Summary findings and pr
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global environment facility
INVESTING IN OUR PLANET

Indian pangolin (©Gerald Cubitt)

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Bates’s weaver bird (©Grant Durr / Unsplash)

Background

Determining the appropriate strategy to combat biodiversity loss and mitigate threats to species requires localised, readily available, and accurate information. This includes knowing where threatened species are found, the types of threats facing specifc species and their signifcance, as well as an analysis of the potential outcomes of different actions designed to address threats to species. Competition over land use and funding constraints only adds to the need to fnd cost-effective and impactful biodiversity conservation and restoration methods. The Species Threat Abatement and Restoration (STAR) metric was developed in response to these needs. The metric uses data from the IUCN Red List of Threatened Species (hereafter IUCN Red List) to estimate the potential and actual impacts of actions and investments in reducing species extinction risk.

The STAR metric has been utilised in some country projects under The Restoration Initiative (TRI).[2] The main objective of TRI is to contribute to restoring ecosystem functioning and improving livelihoods through the restoration of priority degraded and deforested landscapes across 9 countries in Africa and Asia. In Kenya, the objective of TRI is to strengthen integrated natural resource management and restoration of degraded landscapes, specifcally in the Mukogodo Forest and Mount Kulal arii arii Π Ĭ p idegr

extinct in the near future, to “Critically Endangered” for species with an extremely high risk of extinction in the wild, to “Extinct,” for species that are no longer in existence. These species have the most urgent need for conservation and restoration measures. The STAR metric presently covers Red List assessed terrestrial amphibians, birds, and mammals, with plans to incorporate additional species, including reptiles and marine and freshwater species.

The STAR method involves combining species-specifc information, such as the species range, habitat, and threats, with GIS technology and satellite imagery to develop spatial models estimating species current area of habitat (i.e. the areas that are presently habitable by a particular species) and lost area of habitat (i.e. the areas that were once habitable by a specifc species but that are now not suitable for the specifes to inhabit, presumably due to habitat modifcation and destruction). The estimated STAR score is derived from global data calculated by overlaying these spatial models to assign a numerical value to each unit of the assessed area. The values are based on the conservation status of the species and the proportion of the species’ total habitat that exists within a specifc project site or landscape to provide an initial understanding of the species

Cameroon project sites:

The Republic of Cameroon has a diverse ecological landscape. Cameroon's network of biomes, which includes all types of forests, tree systems, savannahs, agricultural mosaics, drylands, etc., are progressively confronted by various forms of degradation. The overall objective of TRI in Cameroon is to support the implementation and scaling up of FLR in the country. The STAR assessment in Cameroon was conducted at three TRI project sites: Douala-Edea, Mbalmayo, and Waza. The estimated total threat abatement STAR score for all areas in Douala Edea was 48.4 compared with 2.9 in all areas in the Mbalmayo project site, and 1.2 in all areas in the Waza project site. Therefore, the STAR scores identifed the Douala-Edea landscape, specifcally the northeast portion, as potentially having the greatest species conservation opportunities among the three sites. The STAR score is mainly attributed to two threatened species at the Douala-Edea project site – the Dizangue Reed Frog (Hyperolius bopeleti; IUCN Red List Classifcation: Vulnerable) and the Apouh Night Frog (Astylosternus schioetzi; IUCN Red List Classifcation: Endangered) – which accounted for 86% of the total threat abatement STAR score for all the three project sites.

The STAR assessment identifed that 44% of the total STAR score for the Douala-Edea project site is associated with abatement of threats from agricultural (non-timber) crop expansion and intensifcation. Other signifcant potential contributions to the STAR score reduction include the abatement of residential and commercial development (43%) and logging and wood harvesting (10%). These scores indicate that if these threats were reduced, the STAR score would also fall, suggesting a reduction in the species extinction risk of the site. Reducing agricultural (non-timber) crop expansion and intensifcation (24%) were also considered as having the most signifcant contribution to the STAR score at the Mbalmayo project site, followed by invasive species (19%) and natural system modifcation (18%). In contrast, at the Waza project site, the primary contribution to the STAR score was abatement hunting (24%), followed by livestock farming and ranching (21%), and agricultural (non-timber) crop expansion and intensifcation (11%).

