GLOBAL WILDLIFE PROGRAM STUDY TOUR

HUMAN-ELEPHANT CONFLICT MITIGATION AND CO-EXISTENCE IN SRI LANKA

October 7-8, 2017

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Elephant Herd at Kaudulla National Park, Sri Lanka

1. BACKGROUND

Sri Lanka has the highest density of Asian Elephants with a population estimated to be around 6000 wild elephants (Fernando et al. 2011). Although Sri Lanka has 95 protected areas covering approximately 13 percent of the country's land area, 70% of the wild elephants range outside the protected area network.This has resulted in Sri Lanka having the highest level of human-elephant conflict in the world. The country has been grappling with the increasing human-elephant conflict problem for the last 50 years. Some of the key interventions attempted in Sri Lanka are the capture translocation of problem elephants, large-scale elephant drives from areas earmarked for development, and confining elephants to Department of Wildlife Conservation Protected Areas through electric fencing established on the boundaries of the protected areas. Yet, approximately 250 elephants and 70 humans are killed annually due to this conflict. A new approach to fencing villages and agricultural lands to keep elephants out has been piloted with much success in Sri Lanka over the last few years. The World Bank has been financing a US $ 45 million "Ecosystem Conservation and Management Project" to scale up the solutions to a better co-existence model between humans and elephants.

In April 2017, the Global Wildlife Program on request from the National Parks Agency in Gabon organized a conference on Reducing Human-Wildlife Conflict and Enhancing Co-Existence. The World Bank is currently leading a US $9.1 million project with the aim to reduce human-elephant conflict in Southern Gabon. Government representatives who participated in the GWP Gabon Conference expressed interest in learning more about tools and techniques such as the appropriate use of electric fences in mitigating human-elephant conflict. Thus, the GWP organized a study tour to Sri Lanka so that countries who are part of the GWP can benefit from a knowledge exchange on this topic. The recently developed successful community based human-elephant coexistence models in Sri Lanka could be of benefit to government representatives from GWP countries.

The objectives of the study tour were:

- learn from community-based institutional models of HEC mitigation and co-existence
- learn first-hand the methods for locating and deploying a physical barrier (electric fences) to mitigate HEC
- learn about human-elephant coexistence measures such as effective ways of upstream land use planning in elephant dominated landscapes.

2. STUDY TOUR PARTICIPANTS

Seventeen delegates from thirteen GWP countries in Asia and Africa participated in this study tour. The participating countries included Botswana, Cameroon, Gabon, Ethiopia, India, Mali, Malawi, Mozambique, Republic of Congo, Thailand, Vietnam, Zambia, and Zimbabwe (see Annex II for participants). The delegates consisted of Directors and Deputy Directors of National Parks and Wildlife, Project Coordinators and Implementers.

Dr. Sumith Pilapitiya, Elephant Ethologist, and former Wildlife Director General in Sri Lanka led the study tour. Dr. Prithviraj Fernando and his team from the Centre for Conservation and Research (CCR), apprised the delegates on the measures undertaken by CCR to introduce the new approach to fencing villages and seasonal agricultural lands in Sri Lanka to reduce HEC with lessons and approaches derived from their experience.

Country Participants
1. Botswana
2. Cameroon
3. Gabon
4. Ethiopia
5. India
6. Malawi
7. Mali
8. Mozambique
9. Republic of Congo
10. Thailand
11. Vietnam
12.Zambia
13. Zimbabwe

Study Tour Participants next to a seasonal electric fence for crop protection, Sri Lanka

3. STUDY TOUR SUMMARY

Background Presentation

Day 1 began with a presentation by Dr. Fernando and his team, from the CCR on "Electric Fences & Elephants." He stated that with the highest level of HEC in the world it is not surprising that electric fences in Sri Lanka run for more than 4,000 km. The Department of Wildlife Conservation, one of the two government institutions responsible for terrestrial biodiversity conservation in the country, is responsible for installation and maintenance of these fences. Historically, electric fences have been erected along the jurisdictional boundaries between Wildlife Department Protected Areas (PAs) and Forest Department PAs without taking into consideration elephant behavior, responses, ecology, habitat or ranging patterns. The government also did not involve the local communities in the design and installation, management or monitoring of these fences. These fences were not very successful in reducing human-elephant conflict, and the fact that elephants were consistently found on both sides of these fences resulted in them breaking the fences regularly in search of fodder and intruding croplands and human settlements, as there was no barrier at the ecological boundary. CCR has now been working on mitigating HEC through a better design of electric fences, located at the ecological boundaries between forests and human habitation. He outlined the work of CCR in piloting community-based electric fences in three districts of Sri Lanka. The key lessons from the talk were:

