Sahel & Sahara Interest Group

2022 meeting proceedings

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Online

Abstracts
Question & Answers

Recueil des résumés
Questions & Réponses

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21ST MEETING OF THE SAHEL & SAHARA INTEREST GROUP

Since 2001, the Sahel and Sahara Interest Group (SSIG) meeting has been an annual forum for everyone working in wildlife conservation within the arid areas of North Africa and the Middle East.
Facilitated by SaharaConservation's (previously Sahara Conservation Fund) 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 once again and included a series of presentations covering a large range of major issues in Sahel and Sahara.

The meeting was structured around three sessions with specific topics:

- Protected area management models, Human-wildlife interactions and opportunities in the Sahelo-Saharan biome
- Biological studies and conservation of wildlife and habitats
- Adapting to changes in livelihoods, technologies and attitudes

More than 210 people from 37 different countries registered for the meeting.

This document contains the abstracts from the presentations given at the 2021 SSIG meeting, as well as the discussions and Q&R that took place in the chat.

21ème réunion du groupe d'intérêt Sahel & Sahara

Depuis 2001, la réunion du Groupe d'intérêt du Sahel & Sahara est un forum annuel pour tous celles et ceux qui travaillent à la conservation de la faune sauvage dans les zones arides d'Afrique du Nord et du Moyen-Orient.
Animée par le Comité Science & Conservation de SaharaConservation (anciennement Sahara Conservation Fund), la réunion est l'occasion de rassembler pour partager des idées et des projets, et de poursuivre une forte tradition de collaboration au nom de la faune et des populations du Sahel et du Sahara.
Cette année, la réunion s'est à nouveau déroulée en ligne et fut l'occasion de présenter une série d'exposés couvrant des questions d'actualité pour le Sahel-Sahara, tout en permettant les échanges fructueux qui caractérisent nos réunions.

La réunion s'est articulée autour des trois thèmes suivants :

- Modèles de gestion des aires protégées, interactions entre les Hommes et la faune sauvage, et opportunités dans le biome sahélo-saharien
- Études scientifiques sur la conservation de la vie sauvage et de ses habitats
- Adaptation aux modifications de modes de vie, technologies et comportements

Plus de 210 personnes, venant de 37 pays différents se sont inscrites à la réunion.

Ce document contient les résumés des présentations faites lors de la réunion 2021, ainsi que les échanges et questions réponses qui se sont déroulés sur le chat.

ABSTRACTS

You will find all the presentations of the meeting (for speakers who gave their consent) on our **YouTube channel**: https://bit.ly/3R36JI7

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Vous trouverez l'ensemble des présentations de la réunion (pour les conférenciers ayant donné leur accord) sur notre **chaîne YouTube** : https://bit.ly/3R36JI7

Lead speech: The Sahel's rangelands - Pressures, risks and Opportunities
Mark Stanley-Price, Board of Directors, SaharaConservation

THEME 1: PROTECTED AREA MANAGEMENT MODELS

Keynote speech: Les objectifs 30*30 et les aires protégées Sahélo sahariennes
Geoffroy Mauvais, Coordinator, IUCN Program on African Protected Areas & Conservation, France

1. **The model behind the new "Gourma Biosphere Reserve" in Mali**
   Susan Canney[1], Inspecteur Général KANOUTE Fatoumata KONE[2,3], Nomba Ganame[4]

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This presentation will describe the creation of a new protected area of over 42,000km2 that has just been designated in Mali. It will describe the process and features of the model to consider its applicability to other parts of the Sahel, and in the context of 30 x 30 target (the designation of 30% of Earth's land and ocean area designated as protected areas by 2030) proposed in the Convention on Biological Diversity's post 2020 Global Biodiversity Framework.

Keywords: Mali, 30x30

2. **Inverser le déclin de la faune menacée dans la Réserve Nationale de l'Aïr et du Ténéré au Niger**
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La population mondiale de gazelles dama (*Nanger dama*) à l'état sauvage est estimée à moins de 200 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. Après plus d'une décennie sans registres de cette espèce, c'est en 2014, lors d'une mission du SaharaConservation, que des gazelles damas ont été observées sur le Mont Takolokouzet. Pour donner suite aux observations réalisées lors de missions de terrain, des pièges photographiques ont été installés de janvier 2017 à mars 2020 sur le massif du Takoloukouzet. L'analyse des données a fourni des informations conséquentes et uniques sur les espèces présentes, de leur schéma d'activités à l'occupation du territoire dans cette partie du massif. Cela a aussi permis de mettre en avant l'occurrence de diverses activités anthropiques sur le massif, telles que l'extraction d'or, qui doivent être prises en considération pour la conservation de la gazelle dama.

Ces études ont permis de mettre en avant l'urgence de mettre en place un système visant à sécuriser cette métapopulation au niveau de ce massif. En réponse à cela, le SaharaConservation a initié en janvier 2022 un projet financé par le fond SOS de l'UICN qui, à travers une approche multidimensionnelle, se concentrera simultanément sur l'arrêt des principales menaces pesant sur la faune et l'amélioration de nos connaissances, tout en soutenant le processus décisionnel pour la conception d'une stratégie de conservation de cette espèce au niveau de la RNNAT.

Mots clés : Gazelle dama, RNNAT, Mont Takolokouzet, pièges caméra

3. **Gestion des feux de brousse dans la Réserve de Faune de Ouadi Rimé - Ouadi Achim au Tchad**
Firmin Dingamtebeye[1]

[1] SaharaConservation, Tchad

Les feux de brousse dans la Réserve de Faune de Ouadi Rimé – Ouadi Achim (RFOROA) sont un des défis majeurs pour la conservation de sa biodiversité. Ces feux ont de nombreuses conséquences néfastes, que ce soit sur les populations humaines, le bétail, et plus généralement la faune et la flore locale. La perte de végétation pèse sur la

biodiversité, et particulièrement sur les espèces réintroduites qui n'ont plus de quoi s'alimenter. Des stratégies ont été élaborées afin de lutter contre ces feux de brousse autour de la base Oryx : réseaux de pare-feu, logistique d'intervention, matériel adéquat, système de communication. Le système de pare-feu a pour objectif de protéger la base oryx, les enclos, ainsi que les zones de pâturage pour la faune sauvage en général et en particulier le bétail domestique et les espèces réintroduites. Le coût de ces stratégies n'est pas négligeable dans la gestion du projet.

Mots clés : Feux de brousse, RFOROA, Causes, Conséquences et solutions

4. **Stratégie d'éducation environnementale : cas de la Réserve de Faune de Ouadi Rimé – Ouadi Achim au Tchad**

Abdelkerim Youssouf Mahamat[1], Arrachid Ahmat Ibrahim[1], Marc Dethier[1], Jérôme Hugonot[1]

[1] SaharaConservation, Tchad

Au Tchad, l'éducation environnementale constitue une logique politique, notamment avec la mise en place du décret N° 378/PR/MAE/2014 portant sur la Promotion de l'Éducation Environnementale, dont la mise en application reste une difficulté majeure. Dans le cadre du projet de Ouadi Rimé – Ouadi Achim (POROA), SaharaConservation a structuré localement une Cellule Sensibilisation Éducation environnementale (CSE), qui s'appuie sur les conseils consultatifs provinciaux des 4 provinces contiguës à la RFOROA et sur les 27 chefs de cantons des 8 départements. L'objectif de la CSE est de présenter les activités sur la conservation de la biodiversité d'une aire protégée, dans le but d'encourager des comportements individuels et collectifs, susceptibles d'établir et de garantir un rapport agréable entre les hommes et leurs milieux de vie. La pierre angulaire du programme de sensibilisation environnementale proposé sera le contenu des « Caravanes d'éducation environnementale » et la capacité de la CSE à formuler des contenus et messages positifs clés.