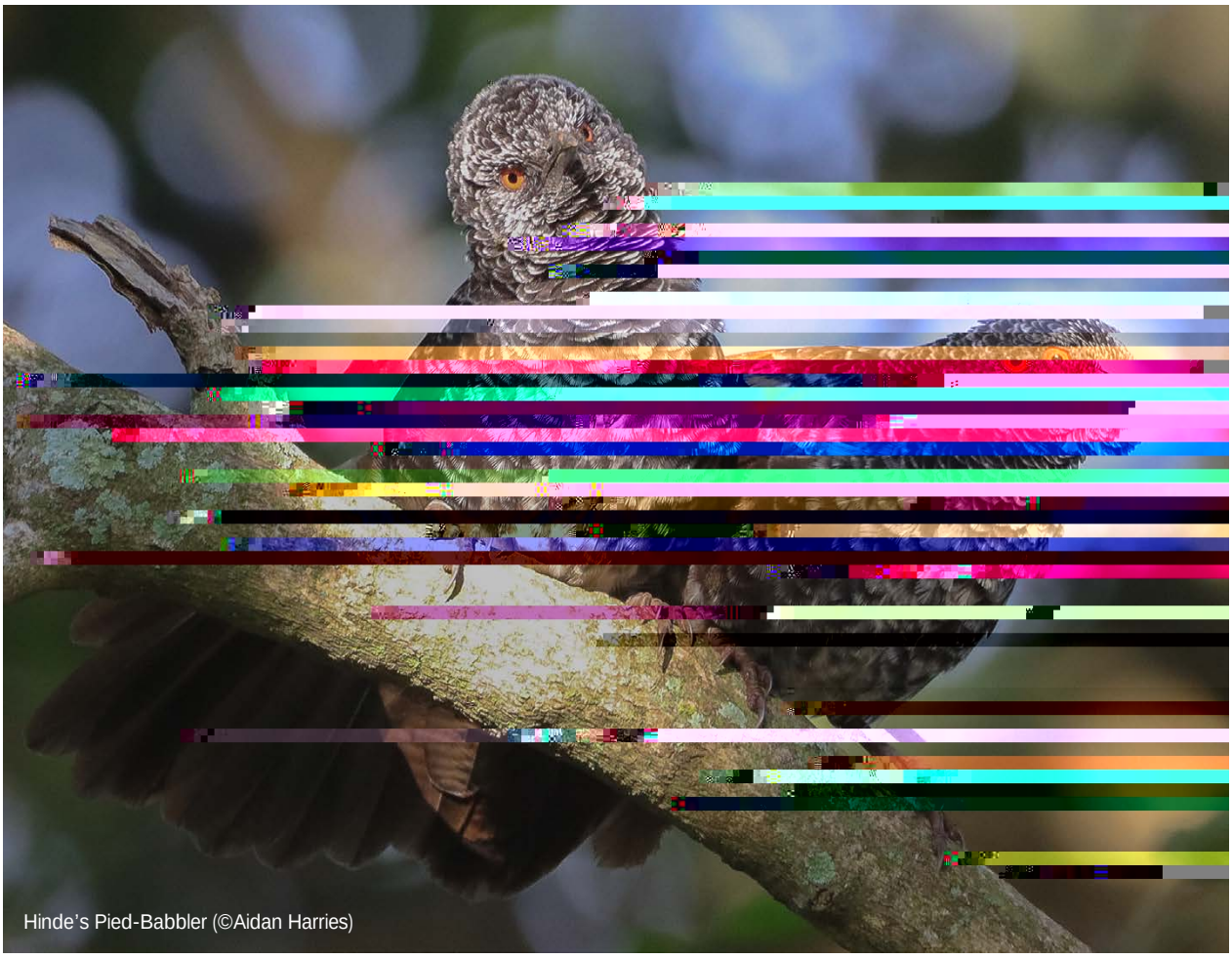
Kenya arid and semi-arid lands (ASAL) TRI project sites:

The TRI in Kenyan arid and semi-arid lands (ASAL) aims to restore deforested and degraded lands through the FLR approach and enhance the socio-economic development of local communities through the development of bio-enterprises of Non-timber Forest Products (NTFPS). The STAR assessment in the Kenya ASAL project sites was conducted in two TRI project sites, Mukogodo forest and the Mount Kulal community forest. The estimated total threat abatement STAR score for all areas in Mukogodo forest project site was 13.8 and 8.9 in the Mount Kulal project site. Fifteen threatened species contributed to 90% of the total threat abatement STAR score. The majority of these species are found in savannah and grasslands (13 of 15) or shrublands (12 of 15), and some in forests (6 of 15).

