WILDLIFE STOCKPILES MANAGEMENT IN NEPAL

Government of Nepal
Ministry of Forests and Soil Conservation

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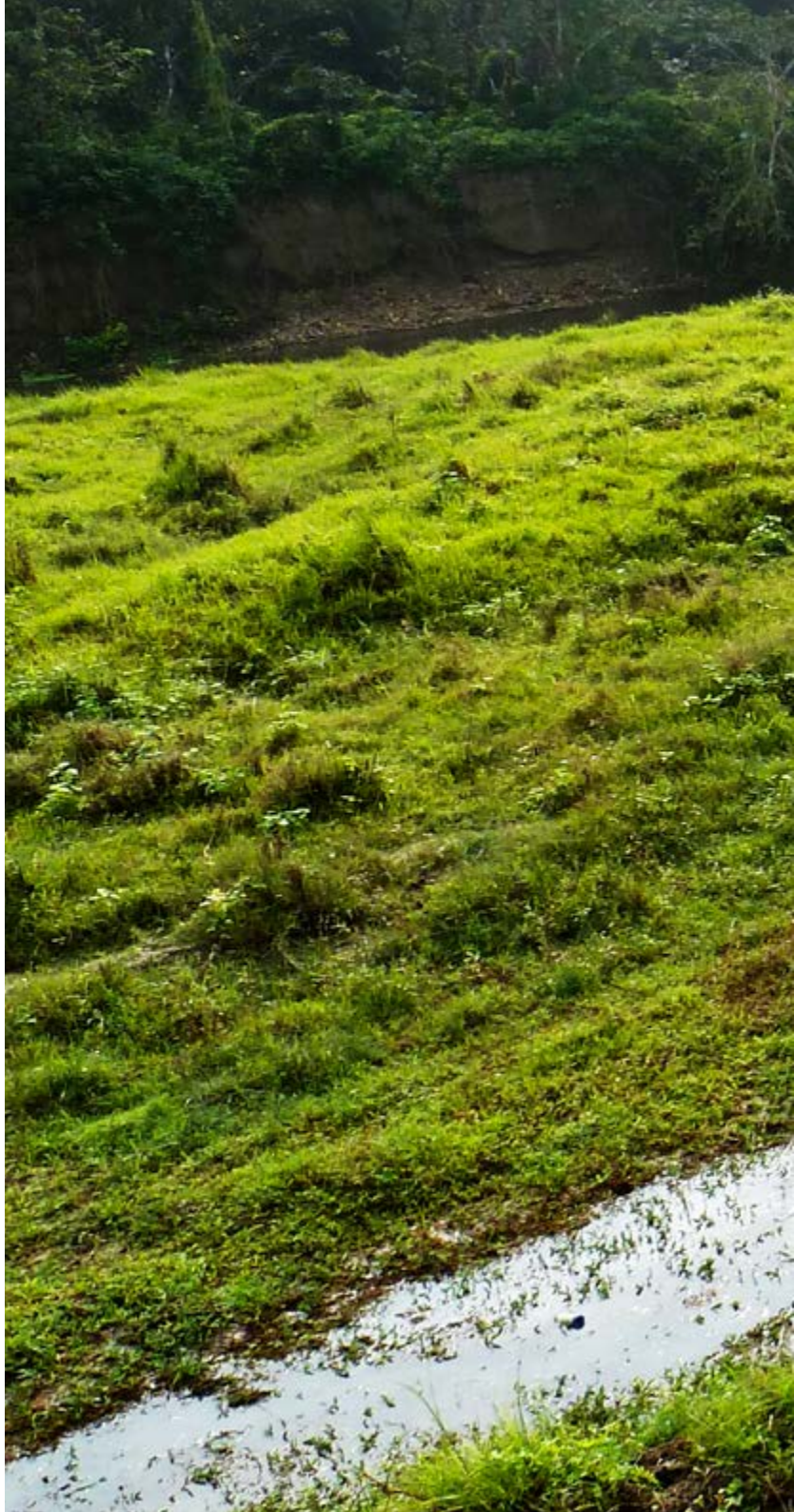

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Government of Nepal
Ministry of Forests and Soil Conservation

MUSK DEER

Photo Courtesy: NTNC/ACAP

STATEMENT BY THE FOREST MINISTER

Nepal is one of the few countries richly endowed with highly diverse biological resources. The Government of Nepal has taken important steps to conserve its biological diversity over the last four decades and a network of protected areas system covering 23% of the total land area of the country is now in place. Nepal is also working with the ambitious goal of doubling its tiger population by 2022 and is moving positively closer to that goal. We are, moreover, gradually achieving success in conservation by recovering important species, including tigers and rhinoceros, and 'zero poaching' of rhinoceros for three years. Nepal also played a crucial role in the development of the South Asia Wildlife Enforcement Network (SAWEN), a legitimate intergovernmental organization set-up to combat wildlife crime in the region. Still, wildlife crime remains one of the main threats to the conservation of biodiversity.

The Government of Nepal had a large stock of wildlife parts, largely collected from the natural death of wild fauna and confiscated during the law enforcement process. The Government has realized that an extended storage of such stockpiles may create ecological and social threats to the country. Effective management of wildlife stockpiles is important because it helps to reduce the risk of leakage of contraband to the illegal markets. Therefore, the Government has prepared a detailed inventory report identifying the reference samples in 2016. Based on the report, the Government has destroyed all the wildlife stockpiles except those identified as reference samples on 22 May 2017. Destroying stockpiles demonstrate the Government's intolerance to wildlife crime and send a public message that wildlife has value only in its living phase.

I am glad to see **Wildlife Stockpiles Management in Nepal** being published which scientifically documents the process of wildlife stockpiles inventory system, reference sampling methodology and destruction process. It can serve as a useful reference material for wildlife stockpiles management in the coming days. I take this opportunity to thank former Honourable Ministers Mr. Agni Prasad Sapkota and Mr. Shankar Bhandari for taking the leadership in the process of inventorying and stockpiles destruction respectively.

Bikram Pandey
Minister
Ministry of Forests & Soil Conservation


HIMALAYAN TAHR
Photo Courtesy: Som B Ale

STATEMENT BY THE FOREST SECRETARY

Scientific and systematic management of wildlife stockpiles is an important milestone in the history of biodiversity conservation in Nepal. In the process of burning wildlife stockpiles on 22 May 2017, huge stockpiles of wildlife stored over more than two decades in Chitwan was destroyed which comprised of smuggled wildlife products seized from illegal traders and lawfully fetched wildlife parts after the natural death of faunal species. The inventory carried out before the destruction of the wildlife stockpiles provides a rich foundation for recording information on the wildlife stockpiles.

As Nepal is both a source and transit country for wildlife parts and products, varieties of wildlife items such as body parts of marine species along with parts of terrestrial faunal species such as skin, bone, scale, gall bladder, hair, horn, tusk, hoof, antler and more were recorded and destroyed.

In the coming days, Nepal commits to destroy the wildlife stockpiles in every two years. Nepal works to conserve biodiversity and enforce the laws for strong actions in combating wildlife crime in partnership with the law enforcement agencies, conservation partners, international donors and local communities.

I take this opportunity to sincerely thank all the high level dignitaries, government officials, technical team members, security personnel, representatives of conservation partners and donors and others for their support in successfully completing the wildlife stockpiles management process. A special appreciation to former Honourable Ministers Mr. Agni Prasad Sapkota and Mr. Shankar Bhandari for their leadership in the process and to the former Secretaries Mr. Udaya Chandra Thakur and Mr. Prakash Mathema for guiding the team during this process.

Wildlife Stockpiles Management in Nepal incorporates comprehensive information about wildlife stockpiles management and is a very informative document that will enrich the knowledge of users in managing wildlife stockpiles more effectively and efficiently in the coming days.

Dr. Yubak Dhoj G.C.
Secretary
Ministry of Forests & Soil Conservation

COMMON LEOPARD

Photo Courtesy: Ashish Gurung/NTNC

FOREWORD

In view of escalating global trend of wildlife poaching and illegal wildlife trade, a stringent prohibitory message to local involvers, middle persons, smugglers and buyers to general public is imperative in the present context. Therefore, Nepal has destructed the wildlife stockpiles on 22 May 2017 subsequent to the scientific execution of stockpiles inventory from 20-30 June 2016 in Kasara and Tikauli, Chitwan.

Scientific wildlife stockpiles management is a challenging task. We have gone through various literatures on wildlife stockpiles management, however, it was not possible to find comprehensive guidelines that could support us for more systematic and scientific management of diverse wildlife stockpiles. Hence, we made an endeavour to publish the **Wildlife Stockpiles Management in Nepal** compiling comprehensively all the performed activities; materials required; policies, rules and regulations followed in Nepal; and lessons learned.

To make this happen, there was a significant support from various stakeholders including conservation partners, regional organization to international donors.

I extend my sincere thanks to former Honourable Minister Mr. Agni Prasad Sapkota, Ministry of Forests and Soil Conservation (MoFSC), who had initiated and took ownership on wildlife stockpiles inventory. Guidance from then Secretaries Mr. Udaya Chandra Thakur and Mr. Prakash Mathema was highly valuable. I remember the support from then Director Generals of the Department of Forests (DoF), Mr. Gauri Shankar Timila and Department of National Parks and Wildlife Conservation (DNPWC), Mr. Krishna Prasad Acharya. I am grateful to Member Secretary of National Trust for Nature Conservation (NTNC), Mr. Govinda Gajurel, for his generous support.

I am indebted to former Honourable Minister Mr. Shankar Bhandari, MoFSC for taking the lead in order to destroy the stockpiles. Indeed, his continuous support and guidance made this historical event a grand success. I acknowledge the dedication and delivery by the technical team members representing from DNPWC, DoF, Natural History Museum (NHM), Central Investigation Bureau of Nepal Police (CIB), National Forensic Science Laboratory (NAFOL), Nepal Army, Chitwan National Park (CNP), NTNC and South Asia Wildlife Enforcement Network (SAWEN).

I wish to convey my gratitude to all the officials from DNPWC, DoF, CNP, Armed Forest Guard Training Centre, NAFOL, Nepal Army, NTNC and SAWEN who worked tirelessly in the field to accomplish the entire management process. I am thankful for technical and financial support from the US Fish and Wildlife Service (USFWS) in coordination with NTNC and other donor agencies like WWF Nepal and ZSL Nepal. Kind support from the US embassy Nepal was invaluable to complete the task.

Man Bahadur Khadka
Director General
Department of National Parks &
Wildlife Conservation

Lastly, the authors Dr. Maheshwar Dhakal, Dr. Siddhartha Bajra Bajracharya, Mr. Krishna Prasad Acharya, Mr. Brian C. Hamlin, Mr. Sujhav Pun, Mr. Pradeep Bhattarai, Mr. Dinesh K. Jha, Mr. Laxman Poudyal and Dr. Amir Sadaula who framed this book to bring in this form deserve special thanks. I have strong belief that the book will be a reference material for all who are planning to conduct scientific management of wildlife stockpiles and research in this sector.

Photo Courtesy: Ashi Ghale

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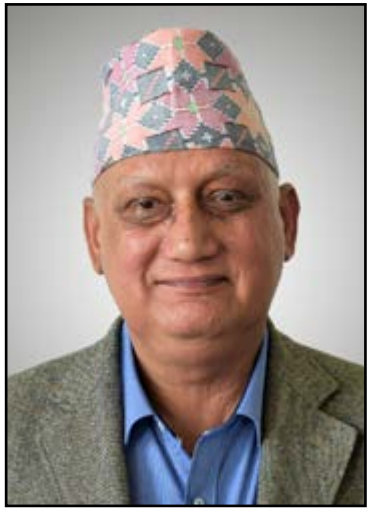
PREFACE

Over the years, Nepal has seen success in protecting its wildlife from poaching and their illegal trade that led to confiscation of wildlife contrabands and arrests of criminals. The accumulation of such contrabands has resulted in large amount of wildlife stockpiles in different places throughout the country. Wildlife stockpiles over time necessitates proper management and destruction to avoid the associated security risks and financial burden, and also ensures fulfillment of the country's international obligations. The Government of Nepal together with conservation agencies and international donors carried out the management of wildlife stockpiles where the stockpiles were inventoried and destroyed. This outcome of our work, together with the Ministry of Forests and Soil Conservation with the technical support of US Fish and Wildlife Services, documents the process of wildlife stockpiles inventory carried out by Nepal in July 2016 and stockpile destruction in May 2017. This document has been prepared to share the experience of Nepal gained while managing the stockpiles and attempts to capture all the steps involved in the chain of systematized process. The document starts with an introductory chapter, describes the process of the inventory system, offers details on the wildlife stockpiles inventory, sampling for laboratory purpose, wildlife stockpiles for future reference, inventory database management, wildlife stockpile destruction, important considerations, and conclusion.

NTNC is very happy to be a part of this important endeavor of the Government. Many thanks to Dr. Maheshwar Dhakal, Dr. Siddhartha Bajra Bajracharya, Mr. Krishna Prasad Acharya, Mr. Brian C. Hamlin, Mr. Sujhav Pun, Mr. Pradeep Bhattarai, Mr. Dinesh K. Jha, Mr. Laxman Poudyal and Dr. Amir Sadaula for the efforts made to complete the wildlife stockpiles management. I also thank the staffs of Biodiversity Conservation Center-NTNC, Chitwan National Park and Armed Forest Guard Training Center for their hard work during the inventory and destruction process. NTNC appreciates the support provided by the World Bank, US Embassy in Nepal and USFWS.



Govinda Gajurel
Member Secretary
National Trust for Nature Conservation

SNOW LEOPARD

Photo Courtesy: Kamal Thapa

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ABBREVIATIONS

AFGTC	Armed Forests Guard Training Center
CIB	Central Investigation Bureau
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CNP	Chitwan National Park
CWT	Counter-Wildlife Trafficking
DDG	Deputy Director General
DG	Director General
DNA	Deoxyribonucleic acid
DNPWC	Department of National Parks and Wildlife Conservation
DoF	Department of Forests
GoN	Government of Nepal
ID	Identity Document
MoFSC	Ministry of Forests and Soil Conservation
MOU	Memorandum of Understanding
NAFOL	National Forensic Science Laboratory
NHM	Natural History Museum
NTNC	National Trust for Nature Conservation
REO	Regional Environment Office
SAWEN	South Asia Wildlife Enforcement Network
UNODC	United Nations Office on Drugs and Crime
USB	Universal Serial Bus
USFWS	United States Fish and Wildlife Service
WWF	World Wildlife Fund
ZSL	Zoological Society of London

Photo Courtesy: Ujjwal Meghi

CONTENTS

Photo Courtesy: Sagar Giri

RED PANDA

Photo Courtesy: *Rishi Baral*

1 INTRODUCTION

The long-standing efforts of the Government of Nepal (GoN) in Counter-Wildlife Trafficking (CWT) have created a large volume of wildlife stockpiles. The majority of such stockpiles was derived from two major sources:

a) **Confiscation:** Wildlife parts or products confiscated in wildlife crime cases and
b) **Natural causes:** Wildlife stockpiles collected after death due to natural causes, such as age factor, fighting, predator attack or disease.

Effective management of the wildlife stockpiles is important to reduce the risk of leakage of contraband to illegal markets. The management of wildlife stockpiles involves a chain of systematized processes that should ensure that such information is not lost, and the destruction of stockpiles is followed by post-destruction activities such as maintaining reference specimen samples and tracking them with unique identification markers, including microchips. Effective management of wildlife stockpiles has thus become a global concern. The declaration of the London Conference on Illegal Wildlife Trade held in February 2014 encouraged the Governments stockpiling wildlife products, particularly of high demand items such as rhino horn or elephant ivory, to destroy them and carry out policy research on measures benefiting conservation. The issue of ivory stockpiles was also discussed at the 66th CITES Standing Committee meeting which directed the CITES Secretariat to provide technical guidance to the Parties on the best practices in ivory stockpile management including destruction, drawing on the experience of Parties, as well as relevant tools developed by research and forensic institutions and non-governmental organizations.

The first destruction of wildlife stockpiles in Nepal was carried out in March 22, 1998 with approval from the Council of Ministers of Nepal on February 26, 1998. The destruction focused on tiger skins, tiger bones, rhino skins, leopards skins and rhino hooves. No rhino horn or ivory was destroyed during the event nor were detail inventoried and reference samples collected then. Recognizing that the wildlife stockpiles include some of the rarest species on Earth with enormous scientific (for example, genetic, chemical, or morphological study) and reference value (for example, in teaching the concerned field personnel to identify wildlife contraband, or development of reliable comparison standards with seized materials), the GoN has determined that if the stockpiles of confiscated wildlife products are to be destroyed, it would be critically important to properly inventory and save reference specimen samples of such products. To date, most national destructions of wildlife products including Nepal have not saved reference specimen samples – leading to an irrevocable loss of priceless scientific information.

