



**The IUCN Species
Survival Commission**

QUARTERLY REPORT
DECEMBER 2021

Content

- 3 Executive Summary
- 8 SSC Chair's Office milestones 2021
- 13 IUCN Species Strategic Plan 2021-2025
- 14 The Species Conservation Cycle
- 16 Recent Activities
- 17 Conferences and Meetings
- 21 SSC Survey
- 22 The SSC DATA transition is over
- 24 Working with local conservationists
- 28 Protecting Marine Biodiversity
- 30 Comprehensive conservation planning
- 33 Sponsors and partners

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Black-spotted Rock Frog (*Staurois guttatus*) LC.

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Hairy oyster mushroom, *Panus lecomtei*

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Mandarinfish (*Synchiropus splendidus*), LC.

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IUCN Species Survival Commission



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Executive Summary

With the publication of this December 2021 *Quarterly Report*, we can now declare the IUCN 2016-2020 (+1) quadrennium closed! Five good years for SSC, having surpassed 10,000 members and reached 168 groups in 175 countries. Our network not only grew in quantity but also in quality and transparency, migrating to our new platform, the SCC DATA information system. Goals, activities and results can now be recorded in real-time – no need to wait to the end of the year to report – and any person from within and outside the network may request an instantaneous snapshot of any component of the Commission. It has been a slow transition, and we are deeply grateful to all of you for your patience and gradual adoption of these new standards. The SSC Chair's office team and the conservation Coordinators at the Global Center for Species Survival (GCSS) at Indianapolis Zoo have been extremely supportive (many thanks!), and will continue to guide SSC groups with SSC DATA and many other capacity-building efforts, communications and technical advice.

Other 2021 highlights include the consolidation of SSC Internal Grants and the SSC EDGE Internal Grants Program – both focused on providing funds to activities aligned with the SSC DATA planning process. National level work stood out through training of 27 Zambians, 47 Cameroonians and 35 Gabonese to apply the global KBA standard, 28 Malawian and 42 Cameroonian biologists to apply the IUCN Red List of Threatened Species standard, as well as completion of the Abu Dhabi Red List of Species and reaching the final stage of the emirate's Red List of Ecosystems.

Partnerships continue to be a source of major support to SSC groups. In addition to the seven taxon Coordinators and the Public Relations Specialist based at the GCSS, 19 additional staff working across eight countries support the SSC network to assess, plan and act. They are based at Centers for Species Survival in Paradise Wildlife Park (UK), Loro Parque Fundación (Spain), Georgia Aquarium (USA), Oceanário de Lisboa (Portugal), Albuquerque Biopark (USA), Parque Das Aves (Brazil) and Fundación Temaikèn (Argentina). Partners also are the primary source of support to the SSC Chair's office team, and we are grateful to the 31 organizations that continue to fund our work. Special thanks go to Environmental Agency – Abu Dhabi for providing support to SSC for another four years, and Re:wild for their stellar and deeply generous role as SSC's fiscal sponsor.

In this issue we dedicate a section to our Species Strategic Plan 2021-2025, and announce the refreshment of our Species Conservation Cycle visual image. We also invite our membership to collaborate by completing the SSC Survey to help us guide delivery of the Species Strategic Plan.

Three very interesting articles close this *Quarterly Report*. The first is by Bezeng et al., and reports on the recent achievements of Biodiversity Assessment for Spatial Prioritisation in Africa (BASPA),

working with conservationists in the National Herbarium-Cameroon, in partnership with Franklina Foundation. They focus on saving the Critically Endangered African zebrawood from illegal logging in Cameroon. Seed collection, training in IUCN standards, replanting and engaging with policy makers are all in their toolbox.

Catarina Fonseca follows with her account of how the Oceanário de Lisboa became a Center for Species Survival. She explains their motivations and vision for the future, the role they play in marine species conservation in Portugal and globally, as well as how they are already growing and expanding to accommodate an increasing work load.

Burbano-Girón *et al.* take systematic conservation planning one step further and introduce *comprehensive conservation planning*, a method for identifying complementary and critical areas that ensure the conservation of species, ecosystems, and ecological groups while minimizing the risk of being affected by landscape transformation. They illustrate the value of integrating data for prioritizing robust conservation area networks across the Neotropics.

Resumen Ejecutivo

Con la publicación de este Informe trimestral - Diciembre 2021, ¡ahora podemos declarar cerrado el cuatrienio 2016-2020 (+1) de la UICN! Cinco buenos años para la CSE, en los que superamos los 10.000 miembros y llegamos a 168 grupos en 175 países. Nuestra red no solo creció en cantidad sino también en calidad y transparencia, migrando a nuestra nueva plataforma, el sistema de información *SSC DATA*. Los objetivos, las actividades y los resultados ahora se pueden registrar en tiempo real, sin necesidad de esperar hasta el final del año para reportar, y cualquier persona dentro y fuera de la red puede solicitar una instantánea de cualquier componente de la Comisión. Ha sido una transición lenta y estamos profundamente agradecidos con todos ustedes por su paciencia y adopción gradual de estos nuevos estándares. El equipo de la oficina del presidente de la CSE y los coordinadores de conservación del Centro Global para la Supervivencia de Especies (GCSS) en el Zoológico de Indianápolis han brindado un gran apoyo (¡muchas gracias!) y continuarán guiando a los grupos de la CSE con el *SSC DATA* y muchos otros esfuerzos de desarrollo de capacidades, comunicación y asesoramiento técnico.

Otros aspectos destacados de 2021 incluyen la consolidación de las becas de subvención internas para la CSE y el programa de subvención en alianza con On the EDGE Conservation, ambos enfocados en proporcionar fondos para actividades alineadas con el proceso de planificación de *SSC DATA*. El trabajo a escala nacional se destacó a través de la capacitación de 27 zambianos, 47 cameruneses y 35 gaboneses para aplicar el estándar global KBA, 28 biólogos de Malawi y 42 cameruneses para aplicar el estándar de la Lista Roja de Especies Amenazadas de la UICN, así

como la finalización de la Lista Roja de Abu Dhabi de Especies y llegando a la etapa final de la Lista Roja de Ecosistemas del Emirato.

Las alianzas siguen siendo una fuente de apoyo importante para los grupos de la CSE. Además de los siete coordinadores de taxones y el especialista en relaciones públicas con base en el Centro Global (GCSS por sus siglas en inglés), 19 empleados adicionales, trabajando en ocho países, apoyan a la red CSE para evaluar, planificar y actuar. Tienen su sede en los Centros para la Supervivencia de Especies en Paradise Wildlife Park (Reino Unido), Loro Parque Fundación (España), Georgia Aquarium (EE. UU.), Oceanário de Lisboa (Portugal), Albuquerque Biopark (EE. UU.), Parque Das Aves (Brasil) y Fundación Temaikèn (Argentina). Los socios también son la principal fuente de apoyo para el equipo de la oficina del presidente de la CSE, y estamos agradecidos con las 31 organizaciones que continúan financiando nuestro trabajo. Un gracias especial a la Agencia Ambiental de Abu Dhabi por confirmar su apoyo a la CSE durante el nuevo cuatrienio, y a Re:wild por su papel estelar y profundamente generoso como patrocinador fiscal de la Comisión.

En esta edición también dedicamos una sección a nuestro Plan Estratégico de Especies 2021-2025 y anunciamos la renovación de la imagen visual de nuestro Ciclo de Conservación de Especies. También invitamos a nuestros miembros a colaborar con nosotros completando la Encuesta CSE para ayudarnos a guiar la entrega del Plan Estratégico de Especies.