Mots clés : Education, Sensibilisation

THEME 2: HUMAN-WILDLIFE INTERACTIONS AND OPPORTUNITIES IN THE SAHELO-SAHARAN BIOME

1. **The wildlife in the Lake Jorf Torba, unique wetland in southwest of Algeria**
Lamia Seddiki[1], Kamel Torki[2], Fayçal Seddiki[2], Salim Seddiki[2]

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Wetlands are generally considered to be the most ecologically productive ecosystems in the world. However, the wetland in the arid zone is rare. Lake Jorf Torba is the last lake in southwestern Algeria that still exists, it is home to a rare wild species threatened with extinction such as otter, uromastyx, gazelles, and mouflons, it is also a resting place for migratory birds. But not only the wild species are threatened with extinction, but also the lake Jorf Torb, the drought caused by the reduction of the precipitations during the last decade, and the dams built upstream of the Guir river which is the only source of the lake. In this context, we are sounding the alarm to find a sustainable solution to protect and conserve this unique ecosystem in the desert.

Keywords: Drought, dams, desert wetland, Jorf-Torba

2. **Suivi des girafes d'Afrique de l'Ouest dans un contexte sécuritaire précaire**
Abdoul Razack Moussa Zabeirou[1], Julian Fennessy[2], Violeta Barrios[3]

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[3] SaharaConservation, France

Les girafes d'Afrique de l'Ouest (*Giraffa camelopardalis peralta*) sont les dernières de leur espèce à l'état sauvage. Cette population se trouve presque exclusivement dans la "zone des girafes" (zone centrale de Kouré et Dallol Bosso) du Niger. La forte régression de ces animaux au niveau de l'Afrique de l'Ouest par le passé a conduit cette espèce au bord de l'extinction.
Grâce aux efforts et engagements de l'État du Niger, ses partenaires techniques et financiers, et les communautés locales, l'effectif des girafes est passé de 56 individus en 1996, à 664 individus en 2019 avec un taux moyen annuel d'accroissement supérieur à 10%. Aujourd'hui l'espèce subit de multiples pressions et menaces sur son habitat, dus à l'empiétement agricole, la dégradation du couvert végétal, le changement et variabilités climatiques, la démographie et la surexploitation des ressources naturelles.
Plusieurs mesures ont été mises en place afin de sécuriser cette dernière population et notamment la création d'une population satellite grâce au transfert de huit individus dans la Réserve de Biosphère de Gadabedj, réalisé par l'État du Niger en partenariat avec GCF/SaharaConservation et d'autres partenaires techniques et financiers.

Cependant, l'insécurité croissante dans le Sahel couplée à la crise sanitaire mondiale ont rendu le suivi de ces populations compliqué. Afin de poursuivre le travail, un nouveau protocole de suivi, basé notamment sur la forte implication d'écogardes locaux a été mis en place, combinant un certain nombre d'activités de suivi et de surveillance.
Les méthodologies mises en place et les résultats obtenus au cours des deux dernières années seront présentés.

Mots clés : Girafe, Suivi, Insécurité, Écogardes, Translocation

3. **Priorities for reptile conservation in the Sahara and Sahel**
Ulrich Joger[1]

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SCF and other conservation groups have so far focused on large mammals and other flagship species like ostrich. This presentation intends to propose to widen the list of species in focus of conservation activities and include several reptile genera. Criteria on which to base a choice are proposed. These include:
- Large and iconic species: Crocodiles, land tortoises, monitor lizards (*Varanus*), Thorny tailed lizards (*Uromastyx*), chameleons. All these are CITES listed but under pressure.
- Relict species (Sahelian species which survive in SW Morocco): Snakes of the genera *Bitis*, *Echis, Naja, Lamprophis* and *Dasypeltis*, as well as some lizard species.
- Local endemic species (especially in SW Morocco and Sahelian countries).
I propose to start monitoring these species in the protected areas which are already established. Specific measures to be taken will arise from these monitoring activities.

Keywords: Reptiles, Monitoring, Conservation

4. **Regional Cooperation on Sahelo-Saharan Megafauna Conservation**
Marc Attallah[1], Clara Nobbe[1], CMS Secretariat[1]

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The CMS Secretariat is implementing a four-year regional project to strengthen conservation efforts for eight species of Sahelo-Saharan megafauna (Scimitar-horned Oryx (*Oryx dammah*), Addax (*Addax nasomaculatus*), Dama Gazelle (*Nanger dama*), Slender-horned Gazelle (*Gazella leptoceros*), Cuvier's Gazelle (*Gazella cuvieri*), Dorcas Gazelle (*Gazella d*orcas), Red-fronted Gazelle (*Eudorcas rufifrons*) and Barbary Sheep (*Ammotragus lervia*)), with national activities to save the Addax in Niger. The project covers the species' 16 Range States (Algeria, Burkina Faso, Chad, Egypt, Eritrea, Ethiopia, Libya, Mali, Mauritania, Morocco, Niger, Nigeria, Senegal, South Sudan, Sudan and Tunisia).

Despite continued conservation efforts, the Sahelo-Saharan megafauna continues to face a catastrophic decline due to multiple threats such as poaching, and habitat loss as a

consequence of competition with pastoralism, infrastructure development, agriculture expansion, urbanization, and resource extraction activities.

The IUCN Species Survival Commission Antelope Specialist Group is providing technical advice to the project and the Sahara Conservation Fund and Noé Conservation are the implementing partners for the activities to save the Addax in Niger.

The expected long-term impact of the project is to improve the conservation status of Sahelo-Saharan megafauna species listed on the CMS appendices, through the satellite collaring and monitoring of addax, and the development of: a global Roadmap for addax conservation; an agreed set of action prepared from a multi-stakeholder forum to address the illegal killing and disturbance of the addax in Niger; and a regional Roadmap, addressing illegal killing and disturbance and promoting conservation and management of the Sahelo-Saharan megafauna and its habitat, adopted by the Range States.

Keywords: Regional cooperation, Migratory species

5. (Trying to) collar(ing) addax in Niger

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In January and February 2022, a team led by SaharaConservation attempted to locate and collar wild addax in the Tin Toumma desert of eastern Niger. Although the mission failed to achieve its objective for several reasons, many lessons were learned that will help in any future efforts to collar wild addax in Niger.

Keywords: Addax, Niger, Tin Toumma, GPS collaring

THEME 3: BIOLOGICAL STUDIES AND CONSERVATION OF WILDLIFE AND HABITATS

Keynote speech : Expérience de l'EIA dans le combat contre le commerce illégal de *Pterocarpus erinaceus* en Afrique de l'Ouest
Raphael Edou, Africa Program Manager, Environmental Investigation Agency, United States

1. **Results of the Egyptian Vulture New LIFE project in Niger**
Cloé Pourchier[1], Violeta Barrios[2]

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[2] SaharaConservation, France

The Egyptian Vulture (*Neophron percnopterus*) is a globally endangered species, with critical status of the populations in the Balkans (>80% decline over the last 30 years) and in Africa. The Egyptian Vulture New LIFE project (LIFE16 NAT/BG/000874), launched in July 2017 in 14 countries, aims to strengthen the Eastern European population of Egyptian Vultures by implementing urgent measures to boost the population recovery in the breeding grounds and substantially reduce the main threats along the flyway. Niger has been identified as a common wintering ground for Balkan Egyptian Vultures and was added to this international and ambitious project. This is the first intense effort to study and reduce the main threats to vultures in the country. The overall analysis showed that illegal killing for belief-based use should be considered the main threat. Due to the complexity of the threat and its cultural roots, this project relied on the implementation of mitigation activities involving a wide range of actors. Awareness-raising and capacity-building campaigns were carried out, involving several key stakeholder groups, namely local leaders, administrative authorities, hunters, healers and local communities living close to vulture populations. The younger generation has also been involved, and support to schools in key areas, in line with the environmental education objectives of the project, has been provided. In this final year of the project, the SaharaConservation aims to extend the best practices developed to other remote areas of Niger and, on a later stage, to the Sahelo-Saharan region, key to the conservation of vulture populations.

