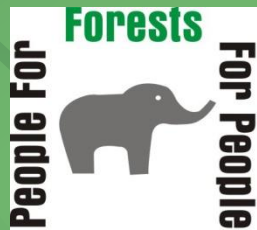


**“Restoration of dry deciduous  
forest ecosystems and sustainable  
community livelihoods at  
Bandipur Tiger Reserve, Western  
Ghats, India”**

**Oral Presentation at SER 2015 Global  
Restoration Congress, Manchester**



# INTRODUCTION



**Junglescapes**

*Towards Sustainable Wildlife Protection*

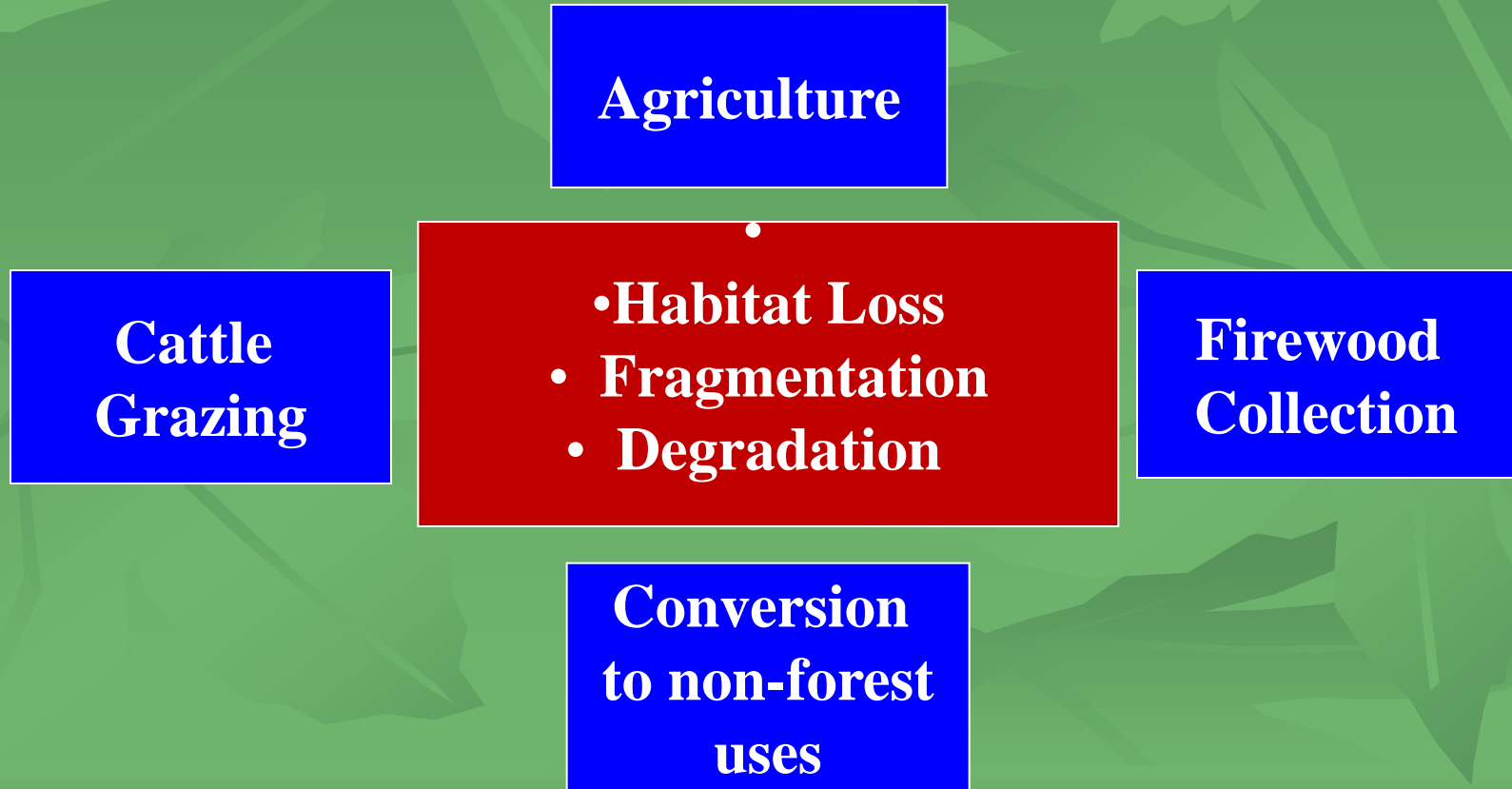
# **About Junglescapes**

**Grass root wildlife conservation non-profit  
focused on community-participative  
conservation since 2006**

**Pursue wildlife conservation initiatives  
that are inclusive of the people who live in  
and around national parks**

# The Conservation challenge in India

High anthropogenic pressure on forests and wildlife



# Can we have a model that changes perceptions and behaviors?

Our perception  
of the 'Forest  
Dwellers'