A wide range of wildlife stockpiles including rhino horn; elephant ivory; tiger, snow leopard, red panda, common leopard and sting ray fish skins, skull and bones of carnivores, particularly big cats; etc. were seized in different locations of the country. However, neither a scientific inventory system to document such items existed nor was there a national policy to scientifically guide and manage these wildlife stockpiles. In this regard, the Government of Nepal, Ministry of Forests and Soil Conservation (MoFSC) has developed *Aakhetopahar Byabasthapan Karyavidhi* 2072 (Wildlife Stockpiles Management Working Procedure 2016 hereinafter referred to as 'Working Procedure 2016'). A recommendation committee based on the Procedure was formed by the GoN in January 2016 for the management of the wildlife stockpiles. The committee recommended destruction of all the wildlife stockpiles stored in Kasara and Tikauli after retaining certain samples for future reference. The committee also recommended keeping a detail database, including measurement (length, breadth, weight), electronic barcoding and photographic documentation.

The Environment Protection Committee of the Parliament also issued a similar directive to MoFSC in April 2016 to prepare a comprehensive inventory of the wildlife parts and sort out the ones in good condition from the decayed ones, and maintain a record of their number, size, and weight. Considering the directives, MoFSC gave consent to enter into a Memorandum of Understanding (MoU) between the National Trust for Nature Conservation (NTNC), and the United States Fish and Wildlife Services (USFWS) to technically and financially support the process. The government formed a committee to manage the wildlife stockpiles with scientific inventory and proper sampling. MoFSC designated its departments namely, Department of National Parks and Wildlife Conservation (DNPWC) and Department of Forests (DoF), as the lead organizations for developing such an inventory system and sampling methodology, and for overseeing the destruction of the wildlife stockpiles.

Recently, the Parliament of Nepal has made 5th amendment to the National Parks and Wildlife Conservation Act 1973 which authorizes the GoN to manage the stockpiles. As per the amendment to the Act, MoFSC drafted a special regulation to manage the wildlife stockpiles which was subsequently endorsed by the Council of the Ministers. According to the provision of the Regulations, MoFSC developed *Aakhetopahar Byabasthapan Karyavidhi* 2074 (Wildlife Stockpiles Management Working Procedure 2017). The Council of Ministers endorsed the recommendation to destroy the wildlife stockpiles stored in the Chitwan National Park (CNP) Headquarters, Kasara and Armed Forest Guard Training Centre (AFGTC), Tikauli. This decision, approved by the Council of Ministers on Thursday, May 18, 2017, is consistent with international standards for CWT - including the standards set forth in the Convention on International Trade in Endangered Species in Fauna and Flora (CITES) to which Nepal is a party. The destroying process affirms the political commitment on CWT and helps raise public awareness of the importance of CWT.

Initially, from June 20 – 30, 2016, the committee formed under 'Working Procedure 2016' together with the experts from USFWS carried out a detailed wildlife stockpiles inventory following the standard scientific procedures where more than 80 personnel were involved including staff from the DNPWC, DoF, CNP, the Nepal Army deputed in CNP, the Central Investigation Bureau (CIB) of Nepal Police, the Natural History Museum (NHM), the National Forensic Science Laboratory (NAFOL), AFGTC, NTNC, South Asia Wildlife Enforcement Network (SAWEN) Secretariat, and the US Embassy Nepal. The expert team worked for weeks to clean and analyze the database, and produced a field report which was submitted to the Director General of DNPWC for further approval.

Immediately after the decision from Council of Ministers, the committees under 'Working Procedure 2017' started preparing for the wildlife stockpiles destruction with greater transparency and scientific rigor. The destruction took place on May 22, 2017 amid a special event in Kasara, Chitwan.

The **'Wildlife Stockpiles Management in Nepal'** consolidates experience-based knowledge, and recommends scientific and secure management of wildlife stockpiles. It covers the process of the wildlife stockpiles management including scientific field identification followed by wildlife stockpiles inventory, collecting samples for laboratory purpose, identifying wildlife stockpiles samples for future reference, inventory database management, wildlife stockpiles storage and security, and disposition of stockpiles.

This document identifies the best possible process and the key learning for wildlife stockpiles management that could be replicated by all the SAWEN member countries and elsewhere in the world which can serve as a reference document for the countries interested in managing the wildlife stockpiles.

Members of the wildlife stockpiles inventory team

BLUE SHEEP

2

WILDLIFE STOCKPILES MANAGEMENT PROCESS

Photo Courtesy: Tashi Ghale

To ensure the use of international best practices in the development of inventory system, sampling methodology, and wildlife stockpiles destruction, the GoN through DNPWC and DOF decided to utilize the experience and expertise of NTNC and USFWS, and Department of the Interior, USA. Accordingly, the GoN authorized NTNC to develop an MOU with USFWS to ensure the international best practices in development of an accountable inventory system, reference sampling methodology, and Wildlife Stockpiles destruction (hereinafter collectively termed the 'Process') pursuant to the 'Wildlife Stockpiles Inventory and Reference Sampling System Development' under consent with the MoFSC Nepal (set out in the endorsement letter from the Ministry with reference no. 348/2072/073, dated May 19, 2016).

The Process was developed and implemented in consultation with the stakeholders, including DNPWC, DOF, Nepal Army, NAFOL, NHM, CIB Nepal Police, NTNC, USFWS, and SAWEN (herein after 'Stakeholders') in the meetings between February 2016 – June 2016 to ensure comprehensive input.

The Process was further refined and developed based on the experiences and lessons learned in the development of the said inventory and sampling methodology, and in the wildlife stockpiles destruction with the intent to ensure that Nepal is at the cutting edge of best practices available worldwide for wildlife stockpiles inventory and specimen sampling. Pursuant to the MOU, the USFWS agreed to provide support and expertise to the GoN through NTNC in ensuring that the reference samples are saved and a proper accountable inventory system is established for wildlife stockpiles. NTNC, USFWS, and the US Embassy Nepal also agreed to make supplies and logistics available as needed for the inventory and sampling.

Prior to the destruction, a comprehensive and accountable inventory, laboratory and reference sampling of the items of specific scientific and/or forensic value was undertaken. In order to ensure that the inventory system, sampling methodology, and destruction were in keeping with the international best practices, the implementation of the Process was designed to ensure the maximum degree of transparency, accountability, and inclusiveness consistent with appropriate operational effectiveness and security.

DNPWC, USFWS, US Embassy Nepal and NTNC Team in a preparatory meeting in DNPWC, Babarmahal

2.1 KEY STEPS IN THE PROCESS

Step 1: A team from NTNC and USFWS had a meeting with policy-level government officers from MoFSC and DNPWC. Then the team visited CNP, Kasara, and AFGTC, Tikauli in February 2016 to study the field situation. The team observed the wildlife stockpiles in the two sites and conducted intensive discussion on existing stockpiles management with the field staff.

Step 2: An MoU was developed and entered into on May 25, 2016 between NTNC and USFWS. On June 19, 2016 a three-member team of USFWS experts traveled to Nepal and met with the stakeholders to discuss the implementation of the Protocol and share the best practices and USFWS experience in inventory and reference sampling system for wildlife stockpiles and controlled destruction of the same.

Step 3: The stakeholders met at DNPWC Kathmandu to refine the Process implementation plans. All the key stakeholders from Kathmandu (DNPWC, DOF, NAFOL, NHM, Nepal Police, NTNC, USFWS, and SAWEN) traveled to Chitwan on June 20, 2016. The Stakeholder team held a planning meeting in the evening at Kasara, Chitwan.

Step 4: The stakeholder team met at Kasara to establish an accountable inventory control system for the wildlife stockpiles and proceed with the reference sampling. The members agreed on a 'Code of Conduct for Participating Personnel' (attached as Annex A) to ensure that the inventory and sampling system development was undertaken pursuant to the highest possible standards to 'avoid any possible misunderstanding' and 'potential misconduct' with regard to the 'specimens to be inventoried'.

Step 5: A half-day training-cum-workshop on inventory control practices and specimen sampling techniques was held on June 21, 2016 which detailed the process of stockpile management, including handling of stockpiles, field-based identification of stockpiles, approach to stockpile individualization (electronic barcode, microchip), sampling for laboratory analysis, database management system, and post-storage of laboratory samples and stockpiles.

Step 6: An overview of the extent of the wildlife stockpiles at Kasara was done [including stockpiles from all the Protected Areas (PAs)] consolidated at Kasara in anticipation of the inventory, sampling, and destruction when the Nepal Army from CNP provided security for the wildlife stockpiles and supported implementation with a dedicated and highly competent team.

Step 7: A computerized inventory system in Excel spread sheet was developed and agreed upon with input from the stakeholders. The inventory database system included the following details:

1. Log entry number (sequential)
2. Barcode number
3. Sub-barcode number (if sample retrieved from parent item)
4. Microchip ID (if microchip used)
5. Species (Nepali name, Scientific name)
6. Level of confidence in identification
7. CITES Appendix (if listed)
8. Stockpile type (i.e., horn, skin, tusk, bone, claw, etc.)
9. Case number (if applicable)
10. Unit
11. Quantity
12. Measurement (separate for length and breadth)
13. Weight
14. Basal circumference (for rhino horn)
15. Sampling date
16. Sample type
17. Source/origin
18. Confidence level of origin
19. Condition
20. Management recommendation (store or disposition, remarks)
21. Photo (hyperlinked in the database system)
22. Additional Photo.

Step 8: Samples for laboratory purpose were taken from a variety of wildlife parts and products following standard methodologies.

Step 9: The stakeholder team was divided into two teams to implement the wildlife stockpiles inventory and reference sampling system based on the nature and volume of the stockpiles. Each team included, but was not limited to, experts (biologists/ scientists), DNPWC/DOF officials, park officials, security officials, and IT specialists.

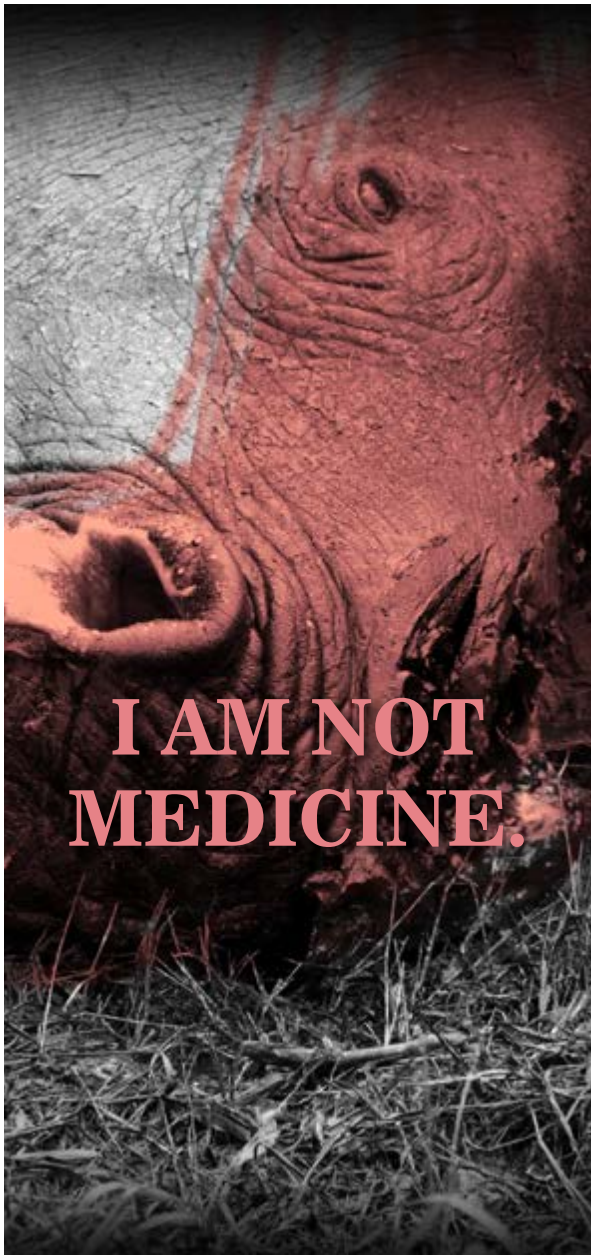
Group A - focused on animal skins, and

Group B - focused on 'hard' items such as bones, horns, antlers, tusks, teeth, and claws, as well as items such musk pods, bear gall bladders, etc.

Each team worked in a specific area and used a dedicated computer system to enter inventory data, tagging items with electronic barcodes and/ or inserting microchips, taking specimen samples (and separately tagging them). In each team, the experts provided support for species identification, and CITES Appendices (if applicable). While the team members typically stayed with one specific team, they also provided assistance to the other team as needed. In addition, some members, such as DNPWC/DOF officials, NTNC staff, and USFWS experts, provided support to both teams. Photographic and video footage was done for archival and security reasons. NTNC's logistic backup team was fully active throughout the period ensuring that the materials required for the process were in place.

Step 10: The overall process was as follows:

a. The Army support team members and others transferred wildlife stockpiles from the securely



stored rooms to the work stations (adjacent locations for Teams A and B with team A located in a station with better ventilation given the problem of odor emanating from decomposing skins). Most of the wildlife stockpiles items were contained in locked/sealed metal boxes with a smaller number contained in sacks and ivory and other materials placed in a secure room.

b. The team members removed stockpiles from the containers, photographed and noted any relevant information from the containers. The experts provided species identification information, CITES Appendix (if applicable), and recommendations - if appropriate - for taking the specimen samples, etc.
c. The team members assisted in stockpile measurements, appropriately placing the identifier, adhesive barcode and/or microchip (hidden marking technique). All the stockpiles were marked with a visible marking technique – Barcode with computerized information link. Where necessary microchips were used for additional security. Microchips were implanted in the existing holes or cracks, or were alternatively inserted in a finely drilled hole in an appropriate place, bound with m-seal (adhesive) covering the hole to make it natural to the extent possible.
d. Stockpile photographs were taken, including relevant information on item (place, date, origin, case number, etc.) that might be physically recorded on stockpiles.
e. A dedicated team member with IT knowledge in each team entered the data into the inventory database system. The database had to be entered with high precision and cross-verification.
f. Where a recommendation was made and accepted regarding the taking of a specimen, the experts took such a sample (for example, a piece from a tiger skin from the area most likely to provide maximum scientific and forensic information). The teams discussed appropriate sampling methodologies and techniques for wildlife stockpiles and agreed on a procedure to ensure maximum scientific validity and accountability. Such specimen samples were separately entered into the inventory system (with entries linked to the entry of the parent item), with all information provided and a unique identifier (sub-barcode identification and/or microchip), used, with such information entered into the inventory system and physically placed on the specimen sample. Specimen samples were then placed in a new container (for instance, a sealable plastic bottle or tube) with appropriate preservative (i.e., desiccant) with the unique identifier information placed on the outside of such container. After sealing, such containers were then placed in a secure location.
g. Where a recommendation was made regarding the ultimate disposition of the item by destruction, such items were placed in a container, typically a new plastic sack, with the unique identifier information located (i.e., barcode) and separately written on the outside of the container. Where items were grouped together for destruction (bones, teeth, claws, skins [in some cases], etc.), individual items might or might not receive specific inventory system entries. For example, while skins typically received individual inventory system entries regardless of whether they were grouped for destruction, large numbers of bones were typically entered together collectively into the inventory system with some measurements (collective weight, etc.) also entered into the inventory system. Such bags with the unique identifier information were attached to, and separately written, on the outside of the bag. Such bags were then sewn shut and placed in a secure location.
h. The DNPWC/DOF officials oversaw the entire process and provided specific advice to the teams as needed. The security officials provided security for the entire process and assisted in all aspects of the process.
i. Every day, the AFGTC/park officials and the Nepal Army team properly sealed the stockpiles storage room and the work station to ensure that no mishandling of any product could take place. Minuting of all the inventoried stockpiles was carried out that helps to review day to day work and to keep record for governmental processes as well as shows transparency. Throughout the process, when work was being done on particular items, such as rhino horns and tiger skins, the Nepal Army put in place additional security cordons at the key locations.

j. Firstly, the teams carried out inventory of stockpiles whose source was CNP. After completing the stockpiles from CNP, the teams worked on a significant number of stockpiles that had been stored at Kasara but were transferred from other Protected Areas

