20th Annual meeting of the Sahelo-Saharan Interest Group

18, 19 & 20 May 2021
Online

Abstracts
Question & Answers
Registered participants list

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20th Annual Meeting of the Sahelo-Saharan Interest Group
20ème réunion annuelle du Groupe d'intérêt sahélo-saharien

The Sahelo-Saharan Interest Group (SSIG) meeting has been an annual forum for all those working in wildlife conservation within the arid areas of North Africa and the Middle East since 2001 (except in 2020 due to the Covid-19 pandemic). Facilitated by SCF's Conservation & Science Committee, the meeting provides an opportunity to bring people together to share ideas and projects, and to continue a strong tradition of collaboration on behalf of Sahelo-Saharan wildlife and people.

This year's meeting was held online and included a series of presentations and round-table discussions covering a range of major issues in Sahel-Sahara, while at the same time enabling the fruitful exchanges that characterize our meetings.

The meeting was structured around three sessions with specific topics; each topic was introduced by a leading expert on the issue:

Theme 1: Geopolitics, climate change and society and in the Sahelo-Saharan region
Theme 2: Large-scale conservation and development
Theme 3: Species and site conservation

This document contains the abstracts from the presentations given at the SSIG Meeting held online from the 18th to the 20th of May 2021.

La réunion du Groupe d'intérêt sahélo-saharien (GIS) est un forum annuel pour tous ceux et celles qui travaillent à la conservation de la faune sauvage dans les zones arides d'Afrique du Nord et du Moyen-Orient depuis 2001 (sauf en 2020 en raison de la pandémie de Covid-19). Animée par le Comité Science & Conservation de SCF, la réunion est l'occasion de rassembler les gens pour partager des idées et des projets, et de poursuivre une forte tradition de collaboration au nom de la faune et des populations sahélo-sahariennes.

La réunion de cette année s'est déroulé en ligne. Elle a compris une série de présentations couvrant une série de questions d'actualité pour le Sahel-Sahara, tout en permettant les échanges fructueux qui caractérisent nos réunions.

La réunion s'est structurée autour de trois sessions portant sur des sujets spécifiques. Chaque session fut introduite par un expert mondial dans la matière.

Thème 1 : Géopolitique, changement climatique et société dans la région sahélo-saharienne
Thème 2 : Conservation et développement à grande échelle
Thème 3 : Conservation des espèces et des sites

Ce document contient les résumés des présentations faites lors de la réunion des SSIG qui s'est tenue en ligne du 18 au 20 mai 2021.

A Unique Forum

The Sahelo-Saharan Interest Group (SSIG) defines itself as a group of "like-minded individuals and institutions" interested in sharing knowledge and encouraging conservation action in the Sahara.
Although it is a not formal membership organization, SSIG plays a unique role as a forum for people to meet, network, share information and build strong partnerships for Sahelo-Saharan conservation through its annual meetings. SCF is committed to maintaining its facilitator role for these gatherings.

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Un forum unique
Le Groupe d'Intérêt Sahélo-Saharien (GISS) se définit comme un groupe de personnes et d'institutions partageant les mêmes idées, intéressées à partager leurs connaissances et à encourager l'action de conservation au Sahara.
Bien qu'il ne s'agisse pas d'une organisation à adhésion officielle, le GISS joue un rôle unique en tant que forum permettant aux gens de se rencontrer, de se mettre en réseau, de partager des informations et de construire des partenariats solides pour la conservation du Sahel et du Sahara par le biais de sa réunion annuelle. SCF s'engage à maintenir son rôle de facilitateur de ces rencontres.

Theme 1 - Geopolitics, climate change and society in the Sahelo-Saharan region

Lead speaker: Ibrahim Thiaw, Executive Secretary of the UN Convention to Combat Desertification

1. Impact of conflict and insecurity on the elephant migration in the Gourma of Mali

Susan Canney, Nomba Ganame, Sophia Leroy
WILD Foundation (SMC, NG, SL), International Conservation Fund of Canada (SMC, NG, SL), University of Oxford (SMC)

The conflict in Mali appears to have had a significant impact on the migration pattern of the approximately 200-300 Mali elephants. GPS collar data obtained by Save the Elephants during the 2000s enabled a precise understanding of the elephant migration pre-conflict. This showed that the elephant migration was shaped by a search for food and water while avoiding areas of human activity as far as possible over an area of around 32,000km2 (minimum convex polygon). Thanks to the information collected by a network of unarmed community ecoguards across the elephant range, the Mali Elephant Project has been able to monitor changes in the distribution and migration of this elephant population since poaching escalated in 2015, and relate it to changes in the poaching and security landscape. Observations suggest that elephants are avoiding core areas and pushing further west and south into areas of their range they abandoned in the 1970s; while individuals (possibly "scouts") are found in new areas such as on the Bandiagara escarpment. A key question was to determine whether the substantial reduction in reports of elephants in the northern parts of the range was a real effect or was due to other factors such as fewer ecoguards in these areas, and/or a reduction in their activity. Preliminary conclusions suggest the shift in range is a real effect and has implications for conservation efforts, particularly given the recent creation of a new 42,633km2 Reserve (modelled on the "biosphere reserve" concept) covering the whole of the pre-conflict elephant range.

Keywords: Conflict, Protected Area, Elephant distribution, Community ecoguards

2. Addressing the potential negative effects of the Green Wall on Sahel's biodiversity

Marisa Naia1,2, Pedro Tarroso1, Andack Saad Sow3, André Vicente Liz1,2, Duarte Vasconcelos Gonçalves1, Fernando Martínez-Freiría1, Frederico Santarém1,2, Gholam Hosein Yusefi1, Guillermo Velo-Antón1, Ignazio Avella1,2, Jeffrey O. Hanson1, Leili Khalatbari1,2, Maria Joana Ferreira da Silva1,4, Miguel Camacho-Sanchez1, Zbyszek Boratyński1, Sílvia B. Carvalho1, **José Carlos Brito**1,2

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The Great Green Wall Initiative (GGW) was outlined to face the severe droughts that affected the Sahel during the 1970/80s. By establishing a mosaic of artificial waterbodies, forest, graze, and cultivated land across the African continent, the GGW aims at providing a vital contribution to the 2030 United Nations Sustainable Development Goals by securing food resources and improving socioeconomic development and regional peace. However, the GGW may potentially cause negative impacts over local biodiversity. For instance, the plantations will include native and exotic species that may promote land-cover and hydrological changes, or the attraction effect after conclusion, creating additional human pressure (road network, urbanisation) in a region that currently is rather remote. These and other factors can cause population fragmentation and isolation in endemic and threatened dryland-adapted species, potentially affecting up to 1,275 terrestrial vertebrates that occur within the intervention zone. To lessen the potential impacts, amongst other measures, it is vital to plan for natural corridors ensuring north-south dispersal in arid-adapted species and connectivity in-between current protected areas. We call for UNCCD and implementation-range countries to: 1) make available the exact location of the Green Wall implementation area and the land-conversion plan defining the sites that will be converted to forest, graze or agriculture, and where natural

habitats will be restored; and 2) then use such information, combined with biological and socioeconomic field evaluations, to deliver country-based environmental impact assessments of the GGW and a mitigation plan for locally threatened biodiversity. Such assessments are critical to ensure that the potential negative effects on biodiversity in arid regions are minimised, and that the baseline objectives of the GGW are effectively achieved in a sustainable manner.

3. Conservation and Carbon Financing: New Opportunities for the Sahelo-Saharan Region

Timothy H. Tear, Ph.D.
International Senior Scientist and Director – Climate Change Program
Biodiversity Research Institute, USA

Climate change is becoming the dominant environmental issue of our time. The urgency of the climate crisis has pushed many societies to call for greater action. In response, many companies and organizations across both the for-profit and non-profit sectors have begun to state their greenhouse gas/carbon reduction strategies in public forums. This change, along with other market factors, is dramatically impacting carbon markets and creating new opportunities and potential for carbon financing to support conservation efforts. As most carbon projects focus on forests, we introduce the concept of rangeland carbon projects in Africa that include grasslands and woodlands, and can occur within and outside traditional protected areas. Some examples from the Sahelo-Saharan region are provided to illustrate the potential for combining carbon financing and conservation of rangeland habitat in the Sahelo-Saharan region.

Keywords: Rangelands, soil carbon, carbon offsets, climate change, nature-based solutions

4. Forest restoration in the Sahel DOES help biodiversity AND local people: the Burkina Faso experience!

Kris Van Looy
Hommes et Terre, Belgium

We document reforestation success for 52 large restoration sites of degraded land in the Sahel region of Burkina Faso and the region of Mopti in Mali, and 31 sites of the Parklands regions of Plateau Central and Northern Center in Burkina Faso. Measurements of tree and herbaceous vegetation diversity, density and cover are studied in time over the different regions, and related to climate, soil and land use history conditions. The forest restoration appeared to be very successful in tree density and survival, both in the Sahel and the Parklands region, with higher diversity in the Parklands region then in the Sahel. Yet, the recovery of vegetation cover is fastest in Sahel, thanks to the general presence of grass seeds and prevalence of open sandy soils; with lower impact of soil crusts and compaction. Thanks to the initial half-moon deep ploughing, ecosystems are able to reverse the process of desertification on heavily degraded lands. In particular, there has been a strong and diverse restoration of herbaceous and woody species, and an immediate response of birds and reptiles. Both in composition and species accumulation, the results are well corresponding to the target dry forests of the regions. Different restoration approaches for the Parklands and Sahel region are proposed based on these results.

Keywords : tree survival, tree diversity, vegetation cover, Burkina Faso, Mali

5. Reforestation and dryland reclamation mean more than 'just' planting trees - experiences from the field Or How come the Sahelian drylands are still dry after all these years and decades of reforestation?

Patrick Van Damme
Ghent University, Belgium and Czech University of Life Sciences

The title says it all. Based on review work for FAO's Action Against Desertification project in the Sahel, and several other advisory contributions to organisations working in the broad field of reforestation and dryland reclamation, the presentation will summarize my very personal findings and lessons learned in this thematic field, in an endeavour

to try and formulate the reasons for failure, and take these to formulate recommendations for more successful interventions. Spoiler alert: I want to 'put people first' ...

6. Allier conservation et appui aux populations des zones reculées d'Afrique : des exemples au Niger

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Au Niger, les zones d'intervention du Sahara Conservation Fund sont assez variées et dans chacune de ces zones, un des principaux défis est de parvenir à allier les besoins et attentes des populations locales et les activités de conservation. En fonction de son expérience, SCF a pu développer des initiatives visant à sensibiliser et inclure les communautés à ces activités de protection de la faune. Lors de ces missions terrains, SCF a pu faire le constat que l'isolation de certaines populations les prive d'un accès aux services de santé. En partenariat avec Education et Santé Sans Frontière et L'Afrique à cœur, SCF a commencé en 2009 à réaliser des missions de soins médicaux itinérantes dont l'objectif est d'apporter les premiers soins aux populations nomades dont l'accessibilité au centre de soins est difficile. Jusqu'à présent plus de 11 000 personnes ont pu en bénéficier. Parallèlement, un appui aux éleveurs a été mis en place dans l'Aïr en leur procurant des chèvres, leur fournissant ainsi une source de subsistance et de revenu, dont la progéniture est réutilisée par le projet pour soutenir d'autres familles. Plus récemment, SCF a développé dans le cadre du projet Egyptian Vulture New LIFE des activités de sensibilisation des jeunes générations et d'appuis aux écoles en zone rurale. Ces activités ont pour but de développer une conscience environnementale ainsi qu'un intérêt pour la faune et sa préservation chez les élèves dès le plus jeune âge, tout en apportant un soutien durable aux écoles en manque de ressources.

Theme 2 - Large-scale conservation and development

Lead speaker: Philippe Mayaux, Head of sector Biodiversity and ecosystem services - Directorate-General for International Cooperation and Development (DG DEVCO), European Commission

Keynote speaker: Jean Labuschagne, Director: Conservation Development & Assurance, African Parks Network, South Africa

7. Scoping of Key Biodiversity Areas (KBAs) in the Sahara and Sahel Region of North Africa

Daniele Baisero[1,2], Andrew J. Plumptre[1,2].

1. Key Biodiversity Areas Secretariat, David Attenborough Building, Cambridge, UK
2. Birdlife International, David Attenborough Building, Cambridge, UK

Key Biodiversity Areas (KBAs) are sites of global importance for the persistence of biodiversity. KBA identification is intended to be a bottom-up process led by local experts, but can also be exceedingly time-consuming when the region or the number of species is large.

In order to facilitate identification of KBAs, we have compiled relevant global biodiversity data and use these to scope where potential KBAs may occur. For the Sahara-Sahel we collated range and area of habitat data for 8671 species assessed on the IUCN Red List of Threatened Species and identified sites where species that potentially trigger KBA Criteria A1, B1 and B2 are most likely to occur. We also collated global layers of ecological integrity to flag regions likely to trigger Criterion C, and adopted a novel metric of irreplaceability to assess Criterion E. We divided the region into 23,035 cells of ~486 km². Of these, 656 potentially triggered one or more of KBA Criteria A1, B1 or B2. Trigger species included 64 animals and 18 plants. Assessments of existing protected areas showed that many of these would also likely meet KBA status. Regions in the East, South and West Sahara desert ecoregions have the potential to trigger Criterion C (ecological integrity), none of which currently contains officially designated KBAs. The irreplaceability analysis highlighted few irreplaceable areas at the scoping resolution.

Results will be illustrated highlighting the next steps required following this scoping to formally propose KBAs for inclusion in the World Database of KBAs.