- National land use and migratory corridor planning: Electric fences can be an effective and immediate solution to reducing HEC in an area of conflict, provided the fences are located on the ecological boundaries. However, they should be complemented by national land use and migratory corridor planning. Land use planning and establishing biological corridors is critical in elephant dominated landscapes. Satellite-based radio collaring of elephants are the best way to identify elephant ranging patterns, and such data should be used in establishing biological corridors. In Sri Lanka elephants inhabit 62% of the total area (40,625 km2); 38% of the country (the South West in particular) have no elephants, whereas only 18% of the total land area in Sri Lanka are designated protected areas which have no human settlements. There is a huge overlap between elephant habitats and human settlements. In fact, 70% of elephant range is shared with people. Conflicts are increasing because as human population increases, settlements begin to encroach upon elephant habitats, however since the elephant's home range hasn't changed, this encroachment leads to decreasing space for elephants to survive. Electric fences, if located appropriately, are an immediate solution to mitigate human-elephant conflict and promote coexistence. Land-use planning and the

establishment of biological corridors are longer-term solutions to prevent the problem from occurring in the first place or keeping the problem down to acceptable levels.

- Electric fencing must be appropriately located for it to be effective. Historical use of electric fences was as enclosures designed to limit elephants to Protected Areas. But evidence proves that unless electric fences are located on ecological boundaries rather than administrative boundaries, enclosure fences are ineffective. Experience also shows that when electric fences are used as exclosures, keeping elephants out of human settlements and paddy fields, it can be an effective tool in mitigating HEC.
- Fence success is determined by four important factors:
  - Determining the location of the fence, which is the most important factor. Locating fences along the ecological boundaries instead of jurisdictional boundaries is key to success. Since the purpose of the fence is to protect the community and their assets, the location suitability can be determined by ground surveys, discussions with villagers and use of satellite imagery. Fences far from human habitation and inside forest areas often get old and are breached by elephants making them ineffective.
  - Specifications and design. The specifications and design of fences need to adhere to the highest standards possible (durability, costs) and should be suitable for local conditions. It is better to build a small, expensive fence that protects few people than a large one that does not protect anyone, effectively. Solar energy powers the electric fences piloted by CCR.1
  - Maintenance. The maintenance of a fence ensures its longevity and effectiveness. Since the fences are erected to protect the local community from elephants, the local communities need to be involved in fence construction, monitoring, and maintenance so that they feel a sense of ownership.
  - Elephant response. Electric fences are only a deterrent to keep elephants away from human habitation, and these do not harm them. If the voltage of the fence drops due to poor maintenance, elephants realize that coming in contact with the fence does not harm them; then these fences become redundant. Fences are often broken by elephants if they are not located on the ecological boundary as they see fodder on the other side of the fence, or if they are not maintained properly. Installing fences along the ecological

[1]The energizer – converts the electricity high voltage, but has low APM. The Voltage is around 6K and only a few APMs. The fence is connected to the energizer and charged, it is not earthed (insulated with a plastic water pipe underground). The current is AC and not DC. The pulse is 2 per second, so when an animal/elephant comes in contact it doesn't harm but gives a massive shock. If the fence is connected to DC, then elephant/person will die. One rule for electric fence is to never connect it to mains electricity; and never connect the energizer to a barbed wire or concertina wire to avoid accidents and fatalities.

boundary, visibility and proximity of the fence to humans are critical factors for the fence to be an effective deterrent. However, some elephants are known to use tusks to uproot fence pillars and break fences. Mechanisms to prevent the tusks from touching the fence and the posts have been successfully tried to prevent tusks from coming in contact with the fence. De-tusking fence-breaker elephants have been used as an approach in HEC mitigation in some countries. But research on the effectiveness of de-tusking in HEC mitigation in Kenya found that it helped reduce fence breaking incidents, but did not eliminate the problem (Mutinda et al. 2014).