It should be noted that the diverse combination of stakeholders worked with an extraordinarily high level of cooperation and support throughout the entire nine days of continuous work at 10-12 hours per day in high heat and humidity, and under challenging work conditions.

including Bardia National Park, Langtang National Park, Makalu Barun National Park, Shukla Phanta National Park (Then Shukla Phanta Wildlife Reserve), Manaslu Conservation Area, etc. When all the items located at Kasara (including those whose origin was Chitwan and other Protected Areas) were fully processed (inventoried and, where regarded appropriate, reference samples taken), they were placed in a secure location locked in the presence of the chief warden of CNP and a high level Nepal Army representative.

l. After five days of intensive work, the team moved to AFGTC at Tikauli, located approximately 35 kilometers from Kasara (45-60 minutes by vehicle) where a significant quantity of wildlife stockpiles was stored. AFGTC is stockpile storage site where stockpiles from other than the Protected Areas are stored.

m. During the next four days, the teams worked at Tikauli to process the wildlife stockpiles located there. The specimen sampling and inventory process at Tikauli followed the process developed at Kasara as mentioned above. Group A continued to largely focus on skins while Group B largely focused on hard specimens such as bones, teeth, claws, antlers, carapace, horns, and ivory.

n. Based on experts' recommendation, some of the wildlife parts and products were retained as reference samples for future use. Selection of reference samples was made according to the rarity, uniqueness and academic/scientific value.

o. A high level monitoring team led by the Honorable Minister of MoFSC, the Secretary of MoFSC, the Director General of DoF, and the Member Secretary of NTNC visited Tikauli and were briefed on the inventory and specimen sampling process. The Honorable Minister observed the process and noted the excellent interagency and international cooperation involved in the process. Press joined the Hon. Minister's meeting and there was widespread media coverage of the event.

p. The expert team and committee members worked together to produce a report with clear recommendations and submitted to MoFSC through DNPWC for the approval. Several meetings were held to discuss and to make decision as per the report.

q. MoFSC developed 'Wildlife Stockpiles Management Working Procedure 2017' to destroy the wildlife stockpiles. During the process, the GoN made the 5th amendment to the National Parks and Wildlife Conservation Act 1973. As per the requirements of the revised Act, a specific set of regulations on wildlife stockpiles was developed by MoFSC subsequently approved by the Council of Ministers. The Council of Ministers also endorsed the recommendation to destroy the wildlife stockpiles.

r. With the decision, a team immediately visited the CNP Kasara and made preparations for the destruction. It started with burning furnace preparation; verification and validation of stockpiles against the inventory database; securely transporting the stockpiles from Tikauli to Kasara; and burning of all the dedicated stockpiles.

s. WIth the decision, a team under the leadership of DNPWC, immidiately visited the CNP Kasara and made preparation for the destruction. It started with burning furnace preparation; verification and validation of stockpiles against the inventory database; securely transporting the stockpiles from Tikauli to Kasara; and burning of all the dedicated stockpiles. In the process, (i) a press conference was organized on 4 May in Tikauli, (ii) media persons were allowed to inspect the stockpiles stores, (iii) the stockpiles from Tikauli were transported to Kasara considering all the safety concerns in presence of the media persons, and (iv) similarly, the stockpiles from the store at Kasara to the burning site was transported in a safe and transparent way.

t. All the stockpiles were carefully piled up in the burning furnace considering volume, flammability and aeration. Wood, coal, sugar and vegetable ghee were alternately set for proper burning. Amid enchanting *vedic* mantras, the pyre of wildlife stockpiles was torched which was witnessed by more than 600 people. The ash from the burning furnace was collected and poured into a pit specially constructed for the purpose. The ash in the pit was sealed with cement and sand mixture. Just above the pit, a monument is constructed to commemorate the historical event of wildlife stockpiles destruction in Nepal.


COMMON LEOPARD SKIN

SUMMARY OF THE PROCESS

Discussion on the inventory process

Piloting the inventory process

Cross-verifying the electronic barcode information

Carnivore skins stored in AFGTC, Tikauli

Taking measurement of the skin during the inventory

A heap of carnivore bones

Taking measurement of the specimens

Rhino horns displayed before the inventory

Measuring rhino horn

Stitching and sealing the sacks for storage

Storage bags with related information


VULTURE

Photo Courtesy: Tashi Ghale

3 WILDLIFE STOCKPILES INVENTORY

Wildlife crime is, globally, the major source of the wildlife stockpiles. In Nepal, natural death and confiscation in the course of law enforcement are the two reasons for rising stockpiles. GoN has been storing wildlife stockpiles over the last two decades which demands a scientific management of stockpiles. If wildlife stockpiles are to be destroyed as part of the management, then it is critically important to properly inventory and save reference samples of such products which can enable the collection of important scientific data for conservation. Nepal being a party to CITES, maintaining an inventory of wildlife stockpiles and reporting to the CITES Secretariat each year is mandatory. Therefore, the inventory was initiated ensuring that Nepal maintains best practices for wildlife stockpiles inventory.

3.1 SKINS

A majority of the stockpiles encountered during the inventorying process in both sites were of carnivore (bear, otter and big cats like common leopard and tiger) skins followed by a large chunk of various ungulates and antelope skins. Certain species of conservation importance such as red panda, Burmese python, blue buck (*nilgai*), and civet cats, were moreover, encountered during the process. In addition, a sizable amount of dry discs (simply entered as skin here) of sting ray fish, an alien species to inland countries like Nepal, were also recorded.

Given the volume and nature of the stockpiles under this category, a ***'remove-stretch-measure-and bag'*** approach was used, decided to be the most suitable way of handling. A lot of stockpiles such as otter skins were stored in bundles and labelled 'many'. Considering the time and human resource available to handle each one of them individually, each bundle was unfolded and skins were spread over the floor, a group picture of the skins was taken, and using eye observation, the longest, medium long, and the shortest skins were selected and took measurement of the selected specimens. The case of the 'mixed' skins posed some difficulty in distinguishing the species as they usually came in decayed, ragged, even decomposed state. Thus, three types of stockpiles were encountered.

- Individual/separate skin
- Skins in bundle
- Mixed skin

Regarding the quality and condition of the skins, the experts' view was necessary in arriving at the best possible recommendation. For example, in Kasara, the condition of the carnivore skins presented a wide range: normal, slightly degraded, degraded, highly degraded, and decayed and the team decided to use this range to grade the stockpile condition. But, in Tikauli, most of the skins encountered were a normal or degraded.

MINIMUM STANDARDS – SKINS

1. Arrange all the skins in an open space in the order of species to the extent possible.

2. Identify skins with the help of experts.

3. Initiate inventorying by taking the key parameters as required.
   i. Stretch the skin both length-and breadth-wise.
   ii. Measure the skin in centimeters (cms) from the snout to the tail end.

4. Properly record in the inventory system
   i. **Barcode -** Generate a unique barcode number and glue to a labeling tag (or small size manila envelope) tied to the skin.
   ii. **Microchip -** Insert a microchip into a drilled hole, cover it with glue, and confirm the chip is functioning by verifying its unique microchip number with the scanner.
   iii. **Photograph -** Take a photograph of the skin and upload it in the inventory system.
   iv. **Recommendation -** Suggest whether the material is to be kept as a future reference sample or for any other management decision.

5. Store securely once the inventory is completed.

Inventorying Process in brief

After the skins were removed from the containers/ bags, they were laid on a designated floor, stretched lengthwise and measurements were taken in centimeters from the snout to the tip of the tail, if available. Data was entered into the inventory system with pictures uploaded to the specific entry. A unique barcode number was generated and glued to a labeling tag (or small size manila envelope) tied to the skin. Additionally, a microchip was implanted on some skins. Following the experts' recommendation, the skins of some species were kept for future reference. A small piece of skins was extracted for laboratory purpose. The process is repetitive for all skins that typically takes about 5-7 minutes to handle a specimen with 6-7 persons working synchronously.

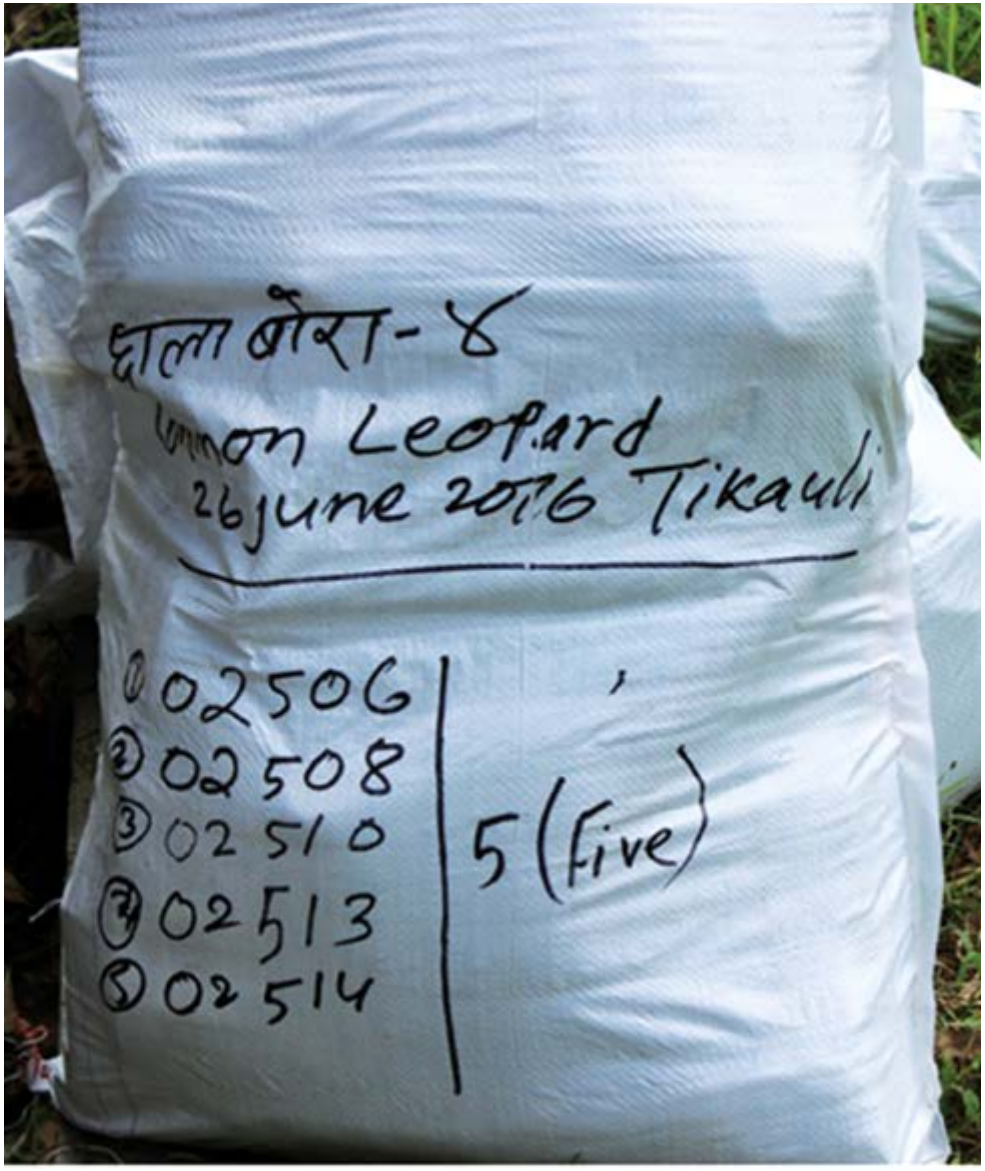
Common leopard skins stack

Clouded leopard skin

Red Panda skin

Common leopard skins packed in sacks/bags

Stitching and sealing the sacks for storage



A sack with barcode number assigned to leopard skins

3.2 ELEPHANT IVORY

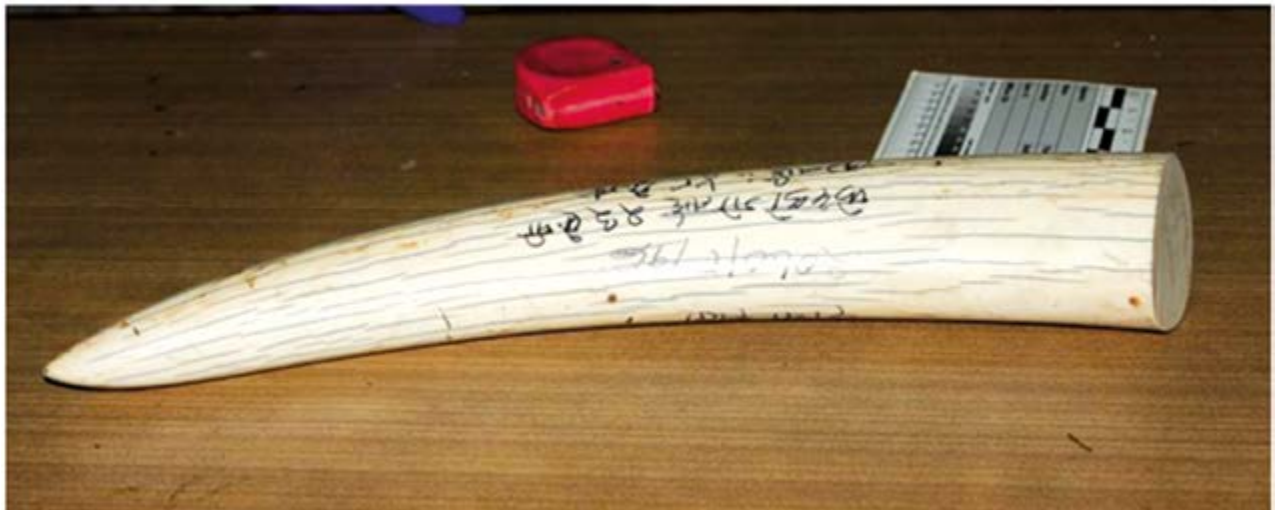
The process of ivory inventorying was started by arranging stockpiles in an open space in terms of their morphological similarity and order of size. It was assumed that tusks from the same animal are similar in appearance and size; hence each tusk was to be arranged next to its pair. Where possible, the arrangement of pairs based on color or appearance was considered. The weight of each tusk was measured in kgs using an electronic weighing machine. Data were entered into the inventory system with pictures uploaded to each specific entry. A unique electronic barcode number was generated and glued on the tusk. A microchip was also implanted for security on some ivories. This is a repetitive process for all tusks that typically takes about 5-10 minutes to handle a specimen with 6-7 persons working synchronously.

MINIMUM STANDARDS – IVORY

1. Arrange all the tusks in an open space in order of morphological appearance and size
2. Pair up the materials on the basis of morphological appearance and size
3. Count the total number of individual ivory
4. Initiate inventory by taking the key parameters as required
5. Properly record in the inventory system
   - i. **Weight –** Measure in kilogram using an electronic weighing machine.
   - ii. **Barcode -** Generate a unique barcode number and glue it to the ivory.
   - iii. **Microchip -** Insert microchip into drilled hole, cover with adhesive material (m-seal) and confirm the chip is functioning by verifying its unique microchip number with the scanner.
   - iv. **Photograph -** Take a photograph of the ivory and upload it in the inventory system.
   - v. **Recommendation -** Whether the item is to be kept for future reference or any other management decision.
6. Store securely once the inventory is completed.

Elephant Tusks displayed on the ground

Taking weight of an Elephant tusk



An elephant tusk with information written after detusking

Elephant tusks paired by similar appearance

MINIMUM STANDARDS – RHINO HORNS

1. Display the rhino horns in a designated space.
2. Count the total number of individual horn.
3. Confirm whether each product is genuine or fake.
4. Initiate inventorying by taking the key parameters as required.
5. Properly record in the inventory system
   - i. **Weight –** Measure in grams using an electronic weighing machine.
   - ii. **Basal circumference –** Measure the circumference of the base of the horn to the nearest centimeter (cm).
   - iii. **Outside curve length –** Measure the horn from the base to the center of the tip.
   - iv. **Barcode -** Generate a unique barcode number and glue it to the horn.
   - v. **Microchip –** Insert a microchip into a drilled hole; cover it with an m-seal and confirm the chip is functioning by verifying its unique microchip number with the scanner.
   - vi. **Photograph –** Take a photograph of the horn and upload it to the inventory system
   - vii. **Recommendation –** Suggest whether the material is to be kept as a future reference sample or for any other management decision.
6. Store the material securely once the inventory is completed.