Tres artículos muy interesantes cierran este Informe Trimestral. El primero es de Bezeng et al. e informa sobre los logros recientes de la Evaluación de la Biodiversidad para la Priorización Espacial en África (BASPA), trabajando con conservacionistas en el Herbario Nacional-Camerún, en asociación con la Fundación Franklinia. Se centran en salvar el zebrano africano en peligro crítico de la tala ilegal en Camerún. La recolección de semillas, la capacitación en los estándares de la UICN, la replantación y el compromiso con los formuladores de políticas están en su caja de herramientas.

Catarina Fonseca relata cómo el Oceanário de Lisboa se convirtió en un Centro de Supervivencia de Especies. Explica sus motivaciones y visión para el futuro, el papel que desempeñan en la conservación de especies marinas en Portugal y en el mundo, y cómo ya están creciendo y expandiéndose para adaptarse a una carga de trabajo cada vez mayor.

Burbano-Girón et al. lleva la planificación sistemática de la conservación un paso más allá e introducen la planificación integral de la conservación, un método para identificar áreas complementarias y críticas que aseguren la conservación de especies, ecosistemas y grupos ecológicos y minimicen el riesgo de verse afectados por la transformación del paisaje. Así mismo, ilustran el valor de integrar datos para priorizar redes sólidas de áreas de conservación en el Neotrópico.

Résumé

Avec la publication de ce rapport trimestriel de décembre 2021, nous pouvons désormais déclarer le quadriennat 2016-2020 (+1) de l'UICN clos ! Cinq bonnes années durant lesquelles le CSE, a dépassé les 10 000 membres et atteint 168 groupes dans 175 pays. Notre réseau a non seulement grandi en quantité mais aussi en qualité et en transparence, en migrant vers notre nouvelle plateforme, le *SCC DATA information system*. Les objectifs, les activités et les résultats peuvent désormais être enregistrés en temps réel – plus besoin d'attendre la fin de l'année pour faire un rapport – et toute personne, qu'elle fasse partie ou non du réseau, peut demander un instantané de n'importe quel élément de la Commission. La transition a été lente et nous vous sommes profondément reconnaissants pour votre patience et votre adoption progressive de ces nouvelles normes. L'équipe du bureau du président de la CSE et les coordonnateurs de la conservation au Centre mondial pour la survie des espèces (GCSS) au zoo d'Indianapolis ont été extrêmement favorables (merci beaucoup !) et continueront à guider les groupes de la CSE avec les données de la CSE et de nombreux autres efforts de renforcement des capacités, communication et conseil technique.

Parmi les autres faits saillants de 2021, citons la consolidation des subventions internes de CSE et le programme de subventions internes EDGE de CSE - tous deux axés sur l'octroi de fonds à des activités alignées sur le processus de planification des données de CSE. Le travail au niveau national s'est démarqué par la formation de 27 Zambiens, 47 Camerounais et 35 Gabonais pour appliquer la norme mondiale ZCB, 28 biologistes malawiens et 42 camerounais pour appliquer la norme de la Liste rouge des espèces menacées de l'UICN, ainsi que l'achèvement de la Liste rouge d'Abu Dhabi des espèces et d'atteindre l'étape finale de la liste rouge des écosystèmes de l'émirat.

Les partenariats continuent d'être une source de soutien majeur pour les groupes du PVC. En plus des sept coordinateurs de taxons et du spécialiste des relations publiques basés au GCSS, 19 employés supplémentaires travaillant dans huit pays soutiennent le réseau CSE pour évaluer, planifier et agir. Ils sont basés aux : Centers for Species Survival in Paradise Wildlife Park (Royaume-Uni), Loro Parque Fundación (Espagne), Georgia Aquarium (États-Unis), Oceanário de Lisboa (Portugal), Albuquerque Biopark (États-Unis), Parque Das Aves (Brésil) et Fundación Temaikèn (Argentine). Les partenaires sont également la principale source de soutien de l'équipe du bureau du président de la CSE, et nous sommes reconnaissants aux 31 organisations qui continuent de financer notre travail. Nous remercions tout particulièrement l'Agence pour l'environnement d'Abou Dhabi pour son soutien à CSE pendant quatre années supplémentaires, et à Re:wild pour son rôle exceptionnel et le très généreux sponsor fiscal de la de CSE.

Dans ce numéro, nous consacrons une section à notre Plan stratégique pour les espèces 2021-2025, et nous annonçons le rafraîchissement de notre image visuelle du Cycle de conservation des

espèces. Nous invitons nos membres à collaborer en remplissant l'enquête de la CSE pour nous aider à orienter la mise en œuvre du Plan stratégique pour les espèces.

Trois articles très intéressants clôturent ce rapport trimestriel :

Le premier est de Bezeng et al., et rend compte des réalisations récentes de Biodiversity Assessment for Spatial Prioritization in Africa (BASPA), en collaboration avec des défenseurs de l'environnement de l'Herbier national du Cameroun, en partenariat avec la Fondation Franklinia. Ils se concentrent sur la sauvegarde du zebrawood africain en danger critique d'extinction suite à l'exploitation forestière illégale au Cameroun. La collecte de semences, la formation aux normes de l'UICN, la replantation et l'engagement avec les décideurs politiques sont tous dans leur boîte à outils.

Le second est celui de Catarina Fonseca qui poursuit avec son récit sur la façon dont l'Oceanário de Lisboa est devenu un centre pour la survie des espèces. Elle explique leurs motivations et leur vision de l'avenir, le rôle qu'ils jouent dans la conservation des espèces marines au Portugal et dans le monde, ainsi que la façon dont ils se développent déjà pour s'adapter à une charge de travail croissante.

Le troisième est celui de Burbano-Giron et al. qui est allé plus loin dans la planification systématique de la conservation et introduire une planification globale de la conservation, une méthode d'identification des zones complémentaires et critiques qui assurent la conservation des espèces, des écosystèmes et des groupes écologiques tout en minimisant le risque d'être affecté par la transformation du paysage. Ils illustrent la valeur de l'intégration des données pour hiérarchiser les réseaux d'aires de conservation robustes à travers les néotropiques.



SSC Chair's Office milestones 2021

SSC Network

NETWORK

December 2020

The SSC Network closed with **10,016** members, representing a **30%** increase over 2017.



December 2021

12,379 members were invited to renew and join the SSC Network as part of the membership renewal process for the new quadrennium 2021-2025. This represents a **22%** increase over 2020.



168 SSC Groups in 175 countries

- 13 Red List Authorities
- 9 Task Forces
- 1 Action Partnership
- 8 Conservation Committees
- 137 Specialist Groups



5 new SSC groups

- IUCN SSC Ant Specialist Group
- IUCN SSC Mite Specialist Group
- IUCN SSC/CEESP Biodiversity and Family Planning (Res072) Task Force
- IUCN SSC Pigeon and Dove Specialist Group
- IUCN SSC Global Freshwater Macroinvertebrate Sampling Protocols

31 Grants for Conservation Projects

Launched two rounds of *SSC Internal Grants*, the funding mechanism of the SSC Chair's Office for small requests within the SSC Network.

- Supported **23** proposals totaling US\$ 69,811.27 for priorities of the SSC Species Conservation Cycle.

A second round of the *SSC EDGE Internal Grant Program* was also launched in partnership with On the EDGE Conservation to support projects related to SSC Groups working with evolutionarily distinct species and lineages.

- Supported **8** projects with US\$ 73,420.00 allocated to activities related to red list assessments and conservation planning.

Capacity Building

NETWORK

Continued to grow the SSC's Center for Species Survival partnerships to support the network in strengthening local capacity, conservation planning, and implementing conservation action.

