sumagaya</i>	DD
<i>gracillima</i>	LC	<i>surigaoensis</i>	DD
<i>halmahera</i>	LC	<i>talaandig</i>	DD
<i>hamata</i>	LC	<i>tboli</i>	DD
<i>hamiguitanensis</i>	DD	<i>thorelii</i>	CR
<i>hemsleyana</i>	EN	<i>tomoriana</i>	LC
<i>holdenii</i>	VU	<i>truncata</i>	VU
<i>jamban</i>	CR	<i>ultra</i>	DD
<i>kampotiana</i>	LC	<i>undulatifolia</i>	DD
<i>kitanglad</i>	DD	<i>vieillardii</i>	LC
<i>kongkandana</i>	CR	<i>viridis</i>	LC
<i>kurata</i>	DD	<i>weda</i>	DD
<i>leyte</i>	DD	<i>zygon</i>	DD

As can be seen from Table 1, two species are assessed as Endangered and alarmingly, seven species are Critically Endangered. The conservation status of these species was not known until the assessments were made in 2015 and the situation is being examined now to see how the CPSG might help arrest, or reverse, the decline in populations of the most seriously threatened species.

Species assessed in 2015 of genera other than *Nepenthes*

The genus *Drosera* (common name: Sundews) is one of the largest groups of carnivorous plants, yet no species had been formally assessed for the IUCN Red List before 2015. Now that the CPSG has achieved its first goal, which was the assessment of all 160 *Nepenthes* species, it can now able to turn its attention to other genera, such as assessing *Drosera* species. To this end, Adam Cross is progressing with drafting assessments for *Drosera* species from Southwest Australia, which is the center of diversity for this genus.

The majority of *Drosera* species are not well known to science and a number of minor complications have arisen in completing and reviewing the first draft assessments. This prevented the completion of any assessments prior to 31 December 2014. However, none of these obstacles are significant and Dr Cross submitted assessments for 11 *Drosera* species in 2015 (Table 2). These are now undergoing the review process.

Table 2. *Drosera* species assessed for the IUCN Red List in 2015 as DD= Data Deficient; LC= Least Concern; NT= Near Threatened; VU= Vulnerable; EN= Endangered; CR= Critically Endangered.

Species	Red List Category
<i>allantostigma</i>	VU
<i>bulbosa</i>	LC
<i>erythrorhiza</i>	DD
<i>fimbriata</i>	NT
<i>gibsonii</i>	VU
<i>glanduligera</i>	LC
<i>graniticola</i>	VU
<i>grievei</i>	EN
<i>oreopodion</i>	EN
<i>squamosal</i>	NT
<i>stolonifera</i>	LC



Additionally, two species of *Pinguicula* and eight species of *Utricularia* were assessed by the Freshwater Plant Specialist Group (FPSG) and reviewed by the CPSG Red List Authority Coordinator, ready for inclusion in the next IUCN Red List update. It should be noted that *Utricularia* had formerly been allocated to be under the purview of the FPSG, but responsibility for assessing them was handed over to the CPSG in September 2015.

2. *Nepenthes suratensis* – a successful direct conservation action

Background

In late May 2015 the CPSG learned from the South East Asia *Nepenthes* Study and Research Foundation (SEANSRF) that the entire known population of *Nepenthes suratensis* - an already Critically Endangered Thai endemic species with only a few hundred individuals remaining - was to be completely wiped out on 6 June to make way for an extension to an existing prison development. The situation was and still is complex to tackle, since the population is contained entirely within the existing prison boundary and therefore it is not a simple matter to visit the site or monitor the situation.

Letters explaining the situation and its dire urgency were sent to appropriate authorities in Thailand. These letters were signed by Ms Inger Andersen, the Director General of IUCN and a set of separate letters were sent by the CPSG Patron, Sir David Attenborough. Also the IUCN Asian Regional Office in Thailand did a tremendous amount of work locally, as did SEANSRF.

Actions

The Thai authorities were co-operative but explained that the existing prison was exceedingly overcrowded by a ratio of 5:1 and a development was understandably necessary. However, due to the information we provided and the efforts of others mentioned above, they agreed to the following measures:

- a. Re-orientate the extension to reduce the impact on the population of plants.
- b. Transplant those plants that were still to be affected by the development to a site about 1km distant (but still within the boundaries of the prison complex).

Results so far

Direct monitoring of the situation has been exceedingly difficult for reasons stated earlier. However, we are informed that the relevant authorities claim that about 50% of the population was unaffected by the development after the building was re-orientated. The other 50% have been transplanted to an alternative site by prison inmates. Photographs of this transplanting process have appeared in some Thai media reports.

Despite the best efforts of SEANSRF, up until the point of CPSG involvement it was appearing that the development would go ahead as originally planned and that there would have been a certain extinction event on 6 June. However, after CPSG and higher level IUCN representations were made, the development was delayed and re-planned with consideration to the population of *Nepenthes suratensis*. Whilst it is too early to draw conclusions as to the final outcome, it appears at this time that the direct engagement of the CPSG was successful. What is certain is that the Thai authorities are now in no doubt as to the importance of protecting the remaining plants.

3. Increasing public awareness

Website

In 2015 the CPSG's general [website](#) continued to attract new members. At the end of 2015 we counted 144 members from 36 countries. As new CPSG members are appointed, they are being given access to edit pages of the website relevant to their field of specialty, in order to increase the informational content and keep the website current.

Social media

To expand CPSG's reach, in August 2015 two new Facebook pages were created and launched, the objective being to reach out to the international community and offer an interactive, popular and flexible way of communicating with those interested.

The first page, the [IUCN-Carnivorous-Plant-Specialist-Group](#), was set up as a company page. It posts information from the CPSG and allows people to reply to our posts. However, it does not allow people to initiate their own posts. The idea behind this page is to provide information to people efficiently, in a manner that enables them to easily find the desired information, without having to necessarily search through other posts by visitors. By the end of 2015, this page had generated 324 likes in the 4 months of its existence.

The second page, the [IUCN Carnivorous Plant Specialist Group Discussion Page](#), was set up as a group and acts primarily as a forum. Posts are made by the CPSG members, but visitors can join, ask their questions and initiate posts. It is also possible for visitors to react to each other's posts. For this reason, this page is moderated by our Communications Officer, Marcel van den Broek and his team: Andrew Broome and Michael Schöner. By the end of 2015, this page already had 395 members.

The basic content of both pages consists of pictures and information on threatened carnivorous plants, news on our activities and shared general IUCN information, as relevant to the CPSG's members. In the case of the Discussion Page, interaction based on questions of members is added to this content. Member posts range from general questions, such as the workings and differences between various national parks and other protected areas, to more specific questions, such as those pertaining to threats faced by individual species. Both pages were very successfully used in spreading the information on our recent successful fund-raising campaign for the Red List workshop that will take place in 2016 (see next section). In general, the content of our pages was well shared and appeared on leading pages in the carnivorous plant field, such as the forum page of the International Carnivorous Plant Society, the Carnivorous Plant Conservation and Research page, and pages maintained by the main national carnivorous plant societies.

4. Fund-raising campaign

Background

After expert consultation with relevant IUCN officers in various parts of the organization, it was calculated that an estimated total of USD 125,000 was needed in order to fund assessments of all carnivorous plants. Many species that are currently Data Deficient are actually suspected to be threatened, but the extent of the dangers posed to them and the source of the threats requires careful field surveys, that can only be undertaken by experts who are willing to work unpaid. Many Data Deficient species, especially *Nepenthes*, are only found in localised areas in remote and inaccessible regions that are difficult and often costly to reach. So despite the unpaid nature of the work, funding is needed. Without such fieldwork, these species will remain largely Data Deficient, and it is feared likely that some of them may face extinction before their conservation status is even documented. It was also decided that in order to speed up the assessment process and effectively pool knowledge between the top specialists in their fields, a Red Listing workshop would be held at Kew in August 2016 (see next section). USD 25,000 has been earmarked for this purpose.

Actions

An online fund-raising campaign was mounted in December 2015 with the initial goal of raising the first USD 25,000 needed for the Red Listing workshop and then proceeding onwards towards the ultimate goal of USD 125,000. This web page was created using the technical input and photographs of several Specialist Members of the CPSG to whom great thanks is due, and the website and underlying technology and payment portal was created by several officers of the IUCN, to whom we are profoundly grateful. The CPSG is also grateful to be fortunate enough to have been selected by the IUCN SSC as worthy of such effort.

Results

So far the campaign has successfully raised the first \$25,000 required for the Red Listing workshop, thanks to the immense generosity of concerned public and of several carnivorous plant societies, all of whom we would like to thank here but are too numerous to mention by name.

5. Red Listing workshop

Background

Although Red Listing is proceeding anyway, considering the urgent plight facing some species very recently assessed, it needs to proceed as fast as possible. The best way to make more rapid progress is to bring the top specialists to one place and with the assistance of trained facilitators, input data directly into the Species Information Service (SIS) and complete the technical review, ready for final review and upload to the Red List website. The CPSG has recently taken on responsibility for Red Listing assessment work for the genus *Utricularia* (common name bladderwort) which was previously under the purview of the FPSG. This raises the total number of assessments expected from the CPSG from 507 to 742. The actual distribution of species amongst genera (approximate or contentious in some cases) is given below (Table 3).

Table 3. Number of carnivorous plant species by genera.

Genus	Number of species
<i>Cephalotus</i>	1
<i>Darlingtonia</i>	1
<i>Drosera</i>	195
<i>Genlisea</i>	30
<i>Heliamphora</i>	23
<i>Nepenthes</i>	160
<i>Philcoxia</i>	4
<i>Pinguicula</i>	80
<i>Roridula</i>	1
<i>Sarracenia</i>	11
<i>Triphyophyllum</i>	1
<i>Utricularia</i>	235

More than 550 of the 742 species shown in the table above remain to be assessed.

Actions

Sufficient funds have been raised to enable the required Red Listing workshop to go ahead. Planning is at an advanced stage. The venue and dates are set. The CPSG would like to thank Martin Cheek and the Royal Botanic Gardens Kew in general, for generously offering the venue as well as the time of a trained facilitator. Suitable specialists around the world, willing to volunteer their time have been approached and are in the process of being formally invited to attend.

6. Goals for 2016

Red Listing

- Organize and undertake Red Listing workshop scheduled to run from 30 July to 5 August. The tentative target for the number of assessments to be submitted to the IUCN Red List during the workshop will be 200, with the emphasis on attempting to complete all Australian carnivorous plants.
- Compile, edit, verify and submit lists of all *Drosera*, *Byblis*, *Utricularia* and *Genlisea* species for uploading into the SIS system prior to the August Red Listing workshop.
- Appoint a senior specialist, Andreas Fleishmann to oversee the preparation of draft assessments of African and South American carnivorous plant species.
- Continue with assessments other than those covered in the workshop.
- Continue fund-raising activities to seek external funding in order to enable essential fieldwork to be undertaken on poorly known species which otherwise would be listed as Data Deficient.

Other

- Investigate and if necessary take direct conservation action, in an attempt to stop an organized smuggling operation of carnivorous plants that has been recently identified. There is now irrefutable evidence that wild populations of endemic *Nepenthes* and *Drosera* species from national parks, particularly in certain Asian countries are being stolen and smuggled world-wide, in disregard to national laws and international conventions such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). It is possible that populations may already have been decimated by this activity, or soon will be. This requires immediate fieldwork to assess the damage already done and recommend realistic preventative measures. Funding needs to be obtained for this purpose on a most urgent basis.
- Continue to widen the CPSG's membership and scope of activities to widen awareness of Red Listing and the plight facing many species of carnivorous plants in habitat.
- Work towards partnerships for *ex situ* conservation breeding programmes for Endangered and Critically Endangered species.





Nepenthes jamban © Ch'ien C. Lee

Slipper Orchids on the IUCN Red List

Mike Fay, Chair, IUCN SSC Orchid Specialist Group

Hassan Rankou, Coordinator, IUCN SSC Orchid Red List Authority

Key achievements

- Red Listing of the genus *Cypripedium* completed and published: 52 new assessments published on the IUCN Red List of Threatened Species.
- Red Listing of the genus *Paphiopedilum* completed and published: 88 new assessments published on the IUCN Red List of Threatened Species.
- Red Listing of the genus *Phragmipedium* completed and published: 26 new assessments published on the IUCN Red List of Threatened Species.
- Red Listing of the genus *Selenipedium* completed and published: Eight new assessments published on the IUCN Red List of Threatened Species.
- Red Listing of the genus *Mexipedium* completed and published: One new assessment published on the IUCN Red List of Threatened Species.

Background

There are approximately 175 species of slipper orchids (Orchidaceae, subfamily Cypripedioideae) worldwide. They are instantly recognisable because of their slipper-like flowers; they receive much interest due to their fascinating flowers and the environments in which they grow, and hybrids derived from the wild species are becoming increasingly affordable for collectors. However, many of the species are at risk due to habitat destruction and over-collection.

There are five genera of slipper orchids: *Cypripedium* with 52 species distributed across the northern temperate regions, *Paphiopedilum* with 88 species in Southeast Asia, *Phragmipedium* with 26 species in Central and South America, *Selenipedium* with eight species in Central and South America and *Mexipedium* with a single species that is endemic to Mexico and may already be extinct in the wild.

Many slipper orchids are severely threatened by habitat destruction and over-collection by collectors and growers. Although habitat destruction affects all species, over-collecting is a particularly serious threat to those species that are important in trade, and it can lead to the near extinction of a species in the wild within a few years of discovery.

In this project we have completed the global Red Listing of all species of slipper orchids.

Major threats

Most slipper orchids, including species of *Cypripedium*, *Paphiopedilum*, *Phragmipedium*, *Selenipedium* and *Mexipedium*, require particular environments and are sensitive to environmental change.

Threats include ruthless collection for regional and international trade, exploitation for horticultural purposes, deforestation, trampling, recreation, ecological disturbance, fires, mining, dams, land sliding, leisure activities, infrastructure development and management activities.



Summary results of Cyripedioideae (Slipper Orchids) Red List assessments

The Red List assessments for Cyripedioideae (175 species) showed in Table 1 and Figure 1 that c. 90% of species (157 species) are threatened; only c. 10% (17 species) are not threatened.

The threatened categories for Cyripedioideae are: 37.71% (66 species) Critically Endangered, 41.14% (72 species) Endangered and 10.85% (19 species) Vulnerable.

The non-threatened categories for Cyripedioideae are: 4% (7 species) Near Threatened and 5.71% (10 species) Least Concern.

Table 1. Red List assessments for Cyripedioideae. DD= Data Deficient; LC= Least Concern; NT= Near Threatened; VU= Vulnerable; EN= Endangered; CR= Critically Endangered.

Genera	Red List Categories						Total
	CR	EN	VU	NT	LC	DD	
<i>Cyripedium</i>	4	24	13	4	7	0	52
<i>Paphiopedilum</i>	49	36	2	1	0	0	88
<i>Phragmipedium</i>	10	7	4	1	3	1	26
<i>Selenipedium</i>	2	5	0	1	0	0	8
<i>Mexipedium</i>	1	0	0	0	0	0	1
Total	66	72	19	7	10	1	175
%	37.71	41.14	10.85	4	5.71	0.57	100

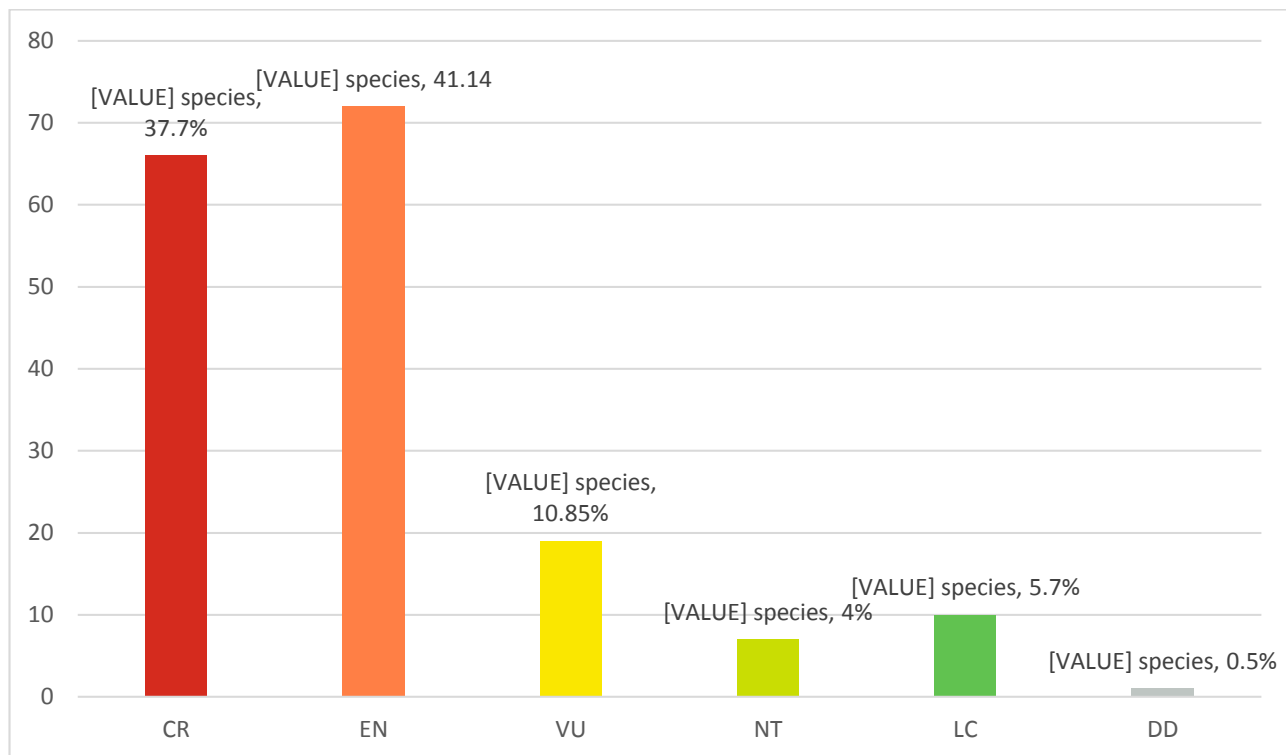


Figure 1. Red List assessments for Cyripedioideae. DD= Data Deficient; LC= Least Concern; NT= Near Threatened; VU= Vulnerable; EN= Endangered; CR= Critically Endangered.

