

# Nepal Tiger Genome Project



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Project Briefing

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## Nepal Tiger Genome Project



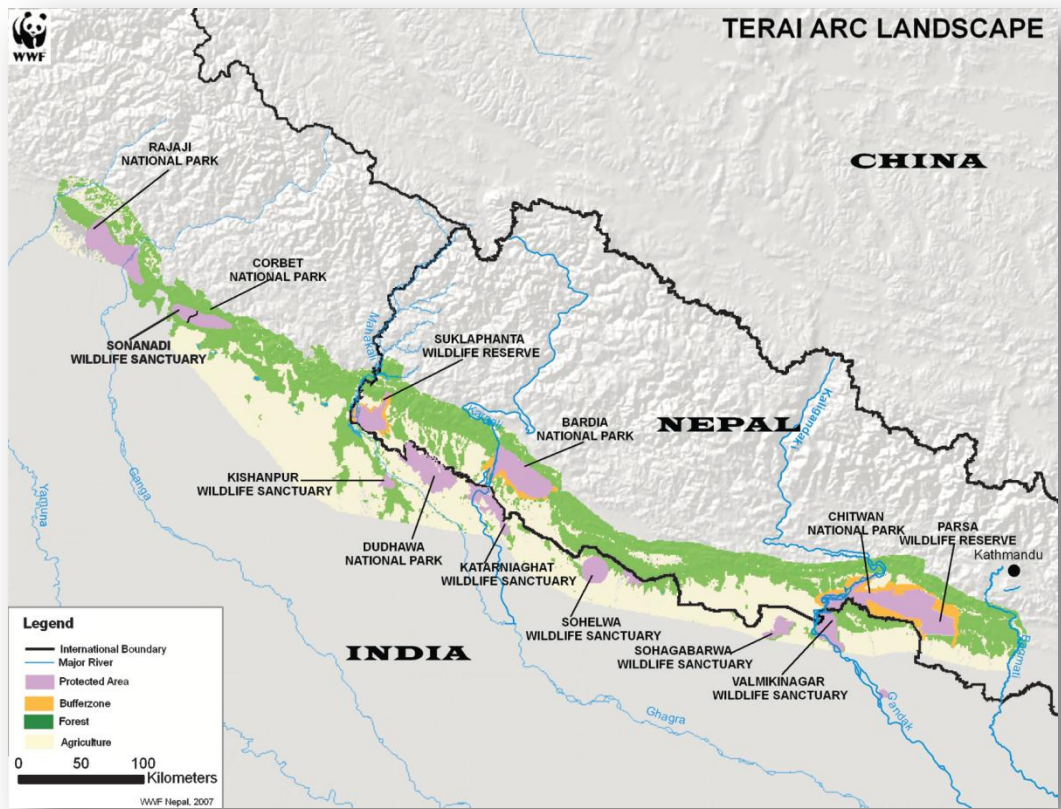
## Presentation Overview:

- ❑ Current Challenges in Tiger Conservation
- ❑ Nepal Tiger Genome Project
  - General Overview
  - Collaboration
  - Project Objectives & Deliverables
  - Project Components
  - Timeline





## Current Challenges in Tiger Conservation:



- Number of Tiger Conservation Landscapes (TCLs) identified: 4

- Area of TCL: 11,455 km<sup>2</sup>

- Area of TCL under protection: 3,255 km<sup>2</sup>

Tiger Conservation Landscape in Nepal-Source WWF



## Current Tiger Numbers:

### Estimated Population and Density of Tigers in Four Protected Area in Terai Arc in 2010

Protected Areas	N	Estimated Population		Estimated Density	
		SE (N)	95%CI	ND(per 100 sq km)	SE (D)
Parsa Wildlife Reserve	4	0.22	4-4	0.72	3.23
Chitwan National Park	125	21.9	N/A	6.53	N/A
Bardia National Park	18	2.5	17-29	1.76	0.26
Suklaphanta Wildlife Reserve	8	1.41	8-14	3.23	0.6
Total	155				



## Current Challenges in Tiger Conservation:

### Priority Issues and Actions

- Improvement in wildlife legislation
- **Improvement in wildlife crime control**
- Strengthening community-based management
- Amelioration of human-wildlife conflicts
- **Establishment of forest connectivity**
- Livestock management
- **Developing framework for tiger monitoring**
- Improvement in Protected Area management, infrastructure and equipment
- **Habitat restoration for tigers and prey**
- **Trans-boundary cooperation with India**
- Public awareness on tiger trade bans