- A total of **8** National Centers for Species Survival (CSS) are now operating around the world: Paradise Wildlife Park (UK), Loro Parque Fundación (Spain), Georgia Aquarium (USA), Oceanário de Lisboa (Portugal), Albuquerque Biopark (USA), Parque Das Aves (Brazil) and Fundación Temaikèn (Argentina).
- A further two CSS partnerships are in development with Mandai Nature (Singapore) and Zoo and Aquarium Association Australasia (Australia) and **5** more are in discussions.
- The Global Center for Species Survival (GCSS) began operating in 2021 as the seven taxon Coordinators and the Public Relations Specialist commenced their roles. Since August

2021, the GCSS has initiated its work plan 2021-2022 with activities including:

- » Accelerate the ability of the SSC network to assess species and develop and implement conservation plans,
- » Assist the network with responses to urgent threats,
- » Expand communication of conservation progress and efforts,
- » Diversify and strengthen the engagement of network membership.

This network of Centers for Species Survival now includes **27** staff working across **8** countries in support of the SSC network to assess, plan and act.

Barometer of Life

ASSESS



Red List Partnership, Global Species Programme and SSC network delivered key indicators through the *IUCN Red List of Threatened Species*:

- **142,000+** species assessed for the Red List
- **40,000** species threatened with extinction

Work at national scales

PLAN

ACT

- KBA support and virtual meetings held with stakeholders from Gabon, Botswana, Cameroon, Malawi, Madagascar, Angola, Ghana, Nigeria, Sierra Leone, Guinea and São Tomé and Príncipe to introduce the concept of KBAs and map a way forward with the identification of a network of KBAs and establishment of the KBA national coordination group.
- Trained **27** Zambians, **47** Cameroonians and **35** Gabonese to apply the global KBA standard.

- Trained **28** Malawian and **42** Cameroonian biologists to apply the *IUCN Red List of Threatened Species* standard.
- Supported completion of the Abu Dhabi *Red List of Species* and currently working on the emirate's *Red List of Ecosystems*.

Conservation action

ACT

- **18** intervention letters delivered to governments and companies in a wide range of countries to address conservation issues of serious concern.
- The multi-partner initiative, *Sumatran Rhino Rescue* keeps working to support the Indonesian government in saving this species.
 - » Pahu featured in Nat Geo Wild. The show provided an opportunity to amplify the critical status of Sumatran rhinos to a global audience.
 - » Training. Several virtual training, including topics as capture operations planning, helicopter translocation methods, tranquilizing drug use in the field, ulcer treatment, and cultural communication.



Communicating the work

COMMUNICATE

- Publication of **148** 2020 SSC group reports.
- For the 2021-2025 period, the SSC DATA Unit aims to continue generating the annual stand-alone reports of all the SSC groups and the Annual Species Report.
- **3** Quarterly Reports, **1** Council report and **17** members resource documents were produced with a more attractive design and unified branding.
- Supported **2** Species Publications by guiding design and coordination with IUCN HQ

(Confiscations Guidelines —[Arabic version](#); [Situation Analysis on the Roles and Risks of Wildlife in the Emergence of Human Infectious Diseases](#)).

- Developed communications with partner institutions such as WAZA, Earth Optimism, Fonfrère and Re:wild to increase our reach in diverse past and ongoing projects:
 - » Reverse the Red webinars and website.
 - » Reverse the Red Pavilion at the World Conservation Congress.
 - » Fonfrère x IUCN t-shirt limited edition.
 - » Re:wild and IUCN SSC become the first global organizations to call for “mycologically inclusive” language (“fauna, flora and funga” and “animals, fungi and plants”).”

Reverse the Red

- The Reverse the Red Pavilion and Movement was a beacon of optimism and a celebration of species conservation success throughout the IUCN World Conservation Congress.
 - » More than **30** sessions and three satellite events hosted by partners in their own countries.
- Held 2021 Reverse the Red webinar series to discuss causes, trends and solutions to the biodiversity crisis, and understand what it will take for our collective efforts to Reverse the Red. Six incredible sessions can be watched [here](#).





IUCN Species Strategic Plan 2021-2025

And our renewed design of the Species Conservation Cycle

The IUCN Species Strategic Plan 2021-2025 brings together the joint work of the IUCN Species Survival Commission and the Secretariat, as well as a number of other partners, including IUCN Member organizations.

As part of the development of the new Species Strategic Plan, the visual image of the Species Conservation Cycle was also refreshed. The cycle now focuses on the three components that are linked to each other: Assess, Plan and Act, and emphasizes the two transversal components, Network and Communicate, required for effective implementation.

This new schematic of the Species Conservation Cycle will guide our efforts for valuing and conserving biodiversity beyond the SSC network, to global movements such as Reverse the Red.

In the section below please find a snapshot of the 2021-2025 targets.

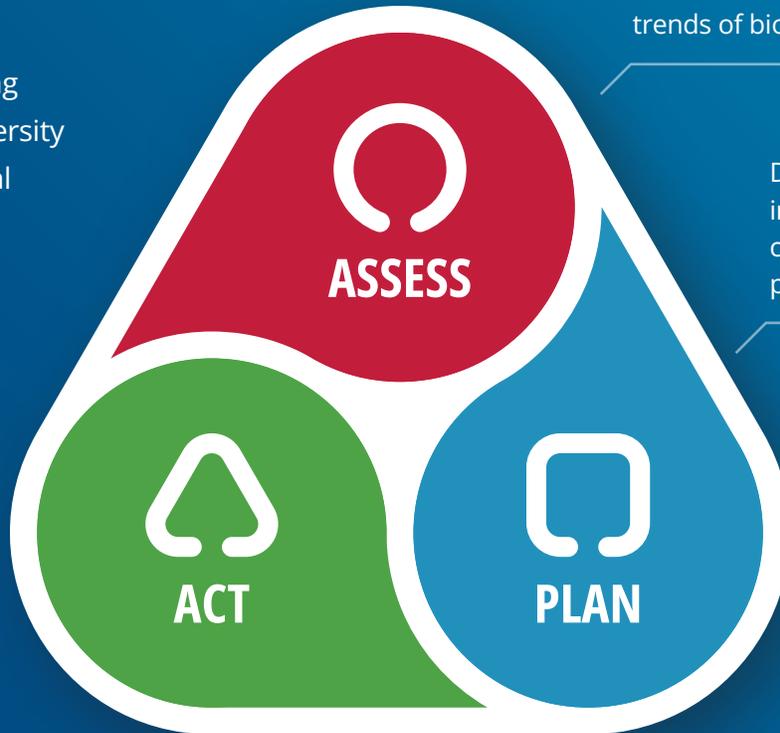
Photo credits (in order of appearance): / Great hornbill, *Buceros bicornis*, VU. By © Angadachappa / Lamproderma arcyrriodes. By © Alain Michaud. / Jaguar, *Panthera onca*, NT. By © P. Meier / Green Bright-eyed Frog, *Boophis viridis*, LC. By © Gonçalo Rosa / Radiated Tortoise, *Astrochelys radiata*, CR. By © Craig Stanford. / Orchis militaris. By © Maarten Christenhusz / Calocypha laidlawi, DD. By © Abraham Samuel / Camouflage Grouper, *Epinephelus polyphekadion*, VU. By © Yvonne Sadov



The Species Conservation Cycle

Its main purpose is to guide efforts for valuing and conserving biodiversity through three essential components that are linked to each other:

Convene and mobilise conservation actions to improve the status of biodiversity.



Understand and inform the world about the status and trends of biodiversity.

Develop collaborative, inclusive and science-based conservation strategies, plans and policies.

Implementation requires two transversal components:



NETWORK

Enhance and support our immediate network and alliances to achieve our biodiversity targets.



COMMUNICATE

Drive strategic and targeted communications to enhance our conservation impact.

Snapshot of 2021-2025 targets

Download the complete plan [here](#) and to access an interactive visualization of the plan click [here](#).

Assess

263 new scientific publications about species research.

99 publications produced in internal journals.

288 research projects completed.

62,097 new biodiversity assessments/reassessment:

- › **27,366** new global Red List assessments.
- › **18,470** global Red List reassessments.
- › **8,524** new national Red List assessments.
- › **2,678** national Red List reassessments.
- › **5,059** green list assessments.