Cypripedium

The Red List assessments for *Cypripedium* (52 species) showed in Figure 2 that 87% of species (45 species) are threatened; only 13% (7 species) are not threatened.

The threatened categories for *Cypripedium* are: 8% (4 species) Critically Endangered, 46% (24 species) Endangered and 25% (13 species) Vulnerable.

The non-threatened categories for *Cypripedium* are: 8% (4 species) Near Threatened and 13% (7 species) Least Concern.

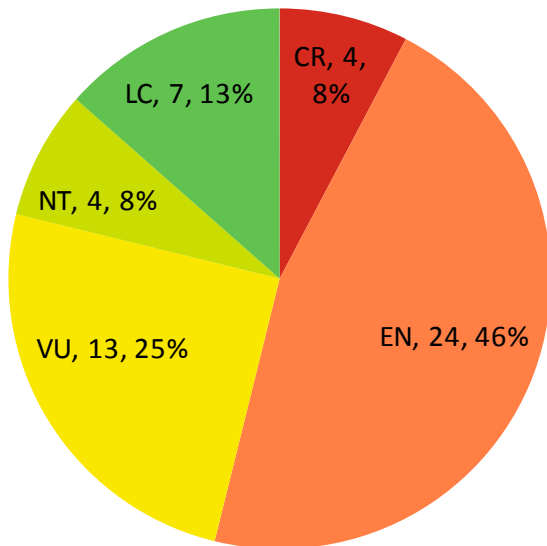


Figure 2. Red List assessments for *Cypripedium*. DD= Data Deficient; LC= Least Concern; NT= Near Threatened; VU= Vulnerable; EN= Endangered; CR= Critically Endangered.



Paphiopedilum

The Red List assessments for *Paphiopedilum* (88 species) showed in Figure 3 that 98% of species are threatened (87 species) and only 2% are not threatened (1 species). The threatened categories for *Paphiopedilum* are: 55.68% (49 species) Critically Endangered, 40.9% (36 species) Endangered and 2.27 % (2 species) Vulnerable. The non-threatened categories for *Paphiopedilum* is: 2% (1 species) Near Threatened.

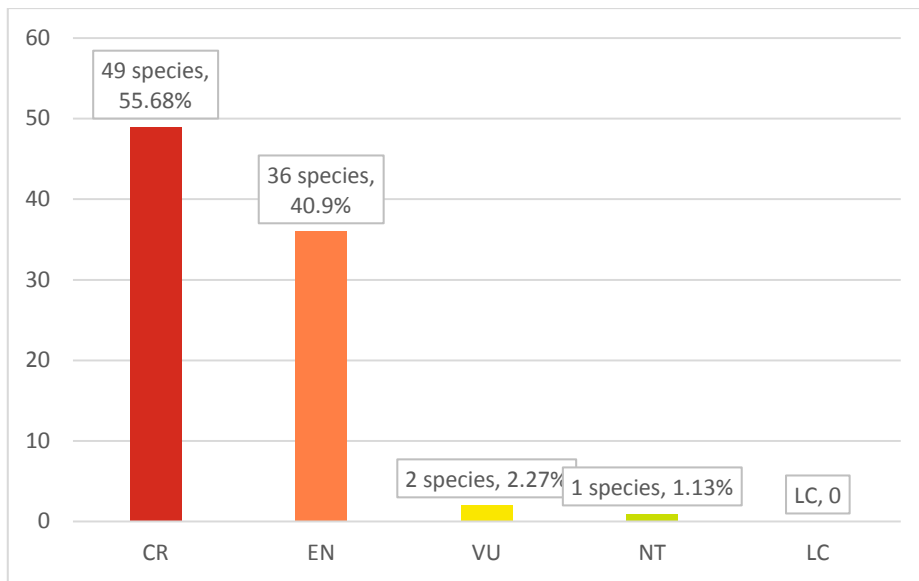


Figure 3. Red List assessments for *Paphiopedilum*. DD= Data Deficient; LC= Least Concern; NT= Near Threatened; VU= Vulnerable; EN= Endangered; CR= Critically Endangered.

Phragmipedium

The Red List assessments for *Phragmipedium* (26 species) showed in Figure 4 that 80.76% of species are threatened (21 species), 15.38% are not threatened (4 species) and 3.84% are data deficient (1 species). The threatened categories for *Phragmipedium* are: 38.46% (10 species) Critically Endangered, 26.92% (7 species) Endangered and 15.38 % (4 species) Vulnerable. The non-threatened categories for *Phragmipedium* are: 3.84% (1 species) Near Threatened and 11.53% (3 species) Least Concern.

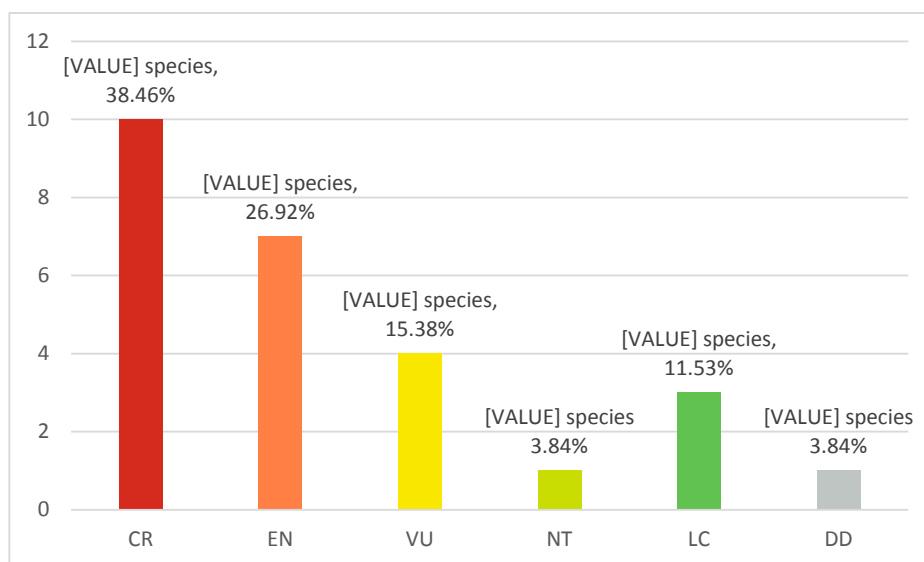


Figure 4. Red List assessments for *Phragmipedium*. DD= Data Deficient; LC= Least Concern; NT= Near Threatened; VU= Vulnerable; EN= Endangered; CR= Critically Endangered.

Selenipedium

The Red List assessments for *Selenipedium* (8 species) showed in Figure 5 that 87.5% of species are threatened (7 species) and only 12.5% are not threatened (1 species). The threatened categories for *Selenipedium* are: 25% (2 species) Critically Endangered and 62.5% (5 species) Endangered. The non-threatened categories for *Selenipedium* is: 12.5% (1 species) Near Threatened.

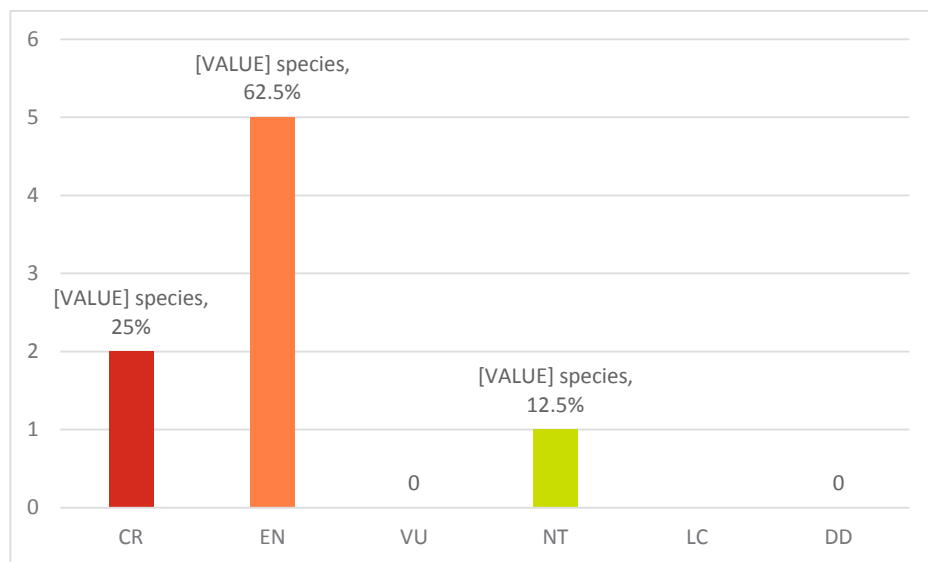


Figure 5. Red List assessments for *Selenipedium*. DD= Data Deficient; LC= Least Concern; NT= Near Threatened; VU= Vulnerable; EN= Endangered; CR= Critically Endangered.

Mexipedium

The Red List assessment for *Mexipedium* (1 species) showed that the genus is threatened and the single species is Critically Endangered (and possibly already Extinct in the Wild).

Concluding Comments

The project was completed on the agreed schedule with the publishing of all accounts for all five genera (*Cypripedium*, *Paphiopedilum*, *Phragmipedium*, *Selenipedium* and *Mexipedium*) on the IUCN Red List of Threatened Species.

These assessments cover a complete subfamily of orchids (Cypripedioideae), the largest family of flowering plants. The family is poorly represented on the global IUCN Red List and this project represents a major step forward. The results will allow us to carry out analyses on threats to slipper orchids and provide recommendations for their conservation.

The results also indicate that slipper orchids are one of the most threatened groups of species assessed so far for the IUCN Red List, due primarily to illegal and unsustainable collecting and trading of wild plants.

Slipper orchids clearly need to be given much higher profile as part of current efforts to combat the illegal wildlife trade.



Cypripedium tibeticum in Yunnan.
© Maarten Christenhusz

Species Conservation Planning Sub-Committee

Mark Stanley Price, Chair, IUCN SSC Species Conservation Planning Sub-Committee (SCPSC)

Key achievements

- Important progress was made with planning for a wide variety of species, including the Singapore crab, Humphead wrasse, starfruit, and giraffe.
- There was a major focus on planning for the 400 species of endemic invertebrates on St Helena.
- The SCPSC has collaboration in place with over 20 SSC Specialist Groups to support planning processes.
- Collaboration also exists between the SCPSC and several government agencies and NGOs.
- Work on version 2 of the SSC guidance on species conservation planning has started.

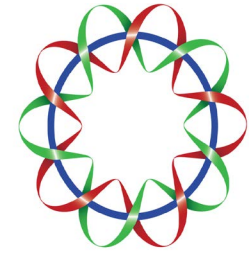


Introduction

In summary, 2015 has been a busy year for the SCPSC and its members, with a satisfactory number of planning events, a great opportunity to reach out to many new partners within the SSC, and some fundamental observations and lessons about species conservation planning and how to ensure that it has impacts on the planned species. These are all covered in detail below.

The year's activities also demonstrated the diversity and depth of relationships between SCPSC and other bodies outside SSC and IUCN. The roles played on request by SCPSC members indicate the value of our approach to species conservation planning, and the demand for it, and must be acknowledged and incorporated into any vision for the future of such planning.

This situation is valuable and timely given the start made in late 2015 to strategise about the future role of species conservation planning within SSC, with a greatly enhanced vision for the scale of activities. Again, this is discussed in greater detail within this report.



SPECIES CONSERVATION PLANNING
SUB-COMMITTEE
Promoting Conservation Action

Activities

With SSC Specialist Groups (SGs)

Freshwater Crustacean SG

Starting in 2010 SCPSC member Philip McGowan took this SG as a model SG that had done no previous conservation planning, but in which there was apparent need. Accordingly, he worked with the Chair to identify a suitable species, and selected the Singapore crab, *Johora singaporensis*. Funded by Wildlife Reserves Singapore, a workshop was held in 2014; a follow-up meeting was held in late 2015. Box 1 describes the process and its impacts.

Grouper and Wrasse SG

An initiative for some planning work on the Humphead wrasse, *Cheilinus undulatus*, came from this SG because of the excessive harvesting of the species in the three range states of Malaysia, Indonesia and the Philippines, indicated by the decreasing size of live individuals. A preliminary workshop in 2012 demonstrated to participants the difference between a conservation strategy and the means to establish harvest levels. Philip McGowan ran this workshop and returned in late 2015 to take planning for the species in Indonesia a stage further (Box 2).

Freshwater Plant SG

The SCPSC was asked to approve or endorse a strategy developed by the Chair of this SG for the starfruit, *Damaso-nium alisma*, a pond plant with a wide distribution across Europe but relatively small and declining area of occupancy (assessed as Vulnerable). Despite an unorthodox development process, the strategy contained all the essential elements of collaboration and collection of information, and the recommendations were eminently sensible; accordingly, following review by several members of SCPSC, the strategy was approved, and at last one more similar strategy from this SG is expected in 2016.

Giraffe and Okapi SG

SCPSC member David Mallon participated in a workshop for the West African giraffe in Niger in early 2015.

Mid-Atlantic Invertebrate SG

This SG is focussed on St. Helena with its estimated 400 species of endemic invertebrates. The SCPSC Chair was invited to help with planning for these species, and subsequently engaged with Buglife to design a two-day workshop. Given the lack of knowledge of the specific ecological needs of any species in a highly modified landscape, the planning focus was largely on remnant indigenous habitat with recommendations about future development in these habitats, and the spread of invasive flora.

The workshop was most unusual in that on the first day a team of 8 persons worked in UK while a small team worked in parallel in St. Helena, and they kept in touch through the day by Skype. On day 2, the same team in UK collaborated with a larger and less technical team of stakeholders on the island, and each had a set of tasks. The outputs are still being compiled. The SCPSC Chair was involved in the design of the workshop, and facilitated the UK end of it. This workshop caused attention to turn to the invertebrate fauna of Ascension Island, which is important albeit with lower endemism. This initiative remains in the concept stage. Following the discovery of further small numbers of the spiky yellow wood-

louse on St. Helena, a conservation strategy was prepared in January 2016, using the Crau grasshopper strategy as a model, and the SCPSC stands ready to review it.

Antelope SG

As part of the multi-year collaboration between SCPSC and the IUCN Centre for Mediterranean Cooperation to promote species conservation planning capacity in the Maghreb countries of Morocco, Tunisia and Algeria, David Mallon ran a transnational workshop on Cuvier's gazelle across all three states. This led to the conclusion that numbers of this gazelle are higher than previously suspected.

Cat SG and Canid SG

The following activities took place:

- National Action Plan for cheetah and African wild dog in Chad in March 2015.
- Revision of the Regional Strategy for cheetah and African wild dog in southern Africa in August 2015; the Cat SG Co-Chairs were impressed by how much action there had been in the last 5 years, but also how much stronger the new revised regional strategy is.
- National Action Plan for cheetah and African wild dog in Algeria in October.
- National Action Plan for lion in Mozambique in November.

Cat SG

The Cat SG released its booklet 'Cat conservation compendium – a practical guideline for strategic and project planning in cat conservation'; based on the SSC approach but tailored for felids. It has been well received and has lessons for SCPSC's own version 2.

Crop Wild Relative SG

This SG had activities in the following areas in 2015, most focusing on training, with further workshop or research through 2016: southern Africa (Southern African Development Community states); Norway; Scandinavia (Iceland, Norway, Sweden, Finland, Denmark); Mexico; UK; North Africa (Morocco, Algeria, Libya, Tunisia, Egypt); West Asian Fertile Crescent (Palestine, Syria, Lebanon, Turkey, Iraq); Oman; and Europe.

Heron SG

The SCPSC Chair invested much time and effort through 2014 to prepare for the first workshop on the White-bellied heron, *Ardea insignis*, in December 2014; he led development of a species conservation strategy from this through 2015, incorporating the results and conservation framework arising from the workshop. He then worked with Synchronicity Earth to prepare for a follow-up workshop, held in Bhutan in December 2015. He co-facilitated this with Madhu Rao, thereby integrating the heron's conservation more effectively into the orbit of the Asian Species Action Partnership. Improving the status of the species is hampered by lack of surveys over huge areas of potential range, ignorance on the dispersal behaviour and performance of fledglings, and the extent of movements of adults. With the wisdom of George Archibald at hand, the main recommendations were to colour band young birds in the nest, catch and fix satellite tags to birds, establish a small-scale captive breeding facility, and enlist further partners if necessary across the range countries (Bhutan, India, Myanmar and China) to greatly increase survey activities. Since the workshop there have been sightings of the White-bellied heron at new locations in Myanmar.