Keywords: Vulture, Illegal killing, Belief-based use, Sensitization, Flyway

2. **First data about movements and threats of Rüppell's Vultures (*Gyps rueppelli*) along North Africa and Sahel from an international and multi-institutions study**

Jose Rafael Garrido[1], Rachid El Khamlichi[2], Zouhair Amhaouch[3], Justo Martín[4], Juan Jose Iglesias-Lebrija[5], Ernesto Álvarez[5], Virginia Moraleda[5], Miguel Ferrer[6], Carlos Florencio[6], Iñigo Fajardo[7], Jose Ramón Benitez[1], Jesús Bautista[8], Helena Clavero[9] and Catherine Numa[9]

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[4] Environmental consultant, Spain
[5] GREFA (Group for the Rehabilitation of Wildlife and their Habitat), Spain
[6] Applied Ecology Group, Estacion Biológica de Doñana, CSIC, Spain
[7] Head of Vultures Program Conservation of Andalucia, Regional Ministry of Agriculture, Livestock Production, Fisheries and Sustainable Development of the Autonomous Government of Andalusia, Spain
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[9] International Union for Conservation of Nature - Centre for Mediterranean Cooperation (IUCN-Med), Spain

The Rüppell's Vulture (*Gyps rueppelli*) is listed as 'Critically Endangered' at the global level in the IUCN Red List of Threatened Species and the Red Lists of breeding raptors of North Africa and Mediterranean region. A multi-institutional collaboration project for the tagging with GPS transmitters 13 vultures in northern Morocco has been launched to acquire information on their movements and threats through its flyway both the north and the south of the Sahara. First results indicate a limited survival during the wintering in Morocco and on the return journey to the Sahel under the conditions that were used this time, alone without joining large groups of migrant birds, especially Griffon Vultures (*Gyps fulvus*). Only four birds flied to South and three have died, one by starvation in desert in Algeria and two by human persecution in Mauritania and Gambia. For those birds that did not succeed in distant dispersal, the high number of fatalities also confirms that threats to the species are very high across Morocco: one bird died by collision with wind turbines and other by electrocution on power lines, two vultures suffered from starvation and weakness and birds remaining in the releasing area a feeding station or on rubbish dumps. Although these results are very preliminary, the data seem to support that the return journey to Sahel is difficult to carry out successfully, especially if it is not carried out together with large groups of migrating Griffon Vultures.

Keywords: Gyps rueppelli, Satellite monitoring, Sahel, Morocco

3. **Diversification cradles in the Sahara-Sahel: contrasting evolutionary histories in functional groups urges a reassessment of priority conservation zones**
André Vicente Liz[1], Duarte Vasconcelos Gonçalves[1, 3, 5], Dennis Rödder[4], Guillermo Velo-Antón[1, 3, 6], Pierre-André Crochet[7], Silvia B. Carvalho[1, 2, 3], José Carlos Brito[1, 2, 3]

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[4] ZFMK, Zoologisches Forschungsmuseum Alexander Koenig, Germany
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The Sahara-Sahel Desert presents distinct bioclimatic and phytogeographical regions, where desert communities aggregate into localized biodiversity hotspots that arose from historical eco-evolutionary processes. These hotspots may differ across functional groups, due to the variable biogeographical affinities of desert taxa. The current characterization of biodiversity hotspots is based on assessments at the species level (e.g., endemism richness) and lacks information on intra-specific genetic diversity (ISD), in spite of this being a crucial element for conservation. Herein, we conduct the first multi-taxonomic inference of ISD hotspots across the Sahara-Sahel, taking into account differences in species habitat requirements. ISD maps were produced for well-sampled representatives of mesic and xeric desert taxa (19 mammals and 14 reptiles) based on spatial interpolations nucleotide diversity, using the mitochondrial marker cytochrome-b. Areas of high ISD were overlapped across species for each functional group, in order to delimit mesic and xeric ISD hotspots. The main ISD hotspots were located in mountain areas and in low sand-dune fields (ergs) for mesic and xeric taxa, respectively. Mountain hotspots are generally considered in conservation planning, but further studies on the Central Sahara highlands are needed to understand the magnitude of their regional diversity. On the contrary, erg hotspots remain largely ignored in conservation planning, due to the low ecological diversity generally presumed for these ecosystems. Therefore, we call for an urgent need to consider xeric diversity hotspots in conservation planning.

Keywords: Comparative phylogeography, Conservation biogeography, Functional groups, Intra-specific genetic diversity, Sahara-Sahel

4. **Diversity, distribution and conservation of land mammals in Mauritania**
José Carlos Brito[1,2,3], Andack Saad Sow[4], Cândida Gomes Vale[1], Cristian Pizzigalli[1,2,3], Dieng Hamidou[5], Duarte Vasconcelos Gonçalves[1], Fernando Martínez-Freiría[1,2], Frederico Santarém[1,2], Hugo Rebelo[1,2], João Carlos Campos[1,2], Juan Manuel Pleguezuelos[6], Maria Joana Ferreira da Silva[1,2], Marisa Naia[1], Pedro Tarroso[1,2], Raquel Godinho[1,2,3,7], Teresa Luísa Silva[1], Tiago Macedo[3], Zbyszek Boratyński[1,2], Zeine El Abidine Sidatt[8], Francisco Álvares[1,2]

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This work assessed the diversity, distribution, and conservation of land mammals in Mauritania. The updated taxonomic list comprises 107 species, including 93 extant, 12 Regionally Extinct, and 2 Extinct in the Wild. Mapping of species distributions allowed locating concentrations of extant mammal species richness in coastal areas, along the Senegal River valley, and in mountain plateaus. Recent regional extinction of large-sized Artiodactyla and Carnivora has been very high (11% extinct species). From the extant mammals, 11% are threatened, including flagship species. Species richness is poorly represented by the current protected areas. Despite the strong advances made, 23% of species categorise as Data Deficient. Persisting systematics and distribution uncertainties require further research. Field surveys in currently unexplored areas (northern and south-eastern regions) are urgently needed to increase knowledge about threatened mammals. The long-term conservation of land mammals in Mauritania is embedded in a complex web of socioeconomic and environmental factors that call for collaborative action and investment in sustainable human development. The current work sets the baseline for the future development of detailed research studies and to address the general challenges faced by mammals and biodiversity in the country

Keywords: Diversity, Distribution, Conservation, Mammals, Mauritania

5. **Building sturdy foundations: using genetic data during founder selection to create a resilient reintroduced addax herd**
   Kara Dicks[1], Justin Chuven[2], Mohammed Al Remeithi[2], Ricardo Pusey[2], Emily Humble[3], Rob Ogden[3], Alex Ball[1], Helen Senn[1]

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[3] University of Edinburgh, United Kingdom

Africa's rarest antelope is the iconic desert-specialist addax, with now probably less than 50 wild individuals remaining, and captive populations are a vital insurance against extinction. Following in the footsteps of the scimitar-horned oryx, addax have returned to the Ouadi Rimé–Ouadi Achim Game Reserve in Chad as part of the ongoing reintroduction project. Previous work has shown that genetic diversity is relatively low and unevenly distributed amongst the captive source populations of addax. Thus, providing theses reintroduced herds with as much diversity as possible, and therefore capacity to adapt to future changing environments and diseases, requires very careful selection of founder

individuals. We have been monitoring genetic diversity throughout the reintroduction process via mitochondrial DNA sequencing to identify maternal lineages and genome-wide markers (SNPs), using the data from addax already on the ground in Chad to help choose which captive individuals would best complement the existing herd genetically and should be prioritised in future translocation. Within the first 40 addax translocated to Chad in 2018 and 2019, the herd had already become the single most genetically diverse population assessed to date, except for the remnant wild herds. Five of the eight maternal lineages known from captivity are already present, and a novel lineage was identified. Future founder selection should therefore aim to capture as much remaining diversity as possible and boost numbers of existing genetic lineages.

Keywords: Addax, Reintroduction genetics, Antelope reintroduction, Conservation genomics

6. **Genetic consequences of conservation management strategies in scimitar-horned oryx**

Emily Humble[1], Martin A Stoffel[2], Kara Dicks[3], Alex Ball[3], Rebecca M Gooley[4,5], Justin Chuven[6], Ricardo Pusey[6], Mohammed al Remeithi[6], Klaus-Peter Koepfli[4,5], Budhan Pukazhenthi[5], Helen Senn[3], Rob Ogden[1]

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In an age of habitat loss and overexploitation, small populations, both captive and wild, are increasingly facing the effects of isolation and inbreeding. Human management has therefore become a vital tool for ensuring population viability. However, little is known about how the type and intensity of intervention shape the genomic landscape of inbreeding and genetic load. We address this using whole genome sequence data of scimitar-horned oryx, an iconic antelope that has been subject to contrasting management strategies since it was declared extinct in the wild. We reveal how unmanaged collections have significantly higher inbreeding coefficients and a considerable excess of deleterious mutations compared to managed populations. These findings emphasise both the risks associated with multiple generations of inbreeding as well as the benefits of both low and high-intensity management for population viability. I will provide an overview of these findings and discuss the implications for future management of scimitar-horned oryx and related species.