Their attitude  
towards the  
Forests

Threat



Partners

Conflict



Collaboration

# **The community-participative conservation model**

**Create scientifically sound and sustainable inter-dependence between local communities and their ecology**

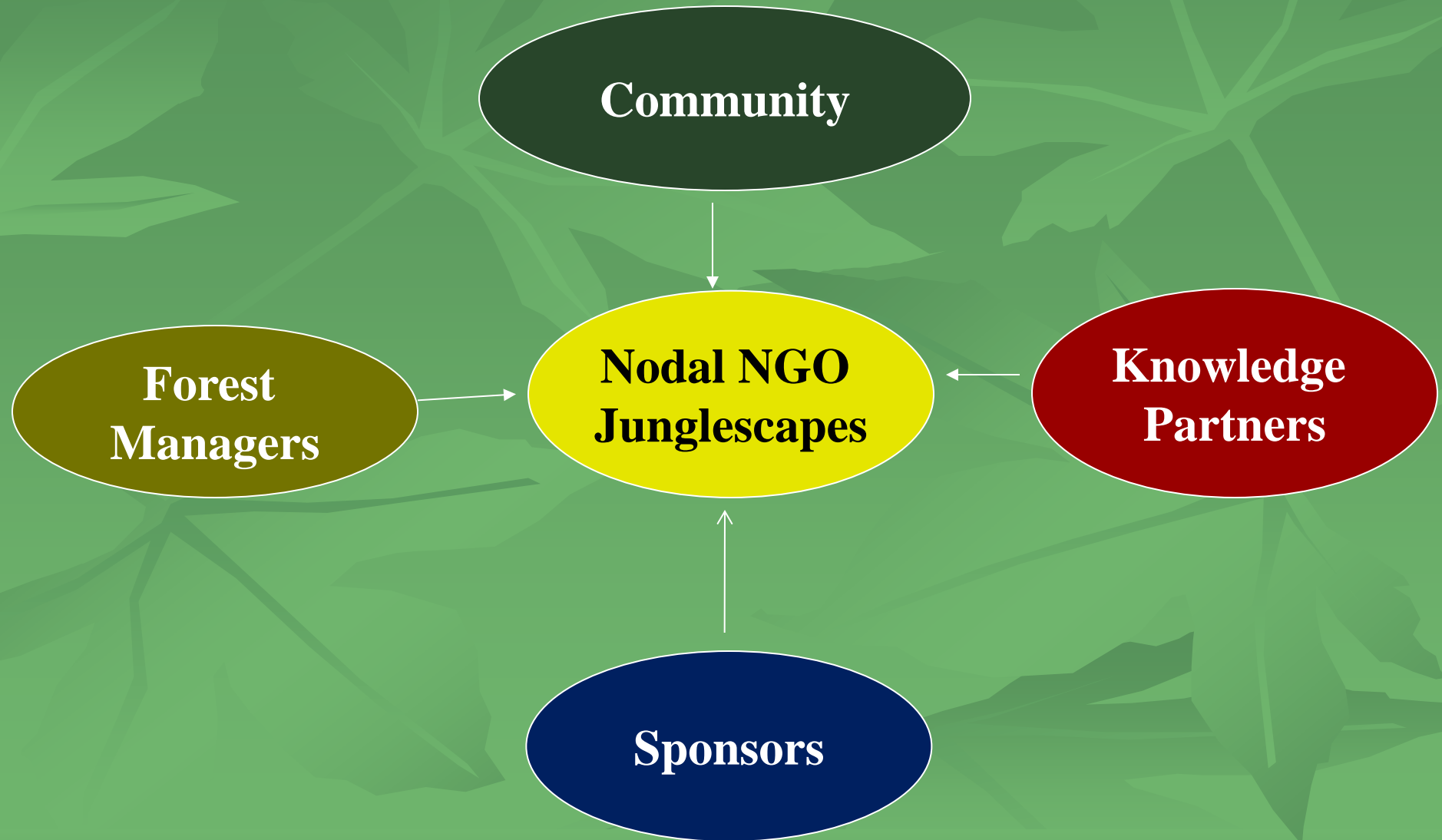
**Create demonstrable economic linkages to conservation-oriented community responses**