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From Existing [National Tiger Action Plan](#) and/  
or [Other Sources](#) \* [GTI website](#)

## Goals in Tiger Conservation Action Plan 2008-2011:

- **Tiger & Prey Information**
- **Habitat Management**
- **Conflicts Resolution**
- **Anti-poaching & trafficking activities**
- **Trans-boundary cooperation**

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## **SAVING WILD TIGERS: RECOMMENDATIONS FROM THE KATHMANDU GLOBAL TIGER WORKSHOP 2009**

“Saving wild tigers is our test. If we pass, we get to keep the planet.”  
(October 30, 2009)

13. Use innovative science and technology to closely monitor and protect wild tigers and their prey and habitats.



## Nepal Tiger Genome Project



## NTGP

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



# Collaborators and Stakeholders:



- Department of National Parks & Wildlife Conservation (DNPWC)
- Ministry of Forests & Soil Conservation (MoFSC)
- Virginia Polytechnic Institute and State University-Virginia Tech (US)
- University of Idaho-UoI (US)
- WWF|Nepal
- NTNC



University of Idaho





## General Objectives

- Develop genomic based tools
- Develop efficient non-invasive methods of gathering information
- To provide training and education on non-invasive wildlife genetics
- Customize the spatial genetic data-base “Wildlife Tracker” for tigers in Nepal.



## Specific Objectives

- To estimate genetic variation within each subpopulation
- To estimate population size of tigers using molecular scatology.
- To determine the impact of habitat fragmentation on genetic structure

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## Activities

- Capacity building
- Seminar and Workshop
- ✓ Current challenges
- ✓ Application of molecular forensics
- ✓ Strategies to utilize information gained
- ✓ Future plans for development of tools



## Activities

- Conduct the first genetic study on tigers in Nepal
- Build Standard Operating Protocol (SOP)
- Create Baseline Genetic Database for Tiger
- Dissemination of post study information through workshop
- Study information sharing

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# Methodology

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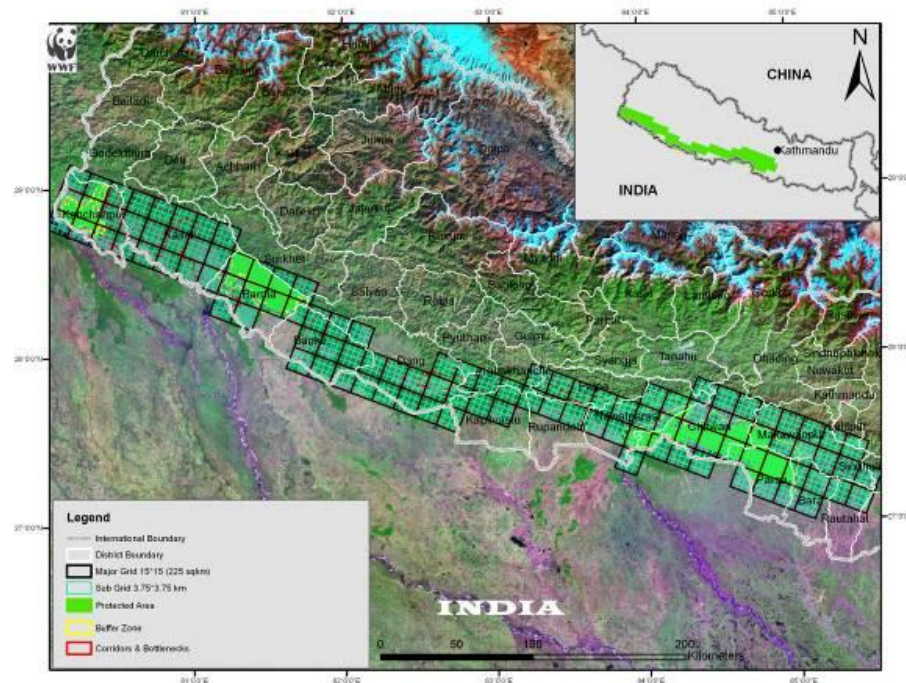