3.3 RHINO HORNS

Inventorying of rhino horns started with bringing the horns from a safe location in full security done by a team of Nepal Army and the Park staff. Horns were removed from the containers/bags by carefully documenting the information written on each bag including the quantity. They were then displayed on a designated space according to their morphological features and level of degradation. Experts checked each horn to confirm whether the item was genuine or fake. Weight, basal circumference, and outside curve length were recorded in grams and centimeters respectively. Data were entered into the inventory system with pictures uploaded to each specific entry. A unique barcode number was then generated and glued to the horn. Additionally, a microchip was also implanted for security on some horns by drilling a hole. The drilled hole was covered with an m-seal. The functioning of the microchip was verified by its unique number with a scanner. Following the experts' recommendation, some horns were taken as future reference samples and specimen samples were extracted for laboratory purpose. This is a repetitive process for all horns that typically takes about 8 - 10 minutes to handle a specimen with 6-7 persons working synchronously.

Rhino horn

Bringing horns from store

Stored rhino horns

Stockpile information written in the bag

Display of rhino horns

The expert team during rhino horn inventory process

Barcoded rhino horns arranged by size

3.4 RHINO HOOVES

There was a huge collection of rhino hooves in the CNP, Kasara. Hooves were piled up on a designated floor space. Photos were taken and packed in new sacks. The total weight of each sack with hooves was then recorded and data were entered into the inventory system with pictures uploaded for each specific entry. A unique barcode number was generated for each sack and glued. Following the experts' recommendation, some hooves were taken as future reference samples with the remaining ones left subject to management decision. This is a repetitive process for all hooves that takes about 5 - 7 minutes to handle each sack with 6-7 persons working synchronously.

Rhino hooves

Hooves stored in a bag

MINIMUM STANDARDS – RHINO HOOVES

1. Pile up rhino hooves in designated floor space.
2. Separate other products, if any.
3. Pack the hooves in new sacks.
4. Start the inventory by taking the key parameters as required.
5. Properly record in the inventory system
   - i. **Weight –** Weight up the sacks of rhino hooves in kilograms using an electronic weighing machine.
   - ii. **Barcode –** Generate a unique barcode number for each sack and glue it.
   - iii. **Photograph –** Take a photograph of the hooves with the sacks and upload it into the inventory system.
   - iv. **Recommendation –** Suggest whether the material is to be kept as a future reference sample or for any other management decision.
6. Store securely once the inventory is completed.

MINIMUM STANDARDS – SKULLS AND BONES

1. Pile up all the skulls and bones in a designated space.
2. Identify and separate the skulls and bones of the major species.
3. Separate the skulls and bones as future reference sample, based on the experts' advice.
4. Take photos of the skulls and bones.
5. Keep all the mixed skulls and bones in new sacks.
6. Start inventory by taking the key parameters as required.
7. Properly record in the inventory system
    i. **Weight –** Measure in kilograms using an electronic weighing machine.
    ii. **Barcode –** Generate a unique barcode number and glue it to the sack.
    iii. **Photograph –** Take a photograph of the stockpile and upload it into the inventory system.
    iv. **Recommendation –** Suggest whether the material is to be kept as a future reference sample or for any other management decision.
8. Store securely once the inventory is completed.

3.5 SKULLS AND BONES

At both sites, a huge amount of skulls and bones were stored. Skulls and bones were mixed, making it difficult to identify the species. However, the skulls of two big cats found, viz. common leopard and tiger, could be distinguished. A full skull and its size, shape, and structure provide clues for identifying at the species level. Teeth are additional visual clues. Another interesting feature is the position and size of the eye sockets. Besides skull, mammalian skeletons consist of vertebral column, ribs, limbs, girdles, and clavicle (collar bone).

Given the volume and nature of the stockpile materials under this category, a ***'remove-pile up-measure-and bag'*** approach was used. All the mixed bones, including skulls, were stored in bags after removing bones from each bag, piling them up on a designated floor and then taking their pictures. Experts observed and distinguished the skulls of two big cats from the mix. From the mix, certain skulls and bones were also identified and recommended for future reference. Bones were put into large sacks and weighted up using an electronic weighing machine. A unique barcode number was then generated for each sack and glued. Data was entered into the inventory system with pictures uploaded for each specific entry. A microchip was also implanted for security on some skulls. This is a repetitive process for all bones that typically takes about 7-10 minutes to handle each sack with 6-7 persons working synchronously.

Big cats skulls and bones

Big cats skulls after the inventory

Gavial skull

MINIMUM STANDARDS – ANTLERS

1. Display antlers and horns on the designated floor space.
2. Count the total number of individual antlers.
3. Group the antlers and horns of the same species in a separate bundle.
4. Start inventory by taking the key parameters as required.
5. Properly record in the inventory system
    i. **Weight –** Take the weight in kilograms using an electronic weighing machine.
    ii. **Barcode –** Generate a unique barcode number and glue it to a labeling tag (or a small size manila envelope) tied to the bundle.
    iii. **Microchip –** Insert a microchip into a drilled hole, cover it with an m-seal and confirm the chip is functioning by verifying its unique microchip number with the scanner.
    iv. **Photograph –** Take a photograph and upload it in the inventory system.
    v. **Recommendation –** Suggest whether the material is to be kept as a future reference sample or for any other management decision.
6. Store the item securely once the inventory is completed.

3.6 ANTLERS AND HORNS

The antlers and horns brought from the store were piled up on a designated floor space and separated according to the species. The total number of antlers and horns was then counted and weight was taken keeping the same species in a separate bundle. Data were entered into the inventory system with pictures uploaded to each specific entry. A unique barcode number was then generated and glued to a labeling tag (or a small size manila envelope) which was tied to the bundles. A microchip was also implanted for security in some antlers and horns. Based on the experts' recommendation, some items were taken as future reference samples and the remaining were left subject to management decision. This is a repetitive process which takes about 5 - 7 minutes to handle a specimen with 6-7 persons working synchronously.

A collection of antlers

Barcoded antlers

Goral and Himalayan serow horns

Tibetan antelope horns

MINIMUM STANDARDS – *SHAHTOOSH*

1. Remove all *Shahtoosh* bags from the store in a designated safe place.
2. Carefully count all the bags.
3. Identify and separate bags with *Shahtoosh* from other bags under expert supervision.
4. Take photos of *Shahtoosh.*
5. Start the inventory by taking the key parameters as required.
6. Properly record into the inventory system
    i. **Weight –** Measure each *Shahtoosh* sacks in kilograms using an electronic weighing machine.
    ii. **Barcode –** Generate a unique barcode number and glue it to the bag.
    iii. **Photograph –** Take a photograph of *Shahtoosh* contained in sacks and upload it in the inventory system.
    iv. **Recommendation –** Suggest whether the material is to be kept as a future reference sample or for any other management decision.
7. Store securely once the inventory is completed.

3.7 TIBETAN ANTELOPE FUR (*SHAHTOOSH*)

Given the volume of *Shahtoosh* bags, all the bags were removed from the store, displayed in a designated open space and the total number of bags was counted. Each bag was opened after which the experts inspected them to identify the genuine *Shahtoosh* or any other material. All the bags with the genuine *Shahtoosh* were kept separately. These bags were repacked in larger sacks. The weight of *Shahtoosh* sacks was taken in kilograms, using an electronic weighing machine. A unique barcode number was then generated for each sack and glued. Data were entered into the inventory system with pictures uploaded for each specific entry. Based on the experts' recommendation, some *Shahtoosh* and mixed materials were taken as future reference samples. This is a repetitive process for all *Shahtoosh* bags that takes about 4-5 minutes to handle a specimen with 6-7 persons working synchronously.

Shahtoosh

3.8 PANGOLIN SCALES

'Remove-pile up-measure-and bag' approach was used for the pangolin scales. Experts kept their watch over any other scales other than those of dominant pangolin species (Indian and Chinese pangolins). After the experts' confirmation, scales were kept back in new sacks weighted using an electronic weighing machine. Based on experts' recommendation, some scales of the species were taken as future reference samples. Data were entered into the inventory system with pictures uploaded for that specific entry. A unique barcode number was then generated for each sack and glued. This was a repetitive process for all items that takes about 5-7 minutes to handle each sack with 6-7 persons working together.

Pangolin scales

MINIMUM STANDARDS – PANGOLIN SCALES

1. Move out all pangolin scales from the container/bags in a designated safe place.
2. Pile up all scales in the designated space.
3. Identify the scales of dominant species and inspect if there is any other products mixed.
4. Keep all scales in big sacks for storage.
5. Start the inventory by taking the key parameters as required.
6. Properly record in the inventory system
   - i. **Weight –** Measure sacks with scales in kilograms using an electronic weighing machine.
   - ii. **Barcode –** Generate a unique barcode number and glue it to the sacks of the wildlife stockpile.
   - iii. **Photograph –** Take a photograph of the scales and sacks with information and upload it in the inventory system.
   - iv. **Recommendation –** Suggest whether the material is to be kept as a future reference sample or for any other management decision.
7. Store securely once the inventory is completed.

MINIMUM STANDARDS – BEAR GALL BLADDERS, MUSK PODS, ELEPHANT TAIL HAIRS, AND OTHER ITEMS

1. Remove all items from the container in a designated safe place.
2. Carefully separate all the items and count.
3. Identify whether each item is genuine or fake.
4. Start the inventory by taking the key parameters as required.
5. Properly record in the inventory system
   - i. **Weight –** Weigh up musk pod, bear gall bladder in grams, using an electronic scale and keep it in separate sealable plastic bags.
   - ii. **Number –** Count elephant tails, elephant tail hairs, tiger claws, tiger teeth and tiger whiskers and keep them in separate sealable plastic bags.
   - iii. **Barcode –** Generate a unique barcode for each item and glue it to the respective bag.
   - iv. **Photograph –** Take photo of each item and upload it in the inventory system.
   - v. **Recommendation –** Suggest whether the material is to be kept as a future reference sample or for any other management decision.
6. Store the materials securely once the inventory is completed.

3.9 BEAR GALL BLADDERS, MUSK PODS, ELEPHANT TAIL HAIRS, AND OTHER ITEMS

This category of stockpiles that includes bear gall bladder, musk pod, tiger whisker, tiger canine, tiger claw, elephant tail hair, hornbill beak, rhino canine, etc. was relatively smaller in volume. All stockpiles belonging to this category stored in containers were collected, displayed in a designated open space, and counted item wise. The items, particularly musk pods were analyzed by experts to determine whether it was fake or genuine. With experts' confirmation, the weight of items was taken in grams, using electronic scale.

In the case of elephant tails, elephant tail hairs, and tiger whiskers, counting was done and each item was then stored in a separate sealable plastic bag. Based on experts' recommendation, some of the bear gall bladders, musk pods, elephant tails, and elephant tail hairs were set aside as future reference samples. Microchips were also implanted for security on some bear gall bladders and musk pods. Data were entered into the inventory system with pictures uploaded to each specific entry. A unique barcode number was then generated for each item and glued to the plastic bag. This was a repetitive process for all the stockpiles of this category that takes about 5-10 minutes to handle an item with 6-7 persons working synchronously.

Genuine and fake musk pods

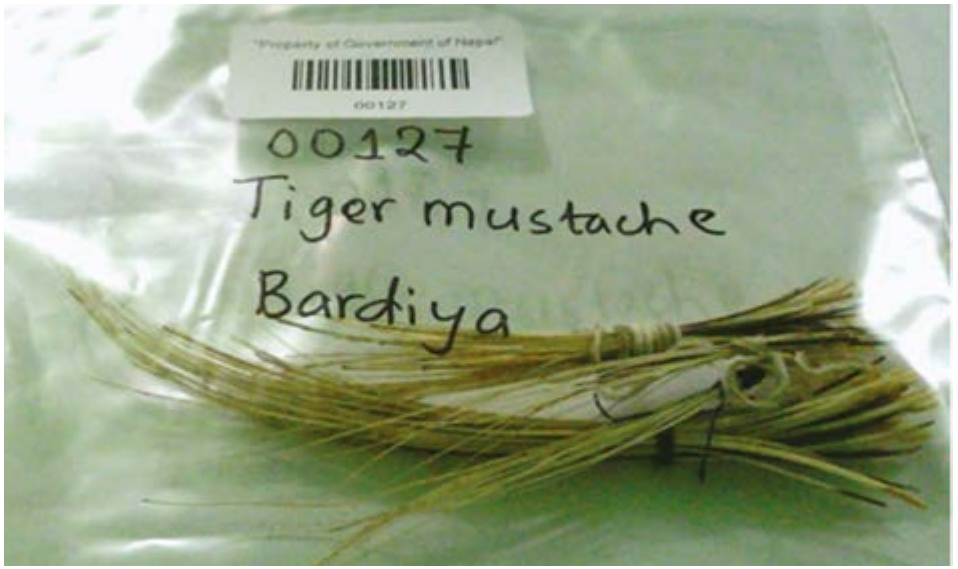
An elephant tail

Elephant tail hairs

Big cats canine teeth

Bear gall bladders

A rhino canine



Tiger whisker with barcode

Sea horses

Gun powder carrier made of unidentified wildlife parts

4

WILDLIFE STOCKPILES SAMPLING FOR LABORATORY PURPOSE

Sampling of wildlife stockpiles for laboratory purpose was carried out as a part of the inventorying process since the quality specimens and samples bear a high value in research and academic pursuits. The extracted samples would be analyzed in a laboratory following a standard research protocols. Forensic, genetic, and chemical analyses are some methods to be applied in the laboratory to draw conclusions. Analysis of the stockpiles in the laboratory can provide information of immense value to the law enforcement authorities for investigation and establishment of facts or evidence in a court of law. For instance, genetic analysis of seized elephant ivory shipments can provide information about the location of poaching hotspots. Information on species diversity and the number of specimens from a given species can provide clue for wildlife crime investigators to help them in deciding which species should be prioritized.

Stockpile sampling was undertaken with due diligence and rigor, not forgoing the rare opportunity available for archiving laboratory samples and reference specimens, along with the data and information collected. On the basis of literature review and experts' recommendations, at least forty percent of the big cat skins, rhino horns, elephant tusks, etc. were extracted as laboratory samples useful for research on species genetics, DNA barcoding, etc.

A high degree of inter/ intra-species contamination is likely to have occurred during seizure, handling, and storage before sampling. Therefore, all the samples taken from the inventoried wildlife parts and products are recommended to undergo standard laboratory decontamination protocols before analysis. The process of extracting samples of some key stockpiles for the laboratory purpose is summarized below.

MINIMUM STANDARD – ELEPHANT IVORY

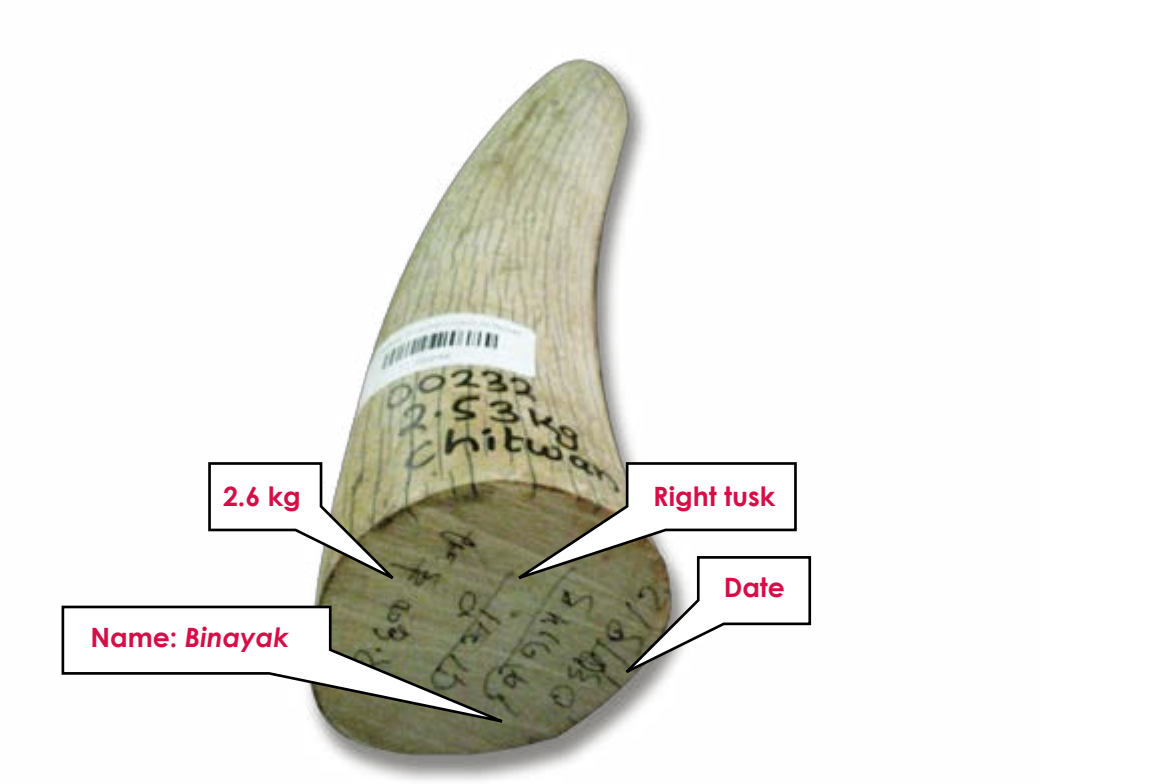
1. Select a sample considering the morphological features and size.
2. Note the information on ivory from which sampling is to be carried out.
3. Decontaminate the sample extracting materials before use.
4. Extract sample/s from the selected ivory piece, following expert advice.
5. Keep the extracted sample/s in a separate plastic container.
6. Seal the container with parafilm to avoid contamination due to micro-organisms and other factors.
7. Add the information about the sampled section to the main inventory system and record in the same row, which describes the parent item.
   i. **Barcode –** Generate a unique barcode number and glue it to a labeling tag in the plastic container.
   ii. **Photograph –** Take a photograph of the extracted sample and upload it in the inventory system.
8. Store the item securely under the recommended condition.