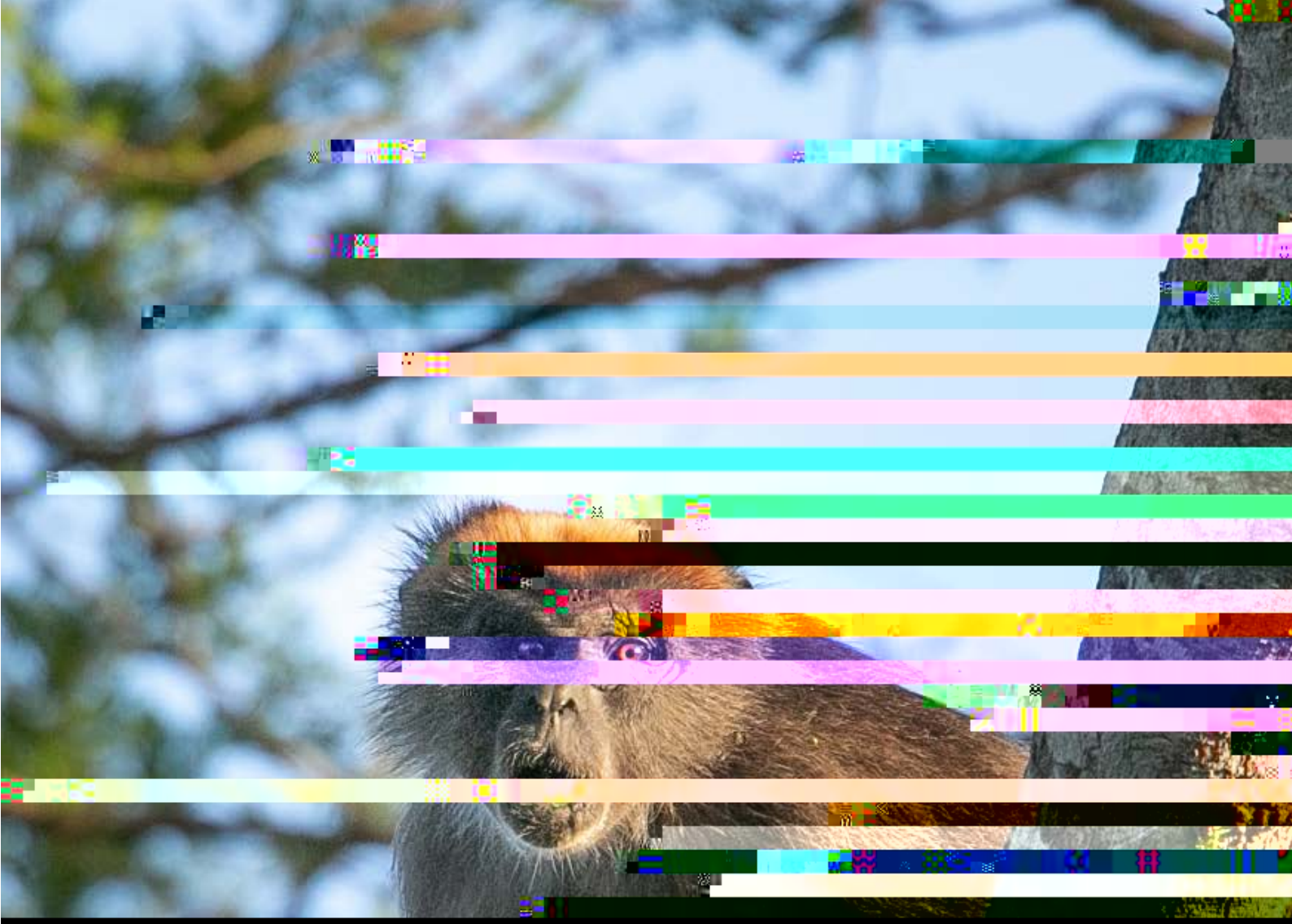
The STAR assessment identifed the southeastern part of the buffer area of the Mukogodo forest landscape and the Mt. Kulal forest landscapes (both project and buffer areas), as well as some smaller forest remnants, as particularly important for several threatened species. In the Mukogodo forest project site, the most signifcant threat abatement measures that would contribute to the STAR score included targeting threats from livestock farming and ranching (18%), natural system modifcation (16%), hunting (15%), non-timber crops (14%), human disturbance (13%), and other threats. Similarly, at the Mount Kulal project site, signifcant threat abatement measures that would contribute to the STAR score include targeting threats from livestock farming and ranching (23%), hunting (17%), natural system modifcation (16%), and human disturbance (13%) and other lesser threats.