Species Conservation Cycle

Plan

358 new conservation plans/strategies developed.

49 conservation plans/strategies updated.

113 conservation plans invited/endorsed by national governments/conservation authorities.

78 policies where SSC members provided technical input for conservation.

57 documents provided to support/guide policy-making.

Act

307 technical consultations provided to support conservation actions.

957 threatened species benefiting from *in-situ* conservation action and **26** from *ex-situ* conservation action.

656 species benefiting with an increase or prevented decrease in population or range size, as a result of conservation actions.

246 actions addressing major drivers/emerging threats of species or population loss.

143 areas under management for species or groups of species.

86 conservation translocations conducted.

138 sustainable use practices supported and **11** unsustainable use practices tackled.

Communicate

Transversal component

440 digital communication outputs developed in relation to specific taxonomic groups.

238 Species e-bulletin, Save Our Species newsletter, SSC Groups' newsletter editions.

146 communication products using innovative tools.

Network

Transversal component

3,903 new SSC members to be recruited by 2025.

2,034 new people trained:

- › **988** in assessment tools.
- › **546** in conservation planning.
- › **326** in conservation action.
- › **20** in communication skills.
- › **36** in management skills.
- › **118** in other fields.

37 governments supported to develop species conservation policies.

10 Reverse the Red pilot countries implementing assess-plan-act to deliver post-2020 conservation targets.

[Spanish version](#) | [French version](#)

IUCN Species Strategic Plan 2021-2025

Recent Activities



CONFERENCES

Where the SSC chair's office attended or offered a lecture.



MEETINGS

Where the SSC chair's office participated.



INTERVENTIONS

Letters sent to Governments or Companies to propose actions for species and habitats under threat.





Conferences and Meetings

(Jon Paul Rodríguez, JPR; Vivek Menon, VM; Kira Mileham, KM; Nahomy De Andrade, NDA; Orlando Salamanca, OS; Jafet Nassar, JN; Aritzai Rodríguez, AR; Mayerlin Ramos, MR; Edgard Yerena, EY; Simeon Bezeng, SB)

CONFERENCES

- Areas and sites for bat conservation in Latin America and the Caribbean. *Seminar on important areas for bat conservation in Chile. Ministry of Environment of Chile and Chilean Program for Bat Conservation.* September 10th, 2021, Santiago, Chile, on-line event. (JN)
- Comprehensive synthesis on important areas and sites for bat conservation in Latin America and the Caribbean: A book for the protection of our nocturnal allies. *Symposium "Bat Conservation in Latin America and the Caribbean". V Latin American Congress of Mammalogy and V Peruvian Congress of Mammalogy.* 17-21 October 2021, Lima, Peru, on-line event. (JN)
- Newsletter of the Latin American and Caribbean Bat Conservation Network: a decade retrospective. *Symposium "Bat Conservation in Latin America and the Caribbean". V Latin American Congress of Mammalogy and V Peruvian Congress of Mammalogy.* October 17th-21st, 2021, Lima, Peru, on-line event. (JN)
- One network in Latin America and the Caribbean to protect bats. *Symposium "Bat Conservation in Latin America and the Caribbean". V Latin American Congress of Mammalogy and V Peruvian Congress of Mammalogy.* October 17th-21st, 2021, Lima, Peru, on-line event. (JN)
- Important areas and sites for bat conservation in Latin America and the Caribbean at one click of distance. *Symposium "Bat Conservation in Latin America and the Caribbean". V Latin American Congress of Mammalogy and V Peruvian Congress of Mammalogy.* October 17th-21st, 2021, Lima, Peru, on-line event. (JN)

- Achievements of the CYTED-RELCOM Thematic Networks of AICOMs y SICOMs Project. *Symposium "Bat Conservation in Latin America and the Caribbean". V Latin American Congress of Mammalogy and V Peruvian Congress of Mammalogy*. October 17th-21st, 2021, Lima, Peru, on-line event. (JN)
- Importance of awareness-raising concerning illegal trade in totoaba specimens and its severe implications for the conservation of vaquita, including demand reduction campaigns, *Meeting of Range, Transit and Consumer States of Totoaba (Totoaba macdonaldi)*, 18-20 and 22 October 2021. CITES, Geneva, on-line event. (JPR, joint presentation with Kristin Nowell and Yvonne Sadovy)
- Conservación basada en evidencias sobre especies y ecosistemas venezolanos. *Academia de Ciencias Físicas, Matemáticas y Naturales*, 27 October 2021, Caracas, on-line event. (JPR)
- Cambio climático y naturaleza, *Conferencia Chevening: Impulsando la ambición climática de Venezuela*, 28 October 2021, Caracas, on-line event. (JPR)
- Análisis situacional sobre los roles y riesgos de la vida silvestre en el surgimiento de enfermedades infecciosas, *XIV Congreso Internacional de Manejo de Fauna Silvestre de la Amazonia y Latinoamérica*, 8 November 2021. Lima, on-line event. (JPR)
- SSC Update, *IUCN US National Committee Annual Meeting*, 1-2 December 2021. Washington, DC Hybrid: in-person and virtual. (JPR)
- Generación de datos sobre biodiversidad venezolana amenazada y su aplicación para informar políticas públicas, *1er Congreso Internacional de Biodiversidad venezolano, "Integración de conocimientos ante la crisis ambiental global"*, 7 December 2021. Caracas, on-line event. (JPR)
- Reverse the Red. Wildlife movement. *44º Congresso da AZAB - Zoolos e Aquários como Centros de Conservação da Biodiversidade*, 7 December 2021. Brazil, on-line event. (KM, NDA)
- *International Congress for Conservation Biology*. 13-17 December 2021, Rwanda, on-line event. (SB)

MEETINGS

- IUCN Red List of Threatened Species training. 13-17 September 2021. National Herbarium Cameroon (SB).
- Entrega del Premio Gorila 2019 y 2020, sede de Presidencia del Gobierno de Canarias, Tenerife, 1 October. (JPR)
- TRAFFIC Board of Trustees Meeting, Cambridge, UK, 6 and 7 October 2021. Hybrid: in person and virtual. (JPR)
- Meeting of Range, Transit and Consumer States of Totoaba (*Totoaba macdonaldi*), 18-20 and 22 October 2021. CITES, Geneva, virtual meeting. (JPR)
- 13th Meeting of the World Land Trust Conservation Advisory Panel, 5 November. Halesworth, Suffolk, U.K., virtual meeting. (JPR)
- 2nd Q&A with SSC Chair and Team, 30 November 2021. Caracas, Venezuela, virtual meeting. (JPR, KM, NDA, MR, OS, EY, AR, JN, SB)
- Global Group for IUCN National and Regional Committee Development meeting, 1 December 2021, Gland, Switzerland, virtual meeting. (JPR)

- IUCN US National Committee Annual Meeting, 1-2 December 2021. Washington, DC Hybrid: in person and virtual. (JPR)
- Third Advisory Board meeting, IUCN Contributions for Nature Strategic Initiative, 6 December 2021. Gland, Switzerland, virtual meeting. (JPR)
- 1er Congreso Internacional de Biodiversidad venezolana, “Integración de conocimientos ante la crisis ambiental global”, 6-10 December 2021. Caracas, Venezuela, virtual meeting. (JPR)
- First workshop on Key Biodiversity Areas. 6-10 December 2021. Gabon. (SB)
- Training workshop on Key biodiversity areas in Cameroon and NCG establishment. 13-17 December 2021 (SB)