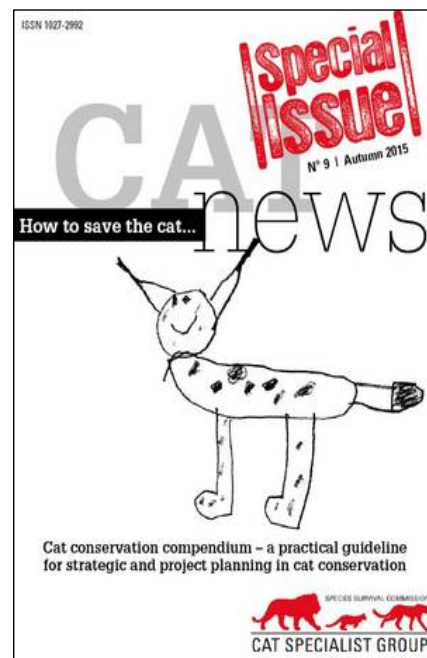
Iguana SG

The strategy for *Iguana delicatissima* was published in early 2015. *I. delicatissima* ranges across multiple islands in the Lesser Antilles, making planning complicated. The plan contains actions for the overall goal of species recovery and also contains country-specific plans for Dominica, St. Eustatius and French West Indies.

Although the plan was developed from a 2009 workshop, subsequent expert elicitation enabled the plan to be updated for the period 2014-2016; this case illustrates the fact that plans can be updated and that it is still important and possible to publish such information rather than not having any follow-up or formal product from the workshop.

Grasshopper SG

A planning workshop for the Critically Endangered grasshopper, *Prionotropis rhodanica*, which occupies a very small area of unique habitat in the south of France, was held in June 2014. The Grasshopper SG and SCPSC were requested to do this by the Conservatoire d'espaces naturels de Provence-Alpes-Côte d'Azur (CEN PACA), an NGO which co-



manages with local authorities the *Réserve Naturelle (RN) des Coussouls de Crau*, in which most of the Crau Plain grasshoppers are found. Development of the planning workshop, and subsequent activities were led and championed by Laurent Tatin, the Chargé de mission scientifique at the RN des Coussouls de Crau, supported by personnel from Thoiry Zoo and Bristol Zoological Gardens, and by the Grasshopper SG. Box 3 shows the sequence and multiplicity of activities and fund-raising around research and conservation of the grasshopper over the very short period since the planning event. It provides a good example of planning being transformed into effective conservation actions due to the energy and creativity of a key small team of committed individuals and organisations.

Other SSC activities

The highlights in 2015 were:

1. The SSC Leaders' Meeting in Abu Dhabi in September 2015, most generously supported by Environment Agency – Abu Dhabi was an event of supreme effectiveness and pleasure, as well for promoting SSC's work and also that of the SCPSC. Our activities included:
 - Having our own 2-day meeting, attended by 12/15 members, and with visitors joining in for the duration or partially.
 - Joining the meetings of other SSC Sub-Committees (Freshwater Conservation, Marine Conservation, Plant Conservation, and Invertebrate Conservation) to describe our work and to offer our services for their planning needs.
 - We ran a workshop 'Successful species conservation: taking the mystery out of planning', with the tagline 'Our team will show how every Specialist Group can plan effectively and confidently'. Many SCPSC members spoke to topics, followed by discussion and questions and answers, with an attendance of 30 people; this offered scope for further follow up.
 - We had a Market Place stall which was reasonably successful.
 - The SCPSC Chair personally spoke with 150-300 participants on species planning potentials, methods and opportunities.

This meeting will influence the development and uptake of species conservation planning for many years to come.

2. The SCPSC Chair, with a team of three (Christine Breitenmoser, Phil McGowan, David Mallon) participated in the SSC Chair's meeting on the "Future of Species Conservation Planning in SSC" in November, and all will be involved in the follow-up by the selected consultant.

SCPSC development

The SCPSC has started to submit short notices to the SSC e-bulletin on species planning efforts, with the ambition of having mention of SCPSC every month. Axel Hochkirch replaced Justin Gerlach in the SCPSC as the representative of the Invertebrate Conservation Sub-Committee.

Other roles and partners

While SCPSC sees the Specialist Groups as a prime clientele for species planning, members interact with many different organisations for a variety of purposes. The main ones in 2015 were:

- The **Amphibian SG** has established a set of working groups to promote implementation of the Amphibian Conservation and Action Plan; the SCPSC Chair co-facilitates its working group on species conservation strategies. During the year, facilitation became shared with Sally Wren of the ASG secretariat. Liaising with the Amphibian Survival Alliance, we are developing as a test case a species conservation plan for two endemic frogs on the Somuncura Plateau of Patagonia, and also including an Endangered fish species¹. This involved working with Facultad de Ciencias Naturales y Museo de la Plata and CONICET². The SCPSC assisted with writing funding proposals and then designing the planning process as an example of capacity-building in amphibian conservation. It is hoped that a planning

¹Naked-characin (*Gymnocharacinus bergii* - IUCN Endangered), the Valcheta Frog (*Pleurodema somuncurensis*, IUCN Critically Endangered) and the Somuncura Frog (*Atelognathus reverberii*, IUCN Endangered).

²The National Scientific and Technical Research Council of Argentina

workshop can be held in 2016.

- The SCPSC Chair is on the Steering Committee of the **Climate Change SG** which has almost completed its Guidance on Selecting and Using Approaches for Assessing Vulnerability of Species to Climate Change. The SCPSC has a joint working group with the CCSG, ready to start work in early 2016 on integrating the CCSG guidance into version 2 of the SCPSC species planning guidance. A first conceptual diagram for this has been developed.
- SCPSC member Ken Lindeman, also Chair of the **Grunt, Snapper and Seabream SG**, is heavily engaged with climate change projections and impacts on the coastal ecosystems of Florida.

His work, relevant to future species planning in marine systems, includes:

- Developing paths to integrate marine and coastal species planning further into the Species Conservation Planning Guidelines and summary document. This includes work that has co-developed management and monitoring plans for new spawning-area reserves for deep water marine fishes, and spawning areas for reef fishes which may be far from reefs.
 - Working with the South Florida Climate Change Compact to advance climate change adaptation planning using living shorelines for species conservation in reports produced by the Compact's Shoreline Resilience Workgroup. This work includes the protection of shallow-water nursery habitats for important reef fish species.
 - Emphasising that research shows that an integrative and resilience-focused management strategy is needed as marine-terrestrial boundaries become dynamic with marine transgression, particularly in landscapes such as South Florida with micro-elevation gradients.
- The **Antelope SG** and SCPSC have been engaging with the Sahara Conservation Fund over the dire status of the last addax antelopes in the wild. This led to a successful application for emergency funding from SOS to support an aerial survey in Niger, due to be carried out in March 2016.
 - David Mallon of SCPSC advises the **Convention on the Conservation of Migratory Species of Wild Animals (CMS)** on saiga and argali, and also the CMS Central Asian Mammals Initiative.
 - David Mallon facilitated, and the SCPSC Chair participated in, the National Forum for the Arabian Tahr, *Arabitragus jayakari*, in Abu Dhabi in January 2015, which was organised and hosted by Environment Agency – Abu Dhabi (EAD). The EAD latter gave the keynote address, entitled “Reintroducing the Arabian Tahr: Principles, Objectives and Thoughts”.
 - David Mallon helped develop a strategic plan for the **Iranian Department of the Environment**. He also ran a planning workshop to cover the 11 ungulate species of concern in Iran. While many threats were shared by all or most species, others were species-specific. This situation and the number of species covered required a different level of planning, and this led to the development of the concept of three tiers of planning intensity (see Box 4), which will be explored and tested by SCPSC.
 - **Fauna and Flora International (FFI)** staff in Cambodia requested advice from SCPSC (David Mallon) over its programme on sea turtles in that country.

Almost all these activities involve engagement with a very wide range of partners, stakeholders and government statutory bodies. In addition, SCPSC has close collaborations with bodies such as the IUCN Mediterranean Office for Cooperation, Buglife, Zoological Society of London (ZSL), and the Programme d'Appui aux Parcs de l'Entente of the Biodiversity and Protected Areas Management Programme (BIOPAMA).

Prospects for 2016

It is a reality that a planning event takes a long time between initial conversation or concept and realisation. Firm activities for SCPSC involvement in 2016, for which much time has already been devoted, include:

- Development of version 2 of the SSC guidance on species conservation planning; while commencement has been deliberately delayed, the last year's experiences will contribute much to this product.
- The SCPSC Chair was greatly involved through the second half of 2015 with development of the concept and background information for the workshop, hosted by Calgary Zoo in January 2016, on the future of the boreal caribou in Western Canada. The need for this project arose from the extremely adverse impacts, both direct and indirect, of large-scale habitat disruption by the oil and gas industries in their pursuit of tar sands. The consequent precarious conservation status of the caribou in Alberta and British Columbia meant that these industries face serious sanctions as they are ultimately responsible for the decline of the species. Hence, they supported the workshop as the first

step towards defining what actions they could take that would help the caribou and demonstrate their commitment to solutions. The workshop over 3 days had 50 participants from oil and gas companies, federal and provincial governments, academics, wildlife managers, First Nations, and NGO's, and was facilitated by the SCPSC Chair and John Ewen (of ZSL and the SSC Reintroduction SG, who is an expert in structured decision-making). Due to bad weather, the Co-Chair of the **Deer SG** was unable to attend at the last moment. The workshop succeeded in presenting the options for intensive population management through captive breeding, maternal penning, wild-to-wild translocations, and fencing options. The industries felt that as a result of the meeting they had adequate knowledge and understanding to guide the next steps of the work.

- Working with the **Conservation Breeding SG**, a multi-national workshop on the Chacoan peccary will take place in Paraguay in March 2016. CBSG will provide the Population and Habitat Viability Assessment (PHVA) capability, and the facilitator, Arnaud Desbiez, is member both of CBSG and SCPSC. The SCPSC has undertaken to provide financial support, originating from EAD.
- A short planning event for the Desertas wolf spider, *Hogna ingens*, on Islas Desertas off Madeira, will take place in April/May, through the **Spider and Scorpion SG**.
- The **Freshwater Plant SG** is taking the lead to develop a strategy for the plant *Callitriche mathezii* in Morocco.
- With little input to date from the SCPSC, the Chair of the **Grasshopper SG** is organising a workshop for the grasshopper *Zeuneriana marmorata* in its remnant wetland range in both Italy and Slovenia.
- In addition to such species planning opportunities, the SCPSC has a workshop at the IUCN World Conservation Congress (WCC) Forum in September 2016, gratefully occupying one of SSC's allotted workshop spaces, entitled "Saving species: diversity, commonality and best practice in planning for success".
- Somewhat related, the Chair submitted a proposal for a Knowledge Café at the WCC on "Re-wilding: what is it and why is it important", which has been accepted.

More tentative prospects for SCPSC in 2016 include the following:

- The 10 species of wild yams in Madagascar need conservation assessment and then support; any role for SCPSC remains to be clarified and understood.
- The SCPSC is working with the **Cactus and Succulent SG (CSSG)**, which is hosted by the Desert Botanic Gardens in Phoenix on the following:
 1. How to plan conservation for cacti - regional approach, taxonomic approach, or based on threats?
 2. Once 1 is completed, then the SCPSC will think about how to proceed in support of the CSSG.
- There is a need and possibly some potential to do some planning for the six species of sturgeon in the Caspian Sea. At the SSC Leaders' Meeting, the Co-Chair of the **Sturgeon SG** welcomed SCPSC engagement for these species if all six range countries around the Caspian Sea could be gathered together.
- With the **Mollusc SG**, there is a need to plan for the conservation of the Pearl mussel *Margaritifera arocana* in Morocco.
- With the purpose of testing the planning process on some fungi, plans are afoot with the **Mushroom, Bracket and Puffball SG** to plan for the waxcap fungi, as threatened group. The geographical scope, whether UK or Europe-wide, is still to be established.
- The **Mediterranean Plant SG** wants SCPSC involvement in its efforts to design a planning process for plants in Important Plant Areas in North Africa, the Near East and the Balkans. It would be a complex project, involving many stakeholders, in different countries, dealing with species conservation, protected areas management, and ecosystem management.
- The **Antelope SG**, with the Sahara Conservation Fund, is considering an emergency planning meeting for the Dama gazelle in Niger in 2016.
- The **Equid SG** is planning on a workshop for a National Action Plan for the African wild ass and possibly Grevy's zebra in Ethiopia.
- The **Mid-Atlantic Invertebrate SG** is contemplating a strategy for the invertebrates on Ascension Island.
- SCPSC has a list of even more distant prospects, garnered from the participants at the SSC Leaders' meeting in September 2015. These leads will be followed up through 2016.

Conclusions from 2015

Over the last five years the SCPSC has worked on many species conservation strategies and has gained much experience. The fundamental observation is that each case is different, and the design stage needs profound analysis of who will be participating in the process and what their level of knowledge is of the situation and the solutions. There are also profound cultural and language issues around facilitation.

Accordingly, the SCPSC feels that while tools (such as PHVAs) are useful, they are the servants of the planning process and not the master; outputs and formats may be variable (which may be one reason why endorsement of strategies to a single standard proves elusive). The ultimate test, which is surely the interest of SSC, is whether a strategy will for sure improve the conservation prospects of any planned species, rather than demonstrating that a process has been followed. This lesson will be followed through into the SCPSC guidance version 2 as “pragmatic flexibility”.

Consequent to this is the observation that delivery of a strategy can often feel like an achievement of sorts, but it is never the end point, merely the beginning of a new stage. The review of regional plans for cheetah and wild dog every 5 years shows the essential value of maintaining contact with the stakeholders, with a legitimate role for an SSC Specialist Group built into the strategy. Even better is to have a paid professional overseeing timely implementing of the strategy.

The 2002 evaluation of SSC Action Plans showed that those that had been most effective had striking characteristics, such as the individuals that had been involved in editing/collating them, what the expectations were, and which agencies and organisations had been engaged and had used them. The boxed case histories here – on the Crau grasshopper, the Humphead wrasse and the Singapore crab – demonstrate exactly this. Success depends on factors such as whether implementation has been driven by a contracted NGO with a driven employee, and/or with a proactive zoo to start captive breeding, and/or with a government agency playing an energetic role, and/or with the plan published in peer-reviewed journal so the whole process transparent to the public.

It is clear that a huge number of species need the sort of planning that the SCPSC provides; yet, the resources for such work are never going to be adequate to develop full-scale strategies based on large expensive workshops, which also require considerable work before and after. Short-cuts are needed, such as the suggested 3-tier approach (see Box 4).

On the other hand, conservation situations are usually complex, requiring very careful analysis and decision-making in the face of uncertainty. As a result, plans need to incorporate flexibility and adaptive management, structured decision-making in the face of uncertainty, and an assessment of the risks inherent in conservation actions. The risks of inaction or delayed response also need to be considered.

Capacity-building should be part of every planning exercise; there is a great need for more individuals who can design and run planning processes. In consequence, preparing for planning may require collaboration or advisory inputs at a very basic level, including helping with funding applications, workshop structure and so on. The SCPSC welcomes taking on this role if it improves the prospects of species that live in areas with limited planning capacity.

Acknowledgements

It is a pleasure to thank my fellow members of the Species Conservation Planning Sub-Committee for their efforts through 2015. I also appreciate the support and collegiality of all staff, whether in the SSC Chair's office or in the IUCN Secretariat.

Above all, we express our sincere thanks to Environment Agency - Abu Dhabi, without whose support – yet again – the SCPSC simply would not exist as a functioning body. We hope that the activities and experiences described above demonstrate commitment and creativity on behalf of species conservation planning, and repay the confidence conferred on the SCPSC.

Box 1. Planning for the Singapore freshwater crab

A planning workshop was held in 2014 with the National Parks Board of Singapore (NParks, the statutory agency), the National University of Singapore, and Wildlife Reserves Singapore (which organised and funded this workshop). The strategy was published in May 2015 and a Working Group, chaired by NParks, was established to promote its implementation. Completion of the strategy received press attention in Singapore (see [here](#)).

The process of developing the strategy, and its significance, were presented at the Conservation and biology of freshwater Decapoda Symposium at the 8th International Crustacean Congress by Darren Yeo. This has been written up for publication as “Conservation first: strategic planning to save the Critically Endangered Singapore freshwater crab, *Johora singaporensis*” in a book on freshwater crustaceans.

The challenge in now implementing the strategy is the detail behind the actions identified as important. Key amongst this is gaining a clearer understanding of the habitat requirements of the species, given the type of management that will be needed both to maintain current sites and prepare others for reintroduction and/or restocking. Harnessing existing knowledge to best effect and identifying the important research needs are, therefore, critical.

To support the Working Group in developing this strand of the Strategy’s implementation, Philip McGowan (in his capacity at Newcastle University) and Darren Yeo (National University of Singapore) secured funding from Newcastle University’s Global Excellence Fund to develop a pilot project to examine this research question as a means of exploring a longer-term collaboration between the two universities.