Keywords : KBA, Sahara, Sahel

8. Evaluating biodiversity of a degraded desert ecosystem to inform protected area management

Meliane Mohamed Khalil, Saidi Amira, Petretto Marie and Gilbert Tania

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Ecosystem resilience is partly defined by species diversity. Jbil national park (JNP) is located at the northeastern limit of the grand erg oriental. The park covers 150000 hectares of protected land aiming at the restoration of desert ecosystem through the protection and reintroduction of globally threatened species (i.e. *Addax nasomaculatus*). Contemporary biodiversity data are needed to evaluate progress and ensure appropriate adaptive conservation management to maximise restoration efforts. To move towards this, we initiated an evaluation of ecosystem status by establishing a camera trap grid in 2019 to monitor mammalian species richness. We detected 12 mammal species spread over a 19 months period. Of particular interest was the canid assemblage of African wolf (*Canis lupaster*), Fennec fox (*Vulpes zerda*), and for the first time, our results revealed the presence of the Rüppell's fox (*Vulpes rueppellii*), a notoriously elusive predator in Tunisia. Although all 3 species are present, water availability seems to affect relative abundances. Also of interest was the presence of wild Dorcas gazelle (*Gazella dorcas*) and Slender-horned gazelle (*Gazella leptoceros*) exhibiting phenotypical similarities. We postulate that morphological resemblance in key identification criteria may lead to the misidentification of the two gazelle species under some

circumstances. From our preliminary results, we present information on the diversity of JNP that will help inform its management to maximise biodiversity in this unique desert ecosystem.

Keywords: mammals, Tunisia, ecosystem integrity, camera trapping

9. Étude de l'évolution des principaux écosystèmes du réseau des parcs culturels Algériens.

Réda Behlouli
Projet des Parcs Culturels Algériens (PPCA), Algérie

La gestion efficiente de la biodiversité au sein des territoires nécessite une évaluation préalable des connaissances et le recours à des outils d'aide à la prise de décision orientant la nature et la portée de l'intervention. Le réseau national de parcs culturels, à travers la mise en œuvre « Conservation de la biodiversité d'intérêt mondial et utilisation durable des services éco systémiques dans les parcs culturels en Algérie », a ainsi entrepris la réalisation de travaux de consultations objectivant l'étude diachronique de l'évolution des principaux écosystèmes des parcs culturels à l'échelle des paysages. Par le recours de la télédétection et de l'imagerie satellitaire et selon une approche pluridisciplinaire alliant l'analyse de l'écologie des territoires et de la sa dimension socio-économique, les études menées tentent d'apporter des réponses sur les changements observés dans les écosystèmes sur une échelle temporelle correspondant aux trente dernières années. Une tendance actuelle à la progression du couvert végétal a ainsi globalement été observée dans le complexe de parcs culturels Ahaggar/Tassili N'Ajjer et, de manière nuancée, au niveau du parc culturel de l'Atlas Saharien.

10. Perceptions of residents as a pillar for the community strategy building in the Ouadi Rimé-Ouadi Achim Wildlife Reserve, Chad

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Residents and their livelihoods are a pillar of natural resources management and conservation, therefore understanding their attitudes and perceptions of protected areas are crucial to identify barriers to behaviour change in context of nature conservation. The Project Ouadi Rimé- Ouadi Achim was initiated in 2016 in order to establish management plan in faunal reserve in the Northern Chad. As integral part of this project, environmental education programme and subsequently the community strategy is to be developed. We applied the approach combining on-job training of local team with evidence-based and target group-specific approach responding to environmental problems and needs of communities residing within the reserve. Preliminary results (n=97) of ongoing "validation phase" suggest that while general attitudes towards the protected area appear positive, there is a gap in interpersonal communication about benefits of faunal reserve. Within four target groups so far examined, no significant difference in attitudes towards protected area has been found. This trend would allow the same version of introductory programme for all target groups. Following problems have been identified as most important for people: bush fires, overgrazing, lack of access to health services; and for wildlife: bush fires, poaching, and cattle concentration. With strengthen security measures; the team is continuing data collection and processing barrier analysis data while the preliminary content of environmental education programme is being designed.

11. The exhibition 'The desert shall live - Nature and its threats in Arabia, the Sahara and Sahel'

Ulrich Joger
Director, State Museum of Natural History Braunschweig, Germany

This special exhibition focuses on threatened mammals and birds of the Sahara. It contains 40 panels on general aspects of deserts (such as climate and adaptations of the fauna), on the indigenous people (nomadic or resident in oases), on species like migrating birds, ostrich, leopard, cheetah, Oryx, Addax, Dama gazelle, the giraffes of Niger and the Mali elephants. There are video screens, interactive media stations, gimmicks for children and plenty of

taxidermically prepared animals. The gate of Palmyra (Syria) and an artificial dune provide special impressions. Even an original Bedouin tent from Jordan can be included. One video shows original interviews with people acting in Sahara conservation projects.

The exhibition was shown in Braunschweig (Germany) in 2019/2020 and is currently on display in Bielefeld. A 180 page book gives further information. The language is just German, but translations are possible if the exhibition is ordered by another country.

Keywords: exhibition, desert biology, conservation

12. Progress and Updates on the Restoration of the mega-fauna of Chad's Sahel-Sahara Ecosystem

Justin Chuven[1], Tim Wacher[4], John Newby[2], Caleb Ngaba[2], Khalid Rahama[2], Habib Ali[2], Krazidi Abeye[2], Marc Dethier[2], Ricardo Pusey[1], Mahamat Hassan Hatcha[3], Katherine Mertes[5]

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Under the leadership of Abu Dhabi, the Environment Agency Abu Dhabi, the Chadian government and the Sahara Conservation Fund, outstanding progress has been made in restoring the iconic scimitar-horned oryx (*Oryx dammah*) to its native habitats of the African Sahel. As we pursue our efforts to bolster and build truly sustainable, protected populations of oryx, we are now moving forward to reintroduce and reinforce additional critically endangered desert species, like the iconic addax (*Addax nasomaculatus*) and conserve and protect the dama gazelle (*Nanger dama*). Together with our technical partners: Zoological Society of London, Smithsonian Conservation Biology Institute, and Royal Zoological Society of Scotland there are has been significant progress made over the last year. The wild population of oryx is increasing at a steady rate and the major milestone of reintroducing the first two pilot groups of addax was accomplished. The results of several aspects of the addax translocation, release strategy, dispersal and success will be discussed. There are many challenges to overcome in the near and distant future, but the project's success is a positive indication that the mega-fauna can successfully be restored to this region.

Keywords: Translocation, monitoring, scimitar-horned oryx, addax, dama gazelle, genetic diversity, reintroduction, ex-situ conservation

13. Concepts, Personnes, Action: La Grande Conservation dans la Réserve de Faune de Ouadi Rimé-Ouadi Achim, Tchad

Arrachid Ahmat Ibrahim, Henry Bailey
Projet Ouadi Rimé – Ouadi Achim, Sahara Conservation Fund, Tchad

Un bref regard sur les défis de la conservation à grande échelle dans le contexte de la réserve de faune de Ouadi Rimé Ouadi Achim ; la plus grande aire protégée du Tchad avec 77.800 km² et les activités du Sahara Conservation Fund par le projet Ouadi Rime Ouadi Achim (POROA) financé par l'UE.

Concepts, Personnes, Action abordera le zonage et le cadre juridique d'une si grande zone de conservation, en abordant le défi de la gouvernance inclusive, en suggérant des recommandations pour la gestion future de la réserve pour la conservation et les partenaires de développement, tout en se référant à certaines réalisations clés accomplies par SCF et POROA en relation avec ces défis, recommandations et stratégies.

14. Biogeography of Sahara highlands: inferring historical climatic refugia and diversification hotspots in the Bosc's fringe-toed lizard *Acanthodactylus boskianus* (Squamata: Lacertidae)

André Vicente Liz [1,2,3]; Dennis Rödder [3]; Duarte Vasconcelos Gonçalves [4]; Guillermo Velo-Antón [1,5]; Miguel M. Fonseca [4]; Philippe Geniez [6]; Pierre-André Crochet [7]; José Carlos Brito [1,2]

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The biogeography of the Sahara-Sahel biodiversity is tightly linked to the region's past climatic oscillations and heterogeneous landscape. These factors substantially shaped the historical distribution and genetic structure of desert species, prompting successive range shifts, vicariance and adaptation processes throughout the Plio-Pleistocene. The Central Sahara highlands are the main mild-climate patches among massive hyper-arid desert extensions, potentially sheltering isolated populations of non-xeric species and generating diversity through adaptive and allopatric diversification. However, remoteness, armed conflict and socio-political instability have historically limited knowledge on regional biodiversity, for which genetic and ecological data are especially scarce. In this work, we explore the role of Sahara highlands on the diversification and desert colonization of the Bosc's fringe-toed lizard *Acanthodactylus boskianus* (Squamata: Lacertidae). We integrate multi-locus mitochondrial and nuclear phylogenies with paleoprojections of species climate-niche models across its distribution range in North Africa and Arabia, in order to assess its genetic structure, identify intra-specific lineages and infer historical climatic refugia and dispersal routes. We found that the species diversification was triggered by paleoclimatic variability and topography, resulting in high levels of intra-specific structure and unveiling potential candidate species, including some endemic to Central Sahara highlands. Climatic refugia were located in desert mountains and coastal areas, whereas stable biogeographic corridors were inferred along the desert periphery and more occasional ones across inland areas of eastern Sahara. This work underlines the critical importance of Central Sahara highlands in conservation, acting as centres of endemism and climatic refugia allowing highly vulnerable desert ectotherms to face global warming.

Keywords: Arid mountain; biogeographic corridor; climatic refugia; cryptic diversity; natural history.

15. East Atlantic Flyway Initiative: Opportunity for collaboration from Iceland to South Africa

Wenceslas Gatarabirwa and other members of EAFI Taskforce
BirdLife International

The East Atlantic Flyway extends from Northeast Canada to Northern Russia in the Arctic, Western Europe, Western Mediterranean, West Africa to Lake Chad, Central and Southern Africa regions. BirdLife's East Atlantic Flyway Initiative is an initiative of group of its partners seeking to achieve favourable conservation status for migratory and other priority bird species and their habitats and though sustainably managed critical landscapes working collaboratively with all key stakeholders.
More specifically the initiative: (a) promotes the use of existing understanding and invests in new research to fill gaps in knowledge of causes of population declines for priority migratory birds; (b) based on this evidence, develops, tests, and refines conservation solutions to reverse declines of migratory birds and other priority species; (c) deploys effective conservation solutions at appropriate locations and scale to improve the conservation status of priority migratory birds and other species in the flyway. (d) it also uses international relevant policy processes (Bern Convention, CMS/AEWA, AEMLAP, Ramsar, Abidjan) to engage governments, businesses and other stakeholders in scaling up what works from local to global along the flyway to ensure the protection and restoration of habitats and their sustainable management.

Keywords: Flyway approach, Migratory Birds Conservation

Theme 3 - Species and site conservation

Lead speaker: Amy Fraenkel, Executive Secretary of UN Convention on Migratory Species (CMS)

Keynote speaker: M. Hamid Abdramane Chaibo, Directeur de la Conservation de la Faune et des Aires Protégées, Ministère de l'Environnement et de la Pêche, Tchad.

16. Dynamics of a reinforced population: abundance assessment and effect of environment and management

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Population reinforcement, through translocations of individuals, aims to restore populations of threatened species. The success of management actions can be assessed by measuring evolution of population size and distribution but various mechanisms shape population size and distribution with potentially opposing effects. For instance, population reinforcement, by increasing the local abundances could cause negative density-dependence effects, particularly on breeding success. We tested this hypothesis and studied the consequences of management and environment on population dynamics.

Based on 8-year monitoring of a reinforced population of North African Houbara bustard (*Chlamydotis undulata undulata*), over an area of 50,170 km² in the eastern region of Morocco, we first used count data to estimate and spatialize population abundance. We assessed the environmental (climate) and management covariates (release effort) associated with temporal and spatial variation in abundance. We investigated the presence of density-dependence effect on breeding success by studying the relationship between nest survival, local abundance, and habitat quality.

Our study provided the first estimates of density and annual abundance of houbara in Eastern Morocco after 22-years of population reinforcement, showing important variation in space and time. Spatial heterogeneity in abundances was negatively associated with temperatures and positively associated with release effort. Abundance has a negative effect on daily nest survival, demonstrating density-dependence effects.

Overall, our study helps to assess the success of Houbara bustard restoration programme on the dynamic of the species on a large scale and underlines the dependence of this dynamic on the combined effects of environment and current management.

Keywords: Spatio-temporal variation, abundance, management, density-dependence

17. Population viability analysis; *Gazella dorcas massaesyla* is another genetic heritage facing extinction [M'Sabih Talaa reserve, Morocco]

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The single remnant Moroccan dorcas gazelle (*Gazella dorcas massaesyla*) has been isolated for more than a half century in the M'Sabih Talaa reserve located in an arid area of west-central Morocco. This population has been subject to different disturbances, especially poaching and depredation by feral dogs. A five-season line transect survey revealed that the population size has been halved in less than 15 years with a lower apparent fecundity rate. Based on the information gathered from this survey and other demographic and life-history data available from captive populations, we carried out a population viability analysis simulating different scenarios using VORTEX software. A sensitivity analysis revealed that inbreeding depression and possible catastrophic events might have a considerable impact on the population's prospects. Scenarios of splitting population into two subpopulations with different management measures dealing with reducing/deleting mortality sources, is proposed. Such scenarios resulted in reducing the consequences of catastrophic events would significantly mitigate the harmful effects of both inbreeding and environmental stochasticity. These results may be of a general interest to conservationists dealing with this unique and imperiled population.

Keywords: Wildlife management, *Gazella dorcas massaesyla*, Sensitive analysis, Vortex software, Inbreeding depression

18. Bilan du Projet de Réintroduction des Oryx (Addax) au Tchad

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Le Projet de réintroduction de l'Oryx du Tchad, en activité depuis fin 2015, est récemment entré dans sa phase II, en collaboration avec le gouvernement du Tchad et l'Agence pour l'Environnement Abu Dhabi. Durant cette phase, un accent particulier est maintenu sur le renforcement de la population d'Oryx (*Oryx dammah*), mais ajoute également de nouvelles espèces sahélo-sahariennes, notamment l'addax (*Addax nasomaculatus*), la gazelle Dama (*Nanger dama*) et l'Autruche d'Afrique du Nord (*Struthio camelus camelus*), qui sont en danger critique d'extinction. Bien que 2020 ait été une année de grands défis, SCF est heureux de faire état d'heureux événements mais aussi de belles expériences issues de ce projet depuis son lancement. L'équipe de suivi de terrain SCF-EAD présentera les résultats préliminaires du programme de capture et de marquage des oryx nés à l'état sauvage et un résumé du statut de la gazelle dama dans la Réserve de faune de Ouadi Rimé-Ouadi Achim.