Elephant Watch tower

- The two types of fences used in Sri Lanka that can promote coexistence between humans and elephants, (i) Seasonal or temporary paddy field or agricultural fences and (ii) Permanent village electric fences. Both are built and maintained by communities.

- Seasonal or temporary paddy field and agricultural fences or mobile fences are simple seasonal fences to protect the community agricultural plots. The fences are simple to install and are erected at the commencement of the cultivation season. These are used to protect crops from elephant depredation during crop maturity. These fences need to be visible to elephants and are effective only when combined with active monitoring (from watch towers on trees, and use of fire/light), particularly during the time the crop ripens. The paddy growing season is about four months in Sri Lanka with one to two seasons per year. Permanent fences in paddy fields are not cost-effective because no one maintains it during the off-season and elephants may get habituated to fence breaking. Thus, seasonal fences are created so that during the season of cultivation, the crops are protected from elephant raiding, but after the crop harvest, the fences are removed, allowing elephants to eat the crop residue and utilize the fallow fields. Farmer societies for each paddy tract were established to construct, maintain and monitor these fences.2 It is important to work with farmer societies because they have the motivation and the responsibility to address crop protection issues.
- Village electric fences are permanent fences to protect the homes, schools and other social infrastructure of the villagers from elephants. The fences are built around villages that have been raided by elephants that have used the village as a part of their path/corridor that results in conflicts with the villages. Such fences protect the community and their assets from elephant depredation. These fences work well when communities are a cohesive unit, and they do not see themselves as separate villages.

- Awareness creation is important to involve communities in the long-term and encourage them to take responsibility for community protection. Communities can be engaged by helping them set up a village-based 'Fence Committee' consisting of members from the local community. 'Fence Committees' in Sri Lanka have a constitution, with assigned office bearers and clear-cut roles and responsibilities, including a fence maintenance roster, and includes organizing monthly meetings, collecting funds for fence maintenance, and coordination.

[2] Members of the farmer societies collect money for fund once a growing season and a separate maintenance fund; they are involved installation as well as rolling-up of fences; takes custody of the energizer; helps in weekly monitoring of the fences

Community members discussing their paddy field temporary fence

- Location of fences: The underlying principle of fence design should be protection from elephants and not boundary establishment and in no case should elephant movement be restricted, except preventing elephants from entering villages and agricultural lands during cultivation.3Fence visibility by the community adjacent to the fence should be used as the benchmark and therefore mapping the area, community lands and settlements are important. Simple designs work better for community fences, the more complex the design, higher the chances of it not working due to complexities in maintenance.
- Village ownership of fences. Ownership can be established by asking communities to invest partially4 in these fences (paying for a part of the cost of the fence, the energizer and energizer hut) to participate in land clearing activities and fence construction, to contribute to the fence

[3] Can use elephant tracking data or use anecdotal information to demarcate elephant movement routes
[4] Full cost recovery is beyond the reach of most communities.

maintenance fund, and involving community members in maintenance and monitoring activities. CCR has set up fence committees where communities provide the labor and 10% of the cost for fence material so that local communities feel invested in the construction and maintenance of the fence. The community is also expected to pay a nominal amount for each acre of land enclosed by the fence, be it a village fence or agricultural fences. Once the fences are installed, all stakeholders including local government officials, police, etc. are invited, and an MOU is signed with the village fence committee. The responsibilities and tasks that include construction, monitoring[5], and fence maintenance are outlined in a public meeting.

- Governments can help scale up electric fencing initiatives while conservation agencies can provide technical assistance. The overall responsibility of working with the community to show the way should be undertaken by Government authorities tasked with community responsibilities. To scale up electric fences, there is a need to collaborate with other authorities, such as development agencies who are undertaking large-scale government or private sector development projects that may contribute towards escalating HEC. Ministries in charge of the welfare of people can oversee HEC mitigation from the peoples' perspective and support payment of compensation. Administrative departments can help in the installation of community fences whereas agricultural agencies can assist in building crop fences. In recent times, the government (Wildlife Department) has gradually started to move away from building huge fences and instead focusing on smaller community fences. The National HEC Mitigation Policy of Sri Lanka now recognizes the importance of community-based village and seasonal agricultural electric fences as the cornerstone of HEC co-existence.