INTERVENTION LETTERS & STATEMENTS

- **SSC offers help to save the Manumea, the national bird of Samoa.** On October 8, Joe Wood and Charles Cerbini, Co-Chairs of the recently created IUCN SSC Pigeon and Dove Specialist Group (PDSG) sent a letter to Frances Reupena, Chief Executive Officer of the Government of Samoa Ministry of Natural Resources and Environment. They expressed SSC’s deep concern about the status of the Manumea (*Didunculus strigirostris*), and offered PDSG’s technical and scientific support in saving the species from extinction. PDSG has considered the available evidence, and concurs with the findings of a review of the 2006-2016 Manumea Recovery Plan, which concluded that ‘there may not be another decade to save the national bird of Samoa’. Furthermore, they are of the opinion that the situation is now so perilous that, without diminishing the importance of the other objectives listed in a 2020-2029 Recovery Plan, the establishing of a captive population should be regarded as a crucial component of any conservation strategy. PDSG is encouraged that an intention to ‘explore and evaluate the option of captive breeding’ was captured in this latest plan, and commend those involved in compiling the plan for recognizing the necessity of this. However, they are concerned that the proposed timescale (a detailed feasibility study and risk assessment produced within 3-5 years with recommendations implemented within 6-10 years) is too long. On the basis of current data, it is entirely feasible that the Manumea will be extinct within 10 years unless decisive action is taken now. As an initial step, PDSG has volunteered their assistance in coordinating the Captive Breeding Feasibility Study referred to in the Recovery Plan and drafting a comprehensive report. Furthermore, they are prepared to commit to ongoing support for the implementation recommended actions, including through the sourcing of funding, the provision of ongoing guidance and the active participation of SSC members. As a result of this letter, the Government of Samoa Ministry of Natural Resources and Environment and the IUCN SSC Pigeon and Dove Specialist Group, have agreed to sign a Memorandum of Understanding relating to the implementation of such support.
- **Dana Biosphere Reserve in Jordan threatened by mining of copper.** On 24 October 2021, the new Chair of the IUCN World Commission on Protected Areas, Madhu Rao, and Jon Paul Rodríguez, Chair of the IUCN Species Survival Commission sent a letter on October 24, to the Prime Minister of Jordan, H.E. Dr. Bisher Al Khasawneh, expressing their concern about the proposal to modify the boundaries of the Dana Biosphere

Reserve in favour of the mining of copper, and in so doing, excluding an area of almost 80 square kilometres containing ecosystems of great significance for the conservation of nature. Dana Biosphere Reserve is one of the most important protected areas in the Middle East, including endemic and near endemic species, such as the threatened Syrian Serin, Sooty Falcon and many important plant species. Its invertebrate fauna is likely to include many endemics not yet known to science. The area's location at the interface of three continents and biogeographic zones, and its range of altitude, climate, topography and geology makes it unique in terms of landscape and biodiversity. Dana Biosphere Reserve is also important for its heritage value and presence of archeological sites that evidence the dawn of human civilization. Jordan has recognised these values and has nominated the area to be listed as a World Heritage Site. Jordan's Ministry of Energy and Natural Resources has requested the excision of a large area of the Dana Biosphere Reserve, to facilitate the mining of copper. This will result in the significant reduction of the area's natural habitats, with direct and cumulative impacts on biodiversity along the Wadi Araba region, as well as the potential loss of historical sites. Mining operations in the area will have significant negative impacts, including to water resources through pollution, and to the prevailing land-use of livestock management. The IUCN Species Survival Commission and IUCN World Commission on Protected Areas have offered their expertise to stand ready to assist the government of Jordan to assess the potential impacts of such boundary changes proposal, and to suggest alternatives that would maintain the integrity of the Dana Biosphere Reserve. Both commissions offer, if requested, a team of experts to conduct an on-site mission to consider the issues and to make recommendations.

- ***A call to save the Irrawaddy dolphins (*Orcaella brevirostris*) residing in the Chheu Teal transboundary pool of the Mekong River on the Laos-Cambodia border.*** A [joint statement](#) of the IUCN SSC Cetacean Specialist Group, the Cambodian Government's Fisheries Administration and WWF was released on October 24 to stress that the isolated population of Irrawaddy dolphins (*Orcaella brevirostris*) residing in the Chheu Teal transboundary pool of the Mekong River on the Laos-Cambodia border is on the verge of disappearing. This very small transboundary population of dolphins, which is thought to have been isolated for some time from the larger groups downstream in Kratie and Stung Treng, is essentially lost. We call on Laos and Cambodian governments to join hands, recognising the near extirpation of the transboundary dolphin population, stop gill-net use and other illegal fishing methods in and around the transboundary pool and urgently devise a plan to restore the habitats by maintaining flows for both dolphins and mega-fish species. Continued provision of alternative livelihood opportunities for communities along the Mekong, community outreach, environmental education, and continued research and monitoring of the species population, are urgently needed.
- ***Eradication of the mouflon (*Ovis aries*) from Tuscan Archipelago National Park.*** On 21 November 2021, Jon Paul Rodríguez wrote Dr Giampiero Sammuri, President of the Tuscan Archipelago National Park, to express the strong support of the IUCN Species Survival Commission (SSC) to ongoing efforts for eradication of the mouflon (*Ovis aries*) from Tuscan Archipelago National Park. Invasive species represent a major threat to biodiversity globally and are particularly harmful on islands. The mouflon was introduced in the 1960s into the Tuscan Archipelago National Park, with cumulative negative effects on the native flora and ecosystems, including rare species-specific to the area. The removal of this alien invasive species is therefore an important step to protect local biodiversity. SSC will always support intervention aimed at reducing the risk of extinction of native animals, fungi and plants. On islands, this typically means controlling or eradicating invasives, as was aptly illustrated in SSC's 2019 publication on [Island invasives: scaling up to meet the challenge](#). Therefore, the SSC Chair offered SSC's scientific advice, and willingness to help.



SSC Survey

All activities of the IUCN Species Survival Commission (SSC) are framed by the **Species Conservation Cycle** of Assess - Plan - Act, and its implementation is supported by two transversal components: Network and Communicate.

- **Assess:** Understand and inform the world about the status and trends of biodiversity.
- **Plan:** Develop collaborative, inclusive and science-based conservation strategies plans and policies.
- **Act:** Convene and mobilize conservation actions to improve the status of biodiversity.
- **Network:** Enhance and support our immediate network and alliances to achieve our biodiversity targets.
- **Communicate:** Drive strategic and targeted communications to enhance our conservation impact.

With this survey we aim to gather information and perspectives of SSC leaders and members about the different components of the Species Conservation Cycle, the capacity of the network regarding different tools, and how conservation action is perceived. This investigation will guide future efforts of the SSC Steering Committee and Chair's Office to support the network in delivering the 2021-2025 Species Strategic Plan.