Keywords: Genomics, Homozygosity, Purging, Diversity

7. **Update on Chad's Oryx Reintroduction Project**
Violeta Barrios[1],

[1] SaharaConservation, France

Under the leadership of the Environment Agency Abu Dhabi, the Chadian government and SaharaConservation, outstanding progress has been made in restoring the scimitar-horned oryx (*Oryx dammah*) to its native habitats in central Chad reaching the project's milestone of 500 individual roaming free in Ouadi Rimé-Ouadi Achim Game Reserve. This success has allowed the project to move forward with the release of other threatened species; the addax (*Addax nasomaculatus*) in 2020 and the North African ostrich (*Struthio camelus camelus*) in 2021. Reinforcement of the Critically endangered dama gazelle (*Nanger dama*) is underway with the establishment of an in-situ captive breeding group at the Oryx Basecamp. An update of several aspects of the project will be presented as well as the work yet to be done to successfully rewild Sahelo-Saharan mega-fauna to this region.

Keywords: rewilding, scimitar-horned oryx, addax, dama gazelle, genetic diversity, reinforcement

8. **Experience and social factors influence movement and habitat selection of two reintroduced Sahelian ungulates**
Katherine Mertes[1], Masolele Majaliwa[1, 2], Kristen Whyle[1], Lacey Hughey[1], Melissa Songer[1], Jared Stabach[1], Peter Leimgruber[1], Ahmed Al Hashemi[3], Mohammed Manea Al Remeithi[3], Ricardo Pusey[3], Hamid Abdramane Chaibo[4], Mahamat Hassan Hatcha[4], Ali Ngari Walsoumon[4], Caleb Ngaba[5], John Newby5, Tim Wacher[6].

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[2] School of Mathematics & Statistics, University of Glasgow, Scotland, United Kingdom
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[5] SaharaConservation, France
[6] Zoological Society of London, United Kingdom

Reintroduced animals face the unique challenge of navigating a completely novel environment. Unfamiliarity with the landscape can be costly, through increased energy expenditure during exploratory movements, and greater exposure to predation and reduced opportunities to forage due to lack of knowledge about local predators and resources. In the absence of interactions with resident animals, it is unclear how individual and social learning may affect a reintroduced animal's ability to track resources in an unfamiliar landscape. We used integrated step selection functions to address these knowledge gaps, by evaluating the extent to which environmental factors, individual experience, and social information-sharing influenced movement decisions by scimitar-horned oryx (*Oryx dammah*) and addax (*Addax nasomaculatus*) reintroduced into a large, protected area in Chad. Of candidate step selection functions for each species,

models that included environmental, experience, and social variables performed best during both dry and wet periods, indicating that both experience and social factors influence reintroduced oryx and addax. During the dry period, oryx selected sites with intermediate long-term vegetation productivity and greater short-term vegetation productivity. In contrast, during the dry period addax selected sites with intermediate short-term vegetation productivity and exhibited a negative relationship with long-term vegetation productivity. In addition, social factors strongly influenced addax habitat selection, with larger groups responding more negatively to current and long-term vegetation productivity – while oryx habitat selection was influenced more strongly by experience, with the most experienced oryx exhibiting a steeper negative response to short-term vegetation productivity. These findings update widely held expectations about how released ungulates acclimate to novel landscapes, demonstrate the utility of long-term monitoring of reintroduced populations, and may inform the management of recovering wildlife populations.

Keywords: Movement, Sociality, Environmental, Learning

9. **Assessment of the infection status of scimitar-horned oryx in conservation reintroductions**

Stephanie Brien[1], Katherine Mertes[2], Marie Petretto[3], Erhan Yalcindag[1], Melissa Marr[1], Ouled Ahmed Hatem[4], Mahamat Hassan Hatcha[5], Tchari Doungous[6], Mahamat Saboun[6], Moukhtar Defallah[6], Mark Bronsvoort[1], Rob Ogden[1]

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[2] Smithsonian Conservation Biology Institute CBI, United States
[3] Marwell Wildlife, United Kingdom
[4] Institut de la Recherche Vétérinaire de Tunisie, Tunisia
[5] DFAP, Chad Government
[6] Institut de Recherche en Élevage pour le Développement, Chad Government

Background: Endangered antelope, such as scimitar-horned oryx (*Oryx dammah*), are being reintroduced to the Sahelo-Sahara region as part of broader programmes to restore arid land biodiversity. To be sustainable, many programmes require land-sharing between antelope and livestock. This carries a risk of inter-species disease transmission, with potential impacts on health, conservation and livelihoods.

Goals:
(i) To investigate the infection status of endangered antelope in reintroduction programmes.
(ii) To identify infections that pose a risk at the wildlife-livestock interface.

Methods: Samples were collected for health surveillance from reintroduced and wild-born scimitar-horned oryx in Chad, and semi-free-ranging oryx scheduled for possible release in Tunisia. DNA extracted from these samples is being assessed for haemoparasites alongside baseline samples taken prior to reintroduction. Serology will assess exposure to

a range of diseases of economic, conservation or zoonotic concern.

Results: A range of haemoparasite genera that also cause infections in livestock were identified, 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. Molecular tests optimised for use in livestock were not uniformly effective at identifying infections in antelope.

Future work: (i) a cross-sectional serological survey of livestock in Chad is planned to compare infection status with samples collected from sympatric wild antelope, (ii) assess whether faecal samples can be used for health and genetic surveillance in antelope, (iii) explore differences in diagnostic test performance in livestock and antelope.

Keywords: Antelope, Infectious disease, Land-sharing, Reintroduction, Wildlife-livestock interface

10. A novel approach: rewilding endangered fauna of the Sahel-Sahara region in Spain, for future reintroductions into their native area

Yvonne Kemp[1], Fernando Morán[2], Justo Martín[3], Diego Rodríguez[4]

[1] Independent ecologist, Spain
[2] Wildlife veterinarian & environment consultancy, Spain
[3] Environmental consultant, Spain
[4] University of Malaga, Spain

We present an ambitious project to support the conservation and restoration of several of the most endangered wildlife species of the Sahel-Sahara region. The central objective is to rewild groups of individuals, which in collaboration with the species experts will be released in a semi-free nature area in Andalucía, Spain. The project will act as a reservoir for future reintroductions of these species into their native distribution areas. The semi-wild environment and the spaciousness of the project area promote a natural (wild) behaviour of the animals and therefore might greatly enhance the chances of survival of animals that are reintroduced into the wild. The project acts as a complement to zoos and animal parks that currently guarantee a pool of specimens keeping these vulnerable species safe from extinction. In this way, the most valuable contribution of our project is the innovative way of providing animals wilder and more accustomed to living in large spaces prior to their release into nature, as a fundamental tool to further the success of reintroductions.

Keywords: Endangered fauna, Rewilding, Reintroductions

11. **Living on the edge: Updates on the distribution of the Guinea baboons' desert populations in Mauritania**

Cristian Pizzigali[1], Andack Saad Sow[2], Hamidou Dieng[2], Maria Joana Ferreira da Silva[1, 3], Raquel Godinho[1], Orly Razgour[4], José Carlos Brito[1, 5]

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[4] University of Exeter, United Kingdom
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The Guinea Baboon (*Papio papio*) is a Near Threatened primate endemic of West Africa. Thanks to its ecological plasticity this species is locally common along its distribution. However, during the last 30 years, its persistence has been strongly affected by human activity, in the form of habitat fragmentation, persecution and poaching. Knowledge on the distribution, population density and habitat use are still limited, and research efforts are mostly restricted in the central/southern areas of its geographic range (namely Senegal, Guinea-Bissau and Guinea Conakry). Few is known on the Guinea baboon populations inhabiting arid regions (i.e. Mauritania). This data deficiency is mostly relevant in desert wetlands, where resources are temporary variable, and this species persists under extreme environmental conditions. In Mauritania, the Guinea baboon is restricted to the southern mountain massifs of the Tagant, Assaba and Afollé, where it is known in just 46 localities. Here, we present an update on the distribution of this species in the country and we provide new data on the population density and habitat use. During four field-surveys implemented in Mauritania from 2016 to 2022, we discovered 47 new localities distributed in the Tagant, Assaba, and Afollé mountains as well as along the borders with Mali and Senegal. We have evidences that population of the Assaba, are organized in bigger groups than those inhabiting the Tagant and Afollé. Moreover, Mauritanian populations of this species can inhabit different habitats, from the sand dunes in the Tagant until the Sahelian savannah characterising the Assaba and Afollé mountains.