Mots clés: Tchad, Oryx, Addax, Dama, Réintroduction

19. Celebrating 50th anniversary of the "Operación Mohor": avoiding the complete extinction of the mhorr gazelle (*Nanger dama mhorr*)

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Estación Experimental de Zonas Áridas-CSIC, Spain

This year 2021, at the Estación Experimental de Zonas Áridas (EEZA), a research center of the National Spanish Research Council (CSIC) in Almería (SE Spain), we celebrate its 50th anniversary. On January 14th, 1971 a group of seven mhorr gazelles (one male and six females) (*Nanger dama mhorr*) from the Western Sahara arrived at "La Hoya" farm. Later the same year, two more mhorr females joining the original group. Finally, on November 14th, 1975, the last mhorr group of ten gazelles (four males and six females) arrived to Almería. After 50 years, we are quite confident that the complete extinction of the mhorr gazelle has been averted. The species has been fully adapted to live under the management conditions imposed by captivity. Currently, the captive population is around 350-400 individuals distributed in different zoological institutions in Europe, North America and the Middle East. During this 50 years, different research groups have collaborated doing research to complete a necessary knowledge on the biology, physiology and behavior, and has been reintroduced in several protected areas (PA) in Senegal in 1984, Morocco in 1992 and Tunisia in 1994. The evolution, success and current situation of these reintroduced populations are uneven depending on intrinsic and extrinsic factors being the management of each PA one of the most important; poaching is still the factor preventing the release on the wild. The experience of these 50 years has made the EEZA a reference center in the management and conservation of endangered North African ungulates.

Keywords *:* Operación Mohor; gazelle; captivity; reintroduction

20. Challenges associated with remote area capture of dama gazelles (*Nanger dama*)

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Remote area captures are often challenging, particularly if the species is rare and difficult to locate. With less than 100 animals remaining in the wild, scattered between four remote populations, the dama gazelle (*Nanger dama)* is a species of important conservation impact for the Sahelo-saharan region of Africa. The only recorded capture of wild damas occurred in 1967, at a time when damas were still reported as plentiful.[1] Current capture events require searches over large transects of habitat in order to locate even a few individuals. A recent capture event spearheaded by the Sahara Conservation Fund and Environment Agency –Abu Dhabi occurred in the remote Manga region of Chad. This capture focused on finding and relocating damas to improved safety in one of the country's monitored wildlife areas. The captures were successful mainly due to extensive preplanning and logistical organization that occurred long before the captures themselves were attempted. The team traveled extensively to facilities that manage captive dama herds in large open areas to discuss potential capture options. A sedation trial was run on a captive dama to ensure appropriate drug regimens were available. Multiple potential holding methods were devised in case of issues. Site surveys, including discussions with local populace, were done ahead of time to locate the most likely places to search. Experts in the field of wild animal helicopter capture were recruited to assist the husbandry team. The combined expertise of the team members and the associated institutions was invaluable in making this capture a success.

Key words**:** Dama gazelle, *Nanger dama*, remote capture

Acknowledgements: The authors would like to thank the entire 2020 Dama Gazelle Capture Team including Dr. Pete Morkel, and the various stakeholders and partners, for their time and dedication to this species, including: Fondation Segré, Luigi Boitani, the Ministry of Environment and Fisheries – Chad, Environment Agency - Abu Dhabi, Sahara Conservation Fund, Fossil Rim Wildlife Center, Noé, Mission Aviation Fellowship, TropicAir, Smithsonian Conservation Biology Institute, Royal Zoological Society of Scotland, and the Zoological Society of London.

Literature cited:

1. Mungall, Elizabeth Cary. The Dama Gazelles Last Members of a Critically Endangered Species. First edition. College Station: Texas A&M University Press, 2018.

21. Suivi par pièges photographiques des gazelles Dama dans la Réserve naturelle nationale de l'Aïr et du Ténéré, Niger

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La population mondiale de gazelles dama (*Nanger dama*) à l'état sauvages est estimée à moins de 100 individus. Elle est limitée à quatre sites, deux au Tchad et deux au Niger, dont la Réserve Nationale Naturelle de l'Aïr et du Ténéré. Au début des années 2000, aucune observation de gazelle dama n'avait été enregistrée durant plus d'une décennie et c'est en 2014, lors d'une mission de SCF, que des gazelles ont été observées sur le Mont Takolokouzet. Ce massif représente un refuge suboptimal pour la faune sauvage, les protégeant des menaces anthropiques et leur offrant un environnement relativement préservé. Suite à ces observations et dans le cadre du suivi de la population sauvage de gazelles dama de la RNNAT, des pièges caméras ont été installés de janvier 2017 à septembre 2019 sur le massif du Takolokouzet selon une répartition systématique basée sur un protocole standard de grille de 2x2 km. Les

caméras ont été cachées dans des zones connues pour abriter des gazelles dama et déplacées tous les six mois. Au total, des centaines de milliers de photos ont été collectées. L'analyse des données a été étalée sur plusieurs mois, fournissant des informations conséquentes sur les espèces présentes, de leur schéma d'activités à leur l'occupation du territoire dans cette partie du massif. De plus, diverses activités anthropiques ayant lieu sur le massif, telles que l'extraction d'or, ont pu être mises en avant et doivent être prises en considération pour la conservation de la gazelle dama.

Mots clés : Dama gazelle, *Nanger dama*, piège photographique, Niger

22. Genomics informs conservation planning of the critically endangered dama gazelle (*Nanger dama*)

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Smithsonian-Mason School of Conservation, USA (KPK, RMG); Smithsonian Conservation Biology Institute, Center for Species Survival, USA (KPK, RMG, PC, DW, BP); ITMO University, Russian Federation (PD, KK); St. Petersburg State University, Russian Federation (GT); Royal Zoological Society of Scotland, United Kingdom (HS, KD); San Diego Zoo Wildlife Alliance, USA (MH); University of Florida, USA (JAC); University of East Anglia, United Kingdom (CR); Johns Hopkins University School of Medicine, Genetic Resources Core Facility, USA (AFS, DWM), Baylor College of Medicine, USA (OD, ELA); University of Edinburgh, United Kingdom (RO)

Native to the Sahara Desert and Sahel, dama gazelles are the world's largest and rarest gazelle species, with only remnant populations remaining in Chad, Mali, and Niger. However, more than 2,300 dama gazelles are managed ex situ in zoos and private collections around the world, with the largest number of animals found on private ranches in North America, mostly in Texas. Three geographic subspecies have been recognized based on color patterning differences among populations: addra (*Nanger dama ruficollis*), the nominate dama (*N. dama dama*), and mhorr (*N. dama mhorr*). The ex-situ population of mhorr gazelles was founded by only a small number of individuals, before this subspecies had become extinct in the wild. In contrast, the addra gazelle ex situ population was founded by a larger group of individuals. We examined the genome-wide effects of these different founding histories by generating whole genome sequences of addra and mhorr gazelles, which included a chromosome-scale reference genome assembly from one addra gazelle. Mhorr gazelles had almost 50% less heterozygosity, a genome occupied by more than 60% of runs of homozygosity, and about three times the number of putatively loss-of-function mutations compared to addra gazelles. We also analyzed addra gazelle populations managed in zoos and private ranches in North America using SNPs identified with ddRAD and found differences in levels of inbreeding and admixture among individuals. These genomic data help inform the conservation management, genetic rescue, and reintroduction back into the wild of this critically endangered antelope.

23. The coexistence of the West African giraffe and humans in Niger

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The West African giraffe (*Giraffa camelopardalis peralta*) was historically spread across much of the Sudano-Sahelian zone but is now only present in Niger. Several factors caused the dramatic decline during the later 20th century. In 1996, only 49 individuals remained, concentrated in the 'Giraffe Zone' (GZ), formally not protected area- ~60 km from the capital Niamey. Conservation activities resulted in the increase of the giraffe population to currently >600

individuals. In November 2018, a new satellite population was established through the reintroduction of eight giraffe into the Gadabedji Biosphere Reserve (GBR) where the animal disappeared in 1970s.

The close human-giraffe coexistence from time-to-time results in a conflict and people´s complaints about crop damages. On the other hand, the community put a lot of effort into giraffe conservation.

To better understand this apparent paradox, the study aimed to assess people's attitudes towards giraffe in both the GZ and GBR. Data from 312 questionnaires in the two areas highlighted contrasting perceptions towards giraffe: in the GZ, people reported more giraffe-related issues than in the GBR ($\chi 2=185.8$; $p<0.001$). The human-giraffe coexistence was seen beneficial only for 48% and 15% of respondents in the GZ and GBR, respectively. Despite these somehow negative perceptions, people declared they were happy to live nearby giraffe for 95% and 98% of them in the GZ and GBR, respectively. The findings are important to understand the coexistence of local people and giraffe and ensure that benefits overweight the cost, mitigate the conflict, and support initiatives for giraffe.

24. Intérêt du système de suivi de la biodiversité du réseau des parcs culturels : récente observation de Guépard saharien dans le Parc Culturel de l'Ahaggar

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Le réseau des pacs culturels a mis en place un système de monitoring qui permet de générer de l'information sur l'état de conservation de la biodiversité et de suivre son évolution. Des missions de prospection et de collectes de données permettent d'alimenter ce système de façon régulière. En 2020, l'équipe du projet des parcs culturels, en étroite collaboration avec l'office du parc culturel de l'Ahaggar, a mis en place un protocole adapté, basé sur la combinaison des transects parcellaires et l'utilisation des pièges photographiques pour le suivi de la faune dans le massif de l'Atakor. Ce procédé scientifique qui intègre les savoirs écologiques traditionnels de la population locale, a permis de documenter la biodiversité d'une partie de l'Atakor et de confirmer la réapparition du Guépard saharien (*Acinonyx jubatus hecki*) par des prises photographiques directes. Ce résultat révèle la pertinence du protocole de suivi de la biodiversité et traduit les efforts consentis par le projet pour mettre en place un système viable qui permettrai à long terme de modéliser la répartition spatiale des espèces phares pour les besoins de leur conservation.

Mot clés ***:*** *Biodiversité, parcs culturels, Guépard saharien.*

25. Réhabilitation du Cyprès du Tassili, espèce endémique relique du Sahara algérien (Tassili n'ajjers)

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Le Cyprès du Tassili, Taroût pour les Touaregs, est l'unique représentant des conifères au Sahara. C'est un arbre endémique relique présent uniquement dans les montagnes du Sahara central Algérien et plus précisément dans la région du Tassili n'ajjers. On le retrouve clairsemé sur le plateau de Tamrit, une zone protégée dans le Parc Culturel du Tassili n'ajjers situé à une altitude de 1200 m avec une précipitation autour de 50 mm.

Les "peuplements", clairsemés comptant au total environ 233 arbres, sont bien étudiés. Chaque arbre mesuré et catalogué et on sait qu'il fructifie et que pas mal de graines sont fertiles. Cependant dans la zone même, il n'y a pas de semis et l'arbre; le plus jeune des arbres doit dépasser 50 ans.

Les graines du Cyprès du Tassili, récoltées dans son aire naturelle, ont été ramenées dans des pépinières, ont germés et les semis obtenus ont été plantés aussi bien dans le Parc naturel et culturel de l'Ahaggar que dans plusieurs stations dans le nord de l'Algérie et même à Prague. Ils poussent bien et dépassent les 5 m après 15 ans. Ces arbres fructifient à leur tour et leurs graines sont aussi fertiles. La culture des méristèmes donne des bons résultats aussi.

La question qui se pose est : quelle politique faudra-il adopter pour sauvegarder l'espèce et quoi faire pour élargir sa propagation dans le cadre de la conservation de la biodiversité. Nous discutons les différentes options.

Mots clés: *Cupressus dupreziana*; conservation; gestion

26. Étude de l'herpétofaune du Sahara septentrional

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Afin d'étudier la composition de l'herpétofaune du Sahara septentrional, nous avons choisi sept habitats écologiques différents, durant une période de 6 ans, Nous avons d'identifier 39 espèces. Elles se répartissent sur deux ordres ; 16 familles et 26 genres différentes, Dans notre échantillonnage, on trouve une nouvelle espèce (*Cyrtopodion scabrum*) pour la première fois dans l'Algérie et l'Afrique du nord.
Les éléments Sahariens et les Méditerranéens sont les éléments les plus dominants dans notre région avec respectivement de 41% et 28,2%. Parmi les espèces recensées neuf sont protégées en Algérie, par le décret N°35 du 10 Juin 2012, selon le journal officiel de la république algérienne. Du point de vue endémisme, 10 espèces sont endémiques par rapport U.I.C.N. Méditerranée. Le nombre d'espèces dans les différentes catégories de la Liste rouge de l'UICN montre que 37 sont considérées comme moins préoccupantes (LC). Les espèces insectivores sont les mieux représentées avec 51,3% suivie par les carnivores avec 30,8%.
Lacertidae est la famille la plus abondante dans le reg, le bas plateau, l'erg et l'oued avec des taux respectivement de 64,4%, 62,7%, 26,7% et 21,4%, alors que ce sont les Geckonidae et les Phyllodactylidae qui sont les plus abondantes dans les palmeraies et dans les milieux urbains. Par saisons, ce sont les Lacertidae et les Scincidae qui sont les familles les plus abondantes et les plus fréquentes presque dans toutes les saisons

Mots clés : Sahara septentrional, Herpétofaune, Biodiversité, Morphométrie, Structure de peuplement.

