



Nepal Tiger Genome Project

USAID
United States Agency for International Development

Year 1 – Dissemination
April 16, 2012

University of Idaho
Virginia Tech



- First project to use comprehensive non-invasive genetic technology for broader conservation efforts of Bengal tigers in Nepal.
- Aims to develop genomic based tools
- Facilitate a better understanding of landscape level genetics of tiger species and design effective conservation policies
- Life of Project: 2011 – 2013
- Geographic Focus: Terai Arc Landscape in Nepal



Collaborators



University of Idaho

USAID | NEPAL

WWF



Goal

- Building wildlife genetics capacity for Bengal tiger conservation in Nepal

Objectives

- To enhance capacity to apply molecular tools for wildlife conservation research in Nepal
- To create spatial genetic database for wild Bengal tigers in Nepal


Geographic Focus

- Terai Arc Landscape in Nepal




Year 1 Activities

1. Human Resource Development
2. Capacity building
3. Collaborative Expert Interactions
4. Development of Standard Operating Protocol [SOP]
5. Sample Collection, field study design, logistics & Implementation
6. Laboratory Assay Optimization
7. Preliminary Data Analysis




Human Resource Development

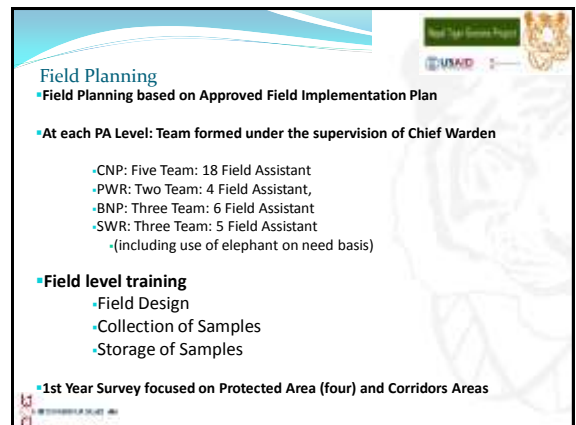
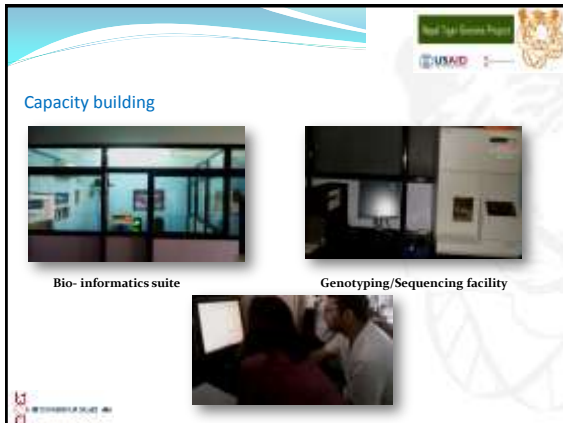
- Conservation Genetics training for NTGP affiliated Staffs in the US
- Conservation Genetics training in Nepal
- Field Biology training in Chitwan



Lisette Waits, Ph.D.
Advisor-Wildlife Genetics
University of Idaho



Marcella Kelly, Ph.D.
Advisor-Field Biology
Virginia Tech



Training



Parsa Wildlife Reserve



Suklaphanta Wildlife Reserve



Training



Chitwan National Park



Bardia National Park

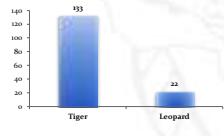


Survey Efforts

Protected Area	Efforts (In Man Hrs)	Number of Days	Team
Chitwan National Park	4,620	48	5
Bardia National Park	3,672	68	3
Suklaphanta Wildlife Reserve	1,392	58	2
Parsa Wildlife Reserve	7,56	42	2


Coverage & Sample Size: Bardia National Park

No of Grid	8
Number of Samples	252



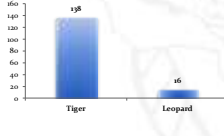
Coverage & Sample Size: Parsa Wildlife Reserve