Keywords: Primates, Conservation, Sahara-Sahel, Human footprint, Habitat selection

12. **Succès et défis du dernier transfert d'autruches d'Afrique du Nord au Niger**

Maimounatou Ibrahim Mamadou[1]

[1] SaharaConservation, Niger

Dans le cadre du programme de réintroduction de l'autruche d'Afrique du Nord au Niger, le SaharaConservation a débuté en novembre 2021 son premier transfert d'autruchons dans la Réserve de Biosphère de Gadabeji.
Si bien les premiers résultats de ce transfert sont globalement positifs, des défis restent à relever, notamment la détermination de problèmes liés à la survie des individus transférés malgré l'absence d'un vétérinaire, la survie de ces autruchons jusqu'à l'âge adulte, la mise

en place d'un système de suivi efficace dans les zones de réintroduction, et l'élargissement du système de réintroduction dans les autres aires protégées du Niger.

Mots clés : Autruche d'Afrique du Nord, Réintroduction, Suivi, Translocation

13. Wintering habitat of turtle doves (*Streptopelia turtur*): opportunities for management

Susana Requena-Moreno[1], Hervé Lormée[2], Graeme M. Buchanan[3], Alison E. Beresford[3], Christopher J. Orsman[1], Cyril Eraud[2], Marcel Rivière[4], Juliet A. Vickery[1], John W. Mallord[1]

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[2] Office Français de la biodiversité, Direction de la Recherche et de l'Appui Scientifique, France.
[3] RSPB Centre for Conservation Science, United Kingdom
[4] France

As a migratory species, the European Turtle dove (*Streptopelia turtur*) (IUCN: Vu) experiences multiple pressures during its annual cycle: in the breeding grounds in the Palearctic region, along the East Atlantic Flyway and in the wintering areas in the Sahelian and Sub-Saharan regions. Applying the tracking information provided by tagged birds and remote sensing data, we studied its winter presence at two scales (local and landscape) in October to November and from December to May. Turtle doves are associated with a non-dominant cover of open forest and shrublands, grasslands and water sources. This is an apparently common habitat that provides resources and benefits for people and bird species. However, this landscape could be under threat in the mid-term future although a sustainable management of the resources by the communities living along the rivers could prevent its loss.

Keywords: Wintering habitat, Migratory species, Landbird, Habitat loss

14. Movement pattern of West African giraffe (*Giraffa camelopardalis peralta*) in Niger

Kateřina Gašparová[1], Pavla Hejcmanová[1], Jared Stabach[2], Michael Brown[2], Julian Fennessy[3], Thomas Rabeil[4], Abdoul Razack Moussa Zabeirou[5], Karolína Brandlová[1]

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[5] Sahara Conservation Fund, Niger

The West African giraffe (*Giraffa camelopardalis peralta*) was historically spread across much of the Sudano-Sahelian zone but is now only present in Niger. In 1996, only 49 individuals remained, concentrated in the 'Giraffe Zone' (GZ), a not formally protected

area- ~60 km from the capital Niamey. Targeted conservation activities have resulted in the giraffe population increasing to >600 individuals currently. We recently fitted GPS satellite units to 19 West African giraffe (16 females and 3 males) to better understand their use of habitat, seasonal migration and the movements into expansion areas.
Data from 15 units were analysed from hourly readings recorded between 5 to 35 months between 2018 and 2022. The giraffe moved on average 0.443 km/hr (SD ±0.09 km). While the individual dispersal throughout the study period was very different. The average home range, estimated using the continuous-time movement modelling (ctmm) R package, was 2,962 km2, ranging from 449 km2 to 3,870 km2, which is larger than in previous results calculated by Suraud in 2011. The spatio-temporal patterns of individual home ranges indicated partial overlap between individuals and supports giraffe fission-fusion social structure. The GPS satellite data and investigating the extent to of giraffe habitat use overlap with human activities and settlements will assist and guide an effective long-term conservation planning and management for the West African giraffe in a human-dominated landscape.

Keywords: Satellite tag, monitoring, seasonal migration, habitat use

15. Conservation status of the last Moroccan dorcas gazelle (*Gazella dorcas massaesyla*) population in the M´Sahih Tâala, Sidi Chiker, Morocco

Moulay Abdeljalil Ait Baamrane[1], Latifa Sikli[2], Zouhair Amhaouch[2], Teresa Abaigar[3], Soufiyan Benzina[2]

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Dorcas gazelle (Gazella dorcas), formerly widespread but now Vulnerable, has declined markedly during last decades. The semi-captive population in M'Sabih Talaa Reserve, west-central Morocco, is genetically distinct and may be the last remnant of the Moroccan dorcas gazelle G. dorcas massaesyla. The last estimate of the size of this population was c. 110 in 2021 with a sex-ratio close to 1:1. To assess the status of this population, 10 camera-traps settled in the reserve in March 2021. Specifically, we are interested in determining the size and composition of the groups, their rate of activity, their health status and the main threats. Preliminary results (spring and summer) shows that 58,8% of captures belong to isolated individual (75% males, 25% females), 30% one-sex group (95% males, 5% females) and 11% mixed groups (2-13 individuals). Identified classes are as: 51% adults, 18,3% subadults, 3,1% juveniles and 6,7% offspring; it was impossible to identify ages and/or sex for 20% of captures. Using 60min as a minimum time interval between photographs for a new event, gazelles show both diurnal (with peaks at 6:00-8:00, 10:00-11:00 and 13:00-15:00), and nocturnal (peaks at 23:00-3:00) activity pattern over a wide range of temperatures (7-52°C). All the gazelles showed good body condition, except one adult male with wounds on one side, probably from a fight. The main identified threat is the occasional presence of feral dogs and men which may be mitigated by reinforcing fence and vigilance.

Keywords: Gazella dorcas massaesyla, camera traps, activity pattern, age classes, M'Sabih Talaa reserve.

16. At half-mast: Dorcas gazelle midden site selection in the Anthropocene

Abdullah Nagy[1], Omar Attum

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[2] Indiana University Southeast, United States

Like many mammals, Dorcas gazelles, have developed its methods for intra-specific and inter-specific communication through keeping latrines or middens. Middens are used as communication centers and defense citadels i.e., territorial marking. Dorcas gazelles used to mark its middens using the highest trees in the landscape. Placing middens near a landmark is advantageous as it lowers the defensive cost and avoid antagonistic encounter. The aim was to revisit the hypothesis that gazelles would use higher trees for midden marking, especially after the increased human activity in the study landscape. This study sites occurs in Egypt's Eastern Desert, within Wadi El-Gemal National Park, where we randomly sampled 113 sites in 4 wadis in 2009 and 2021. We recorded the presence/absence of middens, gazelle tracks or dungs, livestock, trees species, trees height, canopy. With remote sensing and GIS, we appended NDVI, TRI and TWI and distance to coast to each of the 113 points to model how these factor affects the midden site selection in both time frames using GLMM. We observed a 50% decrease in the number of gazelle middens and gazelle signs (tracks and dung) despite the significant increase in greenness of landscape in 2021 in comparison to 2009. Roughly 88, 93% of the Vachelia t. raddiana, Vachelia t. tortilis, respectively survived. Gazelles selected higher trees in the past but now they avoid them. It seems humans intensive use of the landscape is changing the territorial behavior of Dorcas gazelles.