4.1 ELEPHANT IVORY

The primary purpose of sampling tusks is to facilitate DNA and isotope analysis to determine: (a) species; (b) geographical origin; (c) age; (d) how many elephants were killed (UNODC, 2014)[1]. The team extracted samples from ivory with due consideration of representation and quality.

Sampling Process

As per the UNODC 'Guidelines on Methods and Procedures for Ivory Sampling and Laboratory Analysis' (UNODC, 2014), effort was made to pair up all the tusks. After assembling and sorting the tusks arranged in an open space, one from each pair was chosen for sampling. Samples were also taken from the remaining tusks which could not be paired. This process was made easy due to the markings on each tusk as shown in picture below.



1. UNODC (2014) Guidelines on Methods and Procedures for Ivory Sampling and Laboratory Analysis, pp. 132, Vienna.

Decontamination of sample extraction tools must be given a high priority. The blade of the electric saw (reciprocating saw) was first cleansed with 10% sodium hypochlorite (NaClO) solution and then rinsed in sterilized water and dried before extracting sample. Before starting the process, team members used eye safety glass, powder-free nitrile hand gloves, and a clinical mask. The selected ivory was then clamped firmly onto a heavy base clamp (vise) and a small section (ideally approximately 3cm x 3cm x 1cm) was cut out with an electric saw. Taking into consideration future laboratory analysis, the cut piece was extracted from the base of the tusk to ensure high DNA content. The piece was placed immediately in a screw top plastic container for laboratory purpose. The container was further sealed with parafilm to avoid contamination due to micro-organisms and other factors. If there were two or more pieces of the same ivory, they were kept in the same container. A unique barcode (as sub-barcode) was generated and attached to the plastic container. The information was uploaded in the database of the parent item. Sampling ivory can be a time-taking task because it requires certain skills and important tools to proceed efficiently. The whole process was carried out with precaution to avoid injury, particularly to the eye. The process was repeated for other samples.

Materials Used

Electric saw (reciprocating saw), blades, heavy-based clamp, plastic containers, gloves, parafilm, tissue paper, bleach, deionized water, safety eye glasses, and ear plug for hearing protection.

Sample extraction from an elephant tusk

MINIMUM STANDARD – RHINO HORNS

1. Decontaminate all extracting tools before use.
2. Clamp the rhino horn in a vise firmly with basal portion of the horn facing toward the expert.
3. Clean dust, fungal growth, dead insects, loose material or any other particles at the base of the horn using a sand paper.
4. Clean the surface of the horn using a large driller with a larger drill bit.
5. Disinfect the sample collection area and then use a new weighing paper to collect the sample.
6. Start drilling slowly with a small driller machine and consistently but with enough pressure to collect sample in a spiral shape. **Note:** Avoid high drill speed which may cause excessive heat and damage the quality of the sample being collected.
7. Collect sample materials in a weighing paper.
8. Fill a 15ml polypropylene tube with 3 – 5 mm silica gel (approximately 5-7 ml).
9. Collect the sample in a 15 ml (alternatively 50ml) polypropylene tube. The tube should also be filled approximately 2/3rd of its volume.
10. Generate a unique barcode (as sub-barcode) and glue it to the tube.
11. Store samples in a cool, dark, and dry area, and avoid direct sunlight. For long-term storage, samples must be maintained at -70^{o}C or at a minimum temperature of -20^{o}C.

4.2 RHINO HORNS

Rhino horns both similar and varying in shape, size, weight, and morphological features were selected for sampling. Such a sampling gives a reasonable opportunity to capture the diversity of the horn stockpile. At least 40% of the total set of rhino horns was sampled with care. The team members tried to ensure quality sampling and minimal contamination using powder-free nitrile hand gloves and a clinical mask for human safety.

Sampling Process

Cleaning and decontamination was carried out by (a) brushing the specimen entirely to remove surface debris; (b) submerging the extracting tools in a bleached solution for 2-3 minutes; (c) submerging in water for 2-3 minutes; and (d) then allowing it to air dry or wiping with a lint-free tissue to reduce contamination.

The rhino horns selected for sampling were grouped on a working table. The first one was then placed in a heavy-based clamp with the basal portion of horn facing the expert. After clamping the horn, a clean weighing paper was placed below the horn to collect dust particles. The basal part of the horn was cleaned to remove dust, fungal growth, dead insects, loose material or other particles using a sand paper. Two types of drilling machines were used for sampling. A large drilling machine with a larger bit (12.7 mm – 25.4 mm) was used for clearing the external surface of the basal core part of the horn. The section of the basal part of the horn was properly cleaned and the possibility of contamination during sample extraction was minimized. After cleaning, the weighing paper with dust was replaced by another weighing paper for sample collection. The sample materials were carefully extracted by drilling the cleaned part of horn with a small driller machine having a smaller drill bit (5 mm diameter). Drilling was done slowly with a care to maintain mild rotation

Sample extraction from rhino horn

but with a certain level of pressure. This process ensures fine and spirally coiled specimen which was collected on the weighing paper. Low and uniform drill speed reduces the possibility of damage to DNA (thermal DNA degradation effect). All sample materials were collected on the weighing paper. If spirals were clogged in the bit, another clean piece of weighing paper was used to detach samples. This ensured collection of enough horn material. In general, approximately 2/3rd of a 15 ml (alternatively 50ml) polypropylene tube has to be filled up with samples. The tube, filled with 3–5 mm silica gel, was tightened with a cover and then parafilm applied to prevent entry of micro-organisms. A unique barcode (as sub-barcode) was provided in the tube and information was uploaded with the parent rhino horn information kept in the entry system. The hole drilled in the horn was sealed with an *m-seal*.

After each sampling, all debris, dusts, and sample powder were properly kept in a sealable plastic bag. Driller bits, weighing paper, sand paper, and gloves were changed for every sample extraction. The extracted samples are kept in a cool, dark, and dry place, avoiding direct sunlight. For long-term storage, it is strongly advised to store the sample in ultra-freezers at -70° C or at a minimum of -20°C.

Materials Used

Driller (small and large), bits (small and large), heavy-based clamp, Sodium hypochlorite 10% solution, tissue paper, weighing paper, sand paper, silica gel contained polypropylene tube, parafilm, scissors, masks, gloves, and forehead light/torchlight.

Sample extraction from rhino horn

Transferring sample in polypropylene tube

Sample in polypropylene tube

4.3 CARNIVORE SKINS

A wide range of carnivore skins of different species and qualities was encountered in the course of inventorying. Skins of endangered, protected, as well as common wildlife species, including tigers, leopards, bear, fox, and otters were recorded. Samples for future analysis were archived, based on the quality of skin under the supervision of experts. Based on experts' advice, at least 40% samples were extracted from the dorsal portion of the skins and placed in silica-filled polypropylene tubes.

Sampling Process

A group of skins from the same species were displayed in the working area to ease the process. A few higher quality skins were separated from others and retained for the future reference. Approximately 1x5 cm in piece of the skins (preferably from dorsal part of neck) other than those retained for future reference were taken as sample. In case where the skin was of poor quality, the sample was collected from an area that had relatively low level of degradation. The extracted sample was kept in 15 ml or 50 ml polypropylene tube with 5-15 mm silica gel desiccant. A sub-barcode was provided for each tube and recorded accordingly in the inventory system. The tube cover was sealed with parafilm. The samples stored in silica gel have to be maintained in a cool, dark, and dry place avoiding direct sunlight. For long-term storage, the sample must be stored in ultra-freezers at -70° C or at a minimum temperature of -20°C.

Along with the small cut piece, hairs from the skins were also retrieved. Hair samples were taken out from eight key points of skin – (a) forehead; (b) top of the front foot; (c) top of the rear foot; (d) shoulders; (e) chest or belly; (f) tail; (g) thigh; and (j) vibrissae. The most important factor would be obtaining hairs that have follicles attached. Eight to ten hairs were plucked by hand and collected in separate envelope with a label and grouped into a set. The number of the samples collected may vary depending on the condition of the skin. These samples will have an important role in the microscopic analysis. A sub-barcode was provided for each set of the sampled hairs. Photograph was taken and uploaded in the inventory system. All information about the samples was uploaded in the parent entry aligning with the detailed information of the sample.

Materials Used

Sharp knife(s), razor blades, measuring tape, polypropylene tubes with silica gel, paper envelope, stapler with pin.

Tiger skin

MINIMUM STANDARD – CARNIVORE SKINS

1. Display the carnivore skins in an open space.
2. Select the skin and extract samples preferably from the dorsal side of the skin.
3. Keep the sample in a silica-contained tube and seal it properly with parafilm.
4. Pluck 8-10 hairs by hand from eight different locations of the skin and collect them separately in envelopes with a label.
5. Add the information about the sampled section and hairs in the same row of the main inventory system, describing the parent skin.
   i. **Barcode –** Generate a unique barcode number and glue it to a labeling tag in the tubes and envelopes.
6. Store the item securely under the recommended condition once the inventory is completed.

Team members taking hair samples

Expert examining for sample collection

Hair samples collected in envelopes

4.4 TIBETAN ANTELOPE FUR (*SHAHTOOSH*)

Identification of *shahtoosh* was a crucial part of the sampling process as it was mixed with other materials of similar nature.

Sampling Process

Shahtoosh, originally stored in sacks, was visually examined and categorized into three groups: (a) '*shahtoosh*'; (b) '*shahtoosh* mixed with similar materials'; and (c) 'other unidentified materials'. Samples ranging from 20 to 50 gm of all the three types were retrieved from various sacks for further analysis. This helped to determine the composition of materials mixed with genuine *shahtoosh* for further study of the morphological details of *shahtoosh*. The samples retrieved were kept in separate sealable plastic bags with information labeled on each bag. The samples were then weighed and the weight noted on the bag. All the sample bags were then kept in a single bag. A sub-barcode was generated and glued to the bag with all the sample bags. Photograph was taken and uploaded in the inventory system. All data were recorded in the main inventory system.

Materials Used

Plastic bag, marker pen, electronic scale

MINIMUM STANDARD – *SHAHTOOSH*

1. Take out all *shahtoosh* containing sacks to the working place to facilitate the observation process.
2. Open the sacks and check all of them to confirm the contents - *shahtoosh,* similar materials or other/unidentified materials.
3. Examine the materials for final confirmation and separate similar types of materials after identifying the genuine *shahtoosh* or *shahtoosh* mixed with other similar materials.
4. Take the sample randomly from different sacks. Ensure that all types of materials are sampled.
5. Put the sampled materials into different sealable plastic bags to be later kept in a single plastic bag with a barcode.
6. Record the information in the inventory system.
7. Add the information about the sample into the same row of the main inventory system.
   i. **Barcode –** Generate a unique barcode number and glue it to the plastic bag.
8. Store the material securely under the recommended condition once the inventory is completed.

5

WILDLIFE STOCKPILES SAMPLES FOR FUTURE REFERENCE

Stockpile reference sampling was carried out as a part of the inventorying process realizing the immense value of the specimens and samples in research and education. For example, they can be used to train the field personnel to identify contraband wildlife, or as reliable comparison standards for forensic analysis in a suspected illegal trade case of such materials, or can even serve as materials for display in museums for academic purpose. If wildlife stockpile samples for future reference are not saved, it means an irrevocable loss of the priceless scientific information. Effective management of wildlife stockpiles should hence ensure that such information is not lost. Some materials may have unique individuality and may not be readily available in the future. Recognizing the importance of specimens for future reference purpose, the Government of Nepal believes that if wildlife stockpiles are to be destroyed, then it is critically important to properly save certain reference specimens.

This important part of the stockpiles activity was undertaken with due diligence, not to forgo any opportunity to stock future reference specimens by observing each stockpile encountered, the species on hand, and in the best way possible, recording useful information on stockpiles such as original population of the confiscated material. Stockpiles judged to be in 'good condition' were stored for future reference. Importantly, the basis of selection of reference samples was their rarity, uniqueness, and academic/scientific significance. A total of 84 reference samples of 40 different species including rhino horn, tiger skin, snow leopard skin, common leopard skin, tiger skull, musk pod, etc. were identified and stored for future reference.

For reference purpose, the materials were retained for future use by properly storing them with a barcode number. Where possible, additionally, microchip ID was also used to ensure accountability of the person/agency who has the material in possession, and helps in their tracing. The database was entered with microchip ID numbers. Since these materials will be used in the future, the concerned agencies are suggested to store them in a well-conditioned store room to prevent damage and decay. These specimens are also prone to theft and misuse, necessitating additional security during their storage and transfer.

A necklace of bear claw

Hat with wild boar canine teeth and monkey skull

A neclace with bear canine teeth

Statues of Hindu god/goddess made of elephant tusk

A rhino horn

Tiger skull

Wild boar mandible

Inserting microchip in a rhino horn

Carving of unidentified wildlife parts

Stuffed spotted deer

Musk pod with microchip information

BLUE SHEEP

Photo Courtesy: Tashi Ghale

6 WILDLIFE STOCKPILES DATABASE MANAGEMENT SYSTEM

A web-based Wildlife Stockpile Database Management System (WSDMS) was developed recently to record all information available on wildlife stockpiles in a systematic and efficient way. The system was designed keeping in consideration the existing information compiled in the course of inventorying wildlife stockpiles in June 2016 and was upgraded with feedback from the users and experts. Before designing the database, various consultation meetings were organized to streamline the design process for broader coverage in all required fields.

This is a data storage, analysis, and management tool for stockpiles of wildlife products and has been designed for all types of stockpiles to facilitate monitoring of accumulation, marking, registration, security, and coordination of stockpiles collection from all sources. It is a tool to assist in the law enforcement enquiries, and ensure a secure and long-term record storage. The system allows one to upload a wide range of information including barcode number, species names, stockpile types, unit/quantity, measurement (length, weight and basal circumference - especially for rhino horn), sample information, photograph, and management recommendation (store and disposition). Data can be uploaded as an 'administrator' or 'user', but the overall control of data falls under the authority of the 'administrator'. The 'user' can only access his/her uploaded information and should request the 'administrator' if any problem occurs in the system or requires changes.

The administrator's role is highly valued and sensitive in managing the entire data and system. S/he can edit, review, and delete database information. S/he creates a user ID and password and can assign the role to the users. Upon request from the users or subsequent to reviewing the system, the 'administrator' can change the general 'settings' such as editing common name, stockpile type, stockpile received in/stored in, and unit.

To record wildlife stockpiles information, the administrator/user needs to open the 'add record' button in the system for every individual entry. Then the system opens a new blank form where all information associated with the stockpile has to be entered. A unique barcode of five digits (e.g. 02048) generated for each item during the inventory will be uploaded in the system either with the help of a barcode reader or manually. The same process will be applied for a sub-barcode and microchip ID, if applicable. The sub-barcode of five digits (e.g. 02155), provided for the sampled item, will be uploaded in the same form of the parent item. A microchip with a unique microchip ID (e.g. 956000009811601) that is inserted in future reference sample would be uploaded in the respective stockpile form in the system. Then species names-common name, Nepali name, and scientific name-have to be entered along with the CITES appendixes.