***A win-win approach***

# Our scope of work



# Stakeholder framework



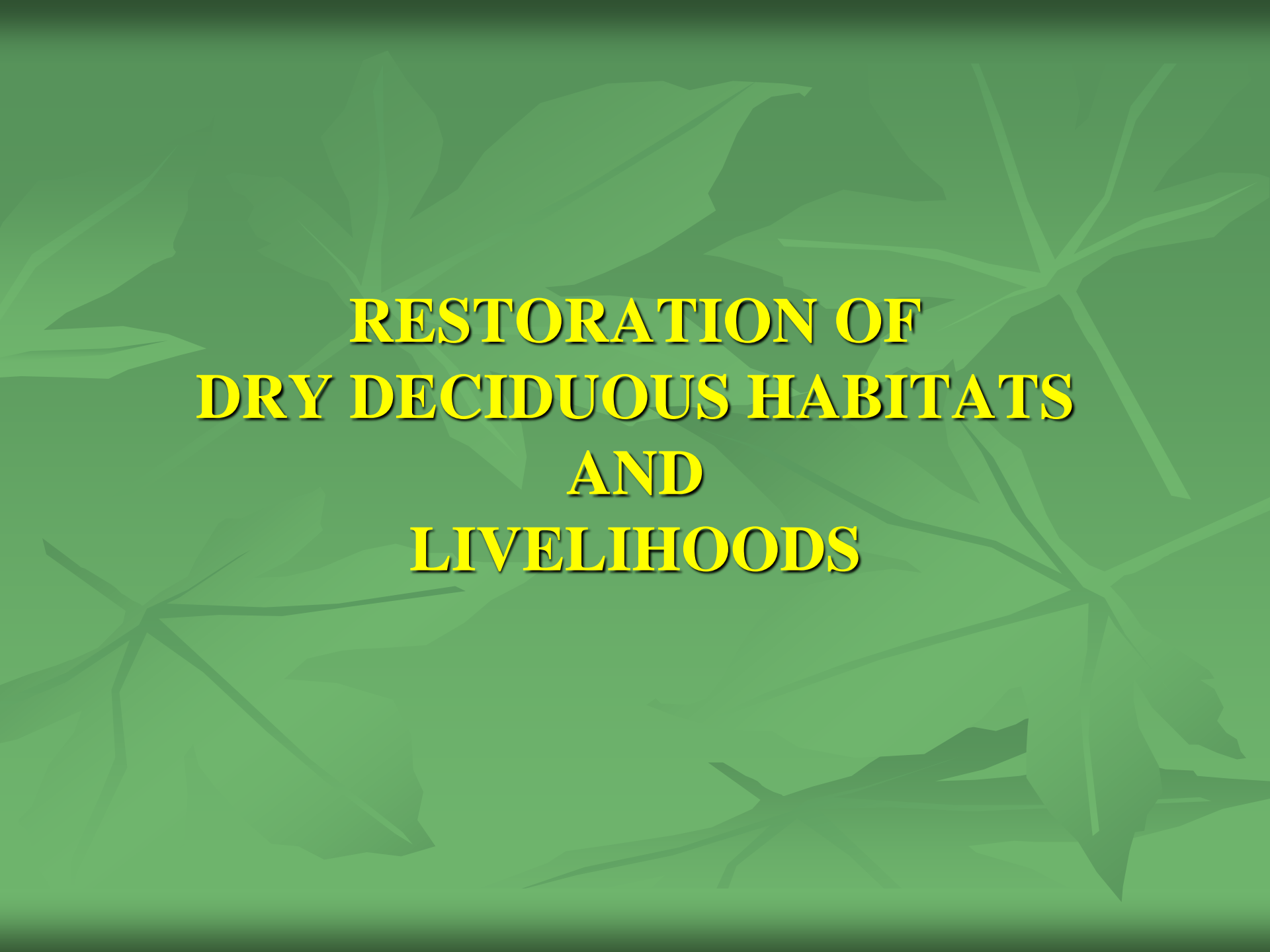


# Project Area: Bandipur Tiger Reserve



**Bandipur National Park  
lies in the Western  
Ghats, a global Bio-  
diversity Hotspot & a  
UN World Heritage Site**

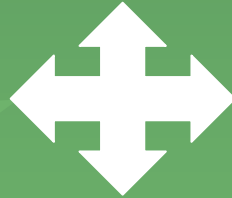
**One of the largest tiger  
and elephant parks in  
India and  
dominated by dry  
deciduous forests**

The background of the slide features a pattern of stylized green leaves and branches, rendered in various shades of green, creating a natural and textured backdrop for the text.