Visit to Paddy Field Fences at Kapugama and Village Fence at Bulugolla

The presentation was followed by a field visit to Kapugama village where members of the farmer association demonstrated the installation of a seasonal/mobile electric fence for crop protection. The study tour participants interacted with members of the farmer association to understand their perceptions on agricultural fences as a solution to reduce crop raiding by elephants. Farmers set up these fences around their agricultural fields during crop cultivation and maintained them until crop maturity. It takes a day to put up a fence around 10 ha of cropland. Accompanied by officers, the farmer organization monitor these fences once a week, while the farmers monitor the fence daily. The fence is taken out on the day crops are harvested allowing for elephants to eat straw stubble and crop residue. Study tour participants also interacted with community members of the

[5]Initially external monitoring is conducted once a week, accompanied by a villager – if going well the monitoring is reduced weekly to bi-weekly, and then once a month.

Bulugolla village to learn from them, on their experience using village electric fences and found widespread satisfaction among the community members that the fence was an effective barrier in preventing elephants entering the village.

Community Members demonstrating the installation of a Paddy Field fence, Sri Lanka

Study tour delegates observing how community members set up a mobile electric fence.

Village Electric fence at Bulugolla, Sri Lanka

Participants interacting with the Village Fence Committee

Group Discussion with Dr. Sumith Pilapitiya

On Day 2, the study tour participants met with elephant ethologist, Dr. Sumith Pilapitiya to comment about the situation of HWC in their countries, on what they had learned the previous day and to pose any remaining questions they had. A summary of the discussion, as well as the responses from Dr. Pilapitiya, is presented below.

The participant from Thailand mentioned that the translocation of elephants is not working in their country. In Thailand, they are doing some population control in certain areas where elephant population is very high, and they are also managing elephant habitats (ensuring water and food for elephants). They have not tried electric fences, and are interested in exploring this further. In Botswana, they have tried chili pepper fences but the delegate expressed interest in piloting mobile electric fences. Driving elephants away with vehicles or helicopters has not worked as it makes the elephants more aggressive. The representative from Mali shared their experience of creating a reserve in 1939 to contain problem elephants but most elephants have moved out to find resources, particularly water, and are thus creating conflicts. Elephants go from Mali to Burkina Faso following a natural corridor but now the elephants are confined within these reserves and create conflicts. The delegate from Malawi expressed interest in learning more about the ecology of elephants. In Gabon, where most elephants[6] like elsewhere in Africa have tusks, elephants have learned to use their tusks to destroy the fences as ivory does not conduct electricity. Installation of electric fences must be accompanied by monitors that can stop some elephants from coming, especially during the crop raiding period. One participant from Zimbabwe wanted to find out the success rate of community-based electric fences.

Interactions with Dr. Sumith Pilapitiya

[6] In African elephants, both Savanah and Forest elephants, 100% of the males have tusks and 85% of the females have tusks

Final comments and responses from Dr. Pilapitiya

Sri Lanka in the 1900s had about 20, 000 elephants. The latest census (2011) puts the count to about 5,900 elephants in the country. During the last 30-40 yrs, HEC has been increasing. The Government strategy has been to enclose elephants within PAs and reserves with fences, capture and translocate problem elephants, and drive elephants out of human-dominated areas. However, the impact of these measures was not studied until about five yrs ago. Satellite-based radio collars on problem elephants were tested 4-5 yrs ago to see the impact of translocation. Elephants were radio-collared and translocated to about 100-150 km away. The study found that within two-days to a month, elephants came back to their areas, 80 % came back to the place of origin, the other 20% were trying to come back, and were creating the same problems in the new places where they were relocated. In fact, the problems created by the translocated elephants were greater in geographic area and intensity than in their place of origin. While there is scientific evidence that relocation and capture don't work, it is challenging to completely avoid translocation because the wildlife department faces a great deal of public and political pressure to remove problem animals. So basically, capture translocation results in the translocation of the elephant and the problem.

Since 2010, the Wildlife Department has been capturing and relocating problem elephants to one holding facility in the north-central part of Sri Lanka. The facility is in about 5,000 ha of forest land reinforced with double barrier fences. While this undertaking has been extremely expensive, it is working reasonably well so far. Thirty problem elephants have been relocated during the past seven years. The elephants are living under natural conditions, and they have adequate food and fodder and are doing well.

Efforts are underway to improve the facility such as introducing a herd to mimic the natural setting along with exploring if select elephants can be reintroduced back to the wild. Currently, the population consists entirely of male elephants.