27. Distribution, ecology, and conservation of *Philochortus zolii* in Mauritania: implications for the long-term persistence of an endangered lizard

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Philochortus zolii is a globally Endangered lizard known only from five localities scattered across North Africa. The population is thought to be decreasing, but there is almost no data about this Sahara-Sahel endemic. Recently, a sixth population was found in Mauritania, at the coastal peripheral zone of the Diawling National Park, which constitutes a remarkable opportunity to gather ecological information for the first time and to plan conservation actions. Here we assess the *P. zolii* regional distribution in Mauritania, estimate population abundance, analyse the species activity patterns, characterise the occupied habitats, assess local threats, evaluate the national conservation status, and define an action plan for the local conservation of the species. P. zolii is locally rare and exhibits a very localised distribution, but additional sampling is needed in other humid areas to fill out the knowledge gap on global distribution. The activity period is very restricted, limited to the central hours of the day, with low detectability and high specialisation in habitat use. The species is evaluated as Critically Endangered at the national level and is threatened by local industrial and agriculture developments. These activities have degraded the suitable available habitats and hamper any dispersal possibility. Extreme climatic events related with sea-level rise could decimate the entire Mauritanian population. Any pet trade that may be stimulated by the current discovery should be carefully supervised and monitored. The discovery of this isolated population justifies that coastal habitats should be designated as integral protection zone and included inside the Diawling National Park.

Keywords : Activity patterns; habitat selection; management; Reptilia; Sahara-Sahel

28. Conservation des vautours au Niger

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Sahara Conservation Fund, Niger

Les vautours étaient autrefois très présents au Niger, mais ils ont connu un déclin important et sont maintenant concentrés dans des zones protégées ou reculées. Afin de mieux comprendre leur écologie et leur distribution dans la région sahélo-saharienne, SCF a mené des activités de suivi de la reproduction de quatre espèces de vautours africains dans deux zones clés du Niger : suivi des nids de vautours oricou (*Torgos tracheliotos*), vautours à tête blanche (*Trigonoceps occipitalis*) et de vautours de Rüppell (*Gyps rueppelli*) dans la Réserve de Biosphère de Gadabeji (RBG), au nord de la région de Maradi, et suivi des percnoptères (*Neophron percnopterus*) et des vautours de Rüppell dans le massif du Koutous, dans la région de Zinder.

Au cours des deux dernières années, de grands progrès ont été accomplis avec l'identification de nouveaux territoires et la collecte de données sans précédent. Simultanément, un nouveau protocole de suivi et de surveillance étroite a été initié dans la RBG.

Parallèlement aux activités de suivi, des activités de lutte contre la principale menace qui pèse sur les vautours au Niger, à savoir leur abattage illégal pour leur utilisation dans des pratiques fondées sur des croyances ont été menées. Des campagnes d'information et de sensibilisation ont été organisées dans les régions de Zinder et de Maradi dans le cadre du projet Egyptian Vulture New LIFE avec pour objectif de développer les capacités locales des principaux acteurs afin lutter contre ces pratiques et de conserver les dernières populations de vautours au Niger.

Mots clés : vautours Africains, massif du Koutous, Réserve de Biosphère de Gadabeji, suivi

29. Programme de conservation de l'Autruche à cou rouge au Maroc

Latifa Sikli, Zouhair Amhahouch
Département des Eaux et Forêts, Maroc

Le programme de développement de l'autruche à cou rouge a permis au Maroc de disposer de stock important en semi-captivité, toutefois, ce programme de développement dans l'aire de répartition historique de cette espèce est conditionné par la réussite de la saison de reproduction annuelle qui reste liée à différents facteurs, notamment, i) les facteurs endogènes à l'espèce : faible taux de survie des jeunes dans le milieu naturel, abandons des nids ; ii) les facteurs liés aux conditions climatiques : irrégularité et rareté des pluies. A cet effet, un programme de conservation ex-situ de l'autruche à cou rouge a été développé afin d'être complémentaire avec le programme de reproduction naturelle dans les réserves de faune. Les objectifs de ce programme étant de Mettre en place un programme d'incubation artificielle des œufs d'autruches sur la base des nids abandonnés dans le PNSM et Safia ; de Développer et disposer de stocks importants d'autruchons pouvant être relâchés dans les réserves de faune du Sud et du Sud-Est du pays ; et Développer des programmes de partenariat avec les pays de la région sahélo-saharienne pour le rétablissement de l'autruche dans son aire de répartition. Au cours de cette présentation, les résultats des deux programmes de conservation en semi-captivité et de l'incubation artificielle seront présentés ainsi que les programmes de lâcher dans la nature.

Keywords : Autruche à cou rouge, Conservation, Incubation artificielle, Taux d'éclosion

30. Vers la réintroduction du plus grand oiseau de la planète, l'autruche d'Afrique du Nord, au Niger

Maïmounatou Ibrahim Mamadou
Sahara Conservation Fund

Sahara Conservation Fund a commencé à intervenir au Niger depuis 2006 en collaboration avec l'Etat, les ONG locales et les privés pour atteindre l'objectif de réintroduction de l'autruche d'Afrique du Nord. Les sites d'élevage en captivité concernés sont :

- Le site de Kellé, créé par la Coopérative pour l'Exploitation des Ressources Naturelles du Koutous (CERNK) et géré par SCF
- Le site de Mainé-Soroa, crée par le propriétaire privé Elhaj Moussa Ibrahim et géré par SCF
- Et le site d'Iférouane, créé et géré par des privés

En 2016 une stratégie nationale est mise en place au Niger afin d'unir et de renforcer les chances de réussite de la réintroduction. Des résultats satisfaisants sont obtenus à savoir : l'augmentation du nombre d'individus par site, transfert des autruchons de Mainé à Kellé et vice-versa pour diversifier le pool génétique. Il faut noter également que beaucoup des problèmes sont résolus au site de Kellé avec l'installation des infrastructures solaires en 2019, d'autres sont en cours de résolution.

Les défis à relever sont entre autres l'obtention d'autruchons en grand nombre et qui atteindront l'âge adulte avec l'incubation artificielle pour renforcer la population et atteindre le seuil requis pour le pré-lâcher qui commencera dans la réserve de Gadabeji dans un premier temps et ensuite Tchilala.

Les soins vétérinaires des animaux et l'identification des causes des mortalités dont nous ignorons les raisons, ainsi que l'échange possible des œufs ou des autruchons avec d'autres pays constituent de prochaines étapes importantes.

Mots clés : Autruche, réintroduction, *Struthio camelus camelus*

31. Using molecular tools to assess the infection status of endangered antelope populations to support conservation reintroductions

Stephanie Brien1, Marie Petretto2, Ouled Ahmed Hatem3, Erhan Yalcindag1, Melissa Marr1, Mark Bronsvoort1 and Rob Ogden1

1 University of Edinburgh (Royal (Dick) School of Veterinary Studies and the Roslin Institute, Edinburgh, UK)
2 Marwell Wildlife (Southampton, UK)
3 Veterinary Research Institute of Tunis (Tunis, Tunisia)

Background: Endangered antelope such as scimitar-horned oryx (*Oryx dammah*) and addax (*Addax nasomaculatus*), are being reintroduced to the Sahelo-Sahara region as part of broader programmes to restore arid land biodiversity. To be sustainable, such programmes require land-sharing between antelope and livestock. This carries a risk of inter-species disease transmission, heightened by the shared evolutionary relationships and similar infection susceptibility profile of different ungulate species. Such diseases pose a threat to wildlife, livestock and humans.

Goals:
(i) To improve understanding of the infection status of endangered antelope populations involved in conservation reintroductions.
(ii) To identify infections that could pose a risk at the wildlife-livestock interface.

Methods: We screened opportunistically-collected blood and faecal samples from semi-free-ranging endangered antelope in Tunisia for haemoparasites using PCR.

Results: We identified a range of haemoparasite genera that cause infections in livestock, including Anaplasma, Ehrlichia and Theileria. There is also evidence of bacteraemia associated with novel, poorly characterised bacterial families that have been identified as a cause of emerging infectious disease in wildlife and humans.

Conclusions: Haemoparasite infections are common in wild ungulates in Tunisia and could present a risk at the wildlife-livestock interface due to potential differences in pathogenicity between species and altered transmission dynamics. Future work is planned to (i) assess infection status more broadly using next-generation sequencing approaches with more universal primers, (ii) compare the infection status of antelope with and without livestock contact, and (iii) assess how infection status impacts on health.

Keywords: antelope, infectious disease, land-sharing, reintroduction, wildlife-livestock interface

32. A global perspective on genetic diversity within wild, semi-wild and captive addax

Kara Dicks 1, Marie Petretto 2, Jamie Ivy 3, Alex Ball 1, Helen Senn 1, Mark Craig 4, Lisa Banfield 4, Hela Guedara 5, Ezzedine Taghouti 5, Mohamed Boufaroua 5, Justin Chuven 6, Philip Riordan 2,7, Tania Gilbert2,7

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4 Al Ain Zoo, UAE
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Addax are on the brink of extinction in the wild, with a single population of less than 50 individuals thought to remain in Niger. However, over 5000 addax exist in ex situ, semi-wild and reintroduced populations. Long-term persistence of a population is highly dependent upon population size, genetic diversity and population management strategies. Here, we used a combination of mitochondrial and genomic data to elucidate the levels of genetic variation and how it is distributed amongst global addax populations. We highlight the high levels of genetic diversity found in wild addax in Niger and historically in Chad and emphasize its irreplaceability and the importance of protecting the remaining population. We show that levels of genetic diversity are substantially lower in captivity and some of the derived reintroduced populations and conclude that the careful selection of individuals for release is essential for providing as much adaptive potential as possible in reintroductions. Knowledge of the distribution of genetic variation amongst the global populations will therefore be crucial for developing both a roadmap for conservation of the species as well as making population-specific conservation management decisions to ensure population survival.

Keywords: Addax; genomics; population structure; genetic diversity; reintroduction

33. Programme de réintroduction de l'addax au Maroc

Zouhair Amhaouch, Latifa Sikli
Département des Eaux et Forêts, Maroc

Programme de conservation de l'Addax. Le Maroc a inscrit l'addax au cœur de son plan d'action de conservation de la faune saharienne. Soucieux du destin de cet emblématique animal du désert, le Département des Eaux et Forêts a mis en place un programme de réintroduction de l'Addax dans la nature en vue de le rétablir dans son habitat naturel où il avait disparu depuis les années 50. Un programme de lâcher dans la nature a été entamé depuis la fin du mois de Novembre 2019, en partenariat avec le Sahara Conservation Fund, et le Smithsonian Conservation Biology Institute. Ainsi, une cinquante d'addax ont été relâchés au cœur d'une vaste aire protégée allant de la réserve de M'hamid El-Ghizlane jusqu'au parc national d'Iriqui, dans le Sud-Est du Maroc, après passage de plusieurs semaines dans un dispositif d'acclimatation, avec le recours à un enclos de pré-relâcher, afin de permettre une adaptation progressive des addax au milieu naturel. Cette présentation sera une synthèse de l'ensemble des étapes franchies dans ce programme, ainsi qu'une analyse des données de suivi obtenues grâce au suivi à distance par les colliers GPS et le suivi visuel assuré par les éco gardes.

Mots clés : Addax, Réintroduction, Lâché dans la nature, suivi

34. What is a season to an oryx? Movement strategies identify three seasons for scimitar-horned oryx reintroduced into Chad

Katherine Mertes, Kristen Whyle
Smithsonian Conservation Biology Institute, USA

Identifying ecologically relevant seasons is a critical step in understanding and interpreting animal movement and space use. We investigated daily movement rates of scimitar-horned oryx (*Oryx dammah*) reintroduced into the Réserve de Faune des Ouadi Rimé-Ouadi Achim (RFOROA) in Chad, and used non-linear mixed models to delineate

(1) seasons of biological relevance to oryx, and (2) transition dates among seasons, for the reintroduced population. We used locations from oryx fitted with GPS collars to calculate individual mean hourly movement rates for each day of the year. Dividing movements into daytime (6 AM to 6 PM) and nighttime (6 PM to 6 AM) periods revealed that reintroduced oryx d12ramatically alter movement timing across the year. During the rainy season (ca. July to October), oryx moved at similar rates during daytime and nighttime periods. However, in cool, dry months (ca. October to March), oryx movement rates were greater during daytime periods, while during the hot, dry season (ca. April to July) oryx movement rates were greater at night than during the day, with a population-level peak in nighttime movement rate in May. We used generalized additive mixed models (GAMMs) to examine the influence of individual and group factors on oryx daytime movement rates. The best-performing GAMMs identified three distinct seasons for oryx reintroduced into the RFOROA. In addition, female oryx in late-term pregnancy, females with calves at heel, and older oryx of both sexes switched among season-specific movement strategies later than other individuals.

35. Genetic monitoring of the scimitar-horned oryx reintroduction and beyond: current findings and future directions

Emily Humble[1]*, Kara L Dicks[2]*, Alex Ball[2], Helen Senn[2], Rob Ogden[1], Justin Chuven[3]

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Scimitar-horned oryx (*Oryx dammah*; SHO) were declared "Extinct in the Wild" in 2000, but an ambitious reintroduction project has now released over 200 animals into the Ouadi Rime-Ouadi Achim Nature Reserve in Chad. This took place across seven translocation operations and the wild population has now reached approximately 360 individuals. To provide the most genetically diverse animals for reintroduction and ensure long-term population viability, efforts were made to source founders from collections across the globe. This was largely facilitated through the establishment of the "World Herd" in Abu Dhabi, United Arab Emirates. To support this overall strategy, we carried out extensive genetic monitoring of both captive and reintroduced SHO from the onset of the reintroduction programme. This has provided a detailed picture of the spatial and temporal distribution of genetic variation, demonstrating how diversity within Chad is substantially greater than it would have been were animals selected from a single source. We are now moving into phase two of the project where we will begin to carry out post-release genetic monitoring of the Chad population together with microbiome analysis, metabarcoding and functional genomic screening of SHO populations across the globe. In our presentation, we will first describe the success of the genetic management approaches to date and then outline how our next steps will enhance capacity for future selection of source populations. In doing so, we will highlight the value of an integrated global management approach for arid land antelope conservation.