**RESTORATION OF  
DRY DECIDUOUS HABITATS  
AND  
LIVELIHOODS**

# Habitat Restoration

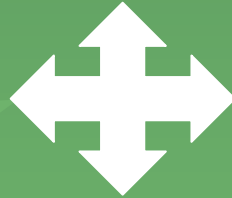
**Reversing  
degradation**



**Managing  
invasive species**

**Minimize  
anthropogenic  
pressures**

**Reversing  
degradation**



Managing  
invasive species

Reducing  
anthropogenic  
pressures

# Reversing degradation

Rain water harvesting



Natural Juvenile support



Sapling planting &  
Seed broadcasting

P  
A  
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E

ACTIVE

# Rain water harvesting

First weapon in the restoration toolkit

- **Critical in a dry deciduous context**
- Habitat restoration benefits
  - Water retention
  - Soil alleviation
  - Grass / vegetation growth
  - Fresh seedling recruitment
- Facilitates wildlife re-habitation

# Water harvesting mechanisms



Small Ponds



Check Dams



Stone overflows



Trenches

Carried out 100% manually by local communities generating significant alternate livelihoods

# Natural Juvenile Support



- Faster height gain than unsupported plants
- Helps surrounding vegetation & grass growth
- More drought resistance



# Natural juvenile support

High cost-benefit ratio

- Low cost
- Shortens restoration time
- Leverages genetic strengths of native plants

Significant revenue generator for local communities

# Sapling Planting and Seed Broadcasting

- Correct specie imbalances
- Address 'keystone specie' deficits

- Generate alternate livelihoods
  - Seed collection
  - Sapling growing
  - Planting / post-planting

# Sapling planting



# Species selection methodology

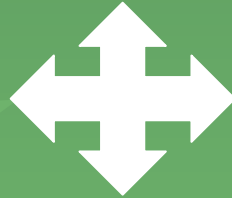
Native species selected based on

- Expert consultations
- Landscape benchmarking

Mix of species based on multiple parameters

- Utility for diverse wildlife
- Soil improvement
- Bio-diversity improvement

Reversing  
degradation



**Managing  
invasive species**

Reducing  
anthropogenic  
pressures

# Lantana...major threat to Western Ghats' bio-diversity

67% of Bandipur Tiger Reserve impacted by *Lantana camara* (over 600 sq kms)

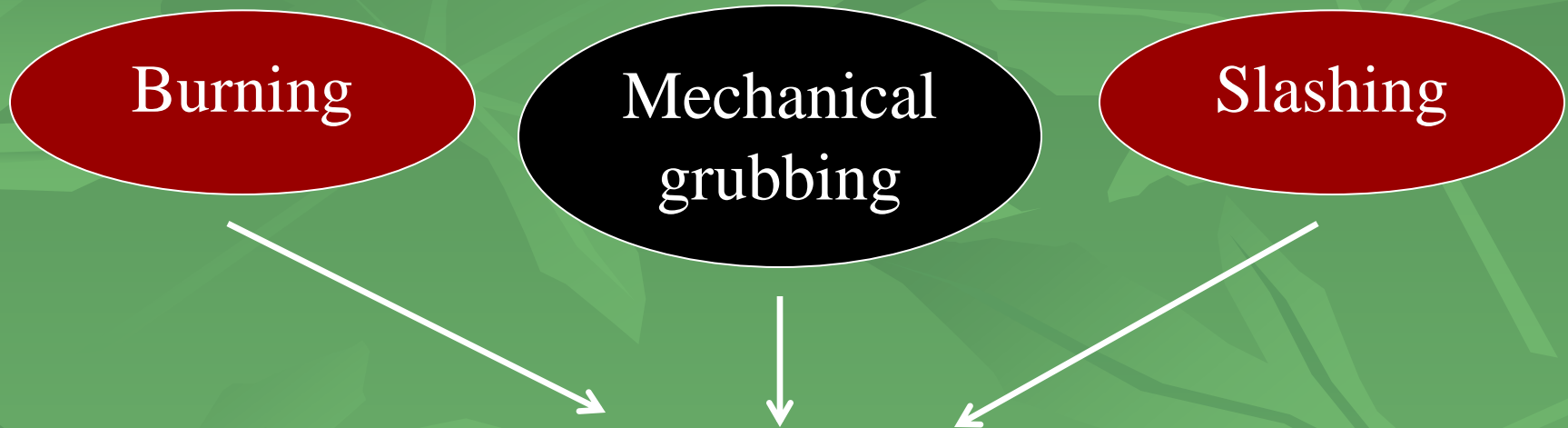
**Disappearance of bottom and middle storey vegetation**