In Sri Lanka, it is not easy to work with communities. However, communities that had the most challenging HEC issues are comparatively easier to work with because they are desperate for solutions. It is important for the governments to find an NGOs in-country or locally that has skills and experience working with communities as most conservation agencies are weak in community interactions.

Carrying capacity of the system to support elephants: In Sri Lanka, it is not a case of carrying capacity but the high density of humans that pose a problem. Sri Lanka has not undertaken any studies on national carrying capacity, and most studies were done at a local level. Dr. Pilapitiya

mentioned that no country has so far conducted a national level study on carrying capacity because it is a complicated undertaking with too many variables to execute a robust study.

Wire meshing around the metal columns to prevent damage to the posts by elephants
Elephant herd on the dried bed of the Kaudulla Reservoir

Studying Elephant Behavior: In Sri Lanka, they constantly learn and study the behavior of elephants and their interactions with the electric fences. For example, they noticed that elephants would destroy the concrete columns/posts because it did not conduct electricity, so later they added wire meshing and connected it to electricity to stop them from destroying the columns/posts.

Elephant response to fences: Elephants do not come near human settlements during the day. Therefore, if the fence surrounds the village, the chances of the fence being broken during the day is minimal. Close to human habitation, people keep the lights on at night, and that tends to deter elephants coming close to the fence. While this is the case with most elephants, habitual fence breakers can be a problem. It has also been observed that further away the fence is from human habitation less successful the fences are.

Success rate of electric fences: In general, the large male elephants that cause problems at the village level in Sri Lanka. Camera traps have helped identify habitual fence breakers, and sometimes researchers or the NGO staff stay up all night to document the behavior of the difficult

animals. The percentage of success is large; village fences has helped 90% reduction in HEC. For the agricultural fences, it is 75% reduction in HEC. The success rate is also correlated to fence maintenance. The better maintained the fence is, the more successful the intervention.

Gabon, Congo, and Mail participants with community leader

Climate change impacts on elephants and habitats in Sri Lanka: No national scale study exist that have assessed the potential impact of climate change on wildlife. The general trend is that intensity of events such as droughts and floods are going to increase but only ad hoc planning is in place to address some of these issues. With prevalent droughts, the probability of elephants moving out of forests in search of fodder is likely to increase, leading to increased conflict.

Electric fences as a medium-term solution: The fences are a medium-term solution as the elephants will eventually learn to bypass the fences. Elephants are also adverse to risk. The closer the fences are to where people are, they are more successful as people can scare elephants away. Longer term solutions include land use planning and securing elephant corridors.

Sri Lanka's long-term plan to coexist with elephants: Human-elephant coexistence is non-negotiable in the country. In Sri Lanka, culling will never be accepted due to the religious principles of not killing animals and for cultural reasons. Of all the current mitigation and co-existence approaches implemented in the country, the only thing lacking is adequate land use planning in elephant and human-dominated landscapes. For instance, the government is distributing land to cultivate sugar cane in elephant dominated landscapes – which is bound to create conflict because sugar cane is a favorite elephant food. Poor choices in agricultural crops in elephant dominated landscapes will lead to increased conflict.

Visit to Kaudulla National Park

Day 2 also included a visit to the Kaudulla National Park (KNP), located in the North Central Province of Sri Lanka where large numbers of elephants gather during the dry season and is internationally renowned for its "elephant gathering." Managed by the Department of Wildlife Conservation, it was declared a national park in 2002 and is also recognized as an Important Bird Area. Besides Minneriya National Park, KNP is one of the best places to observe Asian elephants among the Asian elephant range states. A forested corridor, designated as a wildlife sanctuary links the Minneriya, and Kaudulla National Parks and elephants use this corridor to move between the parks. Monsoon in Sri Lanka begins at the end of Oct and ends in December, and the reservoir gets full. Between May and Oct which is the dry season – elephants come to eat the new grass on the exposed bed of the reservoirs[7] located inside the two parks. Dr. Pilapitiya gave the participants a brief overview on observing elephant behavior in the wild.