This work paid for a short-term post-doctoral research assistant to develop an approach to modelling habitat requirements and for a collaborative visit to Singapore to meet key individuals and participate in a Working Group meeting organised and hosted by Wildlife Reserves Singapore. Much of the discussion centred on the use of Bayesian Networks as a tool to help gather and organise knowledge (and expert opinion) in support of management, given the significant gap between what we know and what is needed in order to make decisions about habitat and hydrology at the required fine scale. Future collaboration is being explored.

A breeding facility has been established by Wildlife Reserves Singapore and captive husbandry is being developed. This is one of the conservation strategy’s actions.



Box 2. Planning for the Humphead wrasse (Napoleon fish) in Indonesia



The SCPSC has been involved with developing a strategic approach to the conservation challenges for this species, starting with a conservation planning process in November 2012 which resulted in a National Plan of Action. SCPSC member Philip McGowan furthered work on the Humphead wrasse³, *Cheilinus undulatus*, in late 2015.

Developing appropriate and realistic conservation goals and actions for this species presents significant challenges. It is widely distributed in coral reefs and inshore habitats through much of the tropical Indo-Pacific, but naturally occurs at a low density. Fishing pressure has led to many declines and local extinctions and this is projected to continue (see IUCN Red List account [here](#)). The key policy driver for conservation action on this species in Indonesia is the rapid depletion of populations to satisfy demand in mainland China leading to concern in both the Food and Agriculture Organisation of the United Nations (FAO) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) over **Illegal, Unreported and Unregulated (IUU) fishing**. This has led, very recently, to efforts to grow the species in culture for this export market, resulting in complexities in understanding the extent to which the trade does (and could) support the livelihoods of coastal communities. The SCPSC's efforts to promote a strategic approach to conservation planning for the Humphead wrasse is taking place within this context of an increasingly serious conservation status, illegality, management and policy constraints, commercial demand, and rural livelihoods. This presents a considerable challenge to conservation planning for the species.

A workshop was conducted in Jakarta for 2.5 days on 8-10 December 2015 to address:

1. The required CITES Non Detriment Finding for the species and associated survey results from six reference field sites;
2. Ongoing IUU fishing of the species; and

³ Also known within Indonesia as Napoleon fish.

3. Conservation planning for the species as a process complementary to the ongoing development of an Indonesian National Plan of Action that was initiated three years ago.

The workshop and related activities were funded by the CITES Secretariat to the SSC Grouper and Wrasse SG (GWSG).

The meeting was jointly organized by the **GWSG** and the **Indonesian Ministry of Marine Affairs and Fisheries**. Among the participants and assisting in the meeting were Dr Kim Friedman (FAO, aquaculture and fishery modelling), Dr Philip McGowan (Newcastle University and SCPSC) and Daniel Kacherleiss (Marine Species Officer, CITES). From Indonesia, key government attendees were present as well as four traders/farmers from the Anambas/Natuna islands. English-Bahasa Indonesia translation was provided for the full 2.5 days of the meeting.

Strategic planning was interspersed throughout the meeting, partly so that perspectives and information could be synthesised and presented back to participants, and partly to allow the pressing policy needs that were driving this process to be met. The draft Vision, Goals and Objectives are given below:

Vision	The long term survival of the Napoleon fish in a diverse marine ecosystem for people to enjoy and use	
Goals	The Napoleon fish occurs throughout its natural distribution in Indonesia.	The Napoleon fish is available as a source of pride and a resource for local communities to improve and sustain their livelihoods.
Objectives	1. To ensure that appropriate legislation, policies and administrative structures are in place so that management can be implemented effectively and efficiently.	1. Develop sustainable wild caught fishery with legal exports based on a complete overview of the fishery (fishers-capture-supply-markets) ensuring it provides long term benefits to the suppliers (local communities).
	2. To collect and disseminate new scientific knowledge and check the status of Napoleon fish to enable implementation of adaptive management.	2. Promote coastal livelihoods that will meet local needs, but will not damage the survival prospects of the Napoleon fish or its habitat.
	3. To implement management that will lead to an increase in Napoleon fish numbers and distribution to a sustainable level and maintaining healthy populations.	3. Support the development of sustainable capture - cultivation operations (capture based aquaculture) linked to diversified marketing opportunities (local, regional and Chinese markets).
		4. Strengthen the understanding of the importance of wise management of the Napoleon amongst those whose activities may influence its survival.

The key messages from the workshops and subsequent discussions appear to be:

- Developing strategic thinking amongst key actors in species conservation does take time to nurture. In this situation, the prevailing concerns and approach are the management of a fishery and addressing the illegal capture and trade.
- It is not at all clear that treating the problems facing Humphead wrasse as a fisheries management issue alone will address the rapidly deteriorating conservation status of the species, and some of the key actors now recognise this.
- Further work is clearly needed, both on this species and more generally in Indonesia, on species conservation and management approaches, and this could be very fruitful given the institutionalised requirement for National Plans of Action in Indonesia for a range of species.

Box 3. Activities following the development of a conservation strategy for the Crau Plain grasshopper (*Prionotropis rhodanica*)

The process of development of the conservation strategy is described in the [strategy](#). The following is a chronology of events following the strategy workshop, presented here to demonstrate the level of activity and impact that such a strategy can have:

June 2014: The planning workshop held in the range of the species, organised by the Conservatoire d'espaces naturels de Provence-Alpes-Côte d'Azur (CEN-PACA), the SSC Grasshopper SG, and SCPSC; the conservation strategy draft was completed within months.

October 2014: The conservation strategy is approved by the scientific committee of the National Nature Reserve of the Crau.

January 2015: Axel Hochkirch, Chair of the SSC Grasshopper SG, is granted US\$15,000 from the Mohamed bin Zayed Species Conservation Fund for research costs and camera trap purchase.

February 2015: Permission is granted to take some grasshoppers into captivity.

March 2015: The conservation strategy is approved by the Regional Scientific Committee of Nature Protection (CS-RPN); in effect, this means the strategy is official policy.

April 2015: Adult grasshoppers are taken to Thoiry Zoo, including 12 females that laid 179 egg pods; 31 pods were returned to the wild, divided between natural habitat and a caged enclosure to assess hatching rate.

April-July 2015: Two Masters students from the University of Trier studied population size through mark-recapture, micro-habitat preferences, and mapping of populations, with one new population found.

September 2015:

- A poster on the *in situ* and *ex situ* programmes was displayed at the European Association of Zoos and Aquariums (EAZA) Annual Conference.
- A film on the grasshopper is [proposed](#).

December 2015:

- The French Ministry of Ecology grants €5,000 per year for 5 years for research.
- A poster submitted by Axel Hochkirch and Laurent Tatin “Strategic conservation planning for insects – the Crau Plain Grasshopper” is accepted (Poster no. 1688) for the IUCN World Conservation Congress, in September 2016.

January 2016: The Crau Plain Grasshopper is in the Wildscreen ARKive selection of the [World's Favourite Underappreciated Species](#): “We asked conservation organisations around the world to nominate a species that they believe to be overlooked, underappreciated and unloved, and tell us why they think that they deserve a fair share of the limelight, this Valentine’s Day.”

Spring 2016: Students will return to the field, with grant for a Ph.D. on the grasshopper.

May 2016: A presentation is proposed for the EAZA Conservation Forum on *in situ* and *ex situ* conservation.



Box 4. Road mapping: intermediate stages in species planning – a concept

Problem statement

Strategic planning for species is a desirable conservation goal, as recognised *inter alia* by production of the IUCN/SSC [Strategic Planning for Species Conservation Planning Handbook](#) in 2008. Such strategies require substantial time and funding to develop. Producing such strategies for a large number of species, even those in the two highest categories of threat on the IUCN Red List (Critically Endangered and Endangered) is currently impractical due to a lack of technical capacity, and the resources needed.

Two ways to increase the volume and rate of species planning within SSC are:

1. To increase the technical capacity through training; and
2. To develop simpler planning processes to supplement the full SCS in data – or resource-poor – situations.

Concept

To develop a 3-tier species planning hierarchy as a rapid response to the need for more strategic plans:

Level 1

A full species strategy (SCS, Single Species Action Plan or similar) consisting of a thorough process of preparation and development in collaboration with all stakeholders, and involving a full stakeholder workshop. This is the ideal for all highly threatened species.

Level 2

A streamlined version of SCS that follows all the core principles, but is developed with a smaller team, over a shorter time scale and through email and/or limited meetings.

This is appropriate for threatened species in:

- a. Very urgent situations;
- b. When resources are lacking; and/or
- c. Where the field situation precludes immediate action.

A recent example is the Dama gazelle (*Nanger dama*) conservation strategy.

Level 3

A conservation 'road-map' that:

- a. Provides an outline plan in resource – or data-poor – situations;
- b. Acts as a preliminary stage to a full species strategy; and/or
- c. Serves as a bridge between Red List assessments and species planning.

This would be used for species in lower categories of threat or as an outline plan in data-poor situations and be based on a detailed threat assessment.

Note: this proposed hierarchy is not intended to be an alternative to a full SCS, but a complementary process to sit alongside it in the conservation planning toolbox. While levels 2 & 3 are shorter and simpler, they retain the basic principles of strategic planning and would be also applicable to single or multiple species, and all geographical scales.

Next steps

- Trial the proposed system with antelopes (85 species)
- Discuss viability and utility with the SCPSC.

Asian Species Action Partnership

Madhu Rao, Development Coordinator, Asian Species Action Partnership

J. W. Duckworth, Scientific Coordinator, Asian Species Action Partnership

Key achievements

- Consolidation of ASAP strategy - The niche for ASAP has become much clearer with confirmation of the critical need for the initiative in the Southeast Asia region.
- Expansion of membership - ASAP has grown significantly in the number of member organizations.
- Communication platform development - ASAP has been successful in creating a website.
- Support for Critically Endangered species conservation - ASAP has been engaged in supporting important initiatives for the Asian pangolins, White-bellied Heron, Helmeted Hornbills and the Asian songbird crisis.



The Asian Species Action Partnership has made significant progress in getting organized to achieve its mission to avert the extinction of Critically Endangered (CR) species in the Southeast Asia region. The Programme is coordinated by IUCN SSC on behalf of its member organisations to assist implementation agencies and their partners to, - “as a matter of urgency, reverse the declines in the wild of Critically Endangered freshwater and terrestrial vertebrates in Southeast Asia”.



The main activities in 2015 included the following

(i) Clarification of ASAP strategy and objectives

In 2015, the relevant areas of need and focus for ASAP were further clarified following various discussions.

The four major objectives of the ASAP initiative are to:

- Catalyze urgent actions to reduce immediate threats causing the decline of ASAP species and strengthen ongoing actions by identifying priorities and originating new initiatives for species recovery. This involves creating new funding streams for ASAP species conservation, initiating new *in situ-ex situ* partnerships for ASAP species recovery, filling knowledge gaps, and supporting conservation planning and prioritization processes for ASAP species.
- Improve transparency, efficiency and impact of conservation action by promoting conservation best practice for species recovery. This involves developing and supporting due diligence mechanisms for donor investment in ASAP species, developing mechanisms to increase transparency, streamlining and aligning funding support for ASAP species conservation.
- Promote conservation best practice for ASAP species by developing accessible conservation planning and impact monitoring methods for ASAP species and facilitating their adoption by organizations involved in ASAP species conservation.
- Communicate the needs of ASAP species and mechanisms to reverse the declines of ASAP species with governments, donors and civil society.

(ii) Communications and Partnership Development

With generous assistance from The Croeni Foundation, ASAP has now a developed website (www.speciesonthebrink.org) that seeks to act as a platform for information on the conservation status of ASAP species, linking directly to the IUCN Red List accounts for each species and, in addition, providing information on ongoing conservation action. The website will constitute an important part of the communication strategy for ASAP planned for further development in 2016. The ASAP membership saw a significant increase in 2015 and currently has 37 participating organizations that are directly implementing or involved with the conservation of ASAP species. These include national and international NGOs, zoological institutions, zoological associations, and donor organizations funding ASAP species conservation.

Madhu Rao attended the Transboundary Workshop at Xishuangbanna Tropical Botanical Garden, China, on 1-4 March 2015 to assess conservation needs for ASAP species and to determine the level of threat and ongoing action. China's southern boundary shared with Myanmar, Laos and Vietnam is a critically important trade route for the illegal wildlife trade, a major threat to many ASAP species. The meeting provided an opportunity to draw attention to the conservation needs for ASAP species in this important transboundary region. The meeting resulted in a formal declaration with recommendations to strengthen the enforcement of existing legislation, create new transboundary protected areas, improve management of existing protected areas and develop standardized monitoring protocols. The declaration recommended that the Government of China, in collaboration with the Governments of Myanmar, Laos and Vietnam, lead in championing effective transboundary protected areas and tackle illegal wildlife trade, thus ensuring a future for regional biodiversity.

Madhu gave a plenary address at the Association for Tropical Biology and Conservation Asia Pacific meetings, in Phnom Penh, Cambodia on 30 March-2 April 2015. This meeting provided an opportunity to highlight ASAP species needs through a plenary address that focused attention on the extinction crisis in Southeast Asia and the effectiveness of the protected area network in the region. Several ASAP species that are on the brink of extinction need urgent protection either through the creation of new protected areas or through better management of existing ones. However, it is

also evident that for many ASAP species, it is imperative to consider the integration of *in situ* conservation action with *ex situ* approaches to avert extinctions. The meeting brought together researchers and conservationists from within the Southeast Asia region.

ASAP participated in the IUCN Asia Regional Conservation Forum in August 2015, together with SSC Chair Simon Stuart, to create greater awareness of the initiative. ASAP organized a workshop and coordinated several important meetings with donors at the SSC Leaders' Meeting in Abu Dhabi in September 2015. The workshop and the meetings helped create additional linkages with SSC Specialist Groups and with various components of the IUCN.

In October 2015, Wildlife Reserves Singapore (WRS) represented ASAP at the SSC Conservation Breeding Specialist Group (CBSG) and World Association of Zoos and Aquariums (WAZA) meetings at the Al Ain Zoo in Abu Dhabi. Two workshops helped raise awareness of ASAP's development in the zoo community and brought attention to the need for *in situ-ex situ* integration for several CR species in Southeast Asia, highlighting a critically important role for zoos and aquaria in averting the extinctions of certain ASAP species. Also in October 2015, a presentation on behalf of ASAP was made at the European Association of Zoos and Aquariums (EAZA) meetings to give an update on ASAP to the EAZA community.

In November 2015, ASAP presented at and participated in a workshop at Southeast Asian Association of Zoos and Aquariums (SEAZA) to help create awareness on the role of Southeast Asian zoos and aquaria in CR species conservation in the region and contributed significantly to the creation of a Conservation Committee within SEAZA. Moving forward, ASAP will be a member of this Conservation Committee to help influence the direction of the Conservation Strategy for SEEAZA. ASAP further hosted a small reception at The American Club, Singapore with the aim of introducing ASAP to an invited audience of potential partners. The event included talks from key ASAP partners - WRS, TRAFIC and Turtle Survival Alliance/Wildlife Conservation Society (WCS).

(iii) Supporting conservation action for ASAP species

Asian pangolins

In June 2015, ASAP participated in the First Pangolin Range States Meeting hosted by the United States Fish and Wildlife Service and the Government of Vietnam. The objectives of the meeting were to bring pangolin range state Government representatives to discuss the impact of trade on the populations of all eight pangolin species (4 in Asia, 4 in Africa) and provide recommendations for the upcoming CITES Standing Committee Meeting in January 2016. ASAP is supporting the process of uplisting all eight species of pangolins in order to Appendix I to help improve the status of the two Critically Endangered species of Asian pangolins *Manis pentadactyla* and *Manis javanica*.



The Chinese Pangolin is Critically Endangered and urgent action is needed to prioritize conservation action at important strongholds for the species across the range states. © Leanne Wicker/Save Vietnam's Wildlife

Rafetus swinhoei

ASAP worked in partnership with the SSC Tortoise and Freshwater Turtle Specialist Group (TFTSG) to organize a workshop on "Conservation of *Rafetus swinhoei*" in December 2014. During 2015, it was decided that a working group would be created as a non-exclusive group of individuals with expertise in the conservation of *R. swinhoei* as well as experience in the flora and fauna of Lao PDR, Vietnam, and Southern China. The working group will provide a sounding board for adaptive management of the proposed priority actions. The primary recommendation of this group was that additional individuals of *R. swinhoei* need to be found and captured for captive breeding and that this needs to be of the highest priority amongst global chelonian conservation. The group has agreed on a number of actions that would be necessary to prevent the extinction of the species.