Keywords: Territoriality, Anthropogenic pressures, Dorcas gazelle

17. Frequency of atypical coloration as an indicator of population isolation

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Atypical colorations are the result of genetic disorders that cause the coloration of some specimens to be different from that of regular-colored individuals. Certain factors can increase the chances of these atypical colorations in the natural population, record of such phenomena are rare especially in African species. We present observation cases of some North African and Saharan species where atypical colorations are recorded. We discuss how this observation can be an indicator for species conservation.

Keywords: Melanism, Atypical phenotypes, Africa, Mammals

QUESTIONS & ANSWERS

DAY 1 – MAY 10th, 2022

THEME: PROTECTED AREA MANAGEMENT MODELS

Keynote speech: Les objectifs 30*30 et les aires protégées Sahélo-sahariennes – Geoffroy Mauvais

- Tahir Brahim : Quels sont les vrais contours d'une bonne gouvernance des AP ?

➔ Sujet très vaste et complexe, le mieux est de se référer aux publications de la WCPA sur le sujet, et qu'on peut trouver en ligne sur le site de l'UICN ou sur www.papaco.org . Il n'existe pas de recette, tout dépend du contexte, de la catégorie d'AP et de son type de gouvernance donc de nombreuses variables à prendre en compte. Mais ce qui est sûr, c'est qu'il existe une bonne gouvernance pour chaque territoire, il faut juste bien l'identifier !

- Amina Fellous Djardini : Est-ce que les OECM's sont considérées comme AP, car nos parcs culturels en Algérie viennent d'être classés en tant que OECM's?

➔ Ce ne sont pas des aires protégées car leur objectif principal n'est pas la conservation, mais ce sont des outils additionnels pour faire de la conservation, en parallèle avec d'autres activités. Ainsi, si les parcs culturels algériens sont des OECM, alors ils contribueront à l'objectif 30*30 de la CDB. A noter que l'Algérie est un des rares pays en Afrique qui a commencé à identifier ses OECM… donc il est normal que ce soit là que les questions apparaissent car c'est encore un processus tout neuf !

Inverser le déclin de la faune menacée dans la Réserve Nationale de l'Aïr et du Ténéré au Niger – Abdoul Razack Moussa Zabeirou

- José Carlos Brito : Existe-t-il des preuves de mouvement de gazelles entre l'Air et Termit ? Les deux populations sont-elles connectées ?

➔ Il n'y a pas connexion entre la population de Dama de Termit et celle de la RNNAT.

- Dr Abdoul-Aziz Seyni : Quelle sera la durée du projet?

➔ La durée du projet est de deux ans, ce projet s'ajoute à d'autres activités.

Gestion des feux de brousse dans la Réserve de faune de Ouadi Rimé - Ouadi Achim au Tchad – Firmin Dingamtebeye

- Benjamin Tchamogoye Kiddindiwa : Vu ce défi du feu de brousse, quelle solution avez-vous préconisé ?

➔ Pour faire face à ce problème des feux de brousse dans la RFORA, il faut une sensibilisation et une prise de conscience par la communauté locale sur l'impact des feux, développer les techniques de lutte avec les outils adéquats et efficaces.

Stratégie d'éducation environnementale : cas de la Réserve de Faune de Ouadi Rimé - Ouadi Achim (RFOROA) au Tchad - Abdelkerim Youssouf Mahamat

- Quelles sont les prochaines étapes de la stratégie ?

➔ Tester les outils de communication avec les différents groupes cibles influents selon la typologie des problèmes prioritaires perçus, avec l'appui technique de Derbianus Conservation. Organiser des caravanes d'éducation environnementale à titre de complément de la formation sur le plan pratique. Continuer à créer les contenus de messages positifs de changement comportemental. Identifier les outils et intrants de communication suivant les cibles identifiées dans la RFOROA. Renforcer l'équipe de la CSE en animateur et agents communautaires. Organiser des séances de formation pour les différents acteurs locaux impliqués sur la protection de l'environnement. Suivre et évaluer les indicateurs de performance de la stratégie de communication Renforcer les capacités organisationnelles, techniques et opérationnelles du réseau de communication du Projet OROA. Organiser des activités culturelles sur la biodiversité dans les milieux académique, scolaire et enseignant. Cette mise en œuvre passera également par une logistique adaptée : repérer des graphistes, artistes, spécialistes de l'audiovisuel pour l'analyse environnementale.

THEME: BIOLOGICAL STUDIES AND CONSERVATION OF WILDLIFE AND HABITATS

Results of the Egyptian Vulture New LIFE project in Niger – Cloé Pourchier

- Mustapha Marraha : Chez une population à forte tradition orale, n'est-il pas opportun de favoriser aussi d'autres formes et outils de sensibilisation comme le chant, la musique… ?

➔ Oui bien sûr, c'est une bonne idée. Il est vrai que pour le moment nous avons favorisé des outils plus 'classiques', tels que l'organisation d'activités avec les enfants comme la rédaction de poèmes, les radios communautaires, et les séances de discussion mais des outils plus ludiques pourraient être une très bonne initiative à développer à l'avenir.

- Haithem Farhati : Les voies migratoires des vautours percnoptères entre l'Europe et le Sahel qui passent par les pays du Maghreb sont-ils aussi pris en compte dans votre programme ? Par exemple l'Algérie ou la Tunisie ?

➔ Non ces voies-là ne sont pas prises en compte car ce projet est dédié à la population de percnoptères des Balkans, en Europe de l'Est. Ils utilisent donc la voie migratoire la plus à l'Est, et en général ne traversent pas la Méditerranée mais passent par la Turquie, et entrent en Afrique par le Nord-Est.

First data about movements and threats of Rüppell's Vultures (*Gyps rueppellii*) along North Africa and Sahel from an international and multi-institutions study – José Rafael Garrido Lopez

- Lamia Seddiki : Avez-vous eu des collaborations avec l'Algérie concernant ces vautours ?

➔ yes, we are collaborating with people from Tlemcen National Park, give them positions and routes of tagged vultures and helping to recover by them the dead vulture in Algeria. We are trying to collaborate in the future monitoring breeding colonies of Griffon Vultures where Algerian experts told us Ruppell's Vulture is also breeding. And we are trying to get some collaboration project to GPS-tag vultures and other raptors species.

- Hugo Fernández: What was the reason 2 of the birds needed to be rescued? Was a diagnosis possible?

➔ inanition

- Mustapha Marraha: Does the transmitter collar have an impact on the survival of the vulture?

➔ No, it doesn't if it is well installed, we marked hundreds of Griffon Vultures and they behave and breed without problems.

Diversity, distribution and conservation of land mammals in Mauritania – José Carlos Brito

- Yvonne Kemp: It seems you used baiting for the camera traps, if that was the case, where these baits species/family specific, or quite general?

➔ We used non-specific baiting, usually sardine or tuna cans.

- Roseline C. Beudels-Jamar: Can you tell us a bit more on Awleigatt NP: you mentioned potentials for restoration of species? Is this happening already? For which species?

➔ The Awleigatt are stocking a series of species, native and exotic. See http://www.pna.mr/
As far as I know, no actions in the field have been taken. There is the potential there, and I hope that they focus on the native!

DAY 2 – MAY 11th, 2022

THEME: HUMAN-WILDLIFE INTERACTIONS AND OPPORTUNITIES IN THE SAHELO-SAHARAN BIOME

Suivi des girafes d'Afrique de l'Ouest dans un contexte sécuritaire précaire – Abdoul Razack Moussa Zabeirou

- Lucie Derussé : Collaborez-vous avec l'ASGN, Association de Sauvegarde des Girafes du Niger ?

➔ Nous travaillons avec l'ASGN, nous collaborons directement avec le terrain pour le suivi (AVEN).

Regional Cooperation on Sahelo-Saharan Megafauna Conservation – Marc Attalah

- Philip Riordan: Is the Q4 regional seminar separate to the addax multi-stakeholder meeting?

➔ They are two separate meeting.

- Amina Fellous: Any kind of cooperation with Algeria in your project? We have few data on it

➔ Algeria and all Range States' engagement will be encouraged and welcome at the Third Regional Seminar.