[7] One of the 16 reservoirs in Sri Lanka built by an old civilization for irrigation purposes

4. OUTCOMES AND NEXT STEPS

- GWP to distribute a Report on the outcomes of the Sri Lanka Study Tour (Nov 2017)
- GWP to deploy HWC products/services:
- HEC expert/s in Sri Lanka to prepare a “Step-wise-Guide” to install village fences and farm fences (mobile) – with specifications on materials, costs, dos and don’ts. (1st quarter 2018)
- A community of practice and stakeholder engagement activities to enhance knowledge sharing and data gathering on HWC will be piloted (i.e., collect data on HWC for GWP countries - February 2018);
- Technical HWC adviser/s to provide support by visiting specific GWP countries (1st quarter 2018);
- GWP to explore the organization of a regional conference in Southern Africa to focus on: community engagement in HEC mitigation, payments (compensation) for damage, and small-scale tourism development around wildlife, such as homestays.
- The next CITES COP meeting is scheduled in Sri Lanka in 2019. The group suggested that the GWP organize the 2019 Annual Conference in Sri Lanka before or after the COP. GWP to explore this possibility.

Tourists from around the world visit KNP to observe the elephant gathering

ANNEX I: AGENDA

Day 6: Friday, October 6, 2017, Ngembo	
0500 – 0600	Breakfast
0600 – 1845	Participants to depart Pench Tiger Reserve to take a flight from Nagpur at 9 AM; and arrive in New Delhi at 2:40 PM; Layover in Delhi for 3 hours; Departing flight from New Delhi to Colombo, Sri Lanka at 6:45 PM
2200-2300	Arrival in Colombo and airport transfer to hotel in Negombo (20 minutes north of the airport)
	Dinner and Stay in Negombo
Day 7: Saturday, October 7, 2017	
0600 – 0700	Breakfast
0730 – 1200	**Successful HEC Mitigation Strategies:** Presentation by Dr. Prithviraj Fernando, CCR, Sri Lanka
1200 – 1300	Lunch
1300 – 1700	**Meetings with community:** *Visit to village fence and agricultural fences*; *Interactions with community members to understand their perspectives on ongoing initiatives; understand the institutional structure*
1800 - 2000	Dinner and Stay in Habarana (near the National Park)
Day 8: Sunday, October 8, 2017	
0600 – 0700	Breakfast
0730 – 1200	*Q&A Session with Dr. Sumith Pilapitiya*
1200 – 1300	Lunch
1400 – 1800	Visit to Minneriya-Kaudulla National Park (the group will be in the national park until about 6 pm as most elephants can be observed from around 1600 until 1800)
18:00 – 2300	Travel to Negombo
	Dinner and Stay in Negombo
Day 9: Monday, October 9, 2017	
0600 –2000	Depart to home country after breakfast

ANNEX II: LIST OF PARTICIPANTS

#	Name	Organization
1.	Mr Rex Mokandla	Government of Botswana
2.	Mr. Njiang Antoine	Government of Cameroon
3.	Mr. Jean Nganongo	Government of Rep. of Congo
4.	Mr. Gaspard Lembe	Government of Rep. of Congo
5.	Mr. Olivier Ondo Assame	Government of Gabon
6.	Mr. Augustin Mihindou Mbina	Government of Gabon
7.	Mr. Koumakoudi Hector-Paulin	Government of Gabon
8.	Mr. Arega Mekonnen	Government of Ethiopia
9.	Mr. Sudarsana Panda	Government of India
10.	Ms. Catherine Chunga	Government of Malawi
11.	Mr Amadou Sow	Government of Mali
12.	Mr. Manuel Mutimucuio	Government of Mozambique
13.	Ms. Kanjana Nitaya	Government of Thailand
14.	Mr. Tran Xuan Cuong	Government of Vietnam
15.	Mr. Edward Chilufya	Government of Zambia
16.	Mr. Arthur Musakwa	Government of Zimbabwe
17.	Mr. Joseph Shoko	Government of Zimbabwe
18.	Ms. Claudia Sobrevila	Global Wildlife Program
19.	Mr. Elisson Wright	Global Wildlife Program
20.	Ms. Manali Baruah	Global Wildlife Program
21.	Ms. Hasita Bhammar	Global Wildlife Program
22.	Mr. Sumith Pilapitiya	Advisor to GWP
23.	Ms. Salimata Follea	World Bank Group
24.	Mr. Jaime Cavelier	Global Environment Facility

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ADB gef UNDP UNEP WORLD BANK GROUP

CITES ICCWC IUCN TRAFFIC the wildlife trade monitoring network WCS WILDAID WWF

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