Asian Songbird Crisis

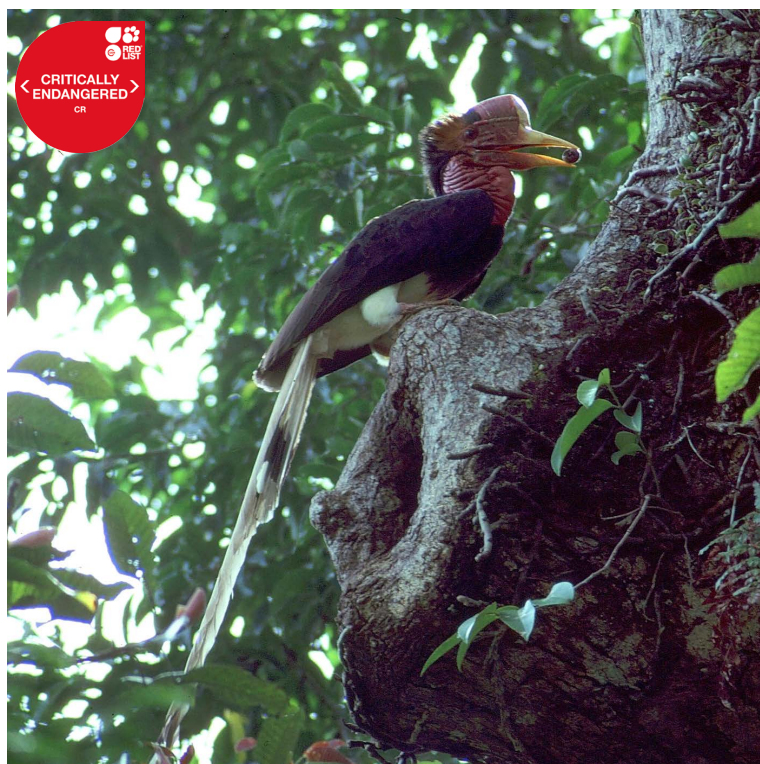
ASAP played a key role in supporting the Asian Songbird Crisis Summit, which took place in Jurong Bird Park, Singapore, in September, 2015, co-organized by WRS, TRAFFIC and the Cikananga Wildlife Center, all three being participating organizations of ASAP. Over the course of the three-day summit, experts agreed upon a priority list of 30 passerines in the Greater Sunda region that are verging on extinction if the illegal trade is left unchecked, and identified twelve species needing immediate action. Only three of these high-priority birds are currently categorized as Critically Endangered on the IUCN Red List: Javan Green Magpie, Black-winged Starling and Bali Starling. This suggests an urgent need to reassess the status of many of these priority species. One of the proposals emerging from the summit was to form an Asian Songbird Specialist Group under the SSC, and more news is expected on this in the coming months. Immediately following the summit was a special meeting on the Bali Starling on Bali, Indonesia, at the beginning of October, in which ASAP also participated. The important meeting addressed the issue of recovery of the Bali Mynah population and action needed to work towards a common strategy of captive breeding and reintroduction on Bali. A Bali Mynah Recovery Action Plan is in development.

Helmeted Hornbills

Helmeted Hornbills have recently been categorized as Critically Endangered due to the demand-driven poaching of the species for their highly prized beak ivory (known as “red ivory”). A meeting was hosted by WRS to develop a clear action plan for the species. ASAP is assisting with the creation of the Working Group and the drafting of the Action Plan in addition to the development of a motion for the species at the upcoming IUCN World Conservation Congress.

White-bellied Heron

Working together with Synchronicity Earth and the IUCN Species Conservation Planning Sub-Committee, ASAP has been involved in organizing and helping implement the second range-state workshop for the White-bellied Heron (*Ardea insignis*), which was hosted by the Ministry of Forestry in Bhutan in December 2015. The meeting helped update and consolidate the new strategy for the White-bellied Heron and agreed on a number of actions towards implementation of the White-bellied Heron Conservation Strategy. ASAP will work alongside Synchronicity Earth in taking responsibility to coordinate the implementation of the strategy and the White-bellied Heron Working Group.



The Helmeted Hornbill has been recently categorized as Critically Endangered due to heavy poaching related to the demand of its ‘red ivory’. © Morten Strange

(iv) ASAP support to SSC Specialist Groups

A key role for ASAP is to provide support to SSC Specialist Groups, especially those with many ASAP species. Freshwater fish constitute a significant portion of species on the ASAP list and, alarmingly, experts indicate that there could be several more species that could potentially be classified as Critically Endangered once the assessments are done. A major issue that needs to be addressed is the lack of Red List assessments for fishes in the Sundaic region (Indonesia and Malaysia) and the Philippines. ASAP is helping bring together various entities to collaborate on the freshwater fish Red List assessments for the Sundaic region. There is currently a growing collaboration between WRS, National University of Singapore (NUS) Raffles Biodiversity Museum and the SSC Freshwater Fish SG (FFSG) on this initiative. The first workshop is scheduled for February 2016 at the WRS offices.

Wildlife Reserves Singapore, an important ASAP partner, also hosted the Asian Primate Red Listing workshop in October 2015. ASAP was involved in helping improve the Conservation Needs and Conservation Actions sections of the Red List accounts for the CR species of primates to help clearly identify actions that need urgent support to avert the extinction of CR primate species.

Developing the Key Biodiversity Areas Standard

Penny Langhammer, Co-Chair WCPA/SSC Joint Task Force on Biodiversity and Protected Areas

Stephen Woodley, Co-Chair WCPA/SSC Joint Task Force on Biodiversity and Protected Areas

Annabelle Cuttelod, Conservation Planning Officer, IUCN Global Species Programme

Key achievements

- The draft *IUCN Standard for the Identification of Key Biodiversity Areas* (KBAs) was revised and improved in response to more than 1200 comments submitted during a first global online consultation in 2014.
- Testing of the KBA criteria and thresholds was undertaken for a diverse set of taxonomic groups across terrestrial, freshwater and marine realms, leading to further improvements in the draft KBA Standard.
- A second global consultation on the KBA Standard, including dedicated discussions at the SSC Leaders' Meeting in Abu Dhabi generated more than 600 comments. These are currently being addressed in anticipation of finalizing the KBA Standard in early 2016.
- Eleven organizations expressed their commitment to form a KBA Partnership, which will operationalize the implementation of the KBA Standard.

Overview

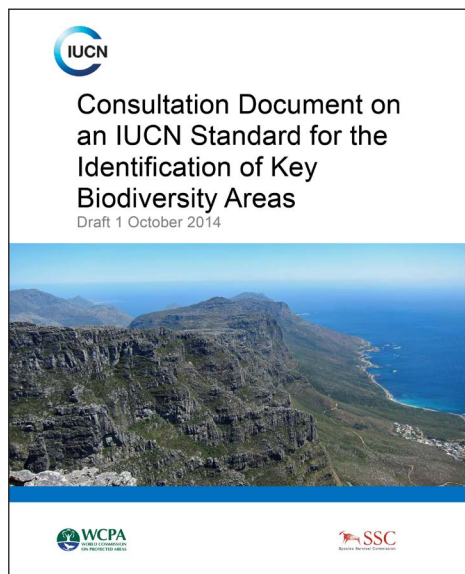
Since 2012 the IUCN WCPA/SSC Joint Task Force on Biodiversity and Protected Areas has mobilized input from experts in the IUCN Commissions, Members and Secretariat staff, other conservation organisations, academia, governments, donors and the private sector to consolidate a global standard for the identification of Key Biodiversity Areas (KBAs), sites that contribute significantly to the global persistence of biodiversity. This work comprises the second of two objectives of the Joint Task Force and responds to Resolution WCC 3.013 passed by IUCN Members in Bangkok in 2004. This Resolution requested the SSC and WCPA, working in partnership with IUCN members, to convene a worldwide consultation process to agree a methodology to enable countries to identify Key Biodiversity Areas, drawing on data from the IUCN Red List of Threatened Species and other datasets, and building on existing approaches to identify important sites for biodiversity.

The aims of the KBA Standard are to:

- Harmonize existing approaches to the identification of important sites for biodiversity;
- Support the identification of important sites for elements of biodiversity not considered in existing approaches;
- Provide a system that can be applied consistently and in a repeatable manner by different users and institutions in different places and over time;
- Ensure that KBA identification is objective, transparent and rigorous through application of quantitative thresholds;
- Provide decision-makers with improved understanding of why particular sites are important for biodiversity.

Key Activities and Achievements

1. First consultation on the KBA Standard



A *Consultation Document on an IUCN Standard for the Identification of Key Biodiversity Areas* was submitted for wide public consultation in October 2014 through the Union Portal and a mirror public site (www.kbaconsultation.org). This document synthesized the results of four technical workshops in 2013, presenting in detail the purpose of the KBA standard, relationship between KBAs and existing approaches, criteria and thresholds for identification of sites as KBAs, guidelines for site delineation, minimum standard documentation, and proposed governance mechanisms for implementation of the KBA Standard. The consultation solicited nearly 1,200 comments from 160 individuals/organizations, most of which focused on the proposed criteria and thresholds and the rules and procedures for nomination, review and endorsement of KBAs. During the first half of 2015, each of these comments was addressed and a detailed response provided for each comment. An editorial team consisting of the task force co-chairs, chairs of each of the technical workshops, Secretariat coordinator, and two co-opted experts met in Feb 2015 to address the most challenging comments. The quality of feedback was generally very high, and many of the comments resulted in changes that improved the KBA Standard.

Dedicated workshop and testing of the KBA criteria and thresholds

Comments received during the first consultation revealed significant challenges with the proposed thresholds for two of the sub-criteria: B2 (centers of endemism) and B3 (biome-restricted assemblages). To address these concerns, the Joint Task Force convened a small workshop in Feb 2015 in Cambridge, UK to review the thresholds and propose alternatives. Experts representing different taxonomic groups (fungi, plants, fish, birds, mammals, in-



KBA Criteria B workshop participants, Cambridge, UK (Feb 2015). © Mike Hoffmann

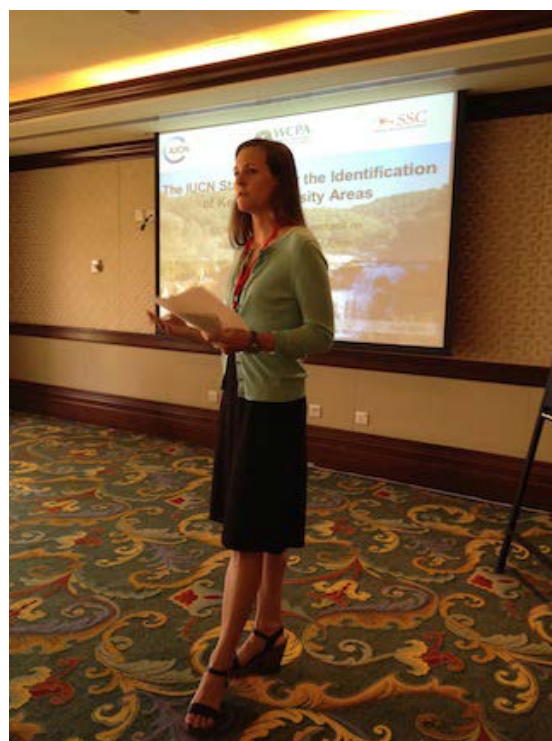
vertebrates) and biomes (marine, freshwater, terrestrial) participated, along with experts skilled in analysing large datasets. The participants proposed two alternative thresholds for each of the sub-criteria, which were informed by on-the-fly analysis of datasets that participants brought to the workshop. Not all of the testing work could be completed during the workshop, and a number of the participants volunteered their time to conduct further testing of the thresholds after the workshop. This led to an exhaustive, months-long process testing process covering a wide range of taxonomic groups, biomes and regions. The results ultimately yielded revised formulations for the B2 and B3 thresholds. The Joint Task Force is deeply grateful to the following individuals for allowing the use of their data and undertaking this testing work on their own time: Steve Bachman, Leon Bennun, Stuart Butchart, Anja Danielczak, Will Darwall, Moreno Di Marco, Graham Edgar, Mike Evans, Lincoln Fishpool, Mariana García, Melanie Heath, Axel Hochkirch, Ian May, Eimear Nic Lughadha, Ana Nieto, Ana Rodrigues, Rachel Skyes, Bob Smith, Lize von Staden and Zoltan Waliczky.

Presenting the KBA Standard at scientific meetings

The Joint Task Force sought additional input and raised awareness of the KBA consultation process through presentations on the KBA Standard at a number of scientific and technical meetings.

These included:

- The Biodiversity without Boundaries conference hosted by NatureServe (April 2015, Traverse City, USA),
- The 27th International Congress for Conservation Biology (August 2015, Montpellier, France),
- The SSC Leaders' Meeting (September 2015, Abu Dhabi, United Arab Emirates),
- A seminar hosted by Center for Biodiversity Outcomes at Arizona State University (November 2015, Tempe, USA),
- The 21st Biennial Conference of the Society for Marine Mammalogy (December 2015, San Francisco, USA).



Penny Langhammer introduces the KBA Standard at the 3rd SSC Leaders' Meeting, Abu Dhabi. © Annabelle Cuttelod



Annabelle Cuttelod presents the KBA Standard at the 27th International Congress for Conservation Biology, Montpellier. © Penny Langhammer



Workshop on the KBA Standard, 3rd SSC Leaders' Meeting, Abu Dhabi. © Annabelle Cuttelod

Application of Key Biodiversity Areas: Publication of a report on KBA End Users consultation

Given the many different stakeholders with an interest in the sites that are contributing significantly to the persistence of biodiversity, the Joint Task Force coordinated a major effort to identify and speak with a range of different existing or potential end-users of the data generated through application of KBA Standard.

These opinions have been enormously helpful in framing the KBA standard and have been compiling as case studies in a report called *Applications of Key Biodiversity Areas: End-user consultations*. It was published in 2015 and an electronic version was made widely available through the IUCN network (<https://portals.iucn.org/library/sites/library/files/documents/2014-051.pdf>).

The case studies range from International conventions (such as the Ramsar Convention), to international agencies like the World Bank, to private sector or national Protected Areas agencies. The report presents the key findings of these interviews on the potential applications of KBA data, the needs and fears of end-users.

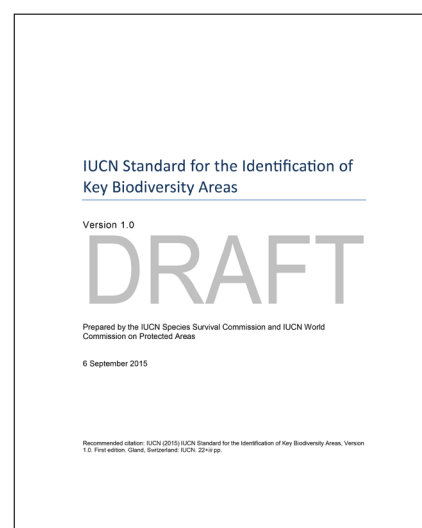
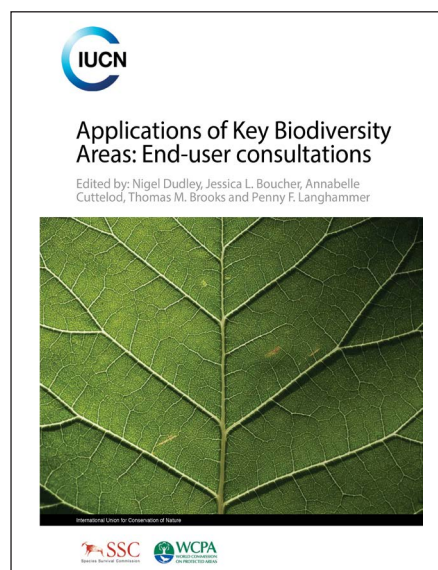
Amongst the key applications that KBAs can play, are:

- Identifying priority sites for conservation including designation by international conventions
- Providing a centralised source of data for end-users
- Informing, validating and confirming existing approaches
- Guiding investment
- Making decisions about development
- Providing additional political recognition
- Identifying core sites for restoration
- Identifying globally significant sites that require local action
- Identifying no-go areas
- Stabilising land tenure
- Prioritising biodiversity research
- Meeting international commitments
- Identifying ecosystem services

In order to be able to use KBA data efficiently, end-users highlighted their main need, among which the need to have an accessible, constantly updated and comprehensive source of data, clear guidance on updating and maintenance of information, effective communication and coordination, consideration of the accessibility of KBA data and information, methodological guidance for using the standard, a means of informing prioritisation, as well as advice on implementation and management and associated information on ecosystem services and socio-economic data. However, several fears were also identified, in particular the lack of KBA data for large areas, the risk that KBAs end up being one more additional process alongside many others or that they will undermine existing systems, or being too numerous or too large to be useful. Fears about availability of sufficient capacity to identify KBAs time needed to have a functional KBA list, an overly academic process, KBAs competing with local or national legislation or exclusion of key stakeholders were also mentioned.

2. Second consultation on KBA Standard

Following the input received during the first consultation and the threshold testing process, the draft *IUCN Standard for the Identification of Key Biodiversity Areas* submitted for a second global consultation in September-October 2015. The draft Standard was posted again to the Union Portal and www.kbaconsultation.org,



along with a spreadsheet of comments from the first consultation and detailed responses, a revised Consultation Document with more detail could be covered in the short Standard document, and a document explaining changes to the criteria and thresholds from the first draft of the Standard to the second. More than 600 comments were received during the second consultation, from 130 individuals/institutions. These are currently being addressed by the KBA editorial team, with an eye towards completing the KBA Standard in early 2016. The final version of the KBA criteria are shown in Table 1.