Kenya Tana Delta project sites:

The overall objective of the TRI Tana Delta project is to strengthen integrated natural resource management and restore degraded landscapes in the Tana Delta. The STAR assessment in the Tana Delta focused on three key species: the Tana River Red colobus monkey (Piliocolobus rufomitratus; IUCN Red List status: Critically Endangered); the Sokoke dog mongoose (Bdeogale omnivora; IUCN Red List status: Vulnerable); and the Spotted ground thrush (Geokichla guttata; IUCN Red List status: Endangered). The estimated total threat abatement STAR score for all Tana Delta project site areas was 1.2. The assessment showed that the northwest portion of the Tana Delta has the highest concentrations of STAR values, indicating its relative importance within the site for conservation. The project site's STAR score is primarily affected by the abatement of threats targeting logging and wood harvesting activities (22%). Following that in decreasing severity, other threat abatement measures impacting the STAR score include targeting threats from natural system modification (including changes to natural hydrology) (20%), non-timber crop production (16%), invasive species (9%), climate change and severe weather (8%), as well as other lesser threats.



Hinde's Pied-Babbler (©Aidan Harries)



Tana River Red Colobus monkey (©Yvonne de Jong & Tom Butynski/IUCN Red List)

Practical applications of the findings

Prioritise conservation and restoration efforts within and among project sites

The project site maps in Kenya and Cameroon depict the areas with higher STAR values, indicating the relative concentration of species facing extinction risk within project sites.[4] These maps provide valuable insights for prioritising conservation efforts, enabling a targeted approach to areas with greater biodiversity significance. The additive breakdown of STAR scores in each project site by threat provides additional information on which threats contribute most to the extinction risk at each site. This breakdown can further focus conservation efforts and threat-reduction measures to address the specific threats impacting the species within each project site.

In Kenya Tana Delta, for example, the results from STAR showed that the highest concentrations of STAR values are in the Northwest part of the project site, indicating their relative importance for conservation within the site. Initially, TRI in Kenya Tana Delta focused on the Southern portions of the Delta. However, through the STAR results, the project expanded its efforts to include the North. During this process, the project team in Tana Delta partnered with the Kenya Institute of Primate Research (KIPRE) to conduct research on primates in the Delta. STAR enabled the Kenya project to look beyond the original project boundaries, consider expanding the scope, and introduce new interventions.

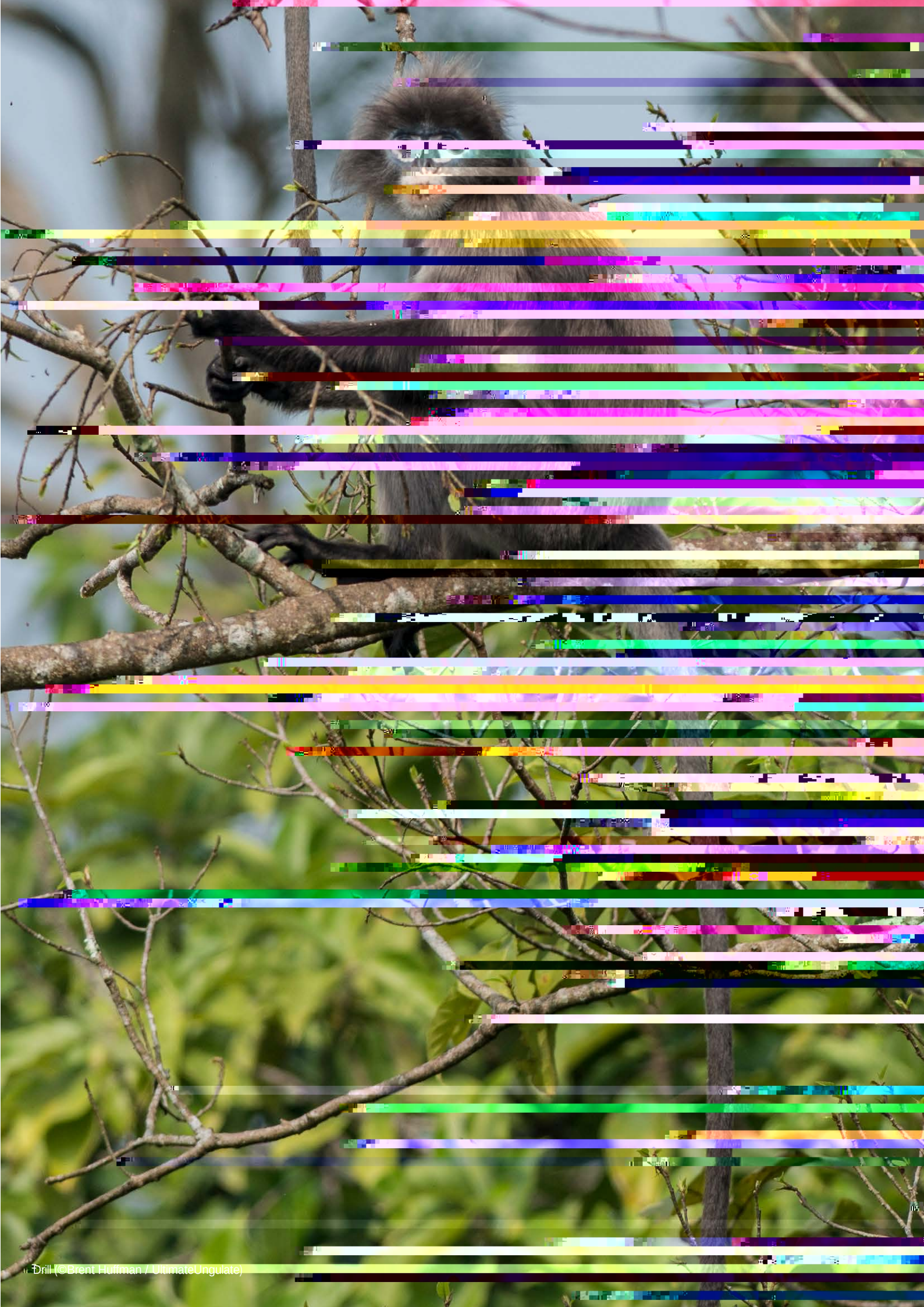
In addition, the overall STAR scores of a site can be compared with scores of other sites, allowing conservation work to be prioritised among different project sites. Comparing sites enables project managers to identify which would significantly contribute to reducing species extinction. When combined with cost data, such as land value or the cost of threat mitigation actions, this information could be used to allocate scarce financial resources to maximise conservation outcomes cost-effectively.