L'Homme propose, Dieu dispose – John Newby

- Mustapha Marraha : Est-ce qu'on peut penser à un piratage des codes des colliers par les braconniers professionnels bien organisés, disposant des moyens numériques intelligents et sophistiqués ?

➔ Piratage des colliers très peu probable sans les moyens faramineux et hautement techniques.

- Mark Stanley Price: Based on performance of the captive-bred addax in Chad, would you recommend a captive-breeding site for addax in northern Niger?

➔ Reproduction en captivité des addax au Niger doit être bien faisable mais attention les couts sont considérables et nécessitent des engagements long-termes.

- Philip Riordan: Is there an option to use automated UAVs for initial surveys? We've been working with AI and robotics colleagues to explore use of this tech: https://www.southampton.ac.uk/iris/marwell-wildlife.page

➔ Noé essaye actuellement de perfectionner les UAV solaire mais progrès est bien difficile compte tenu des espaces vastes dans lesquelles les addax évoluent.

THEME: BIOLOGICAL STUDIES AND CONSERVATION OF WILDLIFE AND HABITATS (CONTINUED)

Building sturdy foundations: using genetic data during founder selection to create a resilient reintroduced addax herd – Kara Dicks

- Mark Stanley Price: When you speak of genetic lineages, do you mean haplotypes? The former makes much more sense to people such as us.

➔ Yes, the genetic lineages I referred to are haplotypes that are inherited maternally. These are quick and easy to analyse and very useful for making rapid management decisions.

Genetic consequences of conservation management strategies in scimitar-horned oryx – Emily Humble

- Mark Stanley Price: How you assess whether a mutation is mildly or strongly damaging?

➔ We use the genome assembly of the scimitar-horned oryx, which is annotated (so we know where all the genes are). When we compare this to our set of genetic variants, we can apply models to predict the impact of these genetic changes on the genes, so whether they will have no impact, some impact, or very damaging impact. They are predictions, but our results are in line with theoretical expectations and one of the best ways we can do this at the present.

- Haithem Farhati : Les colorations atypiques sont-ils considérés comme des traits dommageables ?

➔ Pas nécessairement. Il se pourrait que les gènes de la couleur du pelage soient étroitement liés à des mutations dommageables, mais la réponse courte est que nous ne le savons pas pour l'oryx à cornes de cimeterre.

DAY 3 – MAY 12th, 2022

THEME: BIOLOGICAL STUDIES AND CONSERVATION OF WILDLIFE AND HABITATS

Update on Chad's Oryx Reintroduction Project - Violeta Barrios

- François Lamarque: Do you know what infectious disease was responsible for the oryx die-off in 2018?

➔ Virus de la Fièvre de la vallée de Rift for most of those analysed, also Babésiose.

- François Lamarque: Was there a concomitant Rift valley fever outbreak in domestic animals and/or human?

➔ The last documented episode of RVF was in 2014 on the south-eastern shore of Lake Chad. For Oryx in the Reserve. RVF was the final determining cause of the mortality of 5 oryx analysed, but it is not the primary cause. This would therefore be a co-infection.

- Aaron: Any idea of reasons for high mortality of calves in the Dama gazelles?

➔ Mortality of Dama in OROA pens also affected adults. Dama gazelles are extremely fragile. Some individuals died due injuries, others we are investigating still.

- Mustapha Marraha : A partir de quel effectif s'est-on inquiété de la viabilité de la population de G. dama en milieu naturel au Tchad ?

➔ La gazelle dama est en Danger critique d'extinction avec moins de 200 individus au niveau mondial. La Réserve de Ouadi Rimé-Ouadi Achim abrite la plus large population avec quelques 50 individus. Donc tout travail pour renforcer cette population contribue à la conservation de cette espèce au niveau mondial.

Side exchange on co-infection

- Philippe Chardonnet: I can give you more details about it, yes co-infection but also co-infestation and nutritional shock all together
- Roseline C. Beudels-Jamar: Is there a published report? I would be interested too, of course.

➔ Philippe Chardonnet: Yes, there is a full report with lots of information provided.
The virus RVFV is roaming there, it has been studied for decades in Chad, there were human cases including two foreign soldiers who died in Abéché in the 90s, there is most probably a sylvatic cycle with expression of the disease after outstandingly high rainfall (as usual for RVF), it was said during the presentation that the oryx died from a disease transmitted by livestock, in fact there is no evidence for it. RVF is absent in the UAE, the oryx were not vaccinated, now they are upon arrival. There was a combination of several diseases, RVF being one of them.

Experience and social factors influence movement and habitat selection of two reintroduced Sahelian ungulates - Katherine Mertes

- Amina Fellous Djardini: Any map of the dispersion of the oryx population?

➔ The oryx are moving across a much larger area than the addax, more than 20,000 square km, and are using some areas in the far Northwest of the Reserve.

- Mark Stanley Price: In your step analysis model, it seemed it was impossible for an animal to go back in the direction it came from. Is this so, or just a result of the illustration?

➔ Yes, it is possible for an animal to move "back the way it came." We draw step lengths and turning angles from distributions from each individual's movement data, so if an animal has performed acute turns, they will be in the distribution and may be randomly selected for the "available" steps. Whichever step lengths and turning angles are most frequently performed, are most likely to be selected.

- Mark Stanley Price: For OROA how do you describe topography, and how much variation / distinct forms are there?

➔ We used two topographic variables: (1) elevation in meters as measured by the Shuttle Radar Topography Mission (SRTM), and (2) the Terrain Ruggedness Index, which calculates the total change in elevation between a central grid cell and its 8 closest neighbors http://download.osgeo.org/qgis/doc/reference-docs/Terrain_Ruggedness_Index.pdf

- Philip Riordan: At what scale / resolution did you measure impact on movement?

➔ Because we were interested in general habitat preferences across the population, we used a 4-hour interval. From GPS collar data, we know that reintroduced oryx and addax typically move 100 – 500m within 1 hour. We used a resolution of 500m as a balance between the movement capacity of both species at 4-hour intervals, the heterogeneity of the study system, and the native resolution of environmental covariates.

Assessment of the infection status of scimitar-horned oryx in conservation reintroductions - Stephanie Brien

- Mark Stanley Price: Can you give us any results - even tentative?

➔ It has been challenging getting some of the livestock PCR tests working in the wildlife samples, but I sent the first samples for next generation sequencing this week, so watch this space! Preliminary results from Sanger sequencing identified hemoparasite infections (Anaplasma, Ehrlichia and Theileria) in some of the Tunisian wild ungulates. Typically, they were infected with pathogens from the same genus, but different species, from livestock. There was also a suggestion of infection with novel, poorly characterised gammaproteobacteria, which needs further exploration. We are unlikely to have any serology results until after the livestock survey in September as we are still working on logistical challenges in analysing these.

Movement pattern of West African giraffe (*Giraffa camelopardalis peralta*) in Niger - Kateřina Gašparová

- Resinera: Is there a global census of giraffe in the area? what is the population trend?

➔ Yes, there is annual census and their trend is increasing. There are now around 600 individuals.

At half-mast: Dorcas gazelle midden site selection in the Anthropocene - Abdullah Saied

- Mark Stanley Price: Can you tell us about the size of this very valuable wild population?

➔ So far, unfortunately there is no estimate for this population. That's why we used indirect observation to assess the status of gazelle.