Questions & Answers

We compile here the questions & answers exchanged through the chat box during the meeting.

Nous compilons ici les questions et réponses échangées via le chat pendant la réunion.

Q : question / question
A : answer / réponse

Day 1 : Tuesday, 18 May 2021

Mali elephants

Q: José Brito
How is population size evolving? Poaching is now stable; does that mean that population size is stable/increasing?

A: Susan Canney
Concerning whether the elephant population size is increasing …. we don't know. Their reproduction rate seems to be the same as other savanna elephant populations but are training local ecoguards to be able to do a co-ordinated ground census possibly at the end of the dry season next year.

Forest restoration

Q: John Newby
Q 4 Kris: are you able to distinguish between truly degraded land and naturally sparsely vegetated land such as the “brousse tigrée” formations?

A: Kris van Looy
John: yes, we start from large degraded (barren) lands where the community asks us to replant trees; so they were formerly forested (or at least savanna with trees). We check for the formerly forested condition

Q: Roseline C. Beudels-Jamar
Question for Kris: is your NGO Hommes et Terre in contact with the promotors/facilitators of this GGW we just heard about?

A: Kris Van Looy
We are not 'promoted' by the GGW; inf fact we checked with the GGW Accelerator, and the 14 Billion is not really going to restoring degraded land, but to infrastructure etc. So, we share the fears of José. Our actions do bring important possibilities for the degraded condition of ecosystems because we focus on livelihood of the communities, and importantly of controlling of grazing, which is a huge threat to all biodiversity in the region.

Q: Caleb TAROUM
Comment arrivez-vous a jumellé Restauration de la savane et activités pastorale? Lorsqu'on sait que les pratiques pastorales au sahel sont faites de façon traditionnelles jusqu'à present: sans itinireraire ni planning du paturage.

A: koenraaddesmet
le ppaturage au sahel n'est PAS anarchique mais opportunistique et suit les opportunités de la disponibilité du fourrage et donc des pluies. dans les zones ou hommes et terre intervient, les villages gère les terres enn accord avce les pasteurs et on peut donc "orrganiser" une mise en défence partielle

Q: Mark Stanley Price
How can Jose Brito's concerns about the GGW be harmonised with Kris' findings?

A: José Brito

Projects that target the restauration of the Sahel ecosystem that are not strictly based in increasing tree densities should have minimum impact. The biggest issue with the GGW is the lack of (publicly available) environmental impact assessments. On our view, EIA are mandatory before establishing any infra-structure. This is one of the aspects that UNCCD needs to take into account before continuing the implementation of the GGW

Appui aux populations Niger

Q: Belbachir
Question à Pourchier et al. : le projet d'appui aux populations est d'une grande aide. Toutefois, je souhaite savoir comment le projet est lié à la conservation de la biodiversité locale et comment cela est expliqué à la population locale afin que cette initiative réponde aux termes de référence des PICDs (Projets Intégrés de Conservation et de Développement)? Merci pour la présentation.

A: Cloé Pourchier
Belbachir : Merci pour cette question. Lors de chaque intervention/activité, les personnes concernées sont sensibilisées à la protection de leur environnement et de la biodiversité en particulier. Il leur est bien expliqué que ces activités sont faites dans le cadre d'un programme de conservation et que cela requiert l'engagement de tous.

Achieving conservation at scale

Q: Jaime Garcia Moreno (VBN)
Jean, How does the security crisis is impacting your work in the WAP landscape (or other landscapes)? Looks as if all progress can be wiped in the blinking of an eye. Any suggestions for how to deal with the problem?

A: Jean Labuschagne - African Parks
Jaime - the security crisis does indeed have an enormous impact on operations in the WAP and other areas where we work, and it is something that we have to monitor very closely - not easy. However it is a reality that one has to manage, as these areas are so crucial for both the wildlife and the people living in these landscapes, and if they can be sustainably managed, can really form the nexus of stability - sustainable development - conservation. We believe that through approaching management in a holistic way with a strong focus on good governance, building a constituency for conservation with surrounding communities, close coordination/relationships with relevant regional/national/international actors and ensuring that the appropriate resources (technical and financial) are applied, the risk can be managed. If, with our Govt. partner, we believe that we are not able to overcome the risks then we would always need to re-evaluate the partnership.

Q: Peter Leimgruber
Is the AP analysis of anchor parks available?

A: Jean Labuschagne - African Parks
Hi Peter - the PA analysis that we did is not yet publicly available, however we are working towards publishing this as a paper and aim to develop an interactive mapping tool in parallel. If you would like to discuss further though, please feel free to reach out and I would be happy to walk you through the outcomes of the analysis on a call. (jeanl@africanparks.org)

KBA analysis

A: Stéphane
Daniele, which databases did you use for animal species distribution?

Daniele Baisero
A: @ Stéfphane, We used range data from the 2020.2 IUCN Red List update.

We also developed standardized habitat suitability models for species, created by intersecting the species range with a map of suitable land-cover and elevation. Species-habitat association codes and suitable elevation limits were also obtained from the 2020.2 IUCN update. We used suitable habitat as the prime assessment parameter where we could create the model, and fell back to using range for all other species.

Biodiversity of a degraded desert ecosystem

Q: abaigar
À combien vous estimez la population total de la gazelle des dunes à Jbil?. Merci

A: Meliane Mohamed Khalil
@Abaigar: The gazelle Community in Jbil is dominated by Dorcas. We made observations of an apparently sedentary couple of Slenderhorned gazelles.
The barrier of the core conservation area (7700ha) is sometimes covered by sands in some areas and can enable induviduals to come in or go out.
For the wild SHG, our 2 missions in the sahara (2019 and 2020) by ULM and ATV have shown a significant decrease in population sizes compared to 2006.

A: Marie Petretto
@teresa_abaigar bonjour! évidemment qd Khalil dit que les dorcas dominent à djebil, il parle de la partie clôturée, avec habitat collinaire. dans les dunes, on ne trouve que les SHGazelles

Q: koenraaddesmet
mohhamed khalil et amira, vous allez publier le resulatat de l'utilisation sysstematique des cameras trap ? un grand merci pour l''analyse

A: Meliane Mohamed Khalil
@Koen Currently, CT data is currently used to collect baseline data about local biodiversity and inform decision making for future projects and current management of the PAs. Data is also being analysed and all interesting findings will be publised to benefit the conservation community

Principaux écosystèmes du réseau des parcs culturels Algériens

Q: koenraaddesmet
reda, tu vas publier tes resultats sur le changement de la végétation? je ppeux affrimer l'apparition des tous ces jeunes acacias, mais toi, tu as la preuve !!

A: Reda BEHLOULI
Merci Desmet pour l'intérêt que vous portez aux résultats des études. Comme je l'avais mentionné au courant de la communication, ces travaux réalisés dans le cadre du PPCA par nos experts ont également servi à la constitution d'une base de données d'un état de référence (donnée de référence à temps T). Toutes les observations menées dans ce cadre ont fait l'objet d'un métacatalogue pour pallier à la lacune d'information jusque-là existante (flore, faune, analyse des macroinvertébrés et qualité des eaux, informations à dimension anthropologique et socioculturelles ….). ces métacatalogues serviront ultérieurement à l'actualisation à moyen et long terme des études diachronique. Ces résultats ferons l'objet de publications avec respect des droit d'auteur !

Community strategy in OROA

Q: Mark Stanley Price
For Jan: what languages and translation services are you using in OROA? Is the information received very accurate \nd culturally sensitive?

A: Henry Bailey

Hi Mark - the languages used are the local arabic and gourane. The community engagement teams are from the local area and translate these themselves into french for collation.

Jan Svitálek
A: @ Mark Stanley Price: Indeed, the language is a big issue and team is and will be spending a lot of time with translation and also "interpretation" of a variety of notions and expressions.
Now, we're dealing with french and local arab versions. Luckilly though, the translation and language is a big part of the "envi education" so we're counting on time spent with the issue.

Q: Peter Leimgruber
For Jan: Very interesting work. How do you deal with confirmation bias in your interview? I.e., the tendency to agree with general statements provided in these surveys?

A: Henry Bailey
From my understanding of the accuracy - it has to be ensured that there is a big enough sample size and that the groups or individuals questioned are representative across the population, interviews are done in a way that different groups/individuals don't pressure answers etc… The team were very well trained in this by Derbianus and continue to be mentored remotely. There will be a second visit by Derbianus consultants to reinforce this.

A: Jan Svitálek
@ Petr Leimgruber: The simple answer to give - we keep it in mind and keep on testing and re-testing the methods of enquiry - questionnaires and other. Also considering what can be done. More data we collect, better and less biased results the team will have.
The key in this initial stage is so all the team members themselves are actually aware that the team bias is a thing when approaching their audience and when daily, not nesessirilly scientific decisions are taken.

Day 2 : Wednesday, 19 May 2021

Dynamics of a reinforced population

Q: Philip Riordan
Thanks Alice. What were the dispersal distances for released animals?

A: Alice Monnier-Corbel
@Philip Riordan
Hello Philip Riordan, thank you for the question.
To create the release covariate, we studied captive-bred released houbara tracked data. The average distance travelled by a captive-bred houbara from its release sites was 28 km with the maximum distance observed being 235 km one year after release. We tested different spatial and temporal buffers to create the release covariates. After some analyses, the releases covariate corresponded to the number of houbara released in a buffer of 100 km around the counting point, since the beginning the year of the count.

Q: Mark Stanley Price
For Alice: Great talk, thanks. The density of almost 0.4 per sq km is very high - like this all through the year?

A: Alice Monnier-Corbel
Hello Mark Stanley Price, thank you for the question
The data used for the abundance/density estimates come from the counting protocol that occurs in the fall. In fact, these are fall estimates. We have studied the intra-annual variations but not the inter-annual variations for the moment.

Q: For Alice: Great talk. The number of released animals in hunting vs protected areas seem to be very different. Was this simply a function of the hunting areas being larger? How did you control for this in your

analysis? My second question is: do you have any management recommendation in terms of modifying releases to reduce density-dependent effect?

A: Alice Monnier-Corbel
Hello Peter Leimgruber, Thank you for the question
The relationship between releases and abundance does not vary between hunting and non-hunting areas and the adjusted effects of releases and Hunting on abundance remain significant when they are in the same model. In addition, at the pixel level, there are no more recent releases near counting points in hunting areas than in non-hunting areas, i.e., the releases and the management of the area (hunting or protected) are not correlated. Also previous study (Hardouin et al. 2015) on houbara population showed higher probability of movement of released houbara from protected areas to hunting areas; even if hunting areas were associated with lower survival.

For the relase strategy: for now we are just at the stage of discuss about the results. But we could spread out the releases in time , it could be more beneficial for the population.

Biogeography of Sahara highlands

Q: Philip Riordan
Great talk Andre. Apologies if I missed it, but did you calculate connectivity metrics between habitat patches?

A: André Liz
Thank you! Philip, we did not calculate connectivity metrics, but that indeed will be something interesting to do.

Q: John Watkin - SCF
It would be a fascinating exercise to overlay the refugia identified by André Vicente Liz with the Key Biodiversity Areas identified by Daniele Baisero and Andrew Plumptre.

A: Daniele Baisero
Refugia would cater to Criterion D, which are currently not possible to scope through global and remote sense data. I suspect any overlap would be due to collinear factors. They are however a key component of the KBA approach, so we welcome any initiative to flag new sites based on refugia, and that might highlight how they complement the other Criteria..

East Atlantic Flyway Initiative

Q: Mark Stanley Price
Wenceslas: is there evidence yet that the new trees of the Great green Belt are favouring migrant birds?

A: Jaime Garcia Moreno (VBN)
Hello Mark. Let me take this question on behalf of Wenceslas. There is local evidence (e.g. in Oursi, Burkina Faso) that site restoration has led to improved numbers of birds. That being said, there are trees and trees. What we now know is that migratory land birds are VERY picky when it comes to trees: they only use about ten species - all of them with thorns (Acacias, for example). So planting the "wrong" trees will NOT lead to any benefits for the birds. We need to promote the use of the right trees, which is what we are doing.

Q: koenraad de smet
the dutch "bird protection"" worked alot on that with field work in the sahel and they published a big book on that "living on the edge"

A: Jaime Garcia Moreno (VBN)
@Koenraad: thank you for pointing this out. There is indeed an impressive book written by Leo Zwarts, Rob Bijlsma, Jan van der Kamp and Eddy Wymenga. Using the same title, and with advise from the authors, VBN -

BirdLife in the Netherlands lead a project to restore habitats with support of local communities. Our interventions in the region still continue (the reason for me being here ;-)).

Ugo Mellone
The book is freely available here
https://www.researchgate.net/publication/286443601_Zwarts_L_Bijlsma_RG_van_der_Kamp_J_Wymenga_E_2009_Living_on_the_edge_Wetlands_and_birds_in_a_changing_Sahel_KNNV_publishing_Zeist_The_Netherlands

Keynote speech by Amy Fraenkel

Q: Jared Stabach
@Dr. Fraenkel. Thank you for your comments on the importance of conserving migratory species (great to see Wenceslas' presentation as well). I very much enjoyed hearing your thoughts. As you are aware, CMS also recently launched the Global Initiative on Ungulate Migration (https://www.cms.int/gium). The main goal of this initiative is to provide a global atlas (an inventory) to stimulate research into the threats and mechanisms leading to species decline, with a goal of providing applied solutions to conserve them. Importantly, this is an evolving network, with great room for others to join and contribute data and expertise.

A: Amy Fraenkel
@Jared, indeed, the Ungulate Atlas initiative will be quite relevant for the region, we are very pleased to partner on this work.

