IUCN

SSC
Species Survival Commission

The IUCN Species Survival Commission

QUARTERLY REPORT
JUNE 2021

Common Blue Morpho, (*Morpho peleides*), **Not Evaluated.**
Photo © PJ Stephenson.

Advances in species monitoring for conservation

PJ Stephenson
Chair, IUCN SSC Species Monitoring Specialist Group

Many different stakeholders, from governments to civil society to businesses, need information on the state of species and habitats and the threats they face to facilitate efficient, data-driven decision-making and to enhance conservation impact and sustainability. Biodiversity monitoring is therefore an essential element of environmental management. However, it is often inadequate. Data are frequently scattered, fragmented, of poor quality, and rarely available in the right format at the right time. Consequently, government reporting on biodiversity often lacks data and few companies report on biodiversity performance. Conservation NGOs also struggle to collect and use data to monitor their impacts on biodiversity.

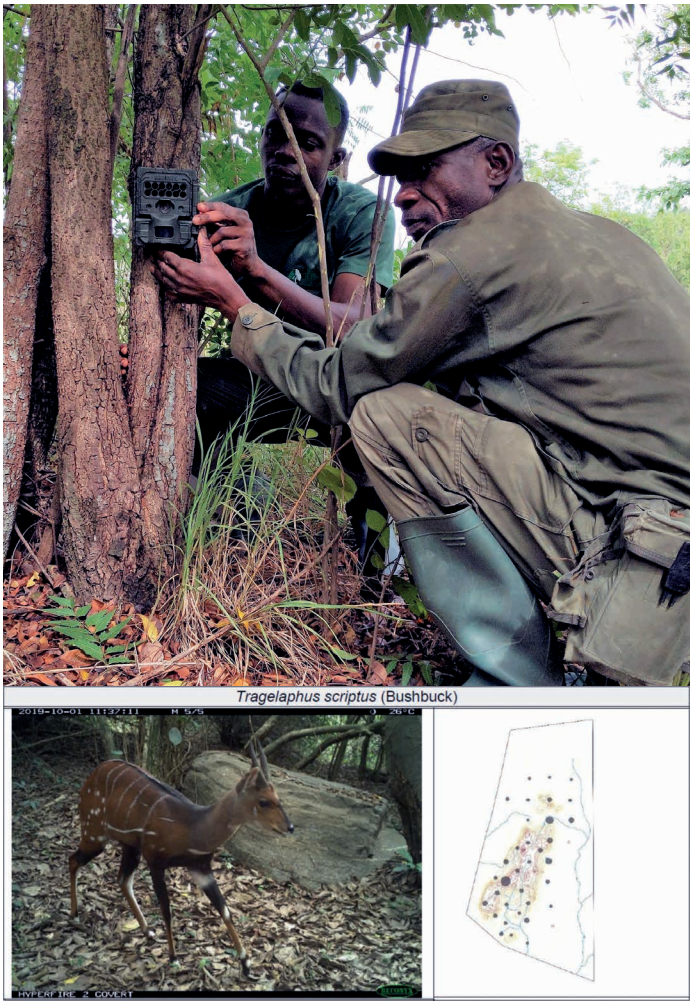
In the latest edition of the *IUCN Red List of Threatened Species*, 18,752 (14.0%) of the 134,425 species assessed are Data Deficient. Even for many species that can be assessed, there are often significant data gaps. For example, no population data or quantifiable habitat loss data are available for any of the 80 small mammals covered by the IUCN SSC Afrotheria Specialist Group. Data in most countries are generally skewed towards more commonly monitored species such as birds, terrestrial large mammals and, to some extent, trees. There are huge data gaps for smaller vertebrates, invertebrates, plants and fungi, especially for aquatic and marine species and species in the tropics.

Progress in the First Five Years

In response to these challenges, in 2016 the IUCN Species Survival Commission established the Species Monitoring Specialist Group. Our mission is to enhance biodiversity conservation by improving the availability and use of data on species populations, their habitats and threats. Our objectives focus on developing and sharing tools and methods, building capacity in different data user groups, improving data collection and use, enhancing databases and data sharing, and promoting the monitoring of poorly-known taxa.