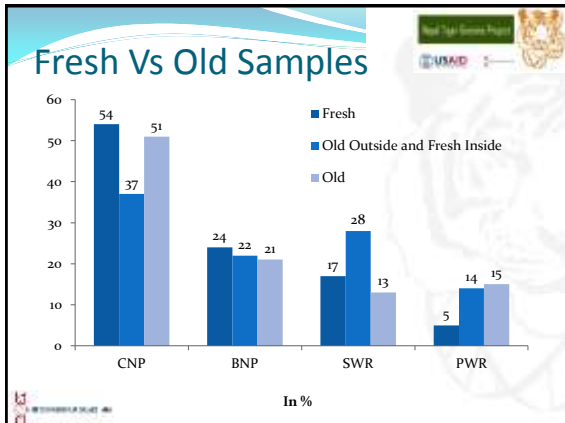
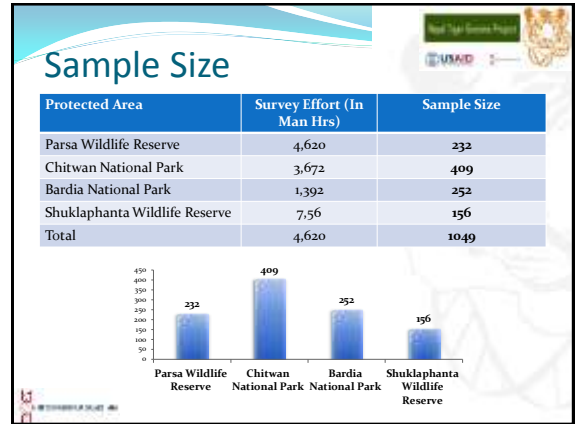
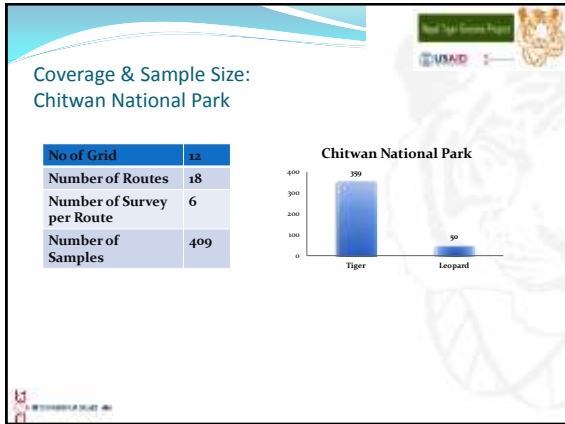
No of Grid	4
Number of Samples	232



Coverage & Sample Size: Suklaphanta Wildlife Reserve

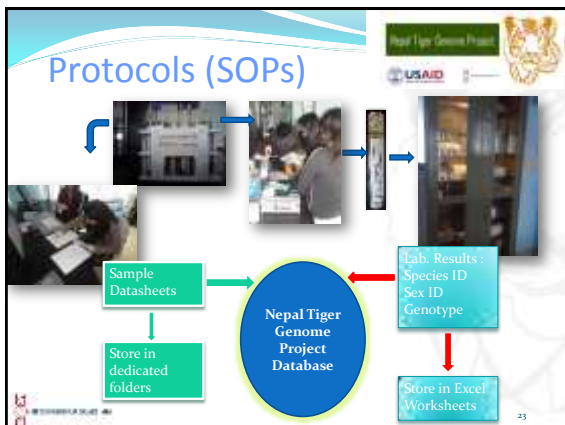
No of Grid	5
Number of Samples	156





On Going Field Effort

- Corridors:
- Khata, Basanta, Laljhadi, Mahadevipur-kamdi- Rapti Valley
- Sample Collected: 28 (Khata)+7 (Kamdi)



Lab Analysis: Performance

	Sample Size	DNA Extraction	Species ID	Sex ID	Genotyping
Optimization Samples	95	95 (CNP)	61% (58)	31% (18)	72.2% (13)
NTGP Samples	1049	106 (BNP)	85.5%	Yet to be done	Yet to be done

Lab Analysis: Comparative Performance

Studies	Sample Size	DNA Extraction	Species ID	Genotyping
Bhagavatula and Singh	48	40 (83%)	28(58%)	17 (60%)
Reddy et al	221	198(89%)	115 (52%)	
Current Study	106	106 (100%)	85.5 %	72.2%



TIGER SPECIES ID

Amplify cytb region of mtDNA with tiger specific primers.


Results

- Species ID = 95/95 and 76/106
- Identified tigers = 58/95 (61%) and 65/76 (85.5%)

Tiger Sex ID (PCR/MLA) process

Sex ID
Determine sex as a male when two bands are seen or female when only one band is seen.

Results
Sex ID performed in 18/58 samples.
Identified 15 females and 3 males



Lab Analysis: GENOTYPING

Sample : NTGP001

Sample : NTGP010

Sample : NTGP042

NTGP001 and NTGP010 are same individuals.

- NTGP042 is an unique tiger.
- 11 tigers with sex ratio 2 male/ 9 female




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