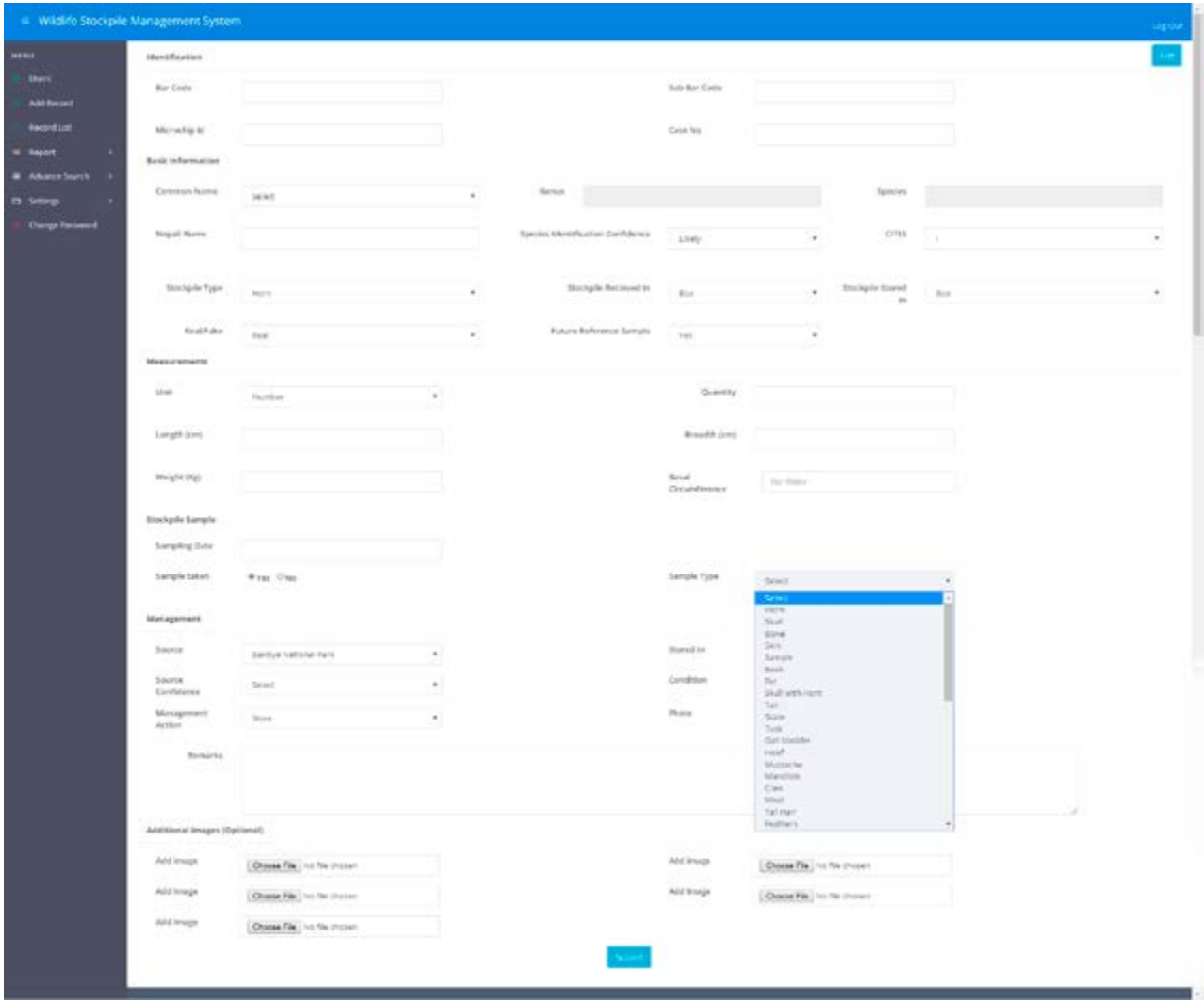
Under the 'measurements' section, information such as quantity, length, breadth, weight, unit,

and basal circumference (for rhino horn) has to be entered. The length, breadth, and basal circumference are measured in centimeters (cms) and weight in kilograms (kgs). Information on sample has to be entered under 'stockpile sample' if the sample is taken for further analysis. Space for the 'sample type' allows adding information on which part of the stockpile has been taken as a sample. Sampling date can also be added.

Under the 'management' section, there is space for source of stockpile and source confidence, stored in, condition, management action, photos, and remarks. The origin of stockpile provides information from where the stockpile originated along with the level of confidence in 'source confidence'. Information regarding the condition of the stockpile 'normal' or 'degraded' can be added into the system in 'condition'. One major part of the inventorying process is to decide whether the wildlife part and product is to be kept as a future reference sample or is subject to disposal. This information is recorded under the 'management action'. 'Remarks' can be added if necessary in each entry. There is also a place for additional photos, if required. The enlisted drop down lists of species names, stockpile types, samples taken, and management recommendations facilitate data entry and reduce the time taken in the entire process.

After entering all available information, the user needs to 'submit' which will add the information in the system. This process is repeated for a new entry. Entered data can be retrieved for editing by using the search function which has the edit option.

The report can be produced in an excel sheet or in charts under the section 'report'. Detailed report



downloadable in Excel spreadsheet provides all key information entered about the stockpiles. The 'record list' offers one a brief view of data entered to date. 'Advanced search' provides options for searching individual entries based on 'common name', 'stockpile type', 'sub/barcode', and 'microchip ID'.

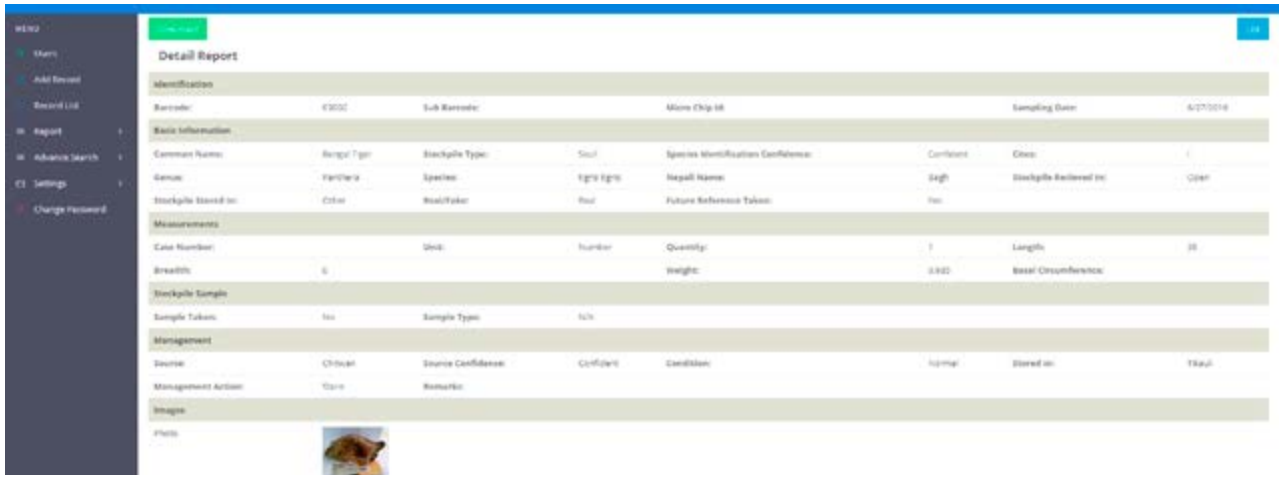
DATABASE FEATURES

The inventory database developed for this wildlife stockpiles inventory has to be managed efficiently in field locations and centrally in the government's concerned department(s). It is necessary to standardize the inventory by using the same database system by following the same procedures of assessing stockpile materials, taking relevant data and their entry, and post-inventorying activities such as storage, identification, transfer, and data retrieval. The stockpiles information has to be registered in the field and reviewed at the central level so that they are fully auditable to prevent leakage to illegal markets while remaining efficient and administratively feasible under the field conditions.

Based on the experience gained from this stockpiles sampling inventorying activity, the following major parts of the process have now to be highlighted to ensure proper guidance for future stockpiles management. Implementing the database has many advantages as it can serve as the main source to be transmitted elsewhere when needed, such as the enforcement agencies, judicial courts, forensic and DNA labs, etc.

6.1 STANDARDIZATION AND CENTRALIZATION

All stockpile management practices detailed in this document should be standardized throughout



the country to ensure compliance in practice from different field locations. Thus, standardization of the process at field levels and centralization at the national level becomes a prerequisite for effective and efficient stockpile management. Ensuring proper stockpiles registration at points of handing over and taking over ensures auditable paper trail that helps centralization in a timely manner, with responsibility borne by the last person to sign off the material.

6.2 ACCURACY AND ACCOUNTABILITY

The development of database system and its utilization in managing the stockpiles ensures entering and recording of various information related to stockpiles arising at different stages of handling- from the point of origin, its storage and disposal. A comprehensive system of stockpiles registration involves accurate documentation of information that are in papers/records made at the field and on logbooks maintained at different points until the stockpile reaches its final storage destination. Issuing paperwork at various stages will enable complete recording of all related information and registering them at the administrative points will provide an auditable paperwork that can be useful in cross-verification an monitoring of the stockpiles. Such approach for creating accuracy and accountability involves considerable work but decreases the likelihood of falsification and loss of important information between the field and central registers. This approach may be simplified by the use of a stockpiles registers to act as the main document dealing not only the stockpiles but also those involved in handling the stockpile to sign. This will reduce the amount of paperwork and ensure that reserve/park/DFO level information reaches the central office.

6.3 BARCODES, SUB-BARCODES, AND MICROCHIPS

The database developed during stockpiles inventorying and sampling contains unique IDs


BLACK BUCK

Photo Courtesy: Dev Rana

assigned to stockpiles, samples derived, and reference specimens that help in easy retrieval of information. IDs relate to the main barcode (5 digits barcode assigned to the stockpile), sub-barcode (5-digit separate barcode assigned to the sample from the stockpile), and microchip IDs (16-digit barcode assigned to stockpiles retained as reference specimens). Such a system allows for nested database of a specific database stockpile where each main barcode ID can have two sub-IDs referring to the laboratory samples and microchip references, as mentioned above. This method ensures additional security and support in the easy retrieval of information about a particular stockpile (and/or samples and reference specimens).

6.4 SPECIES ACCOUNT

This part of the database includes information about the stockpiles, namely, common names, scientific names, CITES legal status, place of origin, etc. useful in various situations. For instance, when data is being entered after confiscation, the stockpile data can be used in filing court cases and forensic analysis.

6.5 STOCKPILE PICTURES

Documentation of stockpile records also involves taking photographs of the stockpiles for visual reference. Individual stockpile photographs clearly illustrating the hides/horns/ivory can be very useful in aiding identification, especially in cases where the inventoried materials are stolen or get decayed over time. Placing hides/horns/ivory (with reference ruler) on top of a plain colored background and taking picture with a USB digital camera will generate photos in the computer's hard drive that can be linked to the stockpile data.

6.6 DATA STORAGE, ACCESS, AND RETRIEVAL

Database should be maintained at both the central and field level to ensure flow of data. Considering the sensitivity of information in the database, securing access only to designated officials will help in maintaining data security. However, some information in database may not be regarded sensitive and may be needed for handling court cases, stockpiles identification, verification, education, etc. In such cases, data can be allowed as permitted by the authority.


RESTRICTED AREA — KEEP OUT
RESTRICTED AREA — KEEP OUT
RESTRICTED AREA — KEEP OUT

7

WILDLIFE STOCKPILES DESTRUCTION

Wildlife stockpiles destruction is the final step in the chain of systematized processes in the management of stockpiles. The destruction is more than just a symbolic event that should be part of the country's commitment to tackle illegal wildlife trade. Destruction of wildlife stockpiles puts stockpiles such as tiger skins, snow leopard skins, rhino horns, and elephant ivory beyond economic use preventing these items from entering into the illegal market. More specifically, there are mainly four reasons for destroying wildlife parts and products.

a. Eliminating the possibility of re-entering in illegal wildlife markets

Unless stockpiles are destroyed, there is always a risk of stockpile re-entering in illegal market. Absence of a strong law enforcement can cause a conducive environment for criminals that may leak the stockpiles entering into the black markets. Organized criminal groups engaged in wildlife crime are always seeking the loopholes in law enforcement and alluring corrupted officials for their benefit in taking out the stored specimens.

b. Sending a public message

Destroying stockpile will demonstrate the government's and wildlife agencies' intolerance to poaching and illegal trade, sending a public message that wildlife has value only when they are alive. It will also help in curtailing demand and foster public support in suppressing poaching and illegal trade.

c. Avoiding costly storage

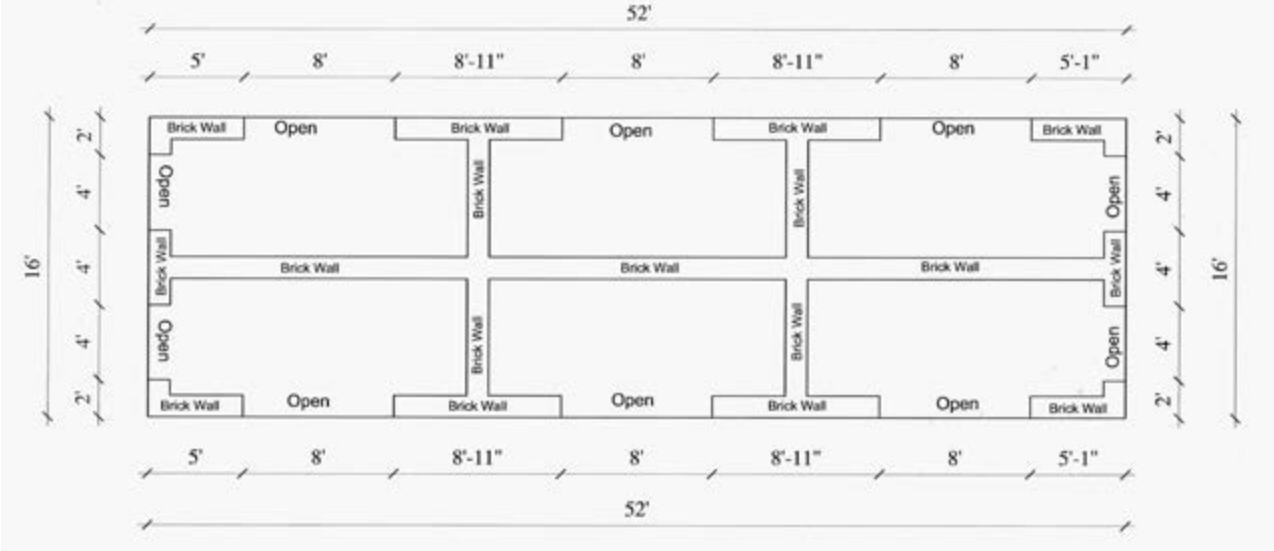
Managing wildlife stockpiles and providing security is very costly. When the volume of stockpile keeps increasing and the authorities do not know how long they have to keep protecting stockpile, it becomes a financial burden and security challenge.

d. Assuring transparency

Developing scientific inventory of stockpile with multi-agency involvement and publicly burning them demonstrates transparency and avoids distrust in authorities.

DESTROYING WILDLIFE STOCKPILES IN NEPAL

The Government of Nepal made a decision to destroy wildlife stockpiles on Thursday, May 18, 2017. Thousands of wildlife parts and products, stored more than two decades, were subject to destroy by this decision. To facilitate the process, MoFSC developed *Vanyajantuko Aakhetopahar Byabasthapan Niyamawali* 2074 (Wildlife Stockpiles Management Regulations 2017) and subsequently, *Vanyajantuko Aakhetopahar Nasta Garne Karyabidhi* 2074 (Wildlife Stockpiles Destruction Working Procedure 2017). With this backdrop, 4012 items of 48 species was destroyed in a pyre



PLAN Drawing/Design by: Ananda Ram Thapa
NTNC-BCC, Chitwan

Construction of the furnace using brick and mud

on May 22, 2017 coinciding with the International Biodiversity Day. Globally, this is the first such event where a large quantity of stockpiles of diverse species were destroyed in a single event. Destruction of a large quantity of stockpiles of diverse species is an additional milestone in the recent record of 'Zero Poaching' milestones in the country. This is a symbolic gesture of Nepal's commitment to combat wildlife crime.