Wenceslas Gatarabirwa
@Jared Thank you for your complement, and pointing out the Ungulate database. The full link is https://www.cms.int/en/gium/migration-viewer

Celebrating 50th anniversary of the "Operación Mohor"

Q: Roseline C. Beudels-Jamar
Q for Teresa: could you remind me of the reason (or hypothesis) for the disappearance of the Mohrr gazelle in Bou Hedma NP after so many years?

A: Marie Petretto
@Roseline: from our point of view, probably a mix of competition with Oryx/Addax, overtaking carrying capacity (and associated diseases and trauma)

Day 3 : Thursday, 20 May 2021

Conservation of* Philochortus zolii *in Mauritania

Q: Koenraad de smet
Marisa, is it's rarity not just "lack of data" ?

A : Marisa Naia
We can say that in Mauritania Philochortus zolii is rare. The species was only detected in the country after 15 years of fieldwork. Also our group did reptile sampling in Diawling National Park before 2017 for the Atlas of Amphibians and Reptiles of the park and P.zolii was not detected at the time. In other regions of the Sahara-Sahel my guess that is lack of data and more sampling is needed in humid areas that may disclosure new populations of the species.

A: José Brito
To complement ideas about the status of Philochortus: it is certainly a species that it is not easy to detect, but from our experience in the West Sahara-Sahel, it is certainly rare. After 15 years of sampling (thousands of

hours in the field!), it was only detected in one locality. This does not exclude of course that it may present in other areas of the Central Sahara, especially in grass habitats close to water

Q : Jaime Garcia Moreno (VBN)
Is the pet trade fed by lizards from Mauritania? Or rather by other populations. Any idea of how the other populations are doing?

A : Marisa Naia
We don't think pet trade of reptiles in Mauritania is currently a problem. About the other populations in the Sahara-Sahel very few information is available, most of the information is on the IUCN website. We just know that populations are probably decreasing, but the main threats are climate change and agriculture expansion.

Q : Teresa Abáigar
felicitations Marisa. Et question: la platform d´explotation gas-petrol sur le delta du Senegal touchera directement sur la zone de distributuon de P. zolii?

A: Marisa Naia
Teresa, non, la la platform d´explotation gas-petrol n'affecte pas l'aire de répartition de l'espèce.

Conservation des vautours au Niger

Q: Justin Chuven
Hi Abdoul Razack, just wondering how close you can typically get to an occupied nest with a drone before disturbing them and they fly off?

A: Abdoul Razack – SCF
Thanks Justin, I used the UAV at a reasonable height and going slow without changing the sound of UAV engine

Q: Krazidi
Bonjour Razzak que dit la loi nigérienne sur le cas de braconnage des vautours? Avez vous pu convaincre un guérisseur qui utilise le vautour dans cette médecine à laisser cette pratique?

A: A: Abdoul Razack -SCF
Le Niger dispose deux lois principales qui réglementent l'utilisation de la faune au Niger la loi N°98-07 qui limitent et règlement l'exploitation de certaines espèces
La loi N°2019-47 qui a pour objet la répression des infractions relatives au commerce des espèces de faune et flore
L'utilisation des vautours est strictement interdite

Q: Krazidi
Merci Abdoul Razack pour tes réponses. Avez vous pensé à un programme de réinsertion des guérisseurs traditionnels qui utilisent les vautours comme élément de remède ? Je me demande s'il abandonne cette pratique qui probablement le permet de subvenir à ses besoins.

A: Abdoul Razack -SCF
Merci Krazidi déjà nos collegues du Nigéria ont proposé un document sur les plantes qui peut être une alternative en place des parties de vautours nous travaillons dans ce sens aussi

Vers la réintroduction du plus grand oiseau

Q: Ulli Joger
Maimounatou: Est-ce que l'installation de la station américain en 2019 était un succès pour la reproduction des autruches?

A: Maimounatou Ibrahim - SCF

Bonjour, l'installation des américains ont eu des effets positifs sur la reproduction. Nous avons eu plus d'une dizaine d'autruchons issus de l'incubation artificielle dont actuellement 6 vivants et les plus agés ont 9 mois et le plus jeune 2 semaines. Cela a permis aussi aux reproducteurs de se reposer au moment ou nous retirons les oeufs

Programme de conservation de l'Autruche au Maroc

Q: Marie Petretto
@Latifa: combien de personnes travaillent au centre d'incubation?

A: Zouhair Amhaouch
@Marie Petretto On a pas de personnel dédié a ce programme a plein temps, on est 3 personnes a temps partiel: Moi, Zouhair AMHAOUCH et Morad (technicien d'elevage)

Katherine Mertes
Bravo Maimouna et Latifa pour ce travail avec une espèce manifestement très difficile à gérer jusqu'à l'âge adulte. Une question à prendre en compte pourrait être le microbiome intestinal - une collègue du SCBI, Elin Videvall, a découvert que des microbes intestinaux particuliers étaient associés à une mortalité juvénile élevée chez l'autruche commune: https://microbiomejournal.biomedcentral.com/articles/10.1186/s40168-020-00925-7

Q: John Watkin - SCF
@Latifa Sikli, do you have a vaccination/vet treatment protocol for the chicks/juvenile ostrich pre-release?

A: Latifa Sikli
@John Watkin Oui on a fait une primo vaccination des 1er autruchons de la 1ere saison pour la Newcastle, mais sinon pour les autres on a pas fait…. le traitement c'est les soins pour chaque cas, mais pas de traitement général apart le vetophos

Using molecular tools and infection status of antelopes

Q: Mark Stanley Price
Stephanie: thanks: will you be looking at density dependent interactions between domestic and wild species?

A: Stephanie Brien
Thanks for the question Mark. It may be difficult to look at density-dependent interactions in the context of reintroduced antelope, although we may be able to get an idea from using the GPS data from collars. We are hoping to look at infection burdens along transects of differing levels of contact in other wildlife-livestock interfaces though.

Programme de réintroduction de l'addax Maroc

Q: Marie Petretto
@Zouhair: pouvez vous nous rappeler la taille de la population source d'addax à souss Massa? Merci

A: Latifa Sikli
@marie: 400 Addax au niveau du parc national de sous massa au debut du programme

Q: Marie Petretto
@Zouhair: avez-vous mis en place un suivi de la distance de fuite par rapport à l'homme?

A: Latifa Sikli
@marie non malheureusement on a pas encore fait ce genre d analyse de données mais d apres l appreciation Des ecogardes Les animaux reprennent peu a peu leur instinct de fuite …

Marie Petretto
@latifa: la situation n'est pas fondamentalement très différente par rapport à la récupération de l'instinct de fuite. Dans les 2 cas de figures on passe d'addax élevés en captivité (semi-captivité) à des animaux qui ne reçoivent plus d'intervention humaine directe. On s'attend donc à une augmentation de la distance de fuite, ce qui est assez évident chez les Oryx. On n'a pas observé le mm cpt chez les addax (mais pleins d'explications possibles :))

Q: Krazidi
Bonsoir Zouhair, Le point d'eau pour les addax comment est il géré? est il permanent?

A: Latifa Sikli
@krazidi c'est Des puits d eau, fait normalement pour le betail...et ils don't permanent

Q: Philippe Chardonnet
Bonjour Zouhair, merci beaucoup pour cette présentation très intéressante et très utile. Pourrais-tu préciser si vous apportez de l'eau aux addax, autrement dit si les addax restent dépendants de votre apport d'eau? L'objectif à long terme n'est-il pas que les addax ne soient plus dépendants de l'apport d'eau, je dis bien à long terme, autrement dit qu'ils n'aient plus besoin de boire toute l'année et qu'ils retrouvent leur capacité physiologique originelle de satisfaire leurs besoins en eau avec leur alimentation. Merci encore Zouhair!

A: Latifa Sikli
@phillipe non il n y a pas d apport en eau ...il existe deux point d eau dans la region que Les Addax visite regulierement...

Q: Philippe Chardonnet
@Latifa: merci pour l'info sur l'eau d'abreuvement. est-ce que vous devez tirer l'eau des puits ou les addax peuvent ils accéder seuls à l'eau?

A: Latifa Sikli
@phillipe c est des points d abreuvement qui etaient fait pour le betail domestique

Marie Petretto
@Latifa: avec le recul en Tunisie, il semble que les addax réintroduits ont beaucoup plus de mal à se séparer de l'homme. Il serait super intéressant d'avoir une comparaison dans un autre contexte pour comprendre si c'est la conséquence d'un trait inné ou du management
je veux dire par rapport aux SHO

Q: Caleb TAROUM
Merci pour l'exposé sur les Addax Latifa. J'aimerais savoir comment vous faite pour quantifier le niveau d'eau consommer par chaque addax au courant de l'année?

A: Latifa Sikli
@caleb Les jeunes chercheurs qui ont fait le suivi des Addax Dan's la nature pendant un mois n'ont jamais pu Les voir entrain de boir même avec Les cameras trappe Durant cette periode... apres en semi captivité on n evalue pas cet indicateur…

Genetic diversity addax

Q: Wenceslas Gatarabirwa (BirdLife) : Very important work going there Kara.
The bottleneck effect on such small population is a challenge. How can the chance for greater genetic diversity be increased?

A: Kara Dicks
Hi Wenceslas, another great question! This is something that will require lots of thought, but hopefully some of the data we showed just now for the scimitar-horned oryx gives an indication of some ways we can try to

maximise diversity from captive populations. Protecting genetic diversity in any remaining wild addax is really important!

What is a season to an oryx?

Q: Caleb TAROUM
Merci pour cette brillante présentation chère Katherine. Avez-vous en prévision d'impliquer des chercheurs du Tchad dans le processus de traitements des données sur les antilopes dans la RFOROA?

A: Katherine Mertes
@Caleb oui, bien sur! Nous devrions parler!

Caleb TAROUM
Merci Katherine, ce serait génial de pouvoir permettre à des jeunes chercheurs Tchadiens d'être impliqués dans le traitement et l'analyse des données afin de garantir la durabilité de la réintroduction sur le long terme.

Q: Roseline C. Beudels-Jamar
Thanks for this Katherine and Kristen. How does your dataset compare to John Newby's data on north-south movement in the 1970?

A: Katherine Mertes
Hello @Roseline! The 1970s data didn't track individual animals, so it's a bit tricky to compare across data sets. But the GPS collar data from reintroduced oryx certainly indicate that oryx move seasonally from NW - SE - but thus far these movements are (largely) contained within the RFOROA

Q: Philip Riordan
Thanks Kristen. Nerdy Bayesian question: what priors did you incorporate into your GAMMs?

A: Kristen Whyle
@Philip: We did not incorporate adjustments for priors into these models.

A: Katherine Mertes
@Philip, nerdy answer just to follow up: we did not have strong expectations for any predictor variable, so we used vague priors. Models were implemented in stan, which uses Hamiltonian Monte Carlo / NUTS sampling.

Genetic monitoring of the scimitar-horned oryx

Q: Stéphane
Kara, do you plan to reconstruct pedigrees in Tunisian populations?

A: Kara Dicks
Hi Stephane, that is a great question. We have tried to reconstruct the pedigrees in Tunisia. However, even with lots of genetic data, it's really difficult to do this with genetically similar individuals and no information about which generation individuals belong to (e.g. is an individual mother or daughter?).

Q: Philip Riordan
Thanks Emily and Kara. As a non-geneticist, can I ask you to comment on epigenetic possibilities?

A: Emily Humble
Thanks for the question Philip. Epigenetics could certainly be something interesting here, especially given the possibility for rapidly responding to environmental change. This is not something that we're looking into and I'm not sure there's a huge amount going on from a conservation perspective although I might be wrong. Definitely something to look into.

Meeting Agenda / Programme de la réunion

20th Meeting of the Sahelo-Saharan Interest Group

18, 19 & 20 May 2021

Meeting **Agenda Day 1**

Themes	Geopolitics, climate change and society and in the Sahelo-Saharan region Large-scale conservation & development
Location:	Online on Zoom
Date:	Tuesday, 18 May 2021
Starting Time:	08:00 am New York (USA) / 13:00hs Chad / 14:00hs France / 16:00hs UAE
Duration:	3 hours

Time (France)	Session / presentation	Speakers
14:00	Opening - Welcome	Pierre Commizzoli, SCF Conservation & Science Committee Roseline Beudels-Jamar, SCF Board John Watkin, CEO SCF
	Housekeeping rules, quick technical indications	Gillian Martin Mehers
14:10 - 15:20	**Theme 1: Geopolitics, climate change and society and in the Sahelo-Saharan region**	
	Lead speaker Theme 1	Ibrahim Thiaw, Executive Secretary of the United Nations Convention to Combat Desertification
	Keynote speaker 1	*TBC* Lacina Koné, Country Director Chad, SOS Sahel
	Impact of conflict and insecurity on the elephant migration in the Gourma of Mali	Susan Canney
	Addressing the potential negative effects of the Green Wall on Sahel's biodiversity	José Carlos Brito
	Conservation and Carbon Financing: New Opportunities for the Sahelo-Saharan Region	Timothy H. Tear, Ph.D.
	Forest restoration in the Sahel DOES help biodiversity AND local people: the Burkina Faso experience!	Kris Van Looy
	Allier conservation et appui aux populations des zones reculées d'Afrique : des exemples au Niger	Cloé Pourchier, Anne Vilaseca, Luc Barbier
	Q&A (Questions & Answers)	
15:25 - 15:30	BREAK / PAUSE	
15:30 - 17:00	**Theme 2: Large-scale conservation & development**	
	Lead speaker Theme 2	Philippe Mayaux, Head of sector Biodiversity and ecosystem services - Directorate-General for International Cooperation and Development (DG DEVCO), European Commission
	Keynote invited speaker 2	Jean Labuschagne, African Parks Network, South Africa
	Scoping of Key Biodiversity Areas (KBAs) in the Sahara and Sahel Region of North Africa	Daniele Baisero, Andrew J. Plumptre
	Evaluating biodiversity of a degraded desert ecosystem to inform protected area management	Meliane Mohamed Khalil, Saidi Amira, Petretto Marie and Gilbert Tania
	Étude de l'évolution des principaux écosystèmes du réseau des parcs culturels Algériens	Réda Behlouli
	Perceptions of residents as a pillar for the community strategy building in the Ouadi Rimé-Ouadi Achim Wildlife Reserve, Chad	Jan Svitálek, Henry Bailey, Markéta Grúňová, Abdelkerim Youssouf, Karolína Brandlová, Pavla Hejcmanová
	Reforestation and dryland reclamation mean more than 'just' planting trees - experiences from the field Or How come the Sahelian drylands are still dry after all these years and decades of reforestation?	Patrick Van Damme
	The exhibition 'The desert shall live - Nature and its threats in Arabia, the Sahara and Sahel'	Ulrich Joger
	Q&A	
16:55 - 17:00	Closing remarks for Day 1 - Intro to Day 2	