Table 1. Final criteria for identifying sites as KBAs in the new IUCN Standard for the Identification of Key Biodiversity Areas

A. Threatened Biodiversity	<i>Biodiversity element at site</i>	<i>% global pop. size/ extent</i>	<i>RU¹</i>
A1: Threatened species	(a) CR or EN species	≥0.5%	≥5
	(b) VU species	≥1%	≥10
	(c) CR or EN species Threatened only due to population size reduction in the past or present	≥0.1%	≥5
	(d) VU species Threatened only due to population size reduction in the past or present	≥0.2%	≥10
	(e) CR or EN species	Entire global population size	
A2: Threatened ecosystem types	(a) CR or EN ecosystem type	≥5%	
	(b) VU ecosystem type	≥10%	
B. Geographically restricted biodiversity	<i>Biodiversity element at site</i>	<i>% global pop. size/extent</i>	<i>RU</i>
B1: Individually geographically restricted species	Any species	≥10%	≥10
B2: Co-occurring geographically restricted species	Restricted-range species: ≥2 species OR 0.02% of total number of species in taxonomic group, whichever is larger	≥1%	
B3: Geographically restricted assemblages	(a) ≥5 ecoregion-restricted species ² OR 10% of the species restricted to the ecoregion, whichever is larger	≥0.5%	
	(b) ≥5 bioregion-restricted species ² OR 30% of the bioregion-restricted species known from the country, whichever is larger		
	(c) Part of the globally most important 5% of occupied habitat of each of ≥5 species within a taxonomic group		
B4: Geographically restricted ecosystem types	Any ecosystem type	≥20%	
C. Ecological integrity	<i>Biodiversity element at site</i>	≤2 sites per ecoregion	
	Wholly intact ecological communities		
D. Biological processes	<i>Biodiversity element at site</i>	<i>% global pop. size</i>	
D1: Demographic aggregations	(a) Species aggregation during one or more key stages of its life cycle	≥1%	
	(b) Among the largest 10 aggregations known for the species		
D2: Ecological refugia	Species aggregations during periods of past, current or future environmental stress	≥10%	
D3: Recruitment sources	Propagules, larvae or juveniles maintaining high proportion of global population size	≥10% ³	
E: Irreplaceability through quantitative analysis	<i>Biodiversity element at site</i>	<i>Irrepl. score</i>	<i>RU</i>
	Site has high irreplaceability measured by quantitative spatial analysis	≥0.90 on 0–1 scale	≥10 (or ≥5 for EN/CR sp)

¹RU=reproductive units; ²within a taxonomic group; ³refers to global population size rather than immature individuals produced.

SSC Leaders' meeting in Abu Dhabi

The 3rd SSC Leaders' Meeting hosted by Environment Agency – Abu Dhabi was a key step in the second consultation on the KBA Standard, allowing the Joint Task Force to gain feedback on the draft document across a large swath of SSC. In a 2-hour workshop, participants were introduced in detail to the consultation process and the draft criteria.

Breakout groups tackled the following questions:

- a. How can the expertise of Specialist Groups and Red List Authorities best be engaged in KBA identification, and
- b. How can KBAs best support the work and objectives of the specialist groups.

Additional targeted valuable feedback was received through participation in the Plant, Marine and Invertebrates SSC Sub-Committee meetings in advance of the main SSC Leaders' meeting, side meetings with specialist group and task force chairs, for example on conservation genetics and on implementation priorities, and a dedicated work session with members of the Joint WCPA-SSC Marine Mammal Protected Areas Task Force.

Further testing of the KBA criteria

In response to concerns raised from the marine community during the second KBA consultation, the Joint Task Force initiated a project in collaboration with NOAA researcher Charlotte Boyd to test the KBA criteria and thresholds for marine mammals. Preliminary results indicated a number of sites of 'known' importance could be demonstrated to meet KBA thresholds for species that would benefit from site-scale conservation (some marine mammal species are broadly nomadic and/or occur at very low densities throughout their ranges). There are some species for which data limitations, at both the global and local level, are serious issues. This work, which is still in progress, was presented at the 21st Biennial Meeting of the Society for Marine Mammalogy in San Francisco, USA in December 2015.

3. Developing a KBA Partnership

In parallel to completing the KBA Standard, efforts are underway to form a KBA Partnership to advance the identification and delineation of KBAs, promote their use across sectors, and maintain KBA data over time. A KBA Partnership, modelled loosely after the Red List Partnership, will also serve as an important means for the organizations to coordinate activities related to site identification, conservation and analysis, and to share information, expertise and insights for the benefit of biodiversity conservation. An initial KBA Partnership scoping meeting was held in Washington, DC in April 2015 with 31 individuals representing 21 institutions. Participants drafted the potential membership criteria for the KBA Partnership and refined the Terms of Reference for a new KBA Committee, which will be the governance mechanism for implementation of the KBA Standard. Following the meeting, eleven organizations sent letters of commitment stating their desire to become founding members of a KBA Partnership. These include the Amphibian Survival Alliance, Bat Conservation International, BirdLife International, Critical Ecosystem Partnership Fund, Global Environment Facility, Global Wildlife Conservation, IUCN, NatureServe, RSPB, Wildlife Conservation Society and WWF-International.

4. Next steps and road map for 2016

The KBA Standard will be finalized in early 2016 and submitted to IUCN Council for approval. Planning is underway for a number of related events at the 2016 World Conservation Congress in Hawaii, USA:

- Formal launch of the *IUCN Standard for the Identification of Key Biodiversity Areas*
- Workshop on "KBA Consultative Forum: exchanging experience on application of the KBA Standard at the national level"
- Workshop on "How can biodiversity data help the private and finance sectors manage risks?"
- Conservation Campus (half-day) on "Applying the new IUCN Standard to identify Key Biodiversity Areas"

As the Joint Task Force's work around development of the KBA Standard nears completion, the focus will shift to operationalizing the KBA Partnership and establishing the KBA Committee. The technical work in developing detailed user guidelines for the KBA Standard and establishing the rules and procedures for nominating, reviewing and recognizing sites as KBAs will be taken up by this new committee. A KBA Partnership negotiation meeting will be held in February 2016 in Cambridge, UK.

Invasive Species Specialist Group

Piero Genovesi, Chair, IUCN SSC Invasive Species Specialist Group (ISSG)

Key achievements

- The ISSG is playing a major role in advising on the implementation of the new EU Regulation on Invasive Alien Species.
- The ISSG's work for the Convention on Biological Diversity on the Global Register of Introduced and Invasive Species has almost achieved global coverage.
- Work is continuing to develop the IUCN Environmental Impact Classification for Alien Taxa (EICAT).
- The ISSG has developed a number of global invasive species indicators as part of its contribution to the work of the Biodiversity Indicators Partnership.
- The ISSG carried out an extensive collaboration with the Convention on Biological Diversity on the use of biocontrol in managing widespread invasive species.
- The redeveloped Global Invasive Species Database is ready to be launched.

Background

The IUCN SSC Invasive Species Specialist Group (ISSG) aims to reduce threats to natural ecosystems and the native species they contain by increasing awareness of invasive alien species, and of ways to prevent, control or eradicate them. It currently has over 210 core members from over 35 countries and a wide informal global network of over 2,000 conservation practitioners and experts who contribute to its work. The ISSG promotes and facilitates the exchange of invasive species information and knowledge across the globe and ensures the linkage between knowledge, practice and policy so that decision-making is informed.



The two core activity areas of the ISSG are:

- Policy, technical advice and advocacy;
- Information exchange through online resources and tools and through networking.

Policy, technical advice and advocacy

In 2015 ISSG has continued mainstreaming the invasive alien species issue at the international level, working in synergy with the IUCN Secretariat, global conventions, regional bodies, national governments, other conservation agencies and civil society to support the development of science-based policies on this issue. Below are some of the highlights of this area of work:

European Regulation on Invasive Alien Species

The ISSG Chair and other members played a key role in the enforcement of the recently adopted EU Regulation on Invasive Alien Species¹. The regulation was approved by the European Parliament in April 2014, and entered into force in January 2015. In 2015 ISSG worked in collaboration with BirdLife International and other organisations to provide guidance to parties on the implementation of the regulation. ISSG also developed a shadow list of invasive species to consider for inclusion in the regulation in the future. The ISSG Chair is a member of the Scientific Forum that will provide advice to the European Commission on the enforcement of the regulation. Furthermore, ISSG is working with the Joint Research Centre of the European Commission to align the information system supporting the implementation of the regulation to IUCN and Convention on Biological Diversity (CBD) standards, in particular for what concerns pathways of invasions. Furthermore, ISSG has contributed to developing an horizon-scanning exercise for Europe, aimed at identifying possible new invaders to the region in order to guide prevention efforts based on the EU Regulation².



Meeting of experts at IUCN Brussels Office, to discuss the possible shadow list for the EU Regulation on Invasive Species.



Workshop in Brussels for the Horizon-scanning exercise.

¹Genovesi, P., Carboneras, C., Vilà, M. & Walton, P. (2014). EU adopts innovative legislation on invasive species: a step towards a global response to biological invasions? *Biol. Invasions*.

² Roy, E., Adriaens, T., Aldridge, D.C., Blackburn, T.M., Branquart, E., Brodie, J., Carboneras, C., Cook, E.J., Copp, G.H., Dean, H.J., Eilenberg, J., Essl, F., Gallardo, B., Garcia, M., Garcia-Berthou, E., Genovesi, P., Hulme, P.E., Kenis, M., Kerckhof, F., Kettunen, M., Minchin, D., Nentwig, W., Nieto, A., Scalera, R., Schindler, S., Schonrogge, K., Sewell, J., Solarz, W., Stewart, A., Tricarico, E., Vanderhoeven, S., van der Velde, G., Vilà, M., Wood, C.A. & Zenetos, A. (2015). Invasive Alien Species - Prioritising prevention efforts through horizon scanning.

Global Invasive Alien Species Partnership

Following the agreement signed by the IUCN and ISSG with the Secretariat of the Convention on Biological Diversity (SCBD) in November 2011 to support and assist the implementation of the CBD Strategic Plan 2011–2020 in relation to invasive species, ISSG has continued to work closely with the SCBD taking a lead in the activities of the Global Invasive Species Information Partnership (GIASI Partnership).

Global Register of Introduced and Invasive Species

ISSG is the lead agency in the development of the Global Register of Introduced and Invasive Species (GRIIS)³. In 2015 ISSG continued compiling in order to achieve global coverage. There are plans to present the results of the GRIIS global coverage at the CBD 20th Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) in April 2016 – where GRIIS will be officially launched – and at the CBD 13th Meeting of the Conference of the Parties (COP) in December 2016.

GRIIS, which has its own interface, posts annotated and verified inventories of introduced and invasive species of all Parties to the CBD in phase 1 (which is on-going) and of all EU Overseas Territories and Regions (250+ countries and territories). All species records are verified by a network of editors (each country has its own nominated editors ranging from 2 to 6 editors per country). GRIIS will also serve as an ALERT system to countries of new alien invasive incursions in their neighbouring countries and trading partners.

GRIIS will thus provide lists of introduced and invasive species for each country of the world. Furthermore, ISSG is having discussions on how to make the information fully available to users, and there is an interest by Scientific Data to help in this direction⁴. The plan of work for the future is to integrate all GRIIS data into the Global Invasive Species Database (GISD), and through it, into the IUCN Red List.

Pathways of introduction and spread of Invasive species

ISSG has taken the lead in the development of a schema classifying and categorizing pathways of introduction of invasive alien species. The schema was included in an information document developed by the SCBD for CBD COP12 in October 2014. The COP, in its decisions on invasive alien species, encouraged ISSG to continue its work on pathway analysis and prioritizing pathways for action^{5,6}. The categorization has been presented in a scientific publication⁷, and other publications have been submitted.

ISSG also worked on a prototype of a resource related to known likely pathways of introduction. The SCBD has requested the ISSG to submit a report on all enhancements undertaken by the group at the upcoming SBSTTA 20 and COP13.

Ranking of Invasive Species based on type and magnitude of impacts

ISSG was also encouraged to continue work on the ranking of invasive species based on the type and magnitude of impacts based on the paper by Blackburn *et al.* published in 2014⁸. The COP of the CBD also called IUCN to continue its work in this direction. This work was originally referred to as the IUCN Black List of Invasive Species, but has now been renamed as the IUCN Environmental Impact Classification for Alien Taxa (EICAT).

³ The Global Register of Invasive Species (GRIS) was developed as a concept and prototype by the IUCN SSC Invasive Species Specialist Group (ISSG) in 2006 as part of a project undertaken for the Defenders of Wildlife on the Regulation of Live Animal Imports into the United States. The concept was revisited and expanded by the ISSG to address Aichi Biodiversity Target 9 and support its achievement with the development of the Global Register of Introduced and Invasive Species (GRIIS). GRIIS is hosted by the ISSG, and contains annotated and validated country-level inventories of introduced and invasive species. Development and population of the GRIIS has been undertaken by the ISSG within the framework of activities of the Information Synthesis and Assessment Working Group of the GIASI Partnership <<http://www.griis.org/>>.

⁴ <http://www.nature.com/sdata/about/faq#q5>

⁵ <http://www.cbd.int/doc/meetings/cop/cop-12/in-session/cop-12-L-04-en.pdf>

⁶ <http://www.cbd.int/doc/meetings/cop/cop-12/in-session/cop-12-L-05-en.pdf>

⁷ Essl, F., Bacher, S., Blackburn, T.M., Booy, O., Brundu, G., Brunel, S., Cardoso, A.-C., Eschen, R., Gallardo, B., Galil, B., García-Berthou, E., Genovesi, P., Groom, Q., Harrower, C., Hulme, P.E., Katsanevakis, S., Kenis, M., Kühn, I., Kumschick, S., Martinou, A.F., Nentwig, W., O'Flynn, C., Pagad, S., Pergl, J., Pyšek, P., Rabitsch, W., Richardson, D.M., Roques, A., Roy, H.E., Scalera, R., Schindler, S., Seebens, H., Vanderhoeven, S., Vilà, M., Wilson, J.R.U., Zenetos, A. & Jeschke, J.M. (2015). Crossing frontiers in tackling pathways of biological invasions. *Bioscience*, 65, 769–782.

⁸ Blackburn TM, Pysek P., Bacher S. *et al.* (2011). A proposed unified framework for biological invasions. *Trends in Ecology & Evolution*, 26, 333–339. <http://dx.doi.org/10.1016/j.tree.2011.03.023>

The proposed EICAT methodology was presented to the SSC Steering Committee in August 2014, to the International Plant Protection Convention (IPPC) in March 2015, and in a dedicated workshop held in Leipzig in March 2015, attended by ISSG members, the CBD Secretariat, the European Commission, CAB International, Island Conservation, the Global Biodiversity Information Facility (GBIF) and the IUCN Red List Unit. Subsequently, the method has also been presented in a meeting of the Interagency Liaison Group on Invasive Species, attended by the World Trade Organization (WTO), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the International Maritime Organization (IMO) and other partners.

On the basis of the comments and suggestions received in the meetings, the draft methodology has been revised and integrated, and has then been presented in a scientific paper with detailed guidance to application⁹. The results of this preparatory phase were presented at the SSC Leaders Meeting in Abu Dhabi in October 2015. Further consultations are still continuing, and it is hoped that the methodology can be completed later in 2016.

Collaboration with FAO and International Plant Protection Convention

The Chair of the ISSG has worked at strengthening collaboration with the IPPC and the Food and Agriculture Organization of the United Nations (FAO). He attended the IPPC Commission on Phytosanitary Measures (CPM) meeting hosted at the FAO in 2015, and was invited to give a plenary speech on 24 September 2015¹⁰.



Invasive alien species indicators

ISSG is leading the development of invasive species indicators as part of the Biodiversity Indicators Partnership (BIP), a CBD-mandated initiative. In 2015, ISSG worked with partners¹¹ on indicators that measured trends in the numbers of introduced and invasive species, and trends in invasive alien species vertebrate eradications.

ISSG also completed an analysis on trends in numbers of invasive plant species for the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), disaggregating the data by types of plants. The results of these indicators were major contributions to the 4th Global Biodiversity Outlook (GBO4) report¹². The ISSG Chair and Programme Officer (Shyama Pagad) were contributing authors to GBO4 Chapter 9 related to Aichi Biodiversity Target 9 on invasive alien species.

The ISSG is supporting the BIP in exploring options on the use of disaggregated datasets from the global indicators for use in developing national-level indicators. The results of the work have been published in an article in *Science*¹³, co-authored by the ISSG Programme Officer Shyama Pagad.

The work of ISSG on this issue has been published in a recent paper in the *Journal of Nature Conservation*¹⁴, with a specific focus for Europe.

⁹Hawkins, C.L., Bacher, S., Essl, F., Hulme, P.E., Jeschke, J.M., Kühn, I., Kumschick, S., Nentwig, W., Pergl, J., Pyšek, P., Rabitsch, W., Richardson, D.M., Vilà, M., Wilson, J.R.U., Genovesi, P. & Blackburn, T.M. (2015). Framework and guidelines for implementing the proposed IUCN Environmental Impact Classification for Alien Taxa (EICAT). *Divers. Distrib.*, n/a–n/a.

¹⁰ <https://www.youtube.com/watch?v=qNBmJPzNYxg>

¹¹ Austrian Environment Agency, Island Conservation

¹² <http://www.cbd.int/gbo4/>

¹³ Tittensor, D. P. *et al.* A mid-term analysis of progress towards international biodiversity targets. *Science* (80-). Accepted, 241–244 (2014).

¹⁴ Rabitsch, W., Genovesi, P., Scalera, R., Biala, K., Josefsson, M. & Essl, F. (2015). Developing and testing alien species indicators for Europe. *J. Nat. Conserv.*, 29, 89–96.