Process of destroying wildlife stockpiles

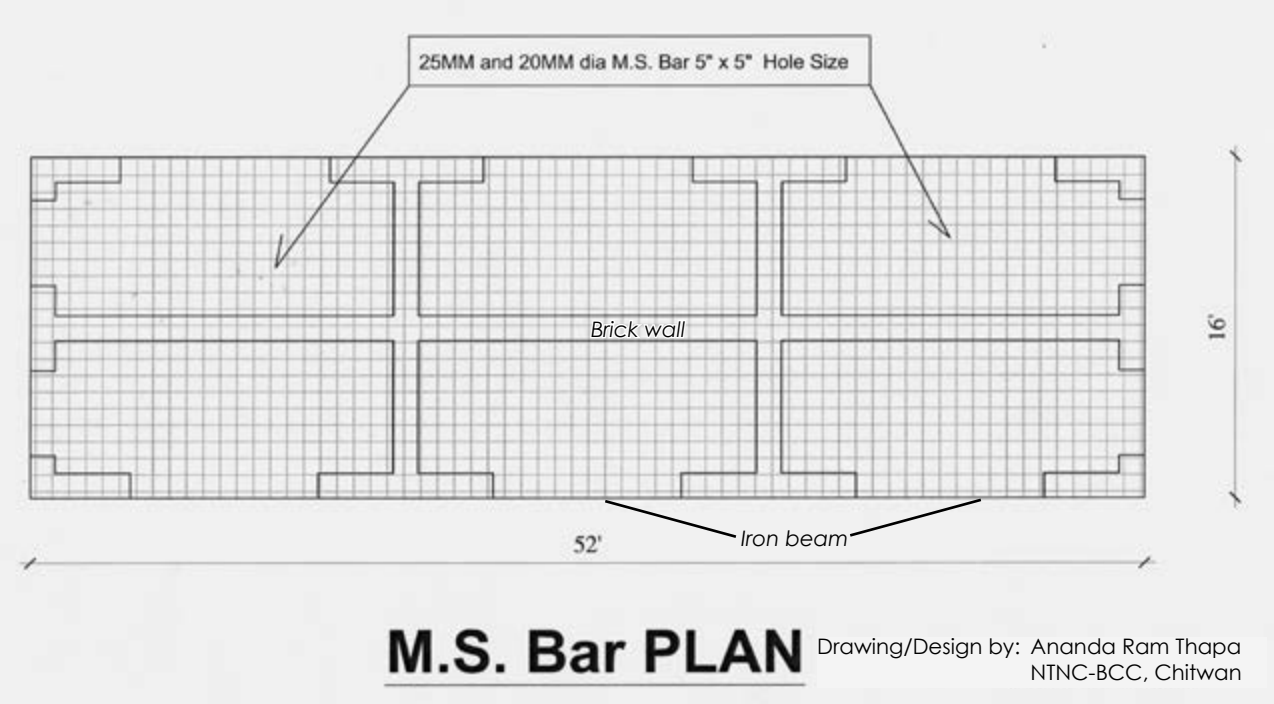
With the decision of the Government, a technical team immediately visited the wildlife stockpiles destruction site at CNP, Kasara. The technical team comprising officials of DNPWC, NAFOL, NTNC and SAWEN discussed with the Park staff and the Nepal Army team for the construction of a burning furnace according to the broad layout given in the 'Working Procedure 2017'. Although many countries have destroyed wildlife stockpiles for decades, there is still limited information and knowledge on how to burn effectively and efficiently, specifically for stockpiles of diverse species. Therefore, an engineering design of the burning furnace was prepared and constructed with due consideration of air circulation, total volume, flammability etc.

A 52 X 16 X 3.5 ft furnace was constructed using bricks, clay (mud), and iron rods and was completed in 48 hours. Local bricks and mud were used together to construct 14 inch wall of the furnace. A row of 3 inch iron bar as a rectangular beam was located on the top of the brick wall to carry the weight. Subsequently, two layers of frame structures of 25mm and 20mm diameter mild steel (M.S.) bars with 5 X 5 inch holes were constructed over the iron beam keeping a 3 inch gap. A layer of brick wall was constructed over the iron frame to provide additional strength to the frame. Special

attention was given for proper aeration from different opening points to ensure efficient burning. There were 10 opening points in this furnace to allow aeration and collection of ashes.

In the other hand , a validation and verification team effectively authenticated all the stockpiles secured for destruction against the inventory database. The accuracy and efficiency of verification and validation was eased by the use of barcode. In order to expedite the process, the technical team involved in the inventory process did the authentication work. The team carefully segregated stockpile items based on size of the items, fat and protein contents, flammability. Low flammable items, bones, and canine teeth, were separated in different places, and highly flammable items such as shahtoosh, skins of tiger, leopard, clouded leopard, and items with fats such as rhino hide were kept separately before allowing to pile up in the furnace.

In the furnace, a layer of wood log and wooden planks was placed in the mild steel bars (M. S. Bar) frame structure. A team transferred all the wildlife stockpiles from the secured store to the burning site under security of the park staff and army. Another team arranged all the stockpile items in the burning furnace considering volume, flammability and aeration. Initially, shahtoosh and down feathers were laid out and a layer of rhino hide and sting ray fish skin was arranged standing vertically above it. Keratinous products such as pangolin scales, rhino horn, and hoofs along with other low flammable items such as antlers, bones, and canine teeth were properly arranged on the top. Tiger, leopard, snow leopard, red panda, and python skins were kept randomly on the pyre of the stockpiles. Wood and coal were alternatively set. Camphor, sugar, and vegetable ghee were added randomly to



MS bar in the furnace

the pyre for better burning. To reduce possible fire hazard, an ambulance and fire brigade were kept on alert in the burning site.

The overall process was witnessed by more than 600 people representing the local community, civil society groups, media, law enforcement agencies, policymakers, conservationists, and conservation partners in the presence of high level dignitaries (Ministers/Diplomats). Amid enchanting *vedic* mantras, the pyre of wildlife stockpiles was torched by the Minister of Foreign Affairs.

Some of the major items burned included: 357 rhino horns; 67 tiger skins, apart from the 418 leopard skins, 1 snow leopard skin, 47 red panda skins, 2 clouded leopard skins, 10 python skins; tiger claws; pangolin scales; musk pods; bear gall bladders; leopard bones; Shahtoosh, elephant tail hairs; tortoise carapaces, and sea horses among others. The wildlife stockpiles of 48 species were destroyed which includes 18 species under the CITES category I (table below). However, 1100kg of elephant tusks could not be destroyed since it required about 900 degrees Celsius of temperature to burn.

It took seven hours to completely burn off all the stockpiles. The ash in the burning furnace was allowed to cool down, then collected and mixed with cement-sand mixture, and poured into a pit specially constructed for the purpose. A monument sculpture will be built on top of the pit in the CNP headquarters premise with details on information about wildlife stockpiles destroyed. This was done to ensure that there is no trace of stockpiles even after destruction.

Schematic representation of wildlife stockpiles layers in the furnace

Constructing the burning furnace

Arranging the wildlife stockpiles

Torching the pyre of wildlife stockpiles by Honourable Minister of Foreign Affairs

CITES Appendix I listed wild animals items

SN	Wild animals	Item types
1	Bear	Bones, paws
		Canine and claws
		Gall bladder
		Skin
2	Clouded leopard	Bone
		Skin
3	Common leopard	Bone, claws
		Canine
		Skin
		Skull
4	Elephant	Hoof
		Molar teeth
		Tail
		Tail hair
		Tusk, piece and products
5	Gaur	Skin
		Skull with horn
6	Gavial	Skull
7	Golden monitor lizard	Skin
8	Great hornbill	Beak
9	Himalayan serow	Horn
10	Musk deer	Canine tooth
		Leg part
		Musk pod
11	One horned rhinoceros	Bones, teeth, nasal part
		Hoof
		Horn
		Skin pieces
		Skull
12	Pangolin	Scales
		Skin
13	Red panda	Skin
14	Snow leopard	Skin
15	Tibetan antelope	Fur
		Horn
16	Tibetan Gray wolf	Skin
17	Tiger	Bone
		Canine
		Clavicle
		Claws
		Skin
		Skull
		Whisker
18	Wild yak	Skin

Burning of stockpiles

Observers during the destruction ceremony

Burning of stockpiles

MINIMUM STANDARDS – WILDLIFE STOCKPILES DESTRUCTION

Step A:

1. Make decisions to conduct wildlife stockpiles destruction including a formation of a technical committee.
2. Verify and validate all the stockpiles for destruction using a barcode reader against the inventory database.
3. Provide adequate security in the verifying and validation place disallowing free access to the outsiders.
4. Cross-verify the stockpile items with a microchips reader where required.
5. Segregate the stockpile items according to size, fat content, and flammability during verification process.
6. Securely lock the store room in the presence of the park staff and security personnel.
7. Organize a press meet to disclose the information regarding items to be burned and clarification on the burning as required for greater transparency.

Step B:

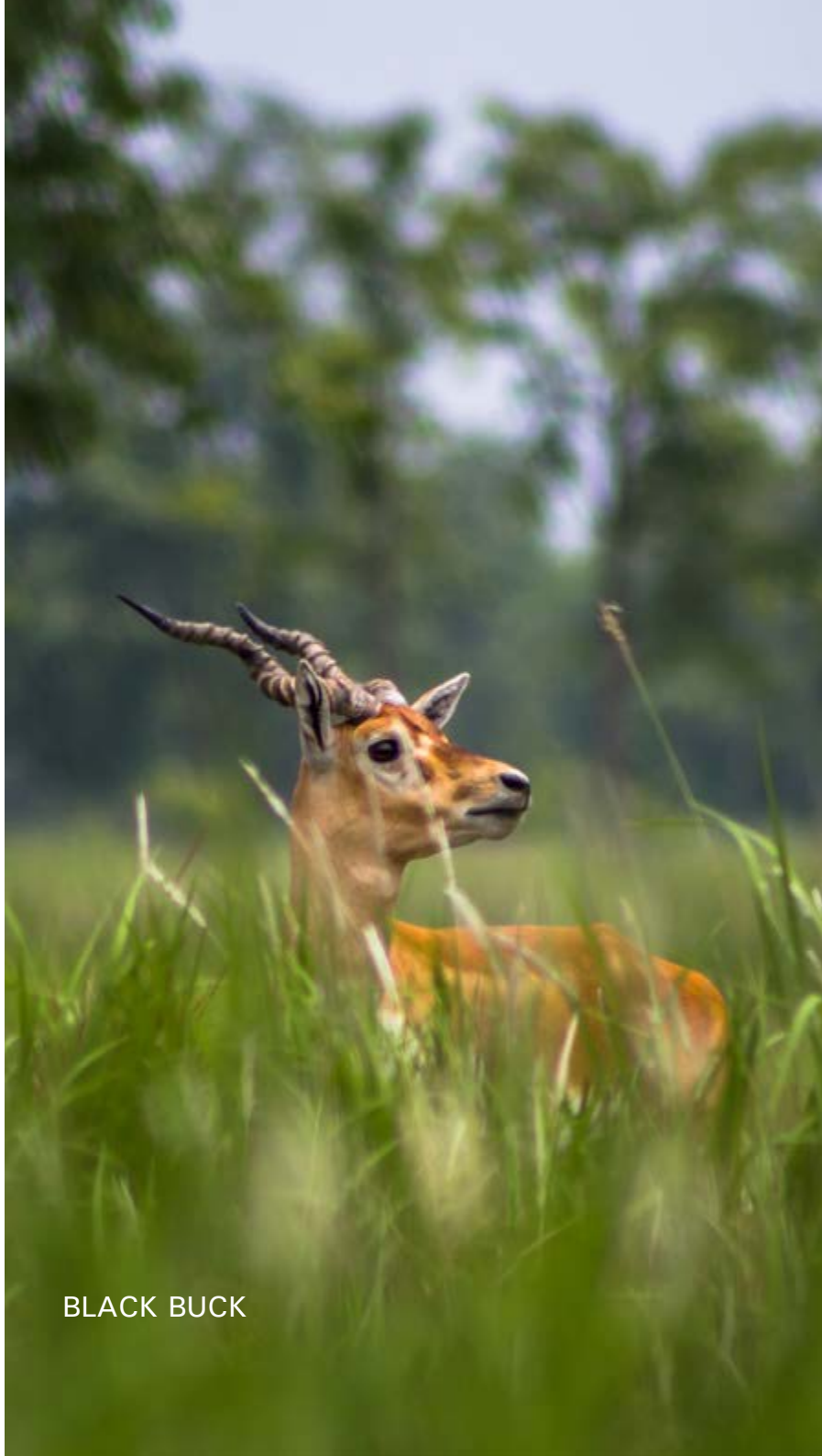
8. Design a burning furnace considering the volume, nature, and quantity of the total stockpiles. The furnace should have enough space to collect ashes.
9. Construct a burning furnace in an open space with good aeration. **Note:** The furnace should have enough area for air flow from different points to ensure efficient burning and materials used should have good heat resistance. The wildlife stockpiles piling place within the furnace should be strong enough to hold all the stockpiles with good spaces for air circulation.
10. Bring all the required materials including wooden logs and planks, coal, vegetable ghee, sugar etc. in the burning site.

Step C:

11. Open the store room in the presence of the park staff, security personnel and media persons.
12. Securely remove all the stockpiles from the store room to the burning site.
13. Properly pile up the stockpiles close to the burning furnace as per the sequence of the segregation in the store room.
14. A cordon should be placed in 15 meter periphery of the burning place.
15. Place a layer of dry wood along with wildlife stockpiles in the burning furnace with enough space for air circulation.
16. Put the wildlife stockpiles in the following order in the furnace i) easily flammable items such as shahtoosh and down feathers; ii) fat contained items such as rhino hide and sting ray fish skin; iii) keratinous and low flammable items such as pangolin scales, rhino horn, hoofs, antlers, bones and canine materials. Keep skins with furs in a random way.
17. Insert wood as and when required when destroying stockpile in the furnace.
18. All the stockpiles should be in the burning furnace before starting burning.
19. Put vegetable oil, sugar, coal and other items to facilitate burning.

Step D:

20. Set the wildlife stockpiles to fire from different points of the furnace for efficient burning.
21. Closely monitor the burning to ensure uninterrupted burning and reduce the possible accidents.
22. Securely dispose the ashes in a pit by mixing up with cement-sand mix.
23. To minimize any potential fire hazard, an ambulance and a fire brigade should be kept in alert in the site.



BLACK BUCK

Photo Courtesy: Dev Rana

8 IMPORTANT CONSIDERATIONS

Wildlife stockpiles management is a challenging but important process that has to be managed by a team of competent personnel including experts, law enforcement officials (park officials, forest officials, and security personnel), IT specialists, and other supporting members. The team members should agree on a 'Code of Conduct' to ensure that the inventory, sampling and destruction process is undertaken pursuant to the highest possible standards to avoid any possible misunderstanding and potential misconduct with regard to the specimens to be inventoried and sampled. Each member of the team has to be clear in their roles and responsibilities. The lessons from Nepal suggest some important considerations to be followed in such management process.

a) **Procedural Issues:** Since there is no definitive single blueprint for procedures in wildlife stockpiles management, it is essential to involve all the relevant stakeholders in initial planning and ongoing discussions as the process evolves. Stakeholders need to recognize that the outcome of such discussions may not satisfy all (other than overriding issues such as security, accountability, etc.) but need to be acceptable to all. Sufficient time to engage stakeholders; obtain needed supplies and equipment; organize administrative logistics; and undertake a secure, accountable, and scientifically robust inventory and specimen sampling process are critical. Political support and the will to undertake an inventory, specimen sampling and destruction at all levels from the ministry and departments to the line personnel will be needed. International support to provide best practices would be advisable, where available.

b) **Security Issues:** In order to effectively manage wildlife stockpiles, proper security arrangement in the various phases of stockpiles management becomes essential. It is also critical to ensure that all the team members fully understand the security issues and agree to comply with the appropriate procedures. Open discussion, clear identification of roles and responsibilities, and signing an agreement on security is very helpful for ensuring appropriate security. The team should have a professional security team to provide external and internal security, and provide inventorying and sampling support as needed. In this regard, the outstanding role played by the Nepal Army and AFGTC team in the entire process of Wildlife Stockpiles Management would be hard to be overstated. The leadership of the Nepal Army team was both integral and critical to the success of the whole process.

c) **Seizure Protocols:** Wildlife stockpile items should be supported by an appropriate document with a correctly maintained chain of custody. This will reduce ambiguity during authentication

of the stockpiles. Maintaining a protocol on seizure helps expedite wildlife stockpiles management. During the inventory process, some obstacles or deficiencies may result from inadequate seizure and evidentiary protocols at the time of acquisition of the specimen. For example, some pieces of stockpiles were not marked, or were marked with reference to unobtainable data or reports, leaving the origin of some products in question, or causing confusion as to whether three specimens came from 1, 2, or 3 individual animals. Lessons learned from a stockpile management effort should be used to better inform the protocols of seized, found, or confiscated wildlife specimens in the future. The basic tools used here may be adapted for use in a full-service database, tracking items from acquisition all the way through final disposition.

d) **Flexibility in Planning:** Regardless of how well planned an exercise is, the team has to be flexible with regard to different situations that may arise while completing the entire management process. A range of things in the field may vary from what was previously planned which requires responding effectively to the changing situations. A member or two from the teams can be designated for micromanaging the activities during all stages who can help guide the course of actions. It will be also crucial for the teams to make instant decisions and take actions promptly as per the advice given by the government agencies in situations that call for altering the original plan of actions. Since there is a multitude of people involved, it is very necessary to simultaneously mobilize everyone such that tasks are taken synchronously. This will ensure completion in a timely manner.

e) **Expert Involvement:** Considering the nature and diversity of specimens and limitations on parallel expertise on all items might cause difficulties in sorting and identification of samples. Therefore, the best national experts available should be engaged to help determine which species have scientific and other values. Ideally, experts familiar with international protocols and procedures should be involved to ensure that the best international practices are considered.

f) **Supplies and Equipment:** The logistic team should be attentive and flexible to purchase additional supplies and equipment during the process and utilize ad-hoc supplies and equipment as needed. Immediate mobilization of standby team member for managing required items is desirable. Proper equipment and supplies are, of course, vital (as discussed below). Redundancy in the entire process is useful. For example, the team had multiple unique identifier systems available: two barcode systems - one with a system that allows for customized barcodes to be printed (the preferred option) and one with fixed pre-printed numbers (which is a viable backup system since if the printing system somehow breaks down, power may be unavailable) – and a separate microchip system for unique identification, especially for items to be retained.