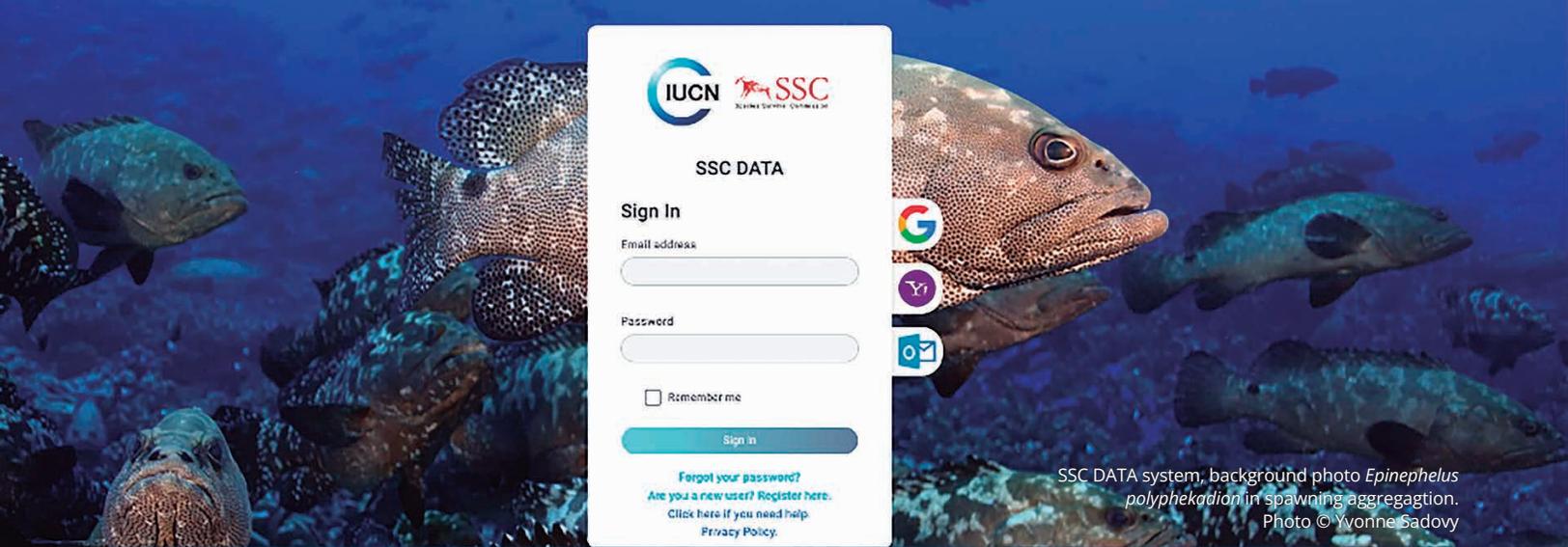
We invite SSC Chairs, Co-Chairs, Red List Authorities Coordinators, Programme Officers and the rest of the SSC membership to collaborate with this research. This will only take a few minutes of your time and your responses will be anonymous.

This survey will close on 11 March 2022.

Thanks for helping us out!

SSC Chair's office team.

[Complete the survey](#)



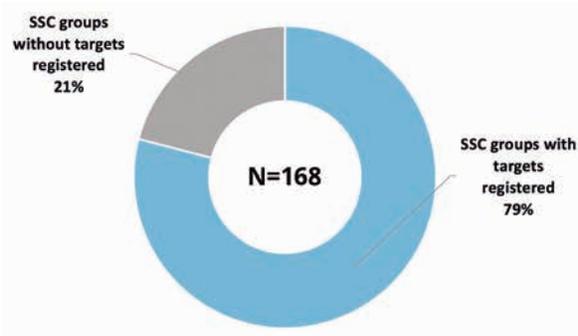
SSC DATA system, background photo *Epinephelus polyphekadion* in spawning aggregation. Photo © Yvonne Sadovy

The SSC DATA transition is over

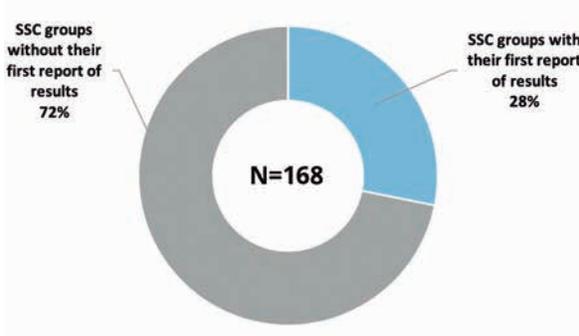
Throughout 2021, SSC DATA operated as a hybrid system, processing the 2020 reports as Excel files and uploading the targets of the SSC groups to the new platform, the SSC DATA Information System.

We are very happy to announce that this transitional phase has come to an end, and from now on the entire reporting process of targets and results will be using the SSC DATA Information System.

By the end of 2021, 132 groups (almost 80% of all SSC groups) had successfully uploaded the targets for the 2021-2025 period and 47 groups had already made their first reports of results. The SSC groups have been of great help fine tuning the process of results uploading, thanks to their questions, suggestions and comments.



Graph 1: Distribution of SSC groups that have uploaded their targets



Graph 2: Distribution of SSC groups that have made their first reports of results by Dec 31st, 2021

The year 2022 waits for us with great advantages using the new platform: optimization of the reporting process, results' report in real-time, updated status of targets at any time, a variety of statistics of each Group and the entire network available to the users, PDF and Excel reports of progress at any time, the possibility to know what other SSC Groups are doing, and a friendly platform that will help Group leaders to manage their targets and related activities, among others.

We have made this possible together, and we thank you all for that.

Deadline for uploading 2021 results: February 28th, 2022

We are aware that we are in the midst of a new process of results reporting and appreciate all the efforts you have made in order to migrate to our new SSC DATA system.

In this regard, we decided to extend the date for adding/editing any information regarding your 2021 results in the [SSC DATA system](#) to **February 28th, 2022**.

After this date, the system will not allow adding/editing any information related to the year 2021.





Photo 1. Trunk of an African zebrawood in Ebo forest of Cameroon
Photo © Eric Djomo Nana

Working with local conservationists to save the Critically Endangered African zebrawood (*Microberlinia bisulcata*) from illegal logging in Cameroon.

Simeon Bezeng Bezeng^(1,2), Lydie Kamga Messado⁽³⁾, Eric Djomo Nana^(4,5)

(1) IUCN Species Survival Commission; (2) BirdLife South Africa; (3) Plant Systematics, Botany and Ecology Laboratory, Higher Teachers' Training College, Yaoundé, Cameroon; (4) Agricultural Research Institute for Development, National Herbarium, Yaoundé, Cameroon; (5) Interdisciplinary Centre for Conservation Science, University of Oxford, U.K

*The implementation of any successful species conservation intervention requires strong partnerships between species experts, funders, policy and decision makers and especially working closely with local communities that live at the edge of prime areas of biodiversity. It is against this backdrop that species experts from the IUCN Species Survival Commission, BirdLife South Africa, National Herbarium – Cameroon, and Franklinia Foundation partnered in 2020 to save the Critically Endangered African zebrawood (*Microberlinia bisulcata* A.Chev.) from illegal logging in Cameroon.*

***Microberlinia bisulcata**, locally known as “Zingana”, is an endemic species to Cameroon, known only from four subpopulations including Mount Cameroon, Loum Forest Reserve, Korup National Park, and more recently in the Ebo Forest (Cheek and Cable, 2000; Djomo Nana et al., 2021; Photo 1).*

Ebo Forest in Cameroon is a forest of high conservation value, which unfortunately does not benefit from any form of protection although it has been a proposed national park for 20 years now. It is home to many threatened animal species such as an unidentified subspecies of gorilla believed to be a separate species, chimpanzees that crack nuts and fish termites with sticks, goliath

frogs, forest elephants, drills and one of the only two populations of the Critically Endangered red colobus monkey. Additionally, this important forest ecosystem hosts a myriad of plant species that act as a carbon sink and sustains the livelihood of thousands of inhabitants in the Banen - Bassa local communities. Notwithstanding, this prime biodiversity area has witnessed a significant loss of its natural habitat due to illegal timber logging and expansion of oil palm plantations. A species of high conservation concern is the Critically Endangered - *Microberlinia bisulcata*, which is sourced for its high valuable timber that is durable and resistant to tunnelling insects and wood-rotting fungi. As such, the wood is suitable for furniture-making; with common objects like tool handles, panelling and veneers frequently produced from this wood. Amongst its many threats, illegal logging is the main one and has recently increased because of Chinese traders who buy a cubic metre of the tree at almost double the price on the black market. This has made the local people to cut down the African zebrawood trees below the diameter for fructification (i.e., immature trees). Thus, recognising this threat and looking for the right resources to avert this indiscriminate exploitation was the first important step taken by conservationists at the National Herbarium in Cameroon to conserve this species to ensure local communities continue to benefit from the different ecosystem services provided by this species (e.g., soil enrichment), including the ancestral and cultural values of this species (Newbery et al., 2004).

Hence, conservationists from the [National Herbarium](#) - Cameroon partnered with [Franklinia Foundation](#) in 2020 through its annual calls to undertake In-Situ conservation to preserve threatened tree species, avoid their extinction and improve their conservation status (Photo 2).