The first challenge for the Group was to establish priorities. Therefore, many of our early projects delved deeper into monitoring systems and databases to determine where species monitoring is happening, where the data are stored, and what taxonomic and geographic gaps and biases persist. We also began developing guidelines and tools to help key users of biodiversity data, starting with managers of protected areas and businesses.

The Group's first five years of work culminated in several key outputs in the last few months which have enhanced our understanding and prepared the ground for further action. Highlights are shared below.



Images Credits: In Shai Hills Reserve in Ghana, data on species presence, distribution and relative abundance are now being collected through a camera-trapping programme to help inform management decision-making. Many species, like bushbuck, had not been systematically surveyed before. Photos © Kofi Amponsah-Mensah

Species monitoring schemes and data sources identified worldwide. In partnership with BirdLife International and in collaboration with other conservation agencies, we conducted a global audit of biodiversity monitoring to identify schemes around the world that are monitoring species populations. The project involved literature reviews, web searches, online surveys of stakeholders, and deep dives into selected countries and databases. We estimate that 3,300 to 15,000 initiatives worldwide are monitoring species populations, of which we were able to identify 1,200. The results have been published in an open access paper (Moussy et al., 2021) and a database of monitoring schemes will be shared soon on the Group's website. In parallel, in collaboration with Global Wildlife Conservation (now Re:wild), we conducted an inventory of biodiversity databases to determine where all the species data are being kept. As a result, at the end of 2020, we published the first ever database of global biodiversity data sources, listing 145 sets of data that are of potential use in monitoring species, their habitats and threats, as well as conservation responses. The results were published in an open access journal (Stephenson & Stengel, 2020) and the database of data sources is available on the Group's website where it will be maintained and updated regularly.

Monitoring capacity and data gaps identified. Working with the IUCN Save Our Species team, we reviewed project reports and the programme database to identify taxonomic and geographic trends in monitoring and the availability of biodiversity data. Data to justify reported results were often limited and species populations were generally monitored much less than threats or habitats across the project portfolio. Geographic and taxonomic biases were discussed and lessons shared that could be applied to future project portfolios. The results are published in an open access paper (Badalotti et al., 2021). We also conducted a survey of SSC taxonomic specialist groups to seek expert opinion and to identify taxonomic and geographic trends in the availability of species data to the SSC (especially relating to Red List assessments). The work produced a list of monitoring priorities for many taxa, and identified the support required by SSC groups to enhance their monitoring (the highest priorities including: fund-raising for monitoring; awareness raising of the importance of monitoring; developing partnerships for monitoring; and providing training in methods and tools). The results were discussed at the Leaders' Meeting in October 2019 and will form the basis of the support objectives our Group will bring to SSC from 2021.

Sustainable monitoring protocols tested in West Africa. Many protected areas worldwide still lack adequate species monitoring programmes to support management decision-making. Therefore, we set up the first of a series of projects to develop cost-effective, sustainable monitoring systems. This project (*Improving capacity for protected area management in Ghana*) is led by the Centre for African Wetlands, University of Ghana, and the Wildlife Division of the Forestry Commission, and aims to enhance the conservation of forest and estuarine ecosystems by developing and testing species monitoring tools at two sites. In Shai Hills Resource Reserve, the project established a camera-trapping system to monitor vertebrates and an invertebrate monitoring scheme, while bird monitoring systems were enhanced at Songor Lagoon, a Ramsar site. Protected area managers and NGO staff, as well as Ghanaian students, were trained in monitoring protocols, and biodiversity data of use to reserve managers is now being collected regularly and analysed. A second phase to the project is in development to expand the work to other sites.

Biodiversity guidelines developed for business. In March 2021, in collaboration with the IUCN Global Business and Biodiversity Programme and our corporate partners, Alcoa, Boskalis and Nespresso, we launched the *Guidelines for Planning and Monitoring Corporate Biodiversity Performance* (Stephenson & Carbone, 2021). These guidelines are a culmination of four years of intensive work and a unique collaboration between the IUCN Secretariat and the SSC to translate lessons from years of conservation science and practice into a corporate context. They provide businesses with a four-step process by which they can develop a corporate biodiversity strategy, focusing on specific environmental pressures and the species and habitats they can conserve. The process provides a framework by which companies can aggregate data across their operations and supply chains to measure corporate biodiversity performance. The guidelines were tested with our corporate partners, and Nespresso has shared their results in a public report (Nespresso and Biodiversity).