In order to smoothly operate wildlife stockpiles management, a reliable power supply is critical. A wide variety of supplies and equipment will also be needed which can vary, depending on factors including, but not limited to, working environment, team composition, quantity, quality, conditions, species variability, and scientific/forensic value of the wildlife products, supplies and equipment needed, etc. (a list of the supplies recommended and equipment is attached as Annex C).

g) **Sharing Lessons Learned:** The invaluable lessons learned in wildlife stockpiles management should be shared domestically with the government entities dealing with confiscated illegal wildlife stockpiles. The lessons learned should also be shared with other countries, regions, and international organizations, including, but not limited to SAWEN, CITES, and others.

h) **Destruction issues:** Decision regarding the destruction of stockpiles should be strictly based on the government's existing laws and regulations.

To ensure destruction integrity, each item or collective container of items (i.e., a sack of bones with one unique identifier for the entire sack) should be placed in the destruction site (i.e., bonfire area). These should have unique identifier(s) (barcode number and/or microchip numbers) verified, and compared to the item described in the inventory database (collective items can also be weighed). The destruction of each item (or collective group) can then be entered into the database system.

Certain items (e.g., ivory tusks, teeth, rhino horn, etc.) cannot be burned completely to ash (and may be only externally charred) even at an extremely high heat. This issue can be resolved by breaking/crushing the items into small pieces (ideally to the size one cubic centimeter or less).

Accordingly, a "Break, Burn, and Bury" process is recommended where items that cannot be easily burnt are broken into smaller pieces, all items marked for destruction are burned, and then the remaining burnt fragments, ash, etc. are buried and/or mixed with cement, aggregate, and sand.

If the post-burn residue is mixed with concrete, the product can be used to make a concrete memorial sculpture (wall or slab) for public awareness purposes. One could enhance CWT public awareness impact by, for example, putting a plaque with the species names of all wildlife stockpiles destroyed.

i) **Challenges:** The wildlife stockpiles management team should be prepared to handle any kind of challenges. There will be a number of unknowns that make it difficult to develop precise plans for the process prior to being on site, and observing the quantity and quality of the items, such as the security environment, work space availability, stakeholder engagement, etc. This means that the development of a protocol is a gradual process based on the experience of the stakeholders and other external factors. Therefore, decisions on identification, sampling, and inventory protocols should be based on open stakeholder discussions and consensus. While this may slightly delay the process, this is the most effective, transparent, and accountable process. Many of the items might be in an extremely decayed condition. The team members have to make precise measurements, use power tools for delicate procedures, and make decisions on complex scientific policy, and security issues in cramped environments, breathing foul odors and large amounts of organic dust.

Nepali team faced high heat and humid weather in both the inventorying and destruction process, therefore, it is advisable to carry out the entire process in favourable weather condition.

j. **Environmental consideration:** Plantation of trees is one of the measures to compensate the carbondioxide emission during the destruction process. This will reflect commitment in reducing the causes of globally acclaimed climate change and its impact. Further, biodiversity conservation is utmost outcome in balancing the environment.

SMOOTH-COATED OTTER

Photo Courtesy: Sagar Giri

9 | CONCLUSION

Inspite of tremendous efforts of the Government of Nepal, wildlife derivatives will still be collected for reasons such as natural causes and confiscation that calls for effective management of the stockpiles. Effective management of the stockpiles which includes a chain of systematized processes is important to control illegal wildlife trade. Considering the growing importance of management of stockpiles, GoN has given due attention to the effective management of the stockpiles by developing 'Working Procedure 2016 and 2017'. Recently, the GoN made the 5th amendment to the National Parks and Wildlife Conservation Act 1973 on March 30, 2017 which authorized the DNPWC to manage the stockpiles including their destruction.

In the past few years, many countries including USA, China, Thailand, Kenya and India have destroyed their stockpiles, particularly ivory by burning or crushing reflecting their commitment to combat wildlife crime. Learning form the global experiences, the Government of Nepal in collaboration with various relevant agencies initiated wildlife stockpiles management in Nepal. More than 4000 stockpile items (More than 9000 kg of over 48 species of wildlife) have been scientifically managed. The management process includes all the measures to ensure that stockpiles are properly marked, registered, and secured. Selected 84 stockpiles items which include rhino horn, tiger skin, snow leopard skin, common leopard skin, tiger skull, musk pod, etc. were stored for future reference that can be used for identification, education and law enforcement. At least forty percent of various stockpiles of big cat skins, rhino horns, elephant tusks, etc. were extracted as laboratory samples.

The stockpiles management team of Nepal, formed under the governmental decision, strongly recommended to destroy all wildlife stockpiles except those selected for future reference. The GoN made a historic decision to destroy the wildlife stockpiles as per the recommendation made on Thursday, May 18, 2017. Accordingly, 4012 wildlife stockpile items were destroyed as per the recommendation amid a grand function. Destruction of wildlife stockpiles puts those stockpiles beyond economic use where these items cannot leak into the illegal market is a signal to the world that Nepal will not tolerate wildlife crime.

One key lesson of the wildlife stockpiles management in Nepal is that destruction process should follow a systematic approach that must use legal verification of the items by an authorized team, following the best available technical guidance for effective and transparent destruction, emphasizing safety and hazard management, and deciding on a post-destruction process.

Wildlife stockpiles management is a time-bound process, all the new stockpiles collected anywhere have to be properly and timely recorded, and adequate storage facilities and security measures are required to prevent theft, decline in quality, and prevent access by unauthorized people. An annual audit of stockpiles, has to be carried out against the inventory database and make a physical check to compare the randomly selected individual stockpiles with corresponding entries. Effective security arrangement throughout the process of the stockpiles management is strongly recommended.

Nepal, with its twelve national parks, one wildlife reserve, one hunting reserve, and six conservation areas, along with various forests managed outside the protected areas, has achieved tremendous success in biodiversity conservation. The achievement in protecting wildlife from crime was possible through the enforcement of robust anti-poaching efforts that has led to sustained populations of the key wildlife species (tigers and rhinos listed in CITES-1) especially in its protected areas. The country's global recognition in forbidding poaching and illegal trade of wildlife is reflected in the recent series of 'zero-poaching' milestones. Wildlife stockpiles management, a new initiative of the GoN, which includes inventory, retaining laboratory and reference samples, and destruction of stockpiles is an additional milestone in Nepal's effort in biodiversity conservation and a reflection of Nepal's firm commitment to combat wildlife crime.


ONE HORNED RHINOCEROS

Photo Courtesy: Sagar Giri

10 ANNEXES

ANNEX A: CODE OF CONDUCT

Wildlife Stockpiles Reference Sampling and Inventorying System Development Kasara, June 19 – 30, 2016

Code of Conduct for Participating Personnel

The following Code of Conduct has been set to ensure that the activities to be conducted during the Wildlife Stockpiles Reference Sampling and Inventorying System Development is undertaken with the best possible care to avoid any possible mishandling and defrauding of the specimens to be sampled and inventoried. This simple but standardized guideline is intended for all the participating personnel involved that will result in achieving the best practice during the process.

1. Information about the stockpiles and their inventorying should be kept confidential and out of public knowledge in order to maintain the integrity of the stockpiles activities.
2. The personnel should practice checking-in and checking-out by declaring in the log book each time there is an exit and entry from the work area.
3. The personnel should refrain from bringing in any personal belongings such as bags, cases, cameras, and other accessories that may lead to risk of stockpiles theft and exposure.
4. Each action to be taken that is outside the stipulated guideline of the stockpiles sampling and inventorying should be discussed with the team and agreed in consensus before taking the action.
5. The personnel should have their name tags round-the-clock during the stockpiles activities.
6. In a situation of suspicion, the personnel should allow checking of their belongings and any other inspection from the authorities.
7. The personnel should not deviate from the given methods, process, and guidelines while performing the stockpiles activities and should commit to giving due diligence and carefulness to ensure prevention of possible aberrations in the outcomes of the stockpiles activities.
8. The personnel should conduct all the tasks with integrity and truthfully recording all the process of the wildlife stockpiles inventory and sampling.
9. The decision from the DNPWC authority will be the final during any dispute, controversy or confusion raised during the stockpiles management process.
10. Breaches of this Code of Conduct or other actions which bring discredit to the profession team may be subject to disciplinary action.

ANNEX B: LIST OF WILDLIFE STOCKPILES OF DIFFERENT SPECIES INVENTORIED

SN.	Family	Scientific Name	English Name	CITES Appendices
1	*Bovidae*	*Boselaphus tragocamelus*	Bluebuck	
2		*Antilope cervicapra*	Blackbuck	III
3		*Naemorhedus goral*	Common Goral	
4		*Tetracerus quadricornis*	Four-Horned Antelope	III
5		*Bos gaurus*	Gaur (Indian Bison)	I
6		*Capricornis thar*	Himalayan Serow	I
7		*Pantholops hodgsonii*	Tibetan Antelope	I
8		*Bos mutus*	Wild Yak	I
9		*Hemitragus jemlahicus*	Himalayan Tahr	
10	*Bucerotidae*	*Buceros bicornis*	Great Hornbill	I
11	*Canidae*	*Vulpes vulpes*	Red Fox	
12		*Canis lupus*	Tibetan Gray Wolf	I
13	*Cercopithecidae*	*Macaca assamenis*	Assam Monkey	
14		*Macaca mulatta*	Rhesus Monkey	
15	*Cervidae*	*Axis porcinus*	Hog Deer	III
16		*Cervus unicolor*	Sambar Deer	
17		*Axis axis*	Spotted Deer	
18		*Muntiacus munjtak*	Barking Deer	
19	*Crocodylidae*	*Crocodylus palustris*	Mugger Crocodile	
20	*Dasyatidae*	*Dasyatis pastinaca*	Common Stingray	
21	*Elephantidae*	*Elephas maximus*	Asian Wild Elephant	I
22	*Felidae*	*Neofelis nebulosa*	*Clouded Leopard*	I
23		*Panthera pardus*	Common Leopard	I
24		*Prionailurus viverrinus*	Fishing Cat	II
25		*Felis chaus*	Jungle Cat	II
26		*Prionailurus bengalensis*	Leopard Cat	II
27		*Uncia uncia*	Snow Leopard	I
28		*Panthera tigris*	Tiger	I
29	*Gavialidae*	*Gavialis gangeticus*	Gavial	I

Continued

SN.	Family	Scientific Name	English Name	CITES Appendices
30	*Hyaenidae*	*Hyaena hyaena*	Striped Hyena	
31	*Hystricidae*	*Hystrix indica*	Porcupine	
32	*Manidae*	*Manis crassicaudata*	*Indian Pangolin*	I
33		*Manis pentadactyla*	Chinese Pangolin	I
34	*Moschidae*	*Moschus chrysogaster*	*Alpine Musk Deer*	I
35		*Moschus leucogaster*	Himalayan Musk Deer	I
36		*Moschus fuscus*	Dusky Musk Deer	I
37	*Mustelidae*	*Lutrogale perspicillata*	Smooth Coated Otter	
38	*Phasianidae*	*Pavo cristatus*	Peafowl	
39	*Procyonidae*	*Ailurus fulgens*	Red Panda	I
40	*Pythonidae*	*Python molurus*	Indian Python	II
41	*Rhinocerotidae*	*Rhinoceros unicornis*	One-Horned Rhinoceros	I
42	*Syngnathidae*	*Hippocampus sps.*	Seahorse	
43	*Suidae*	*Sus scrofa*	Wild Boar	
44	*Testudinidae*	*Testudo sps.*	Tortoise	
45	*Ursidae*	*Ursus arctos*	*Brown Bear*	II
46		*Ursus thibetanus*	Asiatic Black Bear	I
47		*Melursus ursinus*	Sloth Bear	I
48	*Varanidae*	*Varanus flavescens*	Golden Monitor Lizard	I
49	*Viverridae*	*Viverricula indica*	Civet Cat	III
50		*Paradoxurus hermaphroditus*	Palm Civet Cat	III

ANNEX C: MATERIALS FOR WILDLIFE STOCKPILES MANAGEMENT

SN.	Item
1.	100ml polypropylene tubes
2.	15ml polypropylene tubes
3.	20 volt cordless drill and reciprocating saw set with two batteries and a charger
4.	50ml polypropylene tubes
5.	Air freshener
6.	Barcode machine
7.	Barcode printer
8.	Barcode Reader and Labels
9.	Blades for reciprocating saws
10.	Batteries – AAA and AA
11.	Coin envelopes (3.5" X 6.5")
12.	Computer
13.	Draw blade
14.	Drill bits
15.	Electric reciprocating saw - sampling ivory
16.	Extra lithium ion batteries for daylong operation of drills and saws
17.	Flashlight – with lead bulbs
18.	Generator – electricity back-up
19.	Goods identification tag
20.	Handwash
21.	Heavy duty Utility Blades
22.	Knife Sharpener
23.	Measuring tape
24.	Microchips

SN.	Item
25.	Microchip Implanter/Reader
26.	M-Seal
27.	Name tag
28.	Paraffin Grafting Tape – airtight storing of samples
29.	Permanent markers of different colors
30.	Plastic bags 9" x 12" 4 Mil (Heavy Duty) – Zipper re-closable storage bags
31.	Plastic ropes – Storing horns/skins
32.	Plastic storage sacs – 50 kg and 100 kg capacity
33.	Powder-free nitrile gloves (Size M or L)
34.	Printer
35.	Sand paper for cleaning rhino horn and ivory for sampling
36.	Silica gel beaded desiccant 3 – 5 mm
37.	Sodium hypochlorite
38	Strings (locking storing sacs)
40.	Surgical face mask
40.	Tapered Plug Cutters for use with drills – 1/2"
41.	Tapered Plug Cutters for use with drills – 5/8"
42.	Tapered Plug Cutters for use with drills – 7/16"
43.	USB Digital Camera
44.	Utility Knives w/ replaceable blades
45.	Vise/Clamp
46.	Weighing machines of different scales
47.	Weighing paper
48.	White paper

ANNEX D: PHOTOGRAPHS

Planning for wildlife stockpiles management

Examining the wildlife skin during the inventory

Hog deer antler

Bear paws

Fake ivory vase

Carnivore paws

Porcupine spines

Fake rhino horn

Limbs of big cat

Decorated carapace

Statue carved in elephant molar teeth

Rhino skull

Four horned antelope skull

Bamboo basket with monkey skulls and bone

Inserting microchip in future reference sample

Drilled rhino horn with lab sample

Future reference samples in Tikauli

Laying wooden logs above MS bar

Transferring wildlife stockpiles to the furnace

Some stockpiles arranged for burning

Ashes after burning

High level dignitaries during wildlife stockpiles destruction

SPOTTED DEER, CHITWAN NATIONAL PARK

Photo Courtesy: Awadhesh K Das

PEACOCK, CHITWAN NATIONAL PARK

Photo Courtesy: Awadhesh K Das

BISH HAZARI LAKE,
CHITWAN NATIONAL PARK

Photo Courtesy: Awadhesh K Das

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