Developing global guidance on the use of biological control agents to manage invasive alien species

Following decision XII/17 of the COP of the CBD, calling IUCN to support the CBD Secretariat in developing a guidance on the use of biological control agents to manage invasive alien species, ISSG and the SCBD organized an expert meeting aimed at synthesising information on the safe, appropriate and effective use of classical biological control as a sustainable for the management of widespread invasive alien species.

The expert workshop took place in Montreal, Canada, from 28 to 30 October 2015 and was attended by 27 participants including several ISSG members, and representatives from 19 countries and 7 international organisations. The background information on the workshop (prepared by the CBD from country submissions and consultations with experts) is found in CBD report UNEP/CBD/IAS/EM/2015/1/2.

This background information was used as the basis for plenary discussions on key issues, and two group discussion sessions (five simultaneous groups with one biological control expert allocated to each group). There was a report back session on a) the risks and concerns and b) the benefits and opportunities in relation to the information contained in the background information. Biological control experts in each group were there to advise, but not to lead the discussions and each group. Participants were asked to be open minded and objective in their thinking, to avoid advocating a particular position (unless the position was one widely accepted by the represented country), to listen to all in the group, to let everyone have their say, and to ensure that all statements presented were evidence-based as far as possible. The workshop finished with two plenary sessions on organising the synthesis and collectively preparing the key messages.

The workshop concluded with a joint preparation of the key messages in this report. The background material is also being revised and updated to support these outcomes. It is hoped that the broad acceptance of the key messages from the expert meeting provided in this report will assist in achievement of the outcomes in CBD Aichi Target 9. The outcome of the work of the expert workshop will be a synthesis report to be discussed at SBSTTA 20 in April 2016; subsequently a joint IUCN/SSC/ISSG-CBD extended report will be published in the Technical Series of the CBD.

It is important also to stress that this work is expected to lead to the development of an IUCN position on biological control for conservation purposes, that will indeed have a global impact on the policy and management levels. Also, this work confirms the efficacy of the ongoing collaboration between IUCN and the CBD, that is particularly productive on the issue of invasive species.

ISSG at the SSC Leaders' Meeting, Abu Dhabi

The ISSG Chair and the Programme Officer attended the SSC Leaders' Meeting in Abu Dhabi in September 2015. The Chair of ISSG took part to the pre-meeting activities, in particular on behalf of the SSC Policy Sub-Committee.

During the main meeting, the ISSG led or took part in several meetings and events, including a workshop on "Invasive alien species in freshwater ecosystems: a review of collaborative project opportunities for the Invasive Species Specialist Group and freshwater-focused SSC Groups".

During the Leaders' Meeting, Shyama Pagad, Programme Officer of the ISSG, was awarded the SSC Chair's Citation of Excellence by the Chair of the SSC, Simon Stuart, for her outstanding work on networking and exchange of data and information on invasive species.



IISG Programme Officer, Shyama Pagad, receiving the SSC Chair's Citation of Excellence at the SSC Leaders' Meeting, Abu Dhabi 2015, from Simon Stuart, Chair of the IUCN SSC.

Management of Invasive alien species in Protected Areas

ISSG is progressing work, in collaboration with the IUCN World Commission on Protected Areas (WCPA), to develop “Guidelines for the Management of Invasive Alien Species in Protected Areas”. These guidelines will be presented as one of the Technical Series published by the IUCN WCPA. The draft guidelines and the outline of the content were discussed at a dedicated session at the World Park Congress in November 2014, co-organized by ISSG, the CBD Secretariat, WCPA, the Italian Ministry of Environment, the Italian Federation of Parks, and the Regional Park Agency of Latium. In 2015 the draft was improved, and ISSG plans to present it at the next IUCN World Conservation Congress (WCC) in September 2016.

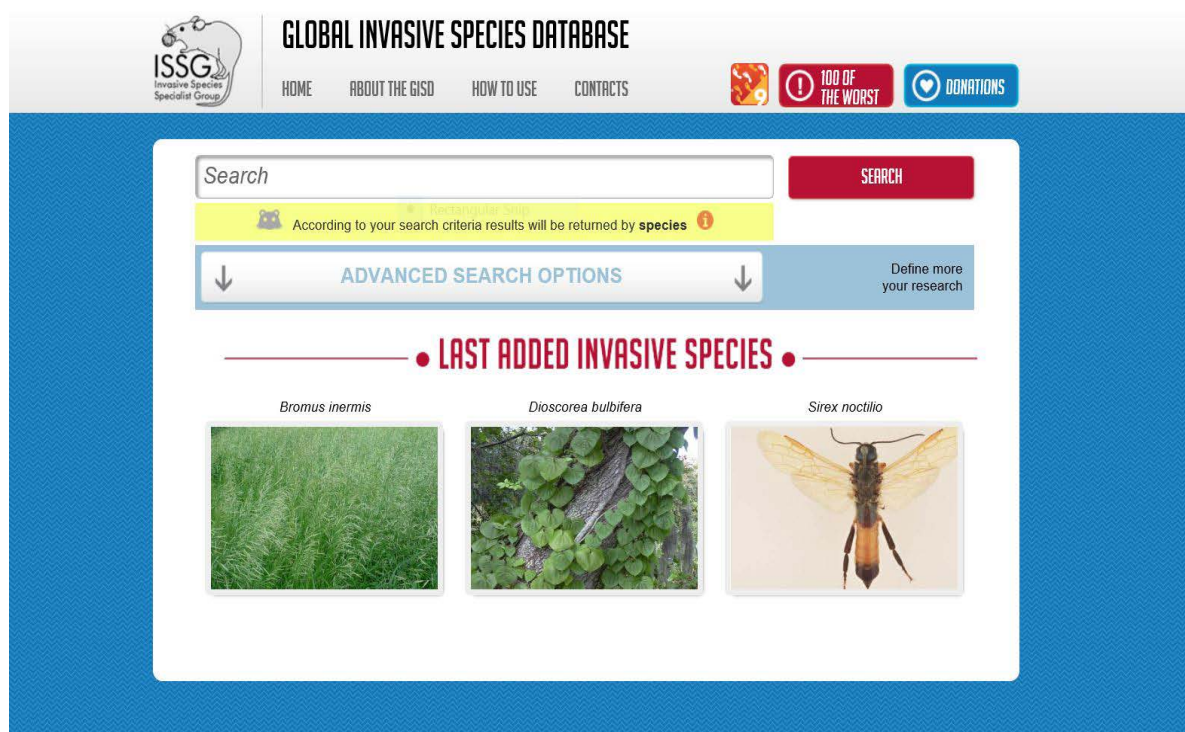
Information exchange through online resources and tools, and networking

Redesign of the Global Invasive Species Database

The ISSG has finalized the redesign of its flagship knowledge product, the Global Invasive Species Database (GISD). This is now complete and will be launched at the CBD SBSTTA 20 meeting in April 2016. The URL of the redesigned GISD is www.iucngisd.org, to stress the IUCN label on the product.

The redesigned GISD presents a vastly improved search functionality including providing users with a selection of options to search on the taxonomy of the species, the region of presence, the pathways of introduction, the impacts it causes, and other annotations related to the species. The ISSG is working on completing the full and dynamic integration of the GISD with the IUCN Red List, as well as exploring similar interlinks with other IUCN knowledge products such as the World Database of Protected Areas.

The redesigned GISD was presented to the SSC Steering Committee in September 2015, where it was positively received. In 2015 several papers were published based on an analysis of GISD data^{15,16}.



Home page of the redesigned Global Invasive Species Database.

¹⁵ Bellard, C., Genovesi, P. & Jeschke, J.M. (2016). Global patterns in threats to vertebrates by biological invasions. *Proc. R. Soc. London B Biol. Sci.*, 283.

¹⁶ Essl, F., Bacher, S., Blackburn, T.M., Booy, O., Brundu, G., Brunel, S., Cardoso, A.-C., Eschen, R., Gallardo, B., Galil, B., García-Berthou, E., Genovesi, P., Groom, Q., Harrower, C., Hulme, P.E., Katsanevakis, S., Kenis, M., Kühn, I., Kumschick, S., Martinou, A.F., Nentwig, W., O’Flynn, C., Pagad, S., Pergl, J., Pyšek, P., Rabitsch, W., Richardson, D.M., Roques, A., Roy, H.E., Scalera, R., Schindler, S., Seebens, H., Vanderhoeven, S., Vilà, M., Wilson, J.R.U., Zenetos, A. & Jeschke, J.M. (2015). Crossing frontiers in tackling pathways of biological invasions. *Bioscience*, 65, 769–782.

Three other resources in development include: the Global Register of Introduced and Invasive Species (GRIIS); the Island Biodiversity and Invasive Species Database (IBIS - a database dedicated to the impact of invasive alien species on native species and natural areas on islands); and the Invasive Alien Species Pathway Management Resource. Options are being explored to develop a common database to manage all of the ISSG's information resources. In 2015, the ISSG published a paper describing the work done on information systems over the years¹⁷.

Global Register of Introduced and Invasive Species (GRIIS)

As mentioned earlier in this report, the GRIIS³ is hosted by the ISSG, and contains annotated and validated country-level inventories of introduced and invasive species. The development and population of the GRIIS was undertaken by the ISSG within the framework of activities of the Information Synthesis and Assessment Working Group of the GISA Partnership. The first phase of GRIIS covered over 100 countries; phase 2 is ongoing and aims at global coverage by April 2016.



Home page of Global Register of Introduced and Invasive Species.

Island Biodiversity and Invasive Species Database (IBIS)

ISSG is working closely with the Joint Research Centre (JRC) of the European Commission (within the framework of the Biodiversity and Protected Area Management Programme (BIOPAMA)) in the development of the Island Biodiversity and Invasive Species Database (IBIS) that will form the core repository on data and information related to invasive species impacts on native species and natural areas on islands in the African-Caribbean-Pacific (ACP) countries. The IBIS database is a stand-alone resource.

World Register of Introduced Marine Species (WRIMS)

WRIMS¹⁸ aims to record all marine species that have been moved from their native range into an introduced range; additionally WRIMS records the pathway or vector of introduction as well as evidence of any known impacts on native species, and their habitats. WRIMS is a subset of the World Register of Marine Species (WoRMS): the taxonomy of the

¹⁷ Pagad, S., Genovesi, P., Carnevali, L., Scalera, R. & Clout, M. (2016). IUCN SSC Invasive Species Specialist Group: invasive alien species information management supporting practitioners, policy makers and decision takers. *Manag. Biol. Invasions*, 6, 127–135.

¹⁸ < <http://www.marinespecies.org/introduced/>>

World Register of Introduced Marine Species

A gateway to introduced, cryptogenic & previously considered alien species



[Intro](#) | [Search taxa](#) | [Browse taxa](#) | [Distributions](#) | [Terminology](#) | [References](#) | [Statistics](#) | [Online sources](#) | [Log out](#)

World Register of Introduced Marine Species (WRIMS)

Introduction



The World Register of Introduced Marine Species (WRIMS) records which marine species in the World Register of Marine Species (WoRMS) have been introduced deliberately or accidentally by human activities to geographic areas outside their native range. It excludes species that colonised new locations naturally (so called 'range extensions'), even if in response to climate change.

WRIMS notes the origin (source location) of the species at a particular location by country, sea area and/or latitude longitude as available. If the species is reported to have had ecological or economic impacts it is considered invasive in that location. Each record is linked to a source publication or specialist database. A glossary of terminology is available. Links have been provided to species profiles of well-known marine invasive species in the Global Invasive Species Database (GISD) of the IUCN Invasive Species Specialist Group (ISSG).

In using WRIMS, users need to consider possible species misidentifications in the sources, and that for some species it is uncertain which is their native and introduced ranges. Whether a species is 'invasive' can vary between locations and over time at a particular location.

Background of the database

In **2008-2009** the IUCN Invasive Species Specialist Group (ISSG) worked on a project, within the framework of the Ocean Biogeographic Information System (OBIS), that developed an annotated dataset of marine introduced and invasive species for the World Register of Marine Species (WoRMS) in order to flag species on the register as "alien and invasive species".

Both online databases and publications were consulted with an aim to achieve global coverage. They include:

- Delivering Alien Invasive Species Inventories for Europe (DAISIE)
- Gall, B. (2009). Taking stock: inventory of alien species in the Mediterranean Sea. *Biological Invasions* 11(2): 359-372.
- Lasram, F.B.R.; Moullot, D. (2009). Increasing southern invasion enhances congruence between endemic and exotic Mediterranean fauna. *Biological Invasions* 11: 697-711.
- Hayes, K.R. (2005). Marine Species Introductions. Unpublished data from CSIRO.
- Molnar, J.L.; Gamboa, R.L.; Revenga, C.; Spalding, M.D. (2008). Assessing the global threat of invasive species to marine biodiversity. *Frontiers in Ecology and the Environment* 6(9): 485-492.

In addition to biological status (represented as occurrence, provenance and invasiveness), annotations included higher taxonomy, origin of species, introduced location, as well as (where available) information on the date of first record/introduction and pathway of introduction.

In **2013-2014**, ISSG worked with the Flanders Marine Institute (VLIZ) on a data collection project developed within the framework of the Biology Project of the European Marine Observation and Data Network (EMODnet) to complete trait information related to "invasiveness". The dataset submitted in 2009 was updated using additional data and information from online databases such as:

- The Global Invasive Species Database (GISD)
- The European Alien Species Information Network (EASIN)
- The Information system on Aquatic Non-indigenous Species (AquaNIS)
- The National Exotic Marine and Estuarine Species Information System (NEMESIS)

and (recently) published literature.

The terminology and definitions to describe occurrence, provenance and invasiveness have been revised and expanded. Additionally, any available information on abundance, pathways of introduction and spread, evidence of impacts on biodiversity were documented. The geographic coverage of this dataset is global. Focus was placed on documenting authoritative information on marine species introductions in the recognized marine bio-invasion hotspots.

Home page of World Register of Introduced Marine Species.

species is managed by the taxonomic editor community of WoRMS, whereas the alien-related information is managed by both the taxonomic editors and the thematic editors within WRIMS. Just like its umbrella-database WoRMS, WRIMS is dynamic: a team of editors is not only keeping track of new reports of alien species, but they also scan existing literature and databases to complete the general distribution range of each alien species in WRIMS.

Aliens-L List service

The ISSG continues maintaining and running the Aliens-L list service which is an active and dynamic list service with over 1341 members. It is used in particular to advise on potential solutions to problems resulting from invasive alien species.

Aliens-Referral service

The ISSG continues to support researchers, practitioners and communities with their information needs and linkages to experts through its referral service. ISSG also contributes invasive species-related information to the Ramsar Forum and other related list services.

Climate Change Specialist Group

Wendy Foden, Chair, IUCN SSC Climate Change Specialist Group

Bruce Young, Deputy Chair, IUCN SSC Climate Change Specialist Group

Key achievements

- A new partnership with the Yorkshire Wildlife Park will provide the group with administrative and logistical support and fund the completion and launch of the SSC guidelines for assessing species' vulnerability to climate change.
- A survey of other Specialist Groups' needs for guidance on climate change provided valuable information that is being used to help shape the CCSG's ongoing programme of work.
- The SSC guidelines on assessing species' vulnerability to climate change is nearing completion, and will be released for external review in March 2016 and launched at the World Conservation Congress in September 2016.
- Input was provided into the Standards and Petitions Sub-Committee's updates to the climate change sections of the Red List Guidelines.
- Preparation for and participation in the UNFCCC COP21 (Paris, December) included:
 - Producing a scientific paper on observed impacts of climate change on natural systems highlighting and demonstrated impacts of these on human livelihoods.
 - Strong participation at the science preparation meeting for the COP ('Our Common Future under Climate Change', Paris, July 2015).
 - Producing an information product on species and climate change which was distributed as part of IUCN media for the COP.
 - Coordinating a pertinent and well-attended side event and panel discussion on "Implementing Climate Solutions" at the COP.
- Formation of a joint Climate Change Task Force to integrate climate change considerations into SSC guidelines for species conservation planning
- Co-ordination of work programmes and activities with the World Commission on Protected Areas' "Protected Areas and Climate Change" Specialist Group.

1. Report on 2015 activities

The Climate Change Specialist Group (CCSG) had a very busy 2015, with activities spanning the scientific, conservation and public outreach arenas. The year saw significant progress in most of our key work themes such that we anticipate completing several of these and beginning new initiatives by the end of 2016. The overall mission of our group remains, however, to: “Provide guidance and information to promote sound conservation decision-making and action under climate change, and to promote coordinated climate change responses by SSC Specialist Groups (SGs), partner organizations and IUCN Program Areas”.

Amongst the most exciting events of 2015 is the initiation of a new partnership between the CCSG and the Yorkshire Wildlife Park. This extremely well-renowned park receives over 700,000 visitors per year and has a strong focus on climate change through its polar bear exhibits. The zoo will provide the CCSG with administrative and logistical support and fund the completion and launch of the SSC guidelines for assessing species’ vulnerability to climate change. The CCSG will assist the zoo’s public outreach on climate change and assist implementation of its conservation objectives. We are extremely grateful to Kira Mileham and the SSC team for their help in setting up this vital partnership.