- Field Methods
  - Collection of scats
  - Preservation of scats
- Genetic analysis
  - Species
  - Sex
  - Individual Identification
- Statistical Analyses
  - Use of analytical tools
- Building Geo-Spatial database (Wildlife Tracker)



## Field Method

- Tiger Monitoring Protocol (Source: DNPWC 2008) as the basis for field sampling
- Protected Areas, Critical Areas and Priority Areas (More than 50% chances of tiger presence) embedded within 104 Grids across the Terai Arc

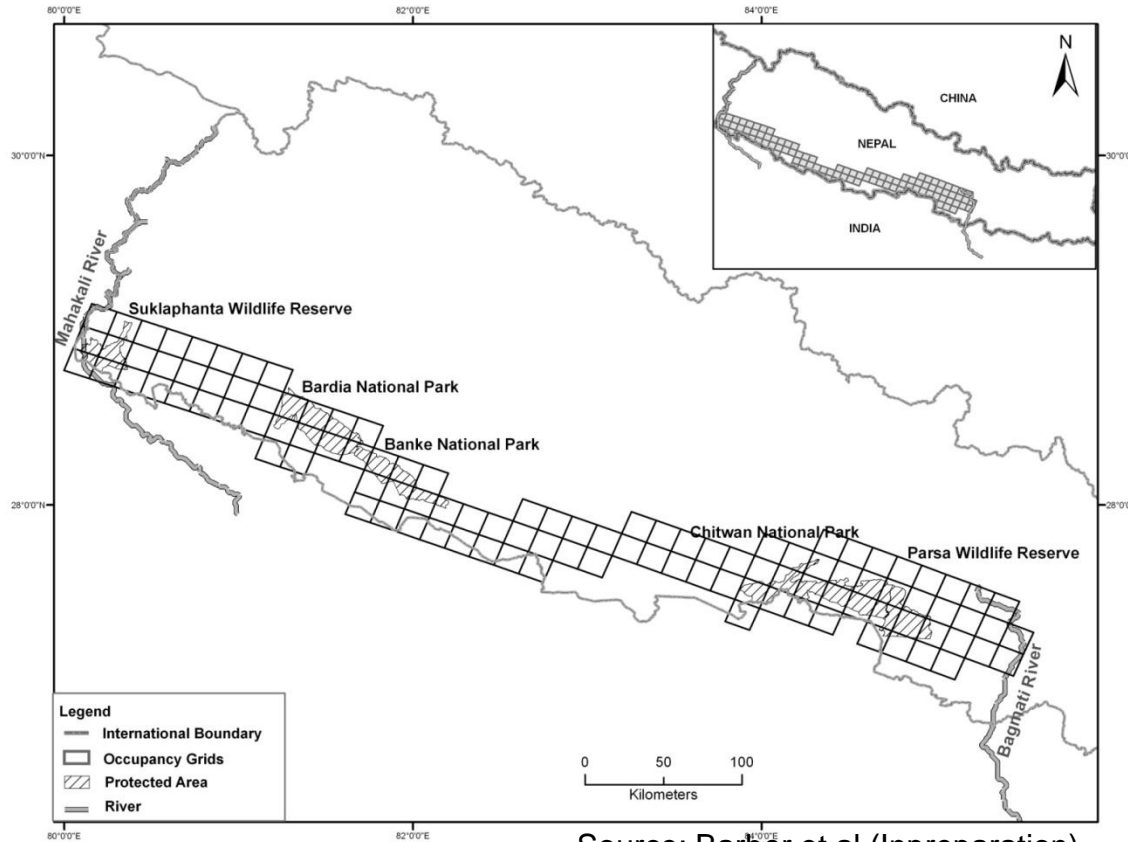


Source: DNPWC (2008), Monitoring Protocol for Tiger and Their Prey In Terai Arc.