Photo 2: Nursery of African zebrawood seedlings as an insurance policy for the future
Photo © Eric Djomo Nana

This grant was supplemented with co-funding from the [IUCN Species Survival Commission](#) through its [Biodiversity Assessment for Spatial Prioritisation in Africa](#) (BASPA) project, which aims to build the capacity of local conservationists in Africa to mobilise foundational biodiversity data that can be used to monitor the trend, status, and pressures on national biodiversity. Through this partnership, conservationists in Cameroon were trained on

applying the [IUCN Red List of Threatened Species](#) standard; an important tool for conservation priority setting amongst others. This training was earmarked for Botanists at the National Herbarium but due to increasing interest from a broader stakeholder, some Zoologists, biodiversity practitioners and even postgraduate students from state and private tertiary institutions were equally trained. The training took the format of lectures, individual and group exercises and presentations and ultimately working in the IUCN Species Information Service (SIS) to produce more plants assessments (**photos 3a, b and c**).



Photo 3: IUCN Red List training sessions, including (a) plenary lectures
Photo © Eric Djomo Nana

Key interventions and future plans from this partnership include.

- a. Sustained conservation efforts through seed collection (~4000 seedlings collected so far) from mature individuals, establishing tree nurseries with local communities in Ndok banguegue and Nyamtam (**Photo 2**). This will serve as an insurance policy for this ever increasing valuable yet threatened tree species;
- b. Training of 35 conservationists to apply the IUCN Red List of Threatened Species standard to identify more species (plants and animals) of conservation concern;
- c. Working in SIS to evaluate the relative extinction risk of endemic plant species in Cameroon, including the reassessment of *Microberlinia bisulcata*;
- d. Working with local communities to replant saplings in selected localities and to help monitor their regrowth making sure this important species establishes stable and viable population;
- e. Partnering with policy and decision-makers to ensure the African zebrawood is placed on the CITES list and for the Ebo forest to be declared a national park. Listing the African zebrawood in CITES will help prevent its

illegal logging and trade, further mounting pressure on the Cameroon government to protect this key stone species;

- f. Working with other national and international stakeholders to secure funding that can help complete national Red List and using the Red List data to identify Key Biodiversity Areas.

“We know how to save species from extinction” Jon Paul Rodríguez, Chair of SSC. Thus, given the right resources, political will and working closely with local communities, the SSC network can help nations around the world to prioritise target species and habitat for developing urgent and targeted conservation actions using science-based tools such as the [IUCN Red List of Threatened Species](#), [Red List of Ecosystems](#) and [Key Biodiversity Areas](#). By so doing, we can collectively achieve the CBD 2050 vision of living in harmony with nature.



Photo 3: IUCN Red List training sessions, including (b) group exercises
Photo © Eric Djomo Nana



Photo 3: IUCN Red List training sessions, including (c) assessing the extinction risk of endemic plant species in SIS
Photo © Eric Djomo Nana



Oceanário de Lisboa



Mandarinfish (*Synchiropus splendidus*), LC.
Photo © Pedro Pina | Oceanário de Lisboa

Protecting Marine Biodiversity

How Oceanário de Lisboa's Centre for Species Survival is taking its conservation mission to a global and national level

Catrina Fonseca⁽¹⁾ and Núria Baylina⁽²⁾

(1) IUCN Marine Species Survival Officer (2) Curator and Head of Conservation at Oceanário de Lisboa.

In 2018, Oceanário de Lisboa took a step further in its commitment to conservation by accepting Kira Mileham and the IUCN Species Survival Commission's challenge to host a Centre for Species Survival. Since then, Catarina Fonseca, a full-time Species Survival Officer has been employed by Oceanário de Lisboa and working closely with the Marine Biodiversity Unit to expand the representation of marine species on the IUCN Red List of Threatened Species.

Due the relatively low number of marine assessments on the Red List, when compared to those of other systems, Oceanário de Lisboa has been focused on the Assess step of the Assess-Plan-Act Cycle, as it is essential to know what needs protection before designing conservation measures. This commitment has resulted in Catarina's participation in several of MBU's assessment projects by collating data for, facilitating, or reviewing almost 600 assessments of marine bony fishes, as well as participating in two international assessment workshops.

Oceanário de Lisboa's commitment is not only to marine species in general, but especially to those under its care. In 2019, the Public Aquarium Species Assessment Project was started to assess all Not Evaluated (NE) marine vertebrate and invertebrate species in public aquariums, starting by Oceanário de Lisboa's and The Deep's animal collection. The information collected is then used to better inform collection planning, conservation and education messages, *ex situ* conservation activities and allocation of funding to *in situ* conservation projects.



With *Reverse the Red's* call to bring together global effort and connectivity to regional actions to prevent extinctions and improve biodiversity status, Oceanário de Lisboa brought a long-held desire into action: to produce a National Red Book for Marine Fishes.



Red Books first started being published in Portugal in the early 1990s: the first, focused on Mammals, Birds, Reptiles and Amphibians was published in 1990; the second, focused on Freshwater and Diadromous Fishes, was published in 1991; and the final volume published in 1993 assessed Marine and Estuarine Fishes. After 30 years, most taxonomic groups have had national assessment updates; however, marine fishes were left behind. With one of the largest European Exclusive Economic Zones (EEZ) and over 1,000 species of marine fishes, it is of extreme importance to know the status of marine biodiversity to define conservation strategies and inform marine development strategies.

This ambitious project is being led by Oceanário de Lisboa and the Oceano Azul Foundation, with the technical support of the Institute for the Conservation of Nature and Forests (ICNF) and financial support from the City Council of Lisbon (CML) and is expected to be completed by 2023.

To this end, three more Species Survival Officers were recruited: Ana Raposo and Catarina Vendrell, and Inês Metelo, a CML staff member dedicated to the project. The new team will follow IUCN's Red List Guidelines for Regional and National Assessments, and count with the participation of researchers and ichthyologists from all over mainland Portugal, Azores and Madeira. Furthermore, Prof. Maria José Costa has joined the project as the principal scientific advisor.



GOES-East satellite viewed the Yucatán Peninsula.
Photo © NOAA Satellites.

Comprehensive conservation planning

Prioritizing robust conservation area networks
across the Neotropics

**Jaime Burbano-Girón, Kerstin Jantke, Maria A. Molina, Natalia Buriticá-Mejía,
Lina M. Sánchez-Clavijo, Andrés Etter and J. Nicolás Urbina-Cardona**

IUCN SSC Amphibian Specialist Group

Biodiversity conservation always faces the dilemma of having to use surrogates to define conservation priorities for thousands of species and ecosystems, on a small amount of land and with a small budget. Systematic conservation planning protocols allow us to support decision-making to meet biodiversity conservation targets while reducing its cost or land area. However, the use of common surrogates (e.g., umbrella species or ecosystems) does not guarantee a comprehensive representation of biodiversity (i.e., to include compositional, structural, and functional levels of biodiversity), and therefore, spatial priorities could be misleading key biodiversity areas.

