



# Glanders Control Status in India: Challenges and Opportunity



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**Equine Production Campus, Bikaner became functional in 1989**

# Mandates of ICAR-NRCE

- Basic and strategic research on equine health and production
- To provide advisory and consultancy services and capacity development



# Equine Health Research

## Surveillance and monitoring of equine diseases in India

EHV-1/4 – Diagnostics and vaccine  
Equine Influenza (**WOAH Twinning**)  
Japanese encephalitis/WNV  
Equine Rota viruses  
Equine Infectious Anaemia

Glanders (**WOAH Twinning**)  
Strangles  
*Rhodococcus equi*  
CEM- Diagnostic services only  
Equine Piroplasmiasis (**WOAH Twinning**)  
Equine Trypanosomiasis (diagnosis, nano-medicine)

# Impact of S&M activities

- **India declared free of AHS in 2015 by WOA**
- **Outbreaks of glanders in equine during 2006-07, 2009, 2010-2022**
  - National Action Plan on Glanders-2019
- **Equine influenza (EI) in India in 2008**
  - subsequently affected equines in 13 different states.
  - Diagnosed and controlled
- **Equine infectious anemia**
  - Diagnosed, eliminated (**1987-88**)
  - No cases of EIA since last 14 years
  - Favourable situation for disease free status

# National Referral Laboratory of Equine Diseases (Govt of India)

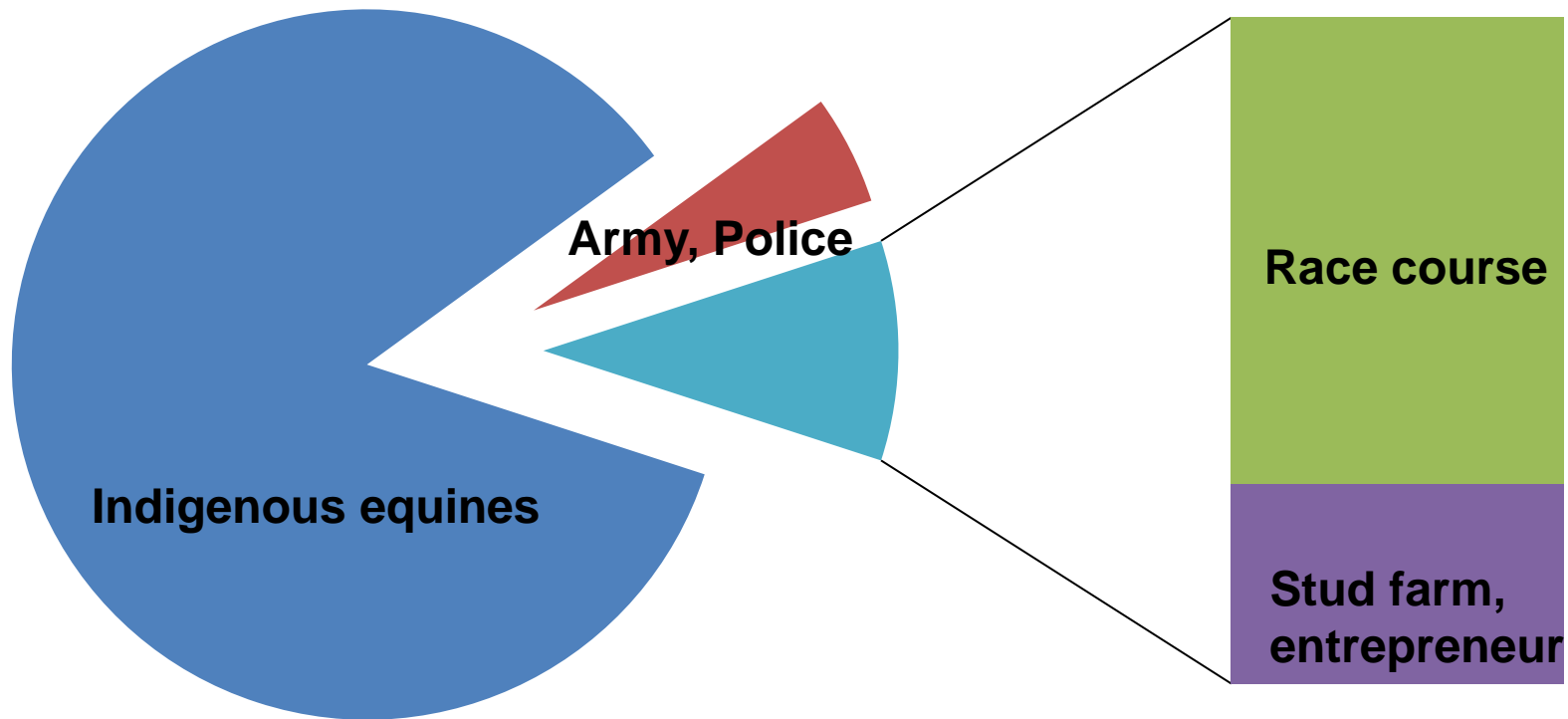
- **Equine Infectious Anaemia (AGID),**
- **Equine Influenza (HI),**
- **Equine rhinopneumonitis (ELISA, PCR),**
- **Equine Piroplasmosis (ELISA),**
- **Contagious Equine Metritis (Agent Identification),**
- **Equine Viral Arteritis (VNT),**
- ***Salmonella* Abortusequi infection (Agglutination),**
- **Dourine (CFT),**
- **Glanders (CFT), Human Glanders (MOHFW)**
- **Trypanosomiasis (ELISA/Agent Identification)**
- **African Horse Sickness (ELISA)**