• Phase I

The three sub-populations:



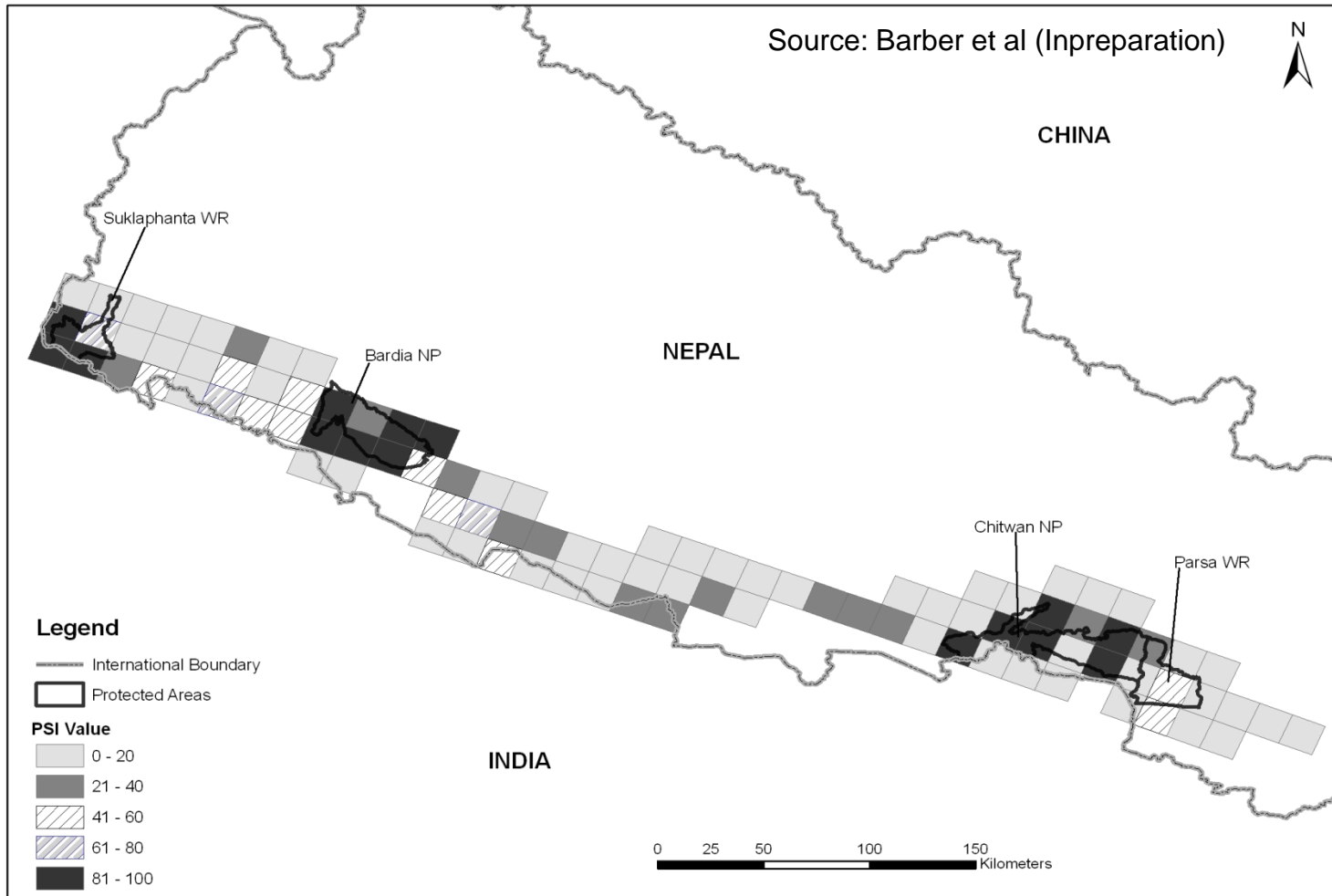
1. Chitwan National Park
2. Parsa Wildlife Reserve
3. Bardia National Park
4. Suklaphanta Wildlife Reserve

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- **Phase II**
  - Six critical sites identified in the landscape
    - Functional corridors (Khata, Basanta, Laljhad)
    - Dispersal bottlenecks (Mahadevpuri, Lamahi and Dovan)
- **Phase III**
  - Remaining grids (Priority Areas): Where there are 50% chances of detecting the tiger signs [Source: Barber et al (In Preparation)]

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# Anticipated Benefits and Outputs

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- Establish Molecular Scatology Capabilities and Forensic Capability in Nepal
- Aid in conservation efforts of all endangered species
- Information and knowledge sharing about applications of wildlife genetics:
  - Species identification
  - Population identification
  - Individual identification
  - Parentage analysis
  - Sex Identification
  - Landscape genetic data-bases
- Building local human resources and experts for a sustainability

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