SSIG 2021

18, 19 & 20 May 2021

Meeting **Agenda Day 2**

Themes	Large-scale conservation & development *(continued)* Species and site conservation
Location:	Online on Zoom
Date:	Wednesday, 19 May 2021
Starting Time:	08:00 am New York (USA) / 13:00hs Chad / 14:00hs France / 16:00hs UAE
Duration:	3 hours + 1hr side event

Time (France)	Session / presentation	Speakers
14:00	Welcome to Day 2	Pierre Comizzoli
	Housekeeping rules, quick technical indications	Gillian Martin Mehers
14:08 - 15:00	**Theme 2: Large-scale conservation & development (continued)**	
	Dynamics of a reinforced population: abundance assessment and effect of environment and management	Alice Monnier-Corbel; Anne-Christine Monnet; Yves Hingrat; Alexandre Robert
	Concepts, Personnes, Action : La Grande Conservation dans la Réserve de Faune de Ouadi Rimé Ouadi Achim, Tchad	Arrachid Ahmat Ibrahim, Henry Bailey
	Biogeography of Sahara highlands: inferring historical climatic refugia and diversification hotspots in the Bosc's fringe-toed lizard *Acanthodactylus boskianus* (Squamata: Lacertidae)	André Vicente Liz; Dennis Rödder; Duarte Vasconcelos Gonçalves; Guillermo Velo-Antón; Miguel M. Fonseca; Philippe Geniez; Pierre-André Crochet; José Carlos Brito
	East Atlantic Flyway Initiative: Opportunity for collaboration from Iceland to South Africa	Wenceslas Gatarabirwa and other members of EAFI Taskforce
	Q&A	
15:00 - 17:00	**Theme 3: Species and site conservation**	
	Lead speaker Theme 3	Amy Fraenkel, Executive Secretary of United Nations Convention on Migratory Species
	Keynote invited speaker 3	M. Hamid Abdramane Chaibo, Directeur de la Conservation de la Faune et des Aires Protégées, Tchad
	État de conservation des espèces sahélo-saharienne rares et emblématiques	Samaila Sahailou, Directeur National de la Faune, de la Chasse, des Parcs et des Réserves, Niger
	Progress and Updates in the restoration of the mega-fauna of Chad's Sahel-Sahara Ecosystem	Justin Chuven, Tim Wacher, John Newby, Caleb Ngaba, Khalid Rahama, Habib Ali, Krazidi Abeye, Marc Dethier, Ricardo Pusey, Mahamat Hassan Hatcha, Katherine Mertes
15:27 - 15:32	BREAK / PAUSE	
	Population viability analysis: *Gazella dorcas massaesyla* is another genetic heritage facing extinction [M'Sabih Talaa reserve, Morocco]	Moulay Abdeljalil Ait Baamrane, Mohammed Znari, Said El Mercht, Siham Bellout, Mohamed Naimi
	Bilan du Projet de Réintroduction des Oryx (Addax) au Tchad	Ngaba Caleb, Khalid Rahama, Krazidi Abeye, Tim Wacher
	Celebrating 50th anniversary of the "Operación Mohor": avoiding the complete extinction of the mhorr gazelle (*Nanger dama mhorr*)	Teresa Abáigar and Sonia Domínguez
	Challenges associated with remote area capture of dama gazelles (*Nanger dama*)	Julie Swenson, Charlotte Moueix, Adam Eyres, Justin Chuven, and John Newby
	Suivi par pièges photographiques des gazelles Dama dans la Réserve naturelle nationale de l'Aïr et du Ténéré, Niger	Abdoul Razack Moussa Zabeirou, Tim Wacher, Thomas Rabeil, Jared Stabach, Karolína Brandlová
	Genomics informs conservation planning of the critically endangered dama gazelle (*Nanger dama*)	Klaus-Peter Koepfli, Pavel Dobrynin, Gaik Tamazian, Helen Senn, Kara Dicks, Rebecca M. Gooley, Marlys Houck, James A. Cahill, Ksenia Krasheninnikova, Camilla Ryan, Alan F. Scott, David W. Mohr, Olga Dudchenko, Erez Lieberman Aiden, Pierre Comizzoli, Rob Ogden, David Wildt, Budhan Pukazhenthi
16:35 - 16:55	Q&A	
16:55- 17:00	Closing remarks for Day 2 - Intro to Day 3	
	SIDE-EVENT	
17:00 - 18:00	**Dama gazelle workshop**	David Mallon, Helen Senn, Lisa Banfield

SSIG 2021

18, 19 & 20 May 2021

Meeting **Agenda Day 3**

Themes	Species and site conservation *(continued)*
Location:	Online on Zoom
Date:	Thursday, 20 May 2021
Starting Time:	08:00 am New York (USA) / 13:00hs Chad / 14:00hs France / 16:00hs UAE
Duration:	3 hours

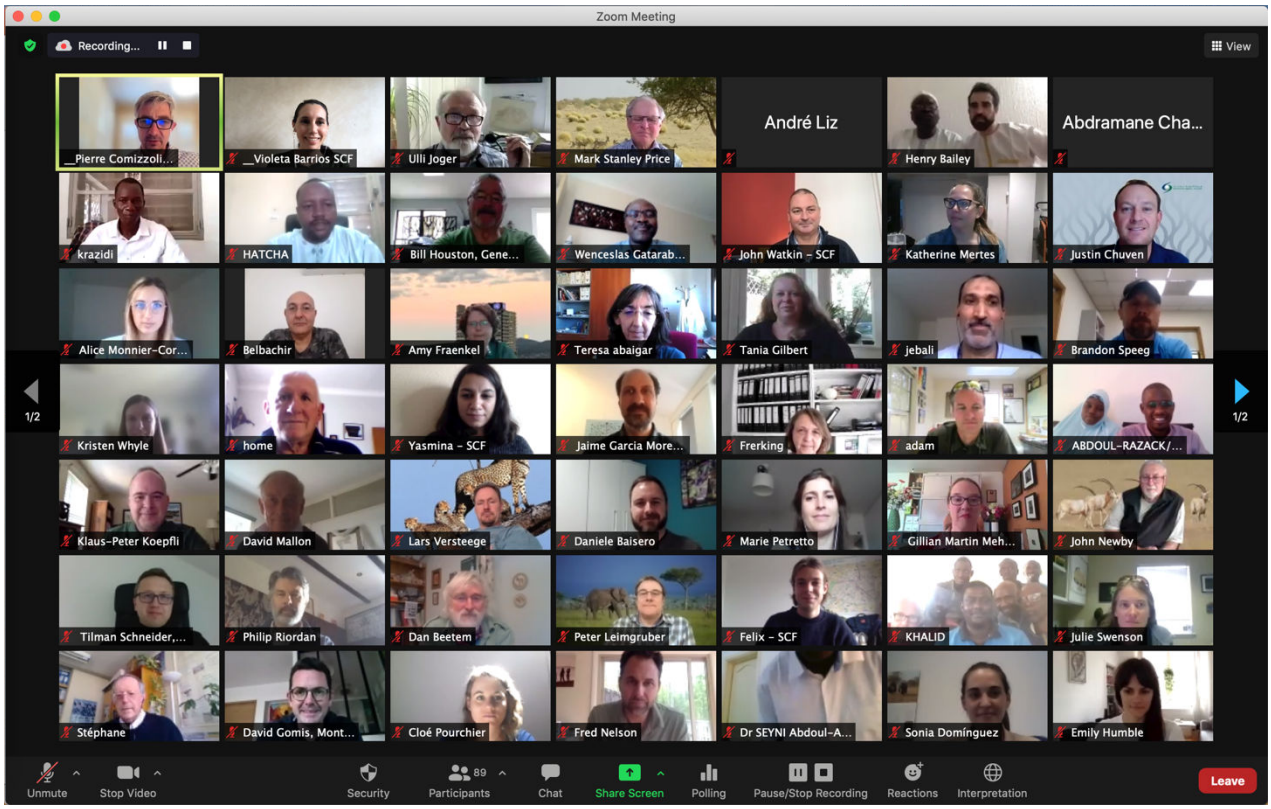
Time (France)	Session / presentation	Speakers
14:00	Welcome - Announcement Day 3	Pierre Comizzoli
	Housekeeping rules, quick technical indications	Gillian Martin Mehers
14:08 - 17:00	**Theme 3: Species and site conservation (continued)**	
	The coexistence of the West African giraffe and humans in Niger	Kateřina Gašparová, Julien Blanco, Jenny Glikman, Julian Fennessy, Thomas Rabeil, Abdoul Razack Moussa Zabeirou, Karolína Brandlová
	Intérêt du système de suivi de la biodiversité du réseau des parcs culturels : récente observation de Guépard saharien dans le Parc Culturel de l'Ahaggar	Abdenour Moussouni
	Réhabilitation du Cyprès du Tassili, espèce endémique relique du Sahara algérien (Tassili n'ajjers)	Rabeha Sahki, Koenraad de Smet
	Étude de l'herpétofaune du Sahara septentrional	Aicha Mouane
	Distribution, ecology, and conservation of *Philochortus zolii* in Mauritania: implications for the long-term persistence of an endangered lizard	Marisa Naia, Andack Saad Sow, João Campos, Zeine El Abidine Sidatt, José Carlos Brito
	Conservation des vautours au Niger	Abdoul Razack Moussa Zabeirou, Cloé Pouchier
	Q&A	
15:15 - 15:20	BREAK / PAUSE	
	Programme de conservation de l'Autruche à cou rouge au Maroc	Latifa Sikli, Zouhair Amhahouch
	Vers la réintroduction du plus grand oiseau de la planète, l'autruche d'Afrique du Nord, au Niger	Maïmounatou Ibrahim Mamadou
	Using molecular tools to assess the infection status of endangered antelope populations to support conservation reintroductions	Stephanie Brien, Marie Petretto, Ouled Ahmed Hatem, Erhan Yalcindag, Melissa Marr, Mark Bronsvoort and Rob Ogden
	A global perspective on genetic diversity within wild, semi-wild and captive addax	Kara Dicks, Marie Petretto, Jamie Ivy, Alex Ball, Helen Senn, Mark Craig, Lisa Banfield, Hela Guedara, Ezzedine Taghouti, Mohamed Boufaroua, Justin Chuven, Philip Riordan, Tania Gilbert
	Programme de réintroduction de l'addax au Maroc	Zouhair Amhaouch, Latifa Sikli
	What is a season to an oryx? Movement strategies identify three seasons for scimitar-horned oryx reintroduced into Chad	Katherine Mertes, Kristen Whyle
	Genetic monitoring of the scimitar-horned oryx reintroduction and beyond: current findings and future directions	Emily Humble, Kara L Dicks, Alex Ball, Helen Senn, Rob Ogden, Justin Chuven
16:20 - 16:45	Q&A	
16:45 - 17:00	Closing remarks & end of meeting	

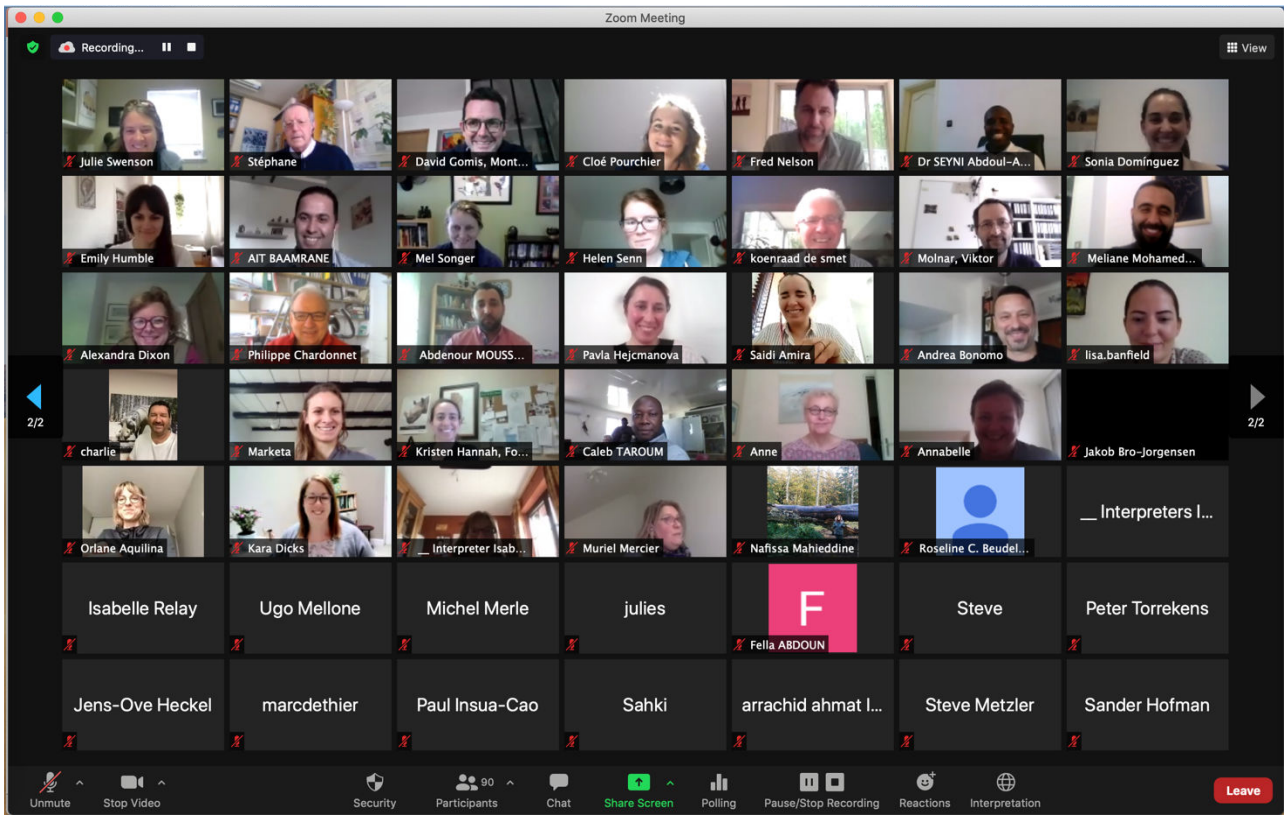
Registered participants / Participants inscrits