# **Equine population in India**

# Distribution of equine population

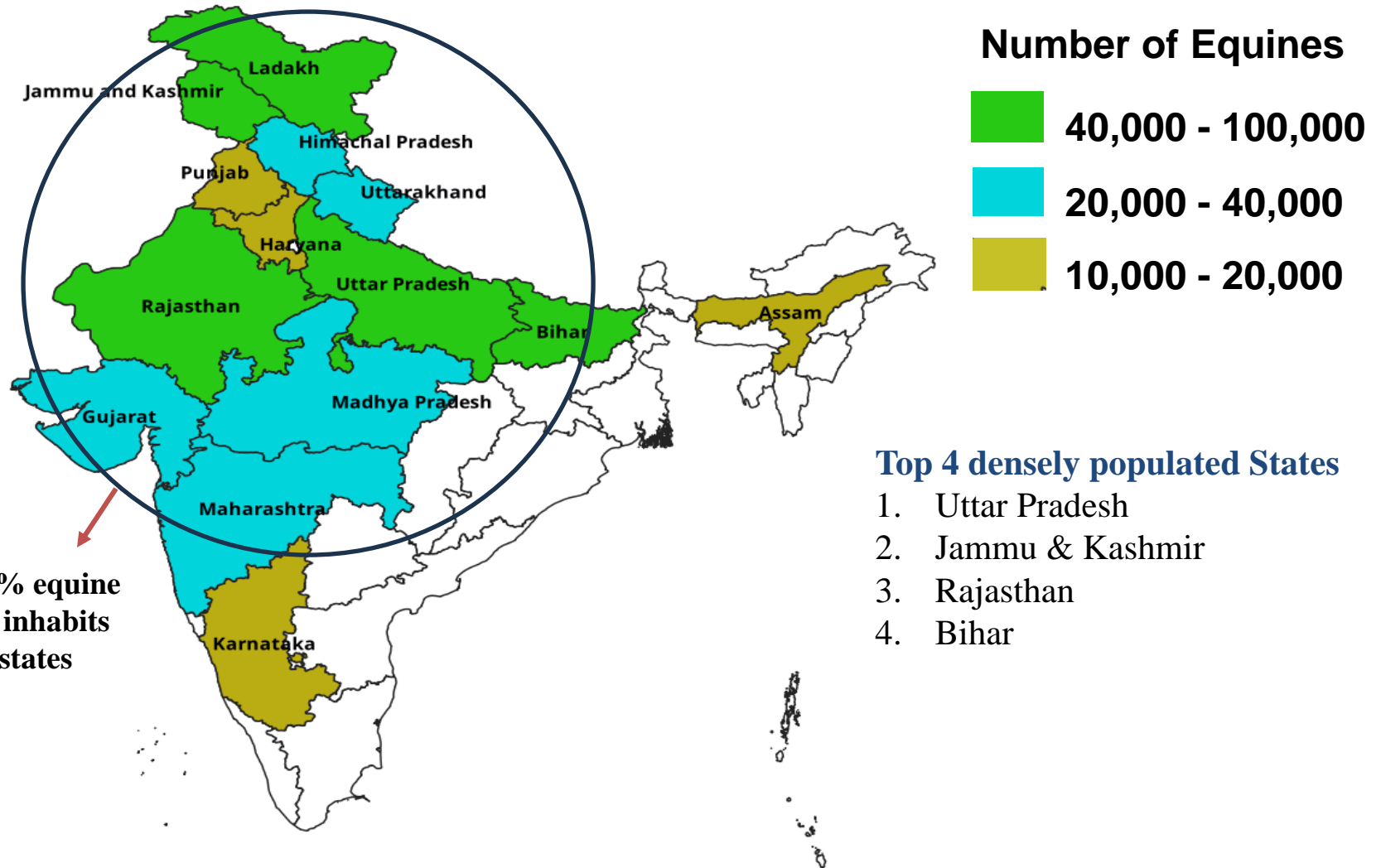
Livestock Census 2019 ~ 0.6 million



- Working equids- pack animal, Brick kiln, hilly terrain
- Poor management
- Frequent cases of Glanders