Organise cross-boundary conservation and restoration projects

Comparisons in project site STAR scores could extend to cross-boundary landscapes. For example, the Waza

Use STAR to target restoration efforts, reduce threats to species and achieve climate and biodiversity commitments

The STAR method is currently being considered for evaluating contributions under the Kunming-Montreal



Drill (©Brent Huffman / UltimateUngulate)

Conclusion and recommendations

The results from the STAR assessments are intended to inform the work of existing TRI projects, including sites in Cameroon and Kenya, and also to support the conservation and restoration of threatened species worldwide. The STAR methodology is continuously being refned to create a comparable, scalable, and verifable measure that can be trusted and utilised by a wide range of stakeholders. The following recommendations indicate some of the ways STAR methodology can be further utilised in the Kenya and Cameroon sites and more generally.

Recommendations

Calibrate STAR assessments through local knowledge

The STAR assessments conducted in Kenya and Cameroon calculated an estimated STAR score. This score is based on global data and provides an initial estimation of species and threats expected to be in the area. Calibration is required to confrm the estimated STAR data through validation from local experts and communities residing in the assessment area.

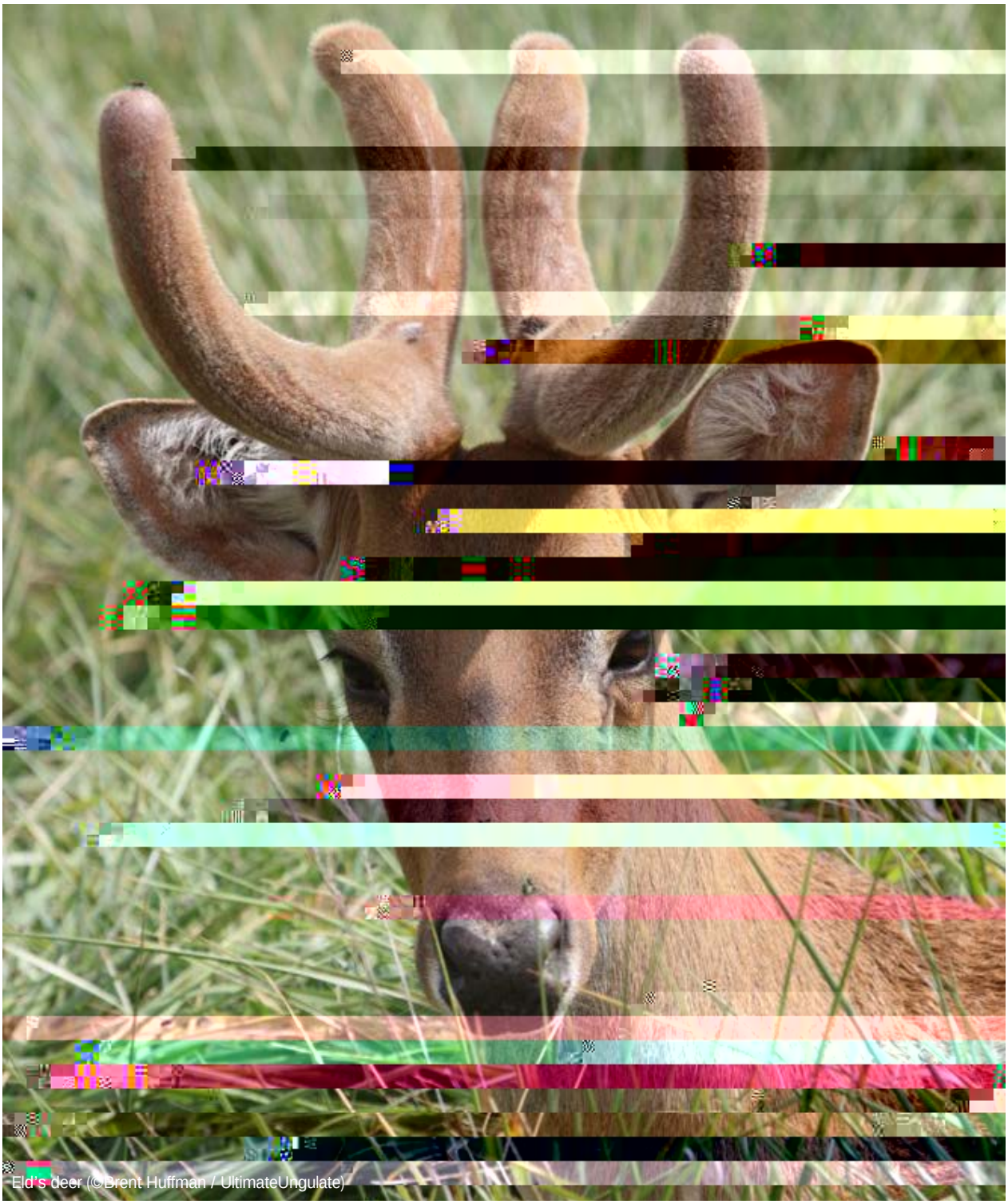
Calibration is a critical truth-grounding exercise and should take a participatory approach, involving focus groups and interviews with relevant stakeholders such as government offcials, researchers, and communities residing in the assessment area. The calibrated STAR integrates the local information from the specifc assessment area and confrms species presence and threat presence and intensity. Calibrated STAR should be used for target setting, as it more accurately refects the opportunities for extinction risk reduction in the assessment area.