**Lower recruitment of tree seedlings**

**Lower food availability for wild animals**

# Traditional methods have not only been ineffective.....

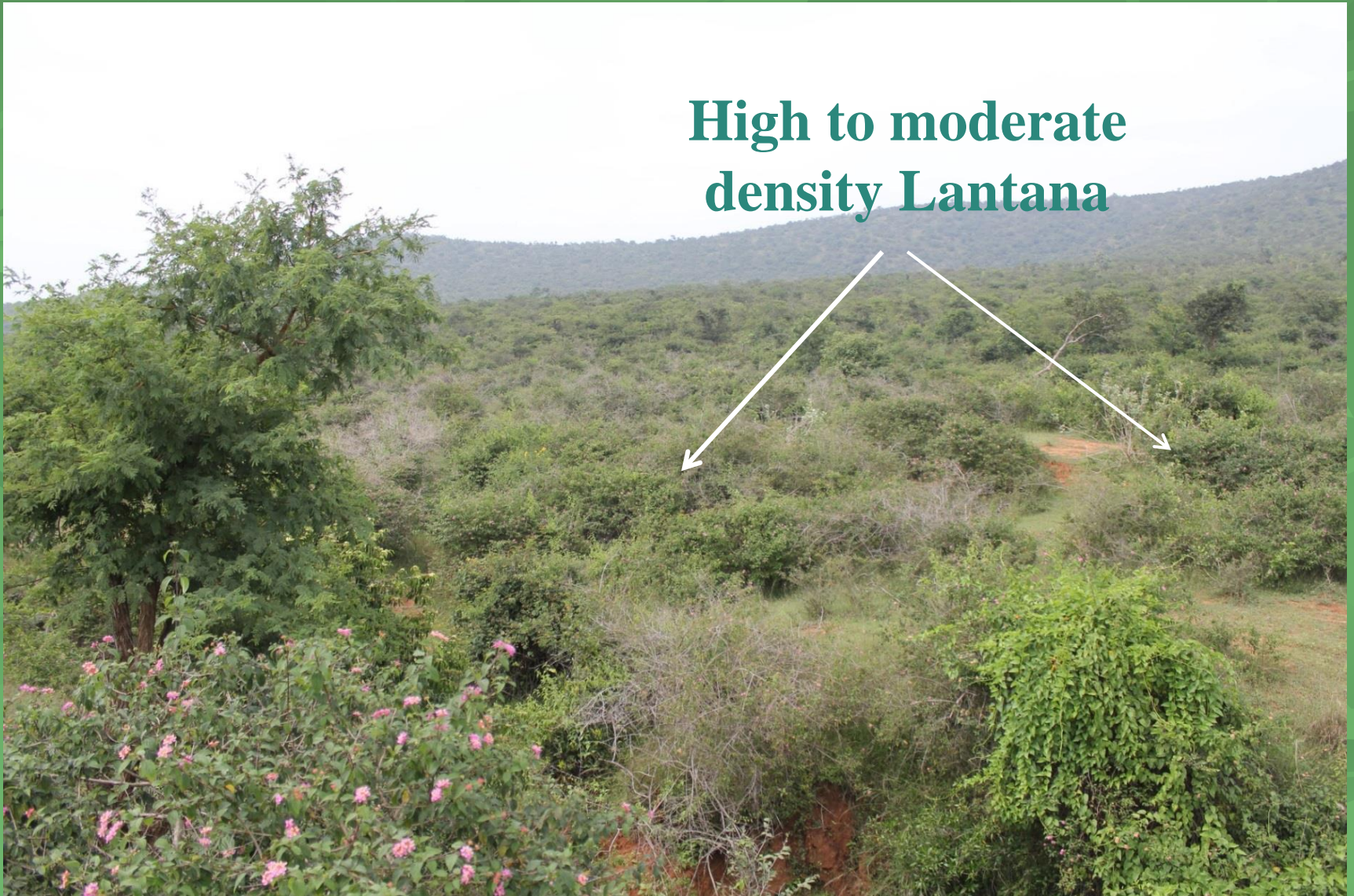


**But have led to exponential increase in Lantana**

- Large-scale exposure of sub-soil Lantana seeds to sunlight / breaking of dormancy
- Destruction of native seedlings / vegetation
- Opening up of forest floor to other invasives