Last Name / Nom de famille	First Name / Prénom	Organization / Organisation	Country / Pays
Abaigar	Teresa	Estación Experimental de Zonas Áridas-CSIC	Spain
Abdou Mahamadou	Abdoul Razakou	Université d'Abomey Calavi	Niger
Abdoun	Fella	Université des Sciences et de la Technologie Houari Boumediene	Algérie
Agunbiade	Michael Bode	Brandenburg Technical University	Germany
Ahmat Ibrahim	Arrachid	Sahara Conservation Fund	Tchad
Ait Baamrane	Moulay Abdeljalil	Faculte Des Sciences Appliquees - Universite Ibn Zohr	MAROC
AlKaabi	Fatima	ZAPIA/ AlAin Zoo	UAE
Allen	Ariel	Fossil Rim	USA
Almukhmari	Maryam	ZAPIA	UAE
Alqahtani	Hessa	Al Ain Zoo	UAE
Amhaouch	Zouhair	Département des Eaux et Forêts	Maroc
Aquilina	Orlane	Amhaouch	France
Aulagnier	Stéphane	CEFS - INRAE	France
Bailey	Henry	Sahara Conservation Fund	Tchad
Baisero	Daniele	KBA Secretariat	UK
Banfield	Lisa	Al Ain Zoo	UAE
Barbier	Luc	ESAFRO (Education et Santé sans Frontière)	France
Barrios	Violeta	Sahara Conservation Fund	France
Beetem	Dan	The Wilds	United States
Behlouli	Réda	Projet Parcs Culturels Algériens	Algérie
Belbachir	Farid	Université de Béjaïa	Algeria
Bello	Abdoul Salam	GBM	Niger
Ben Amor	Bechir	CRDA KEBILI	TUNIS
Ben jlila	Imed	CRDA	Tunisie
Benmammar Hasnaoui	Haféda	Parc national de Tlemcen	Algerie
Beudels-Jamar de Bolsée	Roseline C.	Sahara Conservation Fund	Belgium
Boitani	Luigi	University of Rome	Italy
Bonomo	Andrea	S.V.S. CHAD	Chad
Bourouba	Mohamed	DGF	Tunisie
Brandlová	Karolína	Département des Sciences Animalieres ; Équipe Gestion et Conservation de la Faune, Faculté des AgriSciences Tropicales, Université tcheque des Sciences de la Vie Prague ; Derbianus Conservation ONG	République Tchèque
Breton	Grégory	Panthera	France
Breyer	Jim	Breyer Capital	United States
Brien	Stephanie	University of Edinburgh	United Kingdom
Brito	José	CIBIO-UP	Portugal
Bro-Jorgensen	Jakob	University of Liverpool	United Kingdom
Brunsing	Klaus	Erlebnis-Zoo Hannover	Germany
Burns	Kate	ABZC	United Arab Emirates
Callier	Alain	Aviation sans Frontières	France
Canney	Susan	WILD Foundation / University of Oxford	United Kingdom
Carlo Schneider	Tilman	UNEP/CMS Secretariat	Allemagne
Chaibo	Abdramane	DFAP	Tchad
Chandra	Salisha	BirdLife International	Kenya
Chardonnet	Philippe	Antelope Specialist Group SSC IUCN	France
Chedad	Abdelwahab	DGF	Algérie
Cherdo	François-Xavier	Indépendant	Mali
Chuven	Justin	Environment Agency Abu Dhabi	United Arab Emirates
Comizzoli	Pierre	Smithsonian Conservation Biology Institution	USA
Cooper	Barbara	Rutgers University	United States
Coulthard	Nonie	Logical Cobwebs Ltd.	Scotland
Craig	Mark	Al Ain Zoo	United Arab Emirates
Crenn	Julie	Sahara Conservation Fund	Paris
Dabbebi	Mohammad	CRDA Tozeur, Tunisie	Tunisie
De Kock	Meyer	ECC	South Africa
De Meyer	Emiel	Ghent University	België
de Pous	Philip	vive	
de Smet	Koenraad	Sahara Conservation Fund	België
Dearman	Sarah	University of Gloustershire	United Kingdom
Dethier	Marc	Sahara Conservation Fund	Chad
Dicks	Kara	Royal Zoological Society of Scotland	UK
Dixon	Alexandra	The Eden Project	United Kingdom
Domínguez	Sonia	Estación Experimental de Zonas Áridas-CSIC	España

Last Name / Nom de famille	First Name / Prénom	Organization / Organisation	Country / Pays
Duval	Felix	Sahara Conservation Fund	France
Eddine	Ahmed	Université de Sétif	Algérie
Eyres	Adam	Fossil Rim Wildlife Center	United States
Fischer	Martha	Saint Louis Zoo	USA
Fraenkel	Amy	Convention on Migratory Species (CMS)	Allemagne
Fraipont	Isabelle	Interprète	Belgique
Frerking	Maren	Erlebnis-Zoo Hannover	Deutschland
Gašparová	Kateřina	Czech University of Life Sciences	Czech Republic
Gatarabirwa	Wenceslas	RSPB	United Kingdom
Ghorbel	Mohamed	Albaytari	Tunisie
Gilbert	Tania	Marwell Wildlife	UK
Gold	Stephen	Wild solar	USA
Gomis	David	Zoo de Montpellier	France
Grib	Yasser	Ministère de la défense	France
Grúňová	Markéta	Derbianus	Czech Republic
Guidara	Hela	la direction générale des forêts Tunis Tunisia	Tunisia
Guyon-Lacroze	Katia	Sahara Conservation Fund	France
Hall	Philip	A.P. Leventis Ornithological Research Institute (APLORI), Jos, Nigeria.	Nigeria
Hannah	Kristen	Fossil Rim Wildlife Center	United States
Hannani	Amina	Université de Ouargla	Algerie
Hasnaoui	Noureddine	CRDA Medenine	Tunisie
Heaton	Ray	Wader Quest	England
Heckel	Jens-Ove	IUCN Antelope SG/EAZA Antelope & Giraffid TAG	Germany
Hejcmanová	Pavla	Ceska zemedelska univerzita v Praze; Derbianus Conservation	Czechia
Hemker	Marcus	West texas wildlife preserve	United States
Hingrat	Yves	Reneco International Wildlife Consultants LLC	United Arab Emirates
Hofman	Sander	EAZA	Belgium
Holland	Jeff	Center for the Conservation of Tropical Ungulates	United States
Honorez	Annabelle	Ennedi Natural and Cultural Reserve	Chad
Houston	Bill	Saint Louis Zoo	United States
Huchon	Jean	INTPA Commission UE	
Humble	Emily	University of Edinburgh	United Kingdom
Ibrahim Mamadou	Maïmounatou	Sahara Conservation Fund	Niger
Insua-Cao	Paul	RSPB	UK
Ivy	Jamie	San Diego Zoo Wildlife Alliance	USA
Jan	Svitalek		République Tchèque
jebali	abdelkader	Tunisia Wildlife Conservation Society	Tunisia/France
Joger	Ulrich	State Museum of Natural History Braunschweig	Germany
Kelley	Lisa	Saint Louis Zoo	United States
Khalid	Rahama Abderaman	Sahara Conservation Fund	Tchad
Koepfli	Klaus-Peter	Smithsonian-Mason School of Conservation, George Mason University	United States
Krazidi	Abeye	Sahara Conservation Fund	Tchad
Labuschagne	Jean	African Parks	South Africa
Lamarque	François L	Sahara Conservation Fund	France
Laouel Abagana	Ali	Projet Gestion Durable de la Biodiversité et des Aires Protégées	Niger
Leimgruber	Peter	Smithsonian Conservation Biology Institute	USA
Livingston	Gavin	Zoofari Parks Inc.	United States
Liz	André Vicente	CIBIO/InBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos da Universidade do Porto	Portugal
Lorka-Lavri	Marie-Paule	United Nations Convention to Combat Desertification (UNCCD)	Allemagne
Mahamat Hassan	Hatcha	Direction de la Faune et des Aires Protegées du Tchad	Tchad
Mahieddine	Nafissa	Direction Générale des Forêts	Algérie
Mallon	David	IUCN SSC Antelope Specialist Group	UK
Martin Mehers	Gillian	Bright Green Learning, IUCN Conservation Centre	Suisse
Maunder	Mike	Cambridge Conservation Initiative	UK
Mayaux	Philippe	Unit "Environment, Sustainable Natural Resources" (INTPA.F2), European Commission	Belgium
Mekarska	Anna	Wroclaw Zoo	Poland
Meliane	Mohamed Khalil	Marwell Wildlife	Tunisia
Mellone	Ugo	Freelance	Spain
Mercier	Muriel	Interprète	Belgique
Merle	Michel	Auditeur libre	France
Mertes	Katherine	Smithsonian Conservation Biology Institute	United States

Last Name / Nom de famille	First Name / Prénom	Organization / Organisation	Country / Pays
Metzler	Steve	San Diego Zoo Wildlife Alliance	United States
Molnár	Viktor	Hannover Zoo	Germany
Monfort	Steve	Smithsonian's National Zoo and Conservation Biology Institute	USA
Monnier-Corbel	Alice	French National Museum of Natural History and Emirates Center for Wildlife Propagation (ECWP)	France
Mouane	Aicha	Université Hamma Lakhdar de El Oued	Algérie
Moussa Zabeirou	Abdoul Razack	Sahara Conservation Fund	Niger
Moussouni	Abdenour	Projet Parcs Culturels Algériens	Algérie
Naia	Marisa	CIBIO/InBIO - Research Centre in Biodiversity and Genetic Resources of the University of Porto	Portugal
Nelson	Fred	Maliasili	USA
Newby	John	Sahara Conservation Fund	France
Ngaba Waye Taroum	Caleb	Sahara Conservation Fund	Tchad
Ogden	Rob	University of Edinburgh	United Kingdom
Petretto	Marie	Marwell Wildlife	Tunisie
Pieters	Wouter	Parc Animalier Sainte-Croix	France
Piña-Aguilar	Raul	Instituto de Ciencias en Reproduccion Humana	Mexico
Pizzigalli	Cristian	BIODESERT, CIBIO-InBio	Portugal
Pourchier	Cloé	Sahara Conservation Fund	Niger
Reyniers	Els	Interprète	Belgique
Robin	Nils		France
Sahailou	Samaila	Direction de la Faune et de la Chasse des Parcs et des Réserves	Niger
Sahki	Rabea	Institut National de Recherches Forestieres	Algerie
Saidi	Amira	Marwell wildlife	Tunisie
Sausman	Karen	Sahara Conservation Fund	USA
Schoenberg	Barbara	Convention on Migratory Species (CMS)	Allemagne
Seli	Djimet	Centre de Recherche en Anthropologie et Sciences Humaines (CRASH)	Tchad
Senn	Helen	Royal Zoological Society of Scotland	United Kingdom
Shea	Molly	Fossil Rim Wildlife Center	United States
Shurter	Steve	White Oak Conservation	United States
Sicks	Florian	Tierpark Berlin	Germany
Sikli	LATIFA	Département des eaux et Forêts	Maroc
Slimani	Mohamed Hedi	CRDA Sidi Bouzid	tunisie
Songer	Melissa	Smithsonian Conservation Biology Institute	USA
Speeg	Brandon	White Oak Conservation	United States
Spevak	Edward	Saint Louis Zoo	United States
Stabach	Jared	Smithsonian Conservation Biology Institute	United States
Stanley Price	Mark	Sahara Conservation Fund	UK
Stanley-Price	Mark	WildCRU, Oxford University	UK
Swenson	Julie	Fossil Rim Wildlife Center	USA
Taghouti	Ezzeddine	Direction Générale des Forêts	Tunisie
Tahri	Jamel	Direction Générale des Forêts; Tunisie	Tunisie
Tear	Tim	Biodeversity Research Institut	USA
Tehou	Comlan Aristide	GIZ / programme RBT- WAP & GIC- WAP	Bénin, Burkina Faso et Niger
Tembo	Obert	Zoo	United Arab Emirates
Thiaw	Ibrahim	UN Convention to Combat Desertification	Allemagne
Thier	Tim	Saint Louis Zoo	Etats Unis
Tourenq	Christophe	Biodiversity and Conservation Division, NSW Department of Planning, Industry and Environment	Australia
Tucker	Charlie	San Diego Zoo wildlife alliance	USA
Van Damme	Patrick	Ghent University, and Czech University of Life Sciences	Belgium and Czech Republic
Van Looy	Kris	Hommes et Terre	Belgium
Versteege	Lars	Safaripark Beekse Bergen	Nederland
Vigneron	Eliane	The ManeThing	France
Vilaseca	Anne	ESAFRO (Education et Santé sans Frontière)	France
Watkin	John	Sahara Conservation Fund	France
Weber	Jean-Marie	Association L'Afrique à coeur	France
Whyle	Kristen	Smithsonian Conservation Biology Institute	USA
Woodfine	Tim	Marwell Wildlife	United States
Zanello	Cédric	Des félins pour demain	France





Thank you for participating and see you in 2022!

Merci de votre participation et rendez-vous en 2022 !