Species Monitoring Specialist Group members have also been heavily involved in several other initiatives, including the development and testing of the standards for the *IUCN Green Status of Species* and the *IUCN Green List of Protected and Conserved Areas*. Both standards will provide important tools to enhance monitoring in species conservation.

Next Steps

For the next quadrennium, we will step up a gear. Building on the strong foundation of projects established in 2016-2021, we will build capacity in key user groups to collect and use species data by:

- continuing to understand and resolve the challenges in biodiversity data collection, access and sharing;
- developing monitoring guidelines for different user groups;
- testing tools and protocols for data collection, especially new and evolving indicators (e.g. IUCN Green Status of Species) and technologies (e.g. remote sensing, eDNA);
- providing training and learning opportunities, especially within the SSC.

We will continue to collaborate closely with others, complementing existing work whilst avoiding reinvention or duplication. Many different actors are involved in species monitoring, from those developing indicators and monitoring tools, to those collecting data in the field, to those analysing, storing and sharing data, to those using the data for planning, monitoring and decision-making in governments, NGOs, academic institutions and companies. These actors need to be reflected in the SSC itself. Therefore, membership of the Species Monitoring Specialist Group has been expanded and reorganised to meet the challenges of the 2021-2024 quadrennium and deliver our objectives. The diversity in taxonomic, geographic and technical expertise has been greatly expanded. More early career professionals have been invited to bring in fresh new ideas and support innovation, and a suitable gender balance has been created. At the time of submitting this paper, the Group comprises 43 women and 40 men, currently working in 37 different countries. We have formed sub-groups that will drive forward key tools and approaches in relation to, for example, acoustic monitoring, cameras and camera trapping, eDNA, satellite-based remote sensing, ranger-based monitoring, citizen science, data management and visualization, and indicators and metrics.

Images Credits: The IUCN biodiversity guidelines for business encourage companies to identify priority species as part of their biodiversity strategy. Birds like this keel-billed toucan (*Ramphastos sulfuratus*) can be found in forest landscapes close to farms in Costa Rica. This has encouraged Nespresso to focus on sustainable agriculture practices that encourage the conservation of natural forest habitats and associated species of birds, and to monitor birds around coffee farms. Photos © PJ Stephenson

The Group wants to expand its collaboration with, and support for, taxonomic specialist groups and we will be asking chairs to nominate focal points for monitoring. Our review of SSC data needs suggested there is a strong desire for support, and we will scale up that work in the new quadrennium. Meanwhile, if SSC members and other people interested in species want to engage, they can follow us on Twitter @Monitor_Species and check out some of our tools, papers and databases on our website. In the second half of 2021 we will also start a programme of webinars to present our work, tools and databases.

Biodiversity monitoring has often been neglected. However, as conservation agencies, governments and businesses increasingly strive to measure their environmental impacts, and as the world finalises the post-2020 global biodiversity framework and endeavours to deliver the Sustainable Development Goals, tracking the status of species has never been so important. We will do our best to help make it happen!

Acknowledgements: We are grateful to many people who made the Group's work possible in our first five years. I'd like to give a special thank you to Guilherme Amado, Kofi Amponsah-Mensah, Alessandro Badalotti, Tom Brooks, Claire Bryant, Ian Burfield, Giulia Carbone, Pedro Cardoso, Paul Donald, Luca Fumagalli, Jaboury Ghazoul, Molly Grace, Giovanni Guerrero Lizano, Barney Long, Caroline Moussy, Yaa Ntiamoa-Baidu, Julie Reneau, Juan Diego Roman, Francesco Rovero, Angela Ruiz de Paz, Carrie Stengel, Fokko van der Goot, Laura van Galen, and Catherine Workman. We also acknowledge the following organisations for their financial support: Audemars-Watkins Foundation (through the Centre for African Wetlands); Cambridge Conservation Initiative Collaborative Fund for Conservation (through BirdLife International); Global Wildlife Conservation (through PJ Stephenson); National Geographic Society (through PJ Stephenson); and Nespresso, Boskalis and the Alcoa Foundation (through IUCN Global Business & Biodiversity Programme).