AGENDA

21st Meeting of the Sahel & Sahara Interest Group

10, 11 & 12 May 2022

Meeting **Agenda Day 1**

Themes	Protected area management models Biological studies and conservation of wildlife and habitats
Location:	Online on Zoom
	https://us02web.zoom.us/j/86199763422
Date:	Tuesday, 10 May 2022
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 - 14:07	Opening - Welcome	John Watkin, then Pierre Comizzoli, then Violeta Barrios
14:07 - 14:12	Housekeeping rules, quick technical indications	Lizzie Crudgington, BrightGreenLearning
14:15 - 14:30	Keynote speech: The Sahel's rangelands - pressures, risks and opportunities	Mark Stanley-Price, Board of Directors, SaharaConservation
14:30 - 15:40	**Theme: Protected area management models**	
14:30 - 14:45	Keynote speech: Les objectifs 30*30 et les aires protégées Sahélo-sahariennes	Geoffroy Mauvais, Coordinator, IUCN Program on African Protected Areas & Conservation
14:45 - 14:55	**Q&A**	
14:55 - 15:05	The model behind the new "Gourma Biosphere Reserve" in Mali	Susan Canney, Director Mali Elephant Project, WILD Foundation, and Research Associate at University of Oxford
15:05 - 15:15	Inverser le déclin de la faune menacée dans la Réserve Nationale de l'Aïr et du Ténéré au Niger	Abdoul Razack Moussa Zabeirou, Chargé de projets, SaharaConservation
15:15 - 15:25	Gestion des feux de brousse dans la Réserve de faune de Ouadi Rimé - Ouadi Achim au Tchad	Firmin Dingamtebeye, Responsable des infrastructures et de la maintenance du site oryx, SaharaConservation
15:25 - 15:35	Stratégie d'éducation environnementale : cas de la Réserve de Faune de Ouadi Rimé - Ouadi Achim au Tchad	Abdelkerim Youssouf Mahamat, Responsable de la Cellule Sensibilisation et Education POROA, SaharaConservation
15:35 - 15:45	**Q&A**	
15:45 - 15:50	**BREAK / PAUSE**	
15:50 - 17:00	**Theme: Biological studies and conservation of wildlife and habitats**	
15:50 - 16:00	Results of the Egyptian Vulture New LIFE project in Niger	Cloé Pourchier, Chargée de projets, SaharaConservation
16:00 - 16:10	First data about movements and threats of Rüppell's Vultures (*Gyps rueppellii*) along North Africa and Sahel from an international and multi institutions study	José Rafael Garrido López, Wildlife Monitoring and Management Programmes Coordinator, Environmental and Water Agency of the Regional Government of Andalucía
16:10 - 16:20	Diversification cradles in the Sahara-Sahel: contrasting evolutionary histories in functional groups urges a reassessment of priority conservation zones	André Vicente Liz, PhD student, University of Porto and CIBIO (Research Centre in Biodiversity and Genetic Resources)
16:20 - 16:30	Diversity, distribution and conservation of land mammals in Mauritania	José Carlos Brito, Researcher, University of Porto and CIBIO (Research Centre in Biodiversity and Genetic Resources)
16:30 - 16:50	**Q&A**	
16:50 - 17:00	Closing remarks for Day 1 - Intro to Day 2	

SSIG 2022

10, 11 & 12 May 2022

Meeting **Agenda Day 2**

Themes	Human-wildlife interactions and opportunities in the Sahelo-Saharan biome Biological studies and conservation of wildlife and habitats
Location:	Online on Zoom
	https://us02web.zoom.us/j/86199763422
Date:	Tuesday, 10 May 2022
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 to Day 2	Pierre Comizzoli
14:03 - 14:10	Housekeeping rules, quick technical indications (including Interpretation)	Lizzie Crudgington, BrightGreenLearning
14:10 - 15:15	**Theme: Human-wildlife interactions and opportunities in the Sahelo-Saharan biome**	
14:10 - 14:20	Drivers of an increasing human-carnivores conflict at the edge of the Sahara: lessons for conservation and management	Sidi Imad Cherkaoui, Professor, Ibn Tofail University
14:20 - 14:30	The wildlife in the Lake Jorf Torba, unique wetland in southwest of Algeria	Lamia Seddiki, Researcher, University Tahri Mohamed
14:30 - 14:40	Suivi des girafes d'Afrique de l'Ouest dans un contexte sécuritaire précaire	Abdoul Razack Moussa Zabeirou, Chargé de projets, SaharaConservation
14:40 - 14:50	Priorities for reptiles conservation in the Sahara and Sahel	Ulrich Joger, Director, State Museum of Natural History, Braunschweig
14:50 - 14:55	**BREAK / PAUSE**	
14:55 - 15:05	Regional Cooperation on Sahelo-Saharan Megafauna Conservation	Marc Attalah, Associate Programme Management Officer, Convention on Migratory Species
15:05 - 15:15	L'Homme propose, Dieu dispose	John Newby, Senior Adviser, SaharaConservation
15:20 - 16:15	**Theme: Biological studies and conservation of wildlife and habitats (continued)**	
15:20- 15:30	Building sturdy foundations: using genetic data during founder selection to create a resilient reintroduced addax herd	Kara Dicks, Research scientist, Royal Zoological Society of Scotland
15:30 - 15:40	Genetic consequences of conservation management strategies in scimitar-horned oryx	Emily Humble, Research Fellow, University of Edinburgh
15:40 - 16:10	**Q&A**	
16:10 - 16:15	Closing remarks for Day 2 - Intro to Special Session and Day 3	
16:15 - 16:20	**BREAK / PAUSE**	
16:20 - 17:00	**SPECIAL SESSION**	
16:20 - 17:00	**Presentation of SaharaConservation Strategic Plan 2025**	**John Watkin, CEO, SaharaConservation**

Meeting **Agenda Day 3**

Themes	Biological studies and conservation of wildlife and habitats
Location:	Online on Zoom
	https://us02web.zoom.us/j/86199763422
Date:	Tuesday, 10 May 2022
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	Lizzie Crudgington, BrightGreenLearning
14:05 - 14:20	Keynote speech: Expérience de l'EIA dans le combat contre le commerce illégal de *Pterocarpus erinaceus* en Afrique de l'Ouest	Raphael Edou, Africa Program Manager, Environmental Investigation Agency
14:20 - 17:00	**Theme: Biological studies and conservation of wildlife and habitats (continued)**	
14:20 - 14:30	Update on Chad's Oryx Reintroduction Project	Violeta Barrios, Program Manager, SaharaConservation
14:30 - 14:40	Experience and social factors influence movement and habitat selection of two reintroduced Sahelian ungulates	Katherine Mertes, Research Ecologist, Smithsonian National Zoo and Conservation Biology Institute
14:40 - 14:50	Assessment of the infection status of scimitar-horned oryx in conservation reintroductions	Stephanie Brien, Doctoral researcher in Conservation Science, University of Edinburgh
14:50 - 15:00	A novel approach: rewilding endangered fauna of the Sahel-Sahara region in Spain, for future reintroductions into their native area	Yvonne Kemp, Independent ecologist
15:10 - 15:20	Living on the edge: Updates on the distribution of the Guinea baboons' desert populations in Mauritania	Cristian Pizzigali, Ph.D. Student, CIBIO (Research Centre in Biodiversity and Genetic Resources)
15:20 - 15:40	**Q&A**	
15:40 - 15:45	**BREAK / PAUSE**	
15:45 - 15:55	Succès et défis du dernier transfert d'autruches d'Afrique du Nord au Niger	Maimounatou Ibrahim Mamadou, Chargée de sites de reproduction d'autruches Niger, SaharaConservation
15:55 - 16:05	Wintering habitat of turtle-doves (*Streptopelia turtur*): opportunities for management	Susana Requena-Moreno, Conservation Scientist, Royal Society for the Protection of Birds
16:05 - 16:15	Movement pattern of West African giraffe (*Giraffa camelopardalis peralta*) in Niger	Kateřina Gašparová, Ph.D. student of Tropical Agrobiology & Bioresource Management, Czech University of Life Sciences of Prague
16:15 - 16:25	Conservation status of the last Moroccan dorcas gazelle (*Gazella dorcas massaesyla*) population in the M´Sahih Tâala, Sidi Chiker, Morocco	Moulay Abdeljalil Ait Baamrane, Enseignant chercheur, Faculté des Sciences Appliquées - Ait Melloul de l'Université Ibn Zohr
16:25 - 16:35	At half-mast: Dorcas gazelle midden site selection in the Anthropocene	Abdullah Saied, Assistant lecturer, Al Azhar University in Cairo
16:35 - 16:45	Frequency of atypical coloration as an indicator of population isolation	Haithem El-Farhati, Ph.D, Tunis El Manar Université
16:45 - 16:55	**Q&A**	
16:55 - 17:00	Closing remarks & end of meeting	Fred Nelson, Chair, SaharaConservation Board Pierre Comizzoli

PHOTOS