In the Tana River Delta project, for example, the estimated STAR score focused on three threatened species: the Tana River Red colobus monkey, the Sokoke dog mongoose, and the Spotted ground thrush. However, the project teams included and emphasised the importance of the risks facing the Tana River Mangabey (Cercocebus galeritus). The Kenya project team suggested that the use of data from the IUCN Red List may have limited the estimated STAR score, as additional species information not listed in the Red List informed their project design. Therefore, calibration is critical to identifying insights and relevant information not captured in the estimated STAR score.

Similarly, the Mukogodo Forest project site further highlighted that estimated STAR scores often do not refect the reality of certain projects. In Mukogodo Forest, the estimated STAR fndings for the Kenya ASAL project sites identifed ranching and livestock as signifcant threats. However, the project teams described that many farms and ranches in this area yd that ḍ % i ɔ MthancAM ʻ L ʻ thbeatw Mi%

Advocate for STAR assessment to be adopted by national governments as a consistent metric to assess actions for reducing species extinction risk

At present, there is no consistent, recognised methodology for assessing the impacts of actions and investments aimed at reducing species extinction in many of the project countries. Multiple methodologies exist, which hinders effective project coordination. National governments, particularly in countries that include cross-boundary landscapes, such as those in the Congo basin, could benefit from adopting the STAR assessment to enable better coordinated and effective approaches to reducing risks to species across national boundaries.



Eld's deer (©Brent Huffman / UltimateUngulate)

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