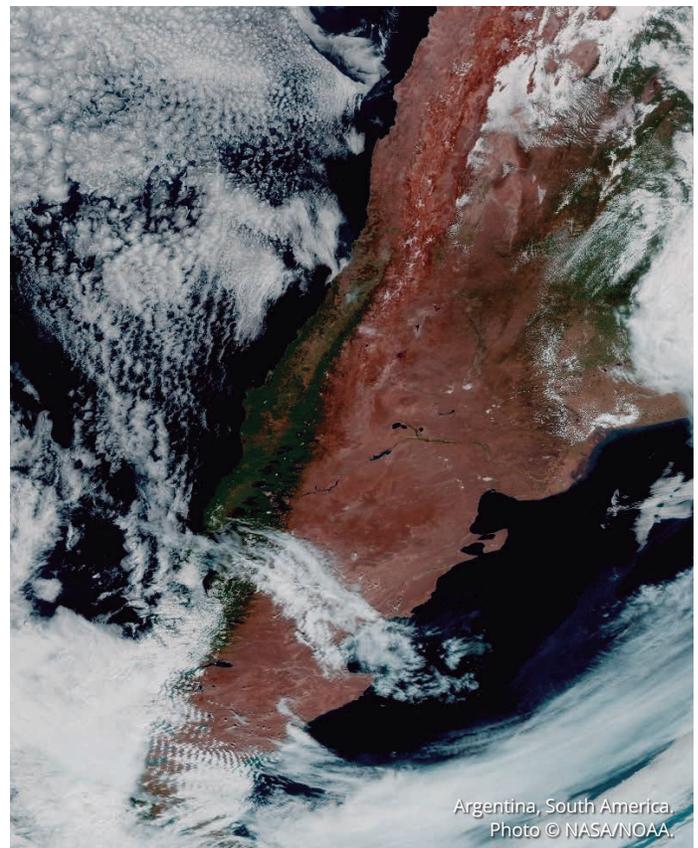
We present a comprehensive [assessment of spatial conservation priorities for Neotropical biodiversity](#), identifying complementary and critical areas that ensure the conservation of 8563 multi-taxa species, 663 ecosystems, and 5382 ecological groups while minimizing the risk of being affected by landscape transformation.

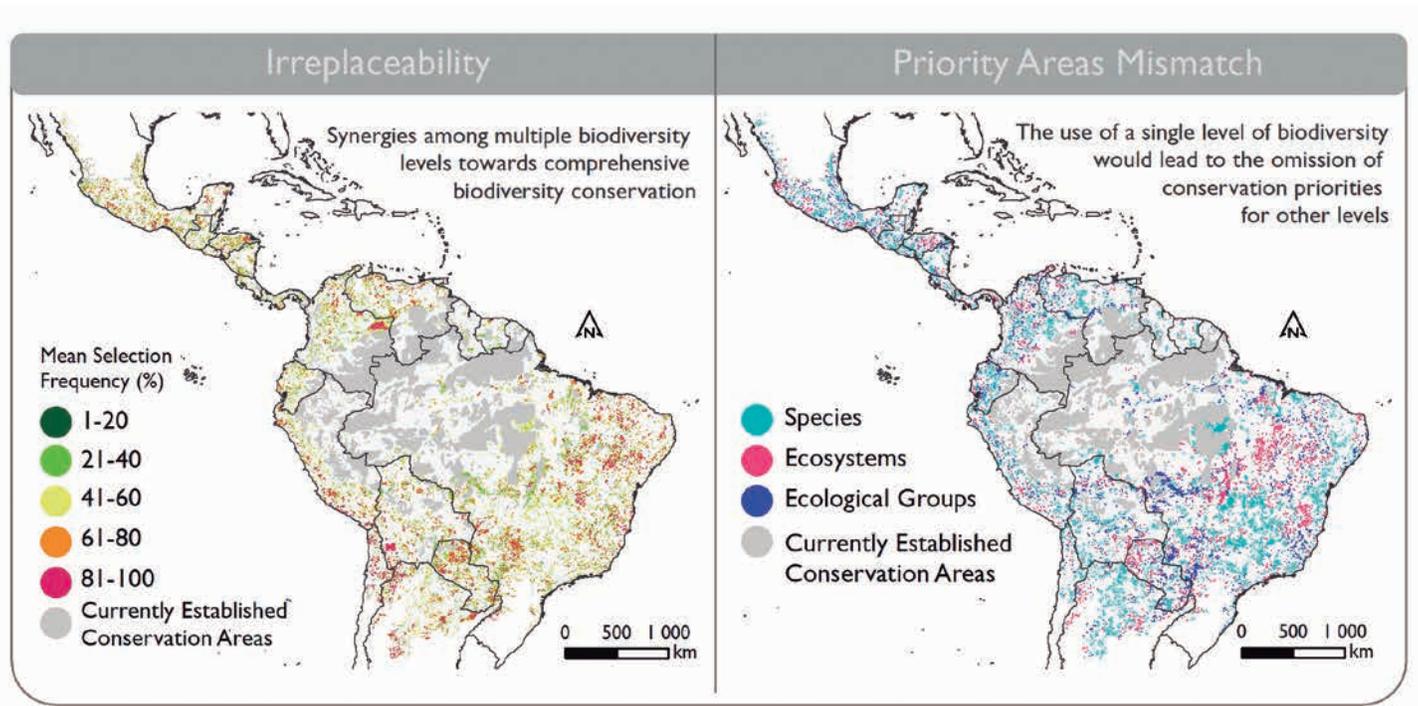
On the assessment, we emphasize the risk of using a few key or umbrella species to define spatial priorities for biodiversity conservation given their low capacity to represent other biodiversity attributes in certain regions of the Neotropics. Our findings support, with quantitative evidence,

the importance of using integrative information of surrogates for distinct levels of biodiversity into identifying priority areas for conservation. The spatial mismatch in the portfolios of priority areas for species, ecosystems, and ecological groups showed how the use of a single level of biodiversity would lead to the omission of conservation priorities for other levels, thus highlighting the importance of this integrative approach to the conservation decision-making processes. Therefore, we recommend including diverse biotic groups (phylogenetically distant and functionally complementary) in combination with habitat structure and functional approaches when prioritizing networks of areas for biodiversity conservation.

All maps of prioritized conservation networks, and irreplaceable areas (those that were prioritized in more than 80% of the 400 portfolios estimated), can be freely downloaded from [Mendeley Data](#). These proposed areas would be useful in supporting decision-making to focus conservation efforts and field monitoring at more detailed scales. In these areas, conservation actions may simultaneously achieve complementarity among multiple biodiversity levels towards comprehensive biodiversity conservation, reducing the uncertainty on conservation planning and resource allocation. Furthermore, these areas are critical for achieving conservation targets in known critical and threatened global biodiversity hotspots, mostly located in the Chaco, the Atlantic Forest, the Pantanal, Cerrado, and Caatinga regions in Brazil, and the moist and dry forests of the northern Andes and Mesoamerica.

Given the spatial scope of this study, it is important to consider that the prioritized critical conservation areas guarantee a significant contribution to the representativeness of biodiversity not only at the country or ecoregion level but also at the Neotropical level. We want to reinforce that prioritizing networks of conservation areas should have a multi-taxa approach that considers multiple levels (structure, composition and function) to ensure a broad representation of biodiversity. However, to implement conservation areas locally, it is important to identify a few surrogates that are appropriate to define long-term participatory monitoring actions. These surrogates should comply with a multi-taxa approach (not biased solely towards keystone or umbrella species) and be assessed at appropriate spatio-temporal scales. The variables to be monitored at the species level can range from demographic and genetic processes to their functional traits. It should always be kept in mind that the variables to be monitored will be responsible for informing the persistence of biodiversity in conservation networks, and should guide management actions to reduce vulnerability in the prioritized areas. We expect that these results will be useful in supporting decision-making to guide the definition of new systems of conservation areas, and other strategies based on ecological restoration, payment schemes for ecosystem services, or environmental compensation, among others.





Irreplaceable areas (mean selection frequency between 81-100) found for species, ecosystems and ecological groups (left) guide conservation priorities where we found synergies among multiple biodiversity levels towards comprehensive biodiversity conservation, reducing the uncertainty on conservation planning and resources allocation. On the other hand, the mismatching areas among species, ecosystems and ecological groups, i.e., where the areas were selected for only one biodiversity attribute surrogate (right), show how the use of a single level of biodiversity would lead to the omission of conservation priorities for other levels, thus highlighting the importance of this integrative approach in the conservation decision-making processes.

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