To understand how best to serve the climate change needs of other SSC Specialist Groups, we carried out a Specialist Group survey to which over 140 members responded (Figure 1). Results are currently being analysed and prepared for publication, and these will help to shape the CCSG’s programme of work in 2016 and beyond. As well as indicating the types of climate change impacts of greatest concern, they also highlighted the strong need for guidance on both assessing species’ vulnerability to climate change, and for considering climate change in Red List assessments.

Climate Change Impact Mechanisms of Concern for SSC Focal Species

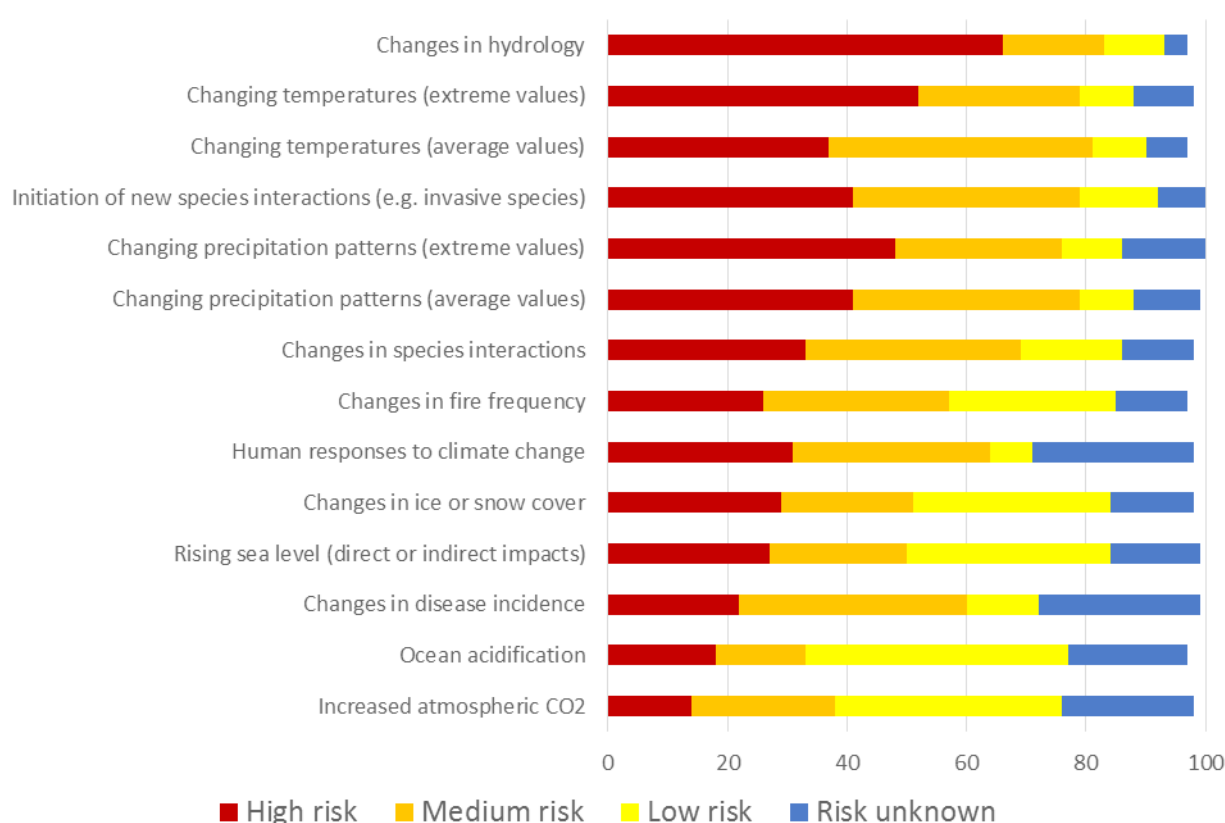


Figure 1. The CCSG survey of SSC Specialist Groups’ needs for responding to climate change revealed the main impact mechanisms of concern for the SSC’s focal species. Over 140 Specialist Group members responded to the survey and specified their concerns for animals, plants and fungi from a broad range of regions and ecosystems globally.

The SSC guidelines on assessing species’ vulnerability to climate change are nearing completion. Their external review is planned for March 2016 and their final launch is scheduled for the IUCN World Conservation Congress in September 2016. The guidelines have been supplemented with 10 case studies describing real-world examples of how conserva-

tion practitioners selected between climate change vulnerability assessment approaches, applied appropriate methods and used the results.

The CCSG has also provided input into the Standard and Petitions Sub-Committee’s updates to the climate change sections of the Red List Guidelines, led by Resit Akcakaya. This is intended to help users to consider climate change in undertaking Red List assessments and to guide the way in which such assessments are carried out (Figure 2).

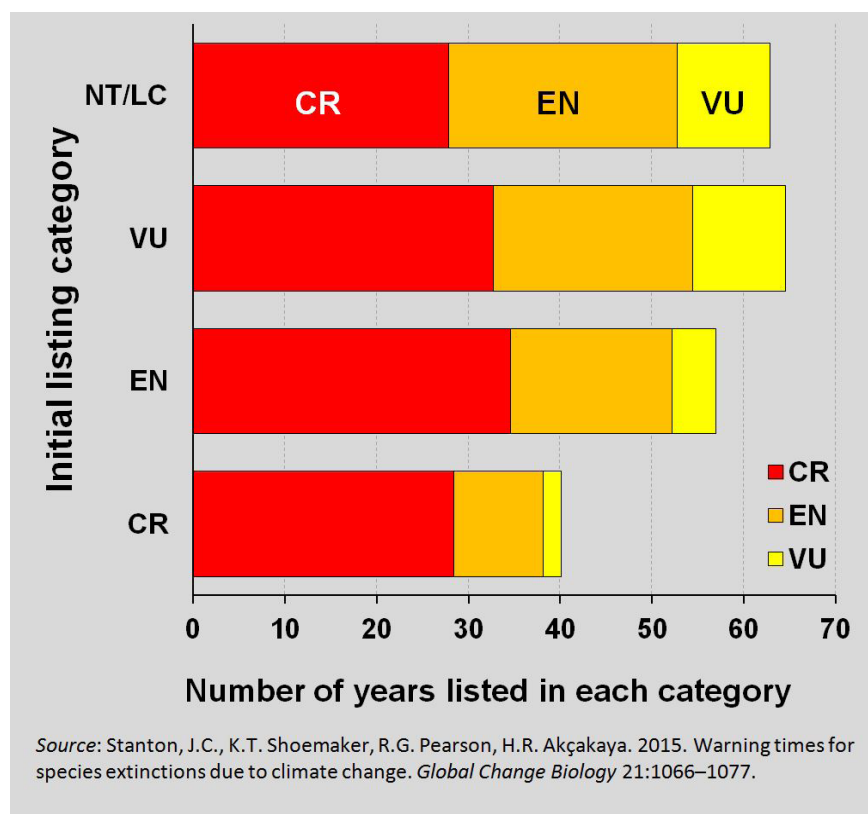


Figure 2. Research by CCSG members showed that the IUCN Red List provides substantial warning times for climate change driven species extinctions. By simulating climate change driven declines in North American reptiles and amphibians, they calculated the average number of years before extinction that species were listed as a threatened species in each IUCN Red List Category: CR (red), EN (orange), and VU (yellow). Each bar summarizes results for a set of species that start off at a specific threat category.

The group prepared for and contributed to the historic United Nations Framework Convention on Climate Change (UNFCCC) 21st Conference of the Parties (COP) in Paris in four key ways.

Firstly, led by Brett Scheffers, we originated and produced a review paper on observed impacts of climate change on natural systems. The paper includes a classification of impacts at levels from genetic to ecosystem, and highlights demonstrated links with human livelihoods and well-being. Although reviewed by *Nature* in advance of the COP, the paper wasn’t ultimately accepted by the journal and is currently being resubmitted elsewhere.

Secondly, to underscore and promote the science underpinning the imperative for an ambitious agreement at the UNFCCC COP 21, key leaders of the Intergovernmental Panel on Climate Change initiated a high-profile conference titled “Our Common Future under Climate Change” in Paris in July. Four group members actively participated, and Guy Midgely and Wendy Foden presented plenary talks.

Thirdly, led by Paul Pearce-Kelly, we worked with the IUCN Global Species Programme to develop an information product on species and climate change which was distributed as part of IUCN information and media for the COP.

Finally, at the COP, Jamie Carr led a pertinent and very well-attended side event and panel discussion on “Implementing Climate Solutions” which stimulated valuable debate received excellent feedback.



At the historic United Nations Framework Convention on Climate Change (UNFCCC) 21st Conference of the Parties in Paris in December, Angela Andrade, Deputy Chair of IUCN’s Commission on Ecosystem Management, presents her recommendations in the “Implementing climate solutions” session led by the CCSG’s Jamie Carr (seated, facing), Climate Change Programme Officer or the IUCN Global species Programme.

Six members of the group were privileged to attend the SSC Leaders’ Meeting in Abu Dhabi, most representing multiple SSC SGs. Activities and highlights included a CCSG “meet and greet” that allowed other groups to discuss their climate change-related queries with us and for us to explore their activities, challenges and needs. We ran a well-attended workshop entitled “Assessing climate change vulnerability of species” which included detailed discussions on Red Listing and climate change.

The events helped us to identify SGs that are carrying out or planning Red Listing and need assistance to include climate change considerations in their assessments. Plans for joint work with the Pinniped SG in particular are now in progress. Since our last dedicated group meeting was in 2013, the event also provided a rare and valuable opportunity for *ad hoc* meetings of group members, and this is facilitated valuable discussion on future directions for the group.

Recognising the strong need to coordinate climate change activities within IUCN’s Commissions, the CCSG and the World Commission on Protected Areas’ ‘Protected Areas and Climate Change’ (PACC) Specialist Group have established links and Bruce Young attended the PACC’s inaugural meeting in Mexico in October, and contributed to ensuring complementary programmes of work.

The CCSG also formed of a joint Climate Change Task Force, led by Mark Stanley Price, to integrate climate change considerations into the Species Conservation Planning Sub-Committee’s guidelines for developing species conservation plans.



Bruce Young (far left) participates in the inaugural meeting of the World Commission on Protected Areas’ ‘Protected Areas and Climate Change Specialist Group’ (PACCSG) in Mexico (October 2015).




< VULNERABLE >
VU

Hooded seals (*Cystophora cristata*) have dropped in abundance by 90% in the North Eastern Atlantic Arctic over the past few decades. This has corresponded with regional sea ice declines of 2-4 times those of other Arctic areas. © Kit Kovacs, Norwegian Polar Institute




< ENDANGERED >
EN

The enigmatic Lungless frog (*Barbourula kalimantanensis*) of Borneo is considered at risk from climate change. The frog species absorbs oxygen through its permeable skin, but warmer water holds less gas. In addition, with more variability in rainfall expected with climate change, streams will also suffer more floods and droughts, altering the physical properties of the streams where these frogs live even more. © David Bickford

Congratulations to James Watson, new president of the Society for Conservation Biology



Incoming Society for Conservation Biology President, James Watson (left), receives the president's gavel from outgoing president, Rodrigo Medellin (who is also Co-Chair of the SSC Bat SG).

In June 2015, James Watson, then Co-Chair of the CCSG, was elected president of the international Society for Conservation Biology. The Society is an international professional organization dedicated to promoting the scientific study of the phenomena that affect the maintenance, loss, and restoration of biological diversity. Its membership of >5,000 people includes resource managers, educators, government and private conservation workers and students. James is only the second NGO representative and third non-American to be elected to the position. His vision for his term is to promote more active involvement in global policy development, and for the society to be more proactive in conservation oriented disciplines beyond the ecology and biology.

Due to his commitments to the Society for Conservation Biology, his leadership roles at the Wildlife Conservation Society and University of Queensland, and becoming a father for the second time, James resigned his position as Co-Chair of the CCSG. His Co-Chair, Wendy Foden, assumed a sole chair role, and Bruce Young became Deputy Chair of the group.

The group offers enormous thanks to James for his vital role in establishing the CCSG, and for leading it through its first 2.5 years. His clear vision, strong leadership and formidable energy shaped the group's direction and built up its powerful momentum. We're grateful for his ongoing contributions and hope that he'll consider resuming a formal leadership role in the future.

Annex



Annex 1. The 36 Key Species Results in the 2013-2016 Species Strategic Plan

IUCN Global Result – Valuing and Conserving Nature

1. *IUCN Red List taxonomic and geographic coverage is expanded.* Taxonomic coverage of the Red List is expanded so that it better informs biodiversity conservation.
2. *More IUCN Red List Assessments are prepared at national and, where appropriate, at regional scales.* The ongoing development of national and regional Red Lists is catalysed.
3. *IUCN Red List Index is widely used as an effective biodiversity indicator.* Wide use of the Red List Index (RLI) as an indicator for monitoring trends in the status of species groups is developed and promoted.
4. *The IUCN Red List is a scientifically rigorous tool for conservation.* The Red List contains the necessary information to make it a reliable tool for informing biodiversity conservation.
5. *IUCN Red Listing capacity built through expanded training programmes.* Capacity developed to ensure that the IUCN Red List Criteria are applied rigorously and consistently to increase the credibility of the Red List.
6. *The IUCN Red List is underpinned by cutting-edge information management technologies.* The information technology infrastructure to support Species Strategic Plan objectives is enhanced.
7. *The IUCN Red List is used effectively to inform policy and action.* The IUCN Red List data and information is increasingly used to inform policy and action in private and public sector.
8. *The IUCN Red List is recognized as a global brand.* The Red List developed as a global brand.
9. *The IUCN Red List is sufficiently and sustainably financed.* Funds secured to ensure the sustainability of the Red List.
10. *Strategic oversight is provided to the IUCN Red List.* Strategic oversight for delivering the Red List provided by Red List Committee.
11. *Measuring Conservation Success.* New methods for measuring and categorising the success of conservation in place.
12. *Population-level Monitoring and Analysis.* Monitoring programmes established for selected species and groups of species.
13. *Invasive Species.* Measures to manage invasive species greatly enhanced through focused efforts involving knowledge, policy and action.
14. *Integrating IUCN Knowledge Products.* IUCN's key biodiversity knowledge products (e.g. Red List and World Database on Protected Areas) fully integrated to allow interoperability and to maximize efficient use.
15. *Species Conservation Strategies, Action Plans and Tools.* Conservation action for species improved through application of IUCN species specific conservation strategies and action plans and other relevant tools.
16. *Setting global standards for the identification of sites of biodiversity conservation significance.* Global standard for defining and identifying "key biodiversity areas" developed and adopted.
17. *Applying IUCN standard for identification of sites of global biodiversity conservation significance.* Biodiversity conservation action improved through the application of consolidated standards.
18. *Wildlife Health.* Wildlife health monitoring in place and advice given on remedial actions needed.

19. *Re-introductions*. Information and advice service in place to support species reintroductions.
20. *Conservation Breeding, and links to ex situ community*. Advice and facilitation in place to support *ex situ* species recovery programmes.
21. *Global and regional policy for biodiversity conservation*. Global and regional policy mechanisms influenced to enhance the effectiveness of biodiversity conservation.
22. *Policy and action at national and cross-boundary levels*. Actions and policies for species and sites implemented at the national level.
23. *Communicating species conservation*. The effectiveness of IUCN's species conservation work enhanced through strategic and targeted communications.
24. *Fostering conservation on land and in water*. Conservation supported through existing and novel funding mechanisms.
25. *Special initiatives to tackle major conservation crises*. Focused attention brought to resolving major crises in biodiversity conservation.
26. *Analyses and investigations into pressing conservation issues*. High profile scientific analyses and investigations completed and published.
27. *World Species Congress*. World Species Congress held in 2015 to draw together the species conservation community and to chart progress in the achievement of the Aichi Biodiversity Targets.

IUCN Global Result – Effective and Equitable Governance

28. *Understanding and communicating sustainable use*. Greater common understanding achieved of the theory and practice of sustainable use of biodiversity, and key linkages to human livelihoods; the importance of species to supporting livelihoods, particularly of the poor, is demonstrated; and innovative, experience-based and adaptive approaches to sustainable use are explored.
29. *Enabling and implementing strategies for sustainable use*. The use of living natural resources is sustainable and recognized as a positive tool for achieving long-term conservation; and the importance of species to supporting the livelihoods of the poor is recognized by key stakeholders, leading to improved governance for people and nature.
30. *Human wildlife interaction (including marine)*. Livelihoods of people and species conservation enhanced through improved human-wildlife interactions.

IUCN Global Result – Nature-based Solutions

31. *Biodiversity and climate change understanding*. Impacts of climate change on species and the response of species to climate change documented, analysed and better understood.
32. *Biodiversity and climate change policy*. Biodiversity considerations taken into account in public and private sector adaptation and mitigation policies and practices at global and regional levels.
33. *Biodiversity and food production*. Biodiversity considerations introduced into emerging policies in the food production sector (agriculture, fisheries, and aquaculture).
34. *Maintaining genetic diversity of wild relatives of crops and domesticated animals*. The long-term supply of food resources secured through the conservation of wild relatives of crops (CWR) and domesticated animals.

35. *Species information for private sector.* Species information contributed to reduce the negative impacts and strengthen the benefits of corporate sector activities on biodiversity.
36. *Biodiversity considerations informing the limits to growth.* Biodiversity incorporated into nature-based solutions to macroeconomic thinking.