# CEPF-ATREE Pilot plot - Before

High to moderate  
density Lantana





# CEPF-ATREE Pilot plot - Now



# Cut Root-stock method



**Successfully implemented in  
Corbett National Park &  
over 100 sq. kms of  
grasslands restored**



**Lantana is cut 2-3 inches  
beneath the soil surface,  
below the coppicing zone**

# Cut Root-stock method



**< 10% Lantana  
re-emergence**

Scar  
6-9 inch  
diameter

**Minimum soil /  
dormant seed  
disturbance**



# Cut Root-stock method



Good emergence of  
Grass: natural and  
propagated

Native plants  
under Lantana  
undisturbed  
> 300 individuals  
per 10000 sft



# Group of community members trained



**Alternate livelihood of around US \$ 200 per acre**

# Lantana Craft as alternate livelihood



**A new livelihood opportunity**

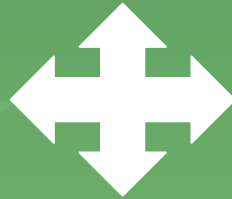
# Roll out post CEPF-ATREE Project

Currently restoring a 200 hectare  
plot inside  
Bandipur Tiger Reserve



*Initial results are  
very encouraging*

Reversing  
degradation



Managing  
invasive species

**Reducing  
anthropogenic  
pressures**



# Key anthropogenic pressures on degraded eco-systems

**Firewood  
Collection**

**Livestock  
Grazing**

# Firewood collection

- Eco-friendly and low-smoke cook-stoves installed across 400 homes
- **65% saving in firewood = 1400 tonnes of firewood saved a year**
- Removed *Lantana camara* provided to villagers for use as fuelwood



# Livestock Grazing

Voluntary cessation of cattle grazing by community members in forest areas restored with their participation



Accelerated  
vegetation growth  
and restoration

Success of participative  
model in altering  
community behaviour  
patterns

The background of the slide is a solid green color with a faint, stylized pattern of overlapping leaves and stems. The leaves are rendered in various shades of green, creating a sense of depth and texture. The stems are thin and dark green, connecting the leaves. The overall effect is a natural, organic feel.

# **OUTCOMES AND IMPACT**

# Ecological outcomes – 1

Successfully evolved a holistic, sound and low-cost methodology for restoring degraded dry deciduous forest eco-systems



Around 1000 hectares restored to healthy wildlife habitats over the last 6 years

Replicable

# Ecological indicators – 1.1

Eco-system functions reach healthy & self-sustaining levels in hitherto badly degraded and denuded forest tracts

2009



2014



# Ecological indicators – 1.2

Indicator	Measurement
Grass cover %	> 80%
Tree population numbers per acre	452
Average number of tree species per acre	10
Total number of tree species across plots	16
Shrub population numbers per acre	236
Number of grass & shrub species per acre	6

Vegetation density on par with healthy habitats  
Bio-diversity levels are improving

# Ecological outcomes – 1.3

Good resurgence of prey and predator species (mammals, birds, reptiles) as evidenced by field surveys and transects





# Ecological outcomes – 2

Evolution of protocols for managing *Lantana camara* in dry deciduous forests of the Western Ghats



Potential for significant bio-diversity benefits in a global BD hotspot

# Socio-economic outcomes - 1

Established a sustainable model of community-participative wildlife conservation



Model sustained for > 6 years  
5 village communities involved  
90 people participating

- ~ 18000 person-days of alternate livelihood
- \$ 80000 of revenues

# Socio economic outcomes - 2

Significant intangible community benefits i.e. reduced human-animal conflicts, quality of life, self-esteem, **retention of traditional knowledge**, etc.



The image features a background of stylized, overlapping green leaves with prominent veins, rendered in a flat, graphic style. The leaves are in various shades of green, creating a sense of depth and texture. Centered over this background is the text "THANK YOU" in a bold, yellow, serif font with a slight drop shadow, making it stand out against the green foliage.

**THANK YOU**