# Distribution of equine population in different states of India



# Horses in India



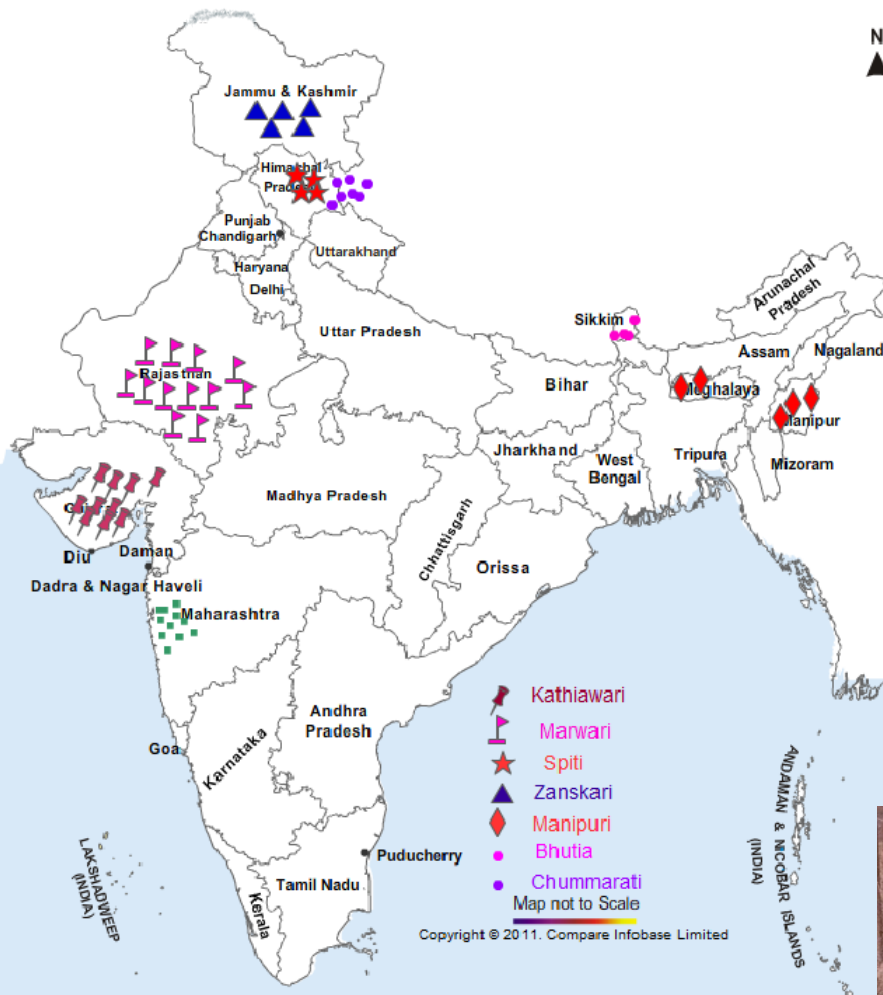
**Marwari**



**Kathiawari**



**Spiti**



**Zanskari**



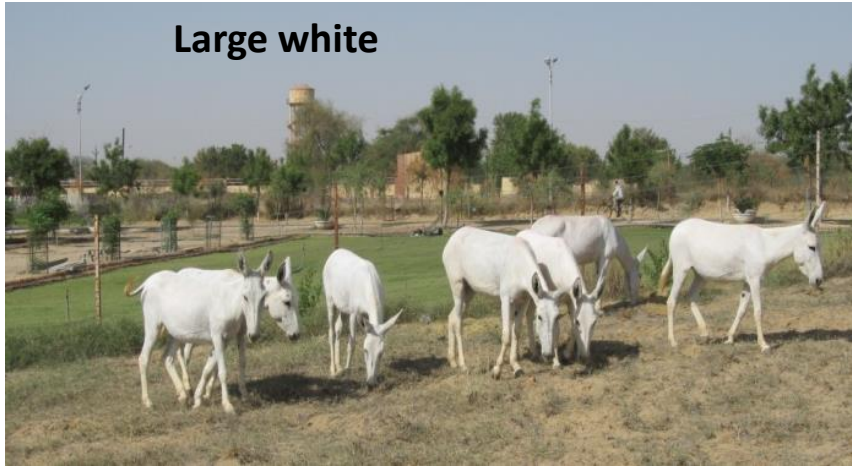
**Bhutia**



**Manipuri**

# Donkeys in India

Large white



Small Grey



Khur



Kiang





# Equine glanders in India

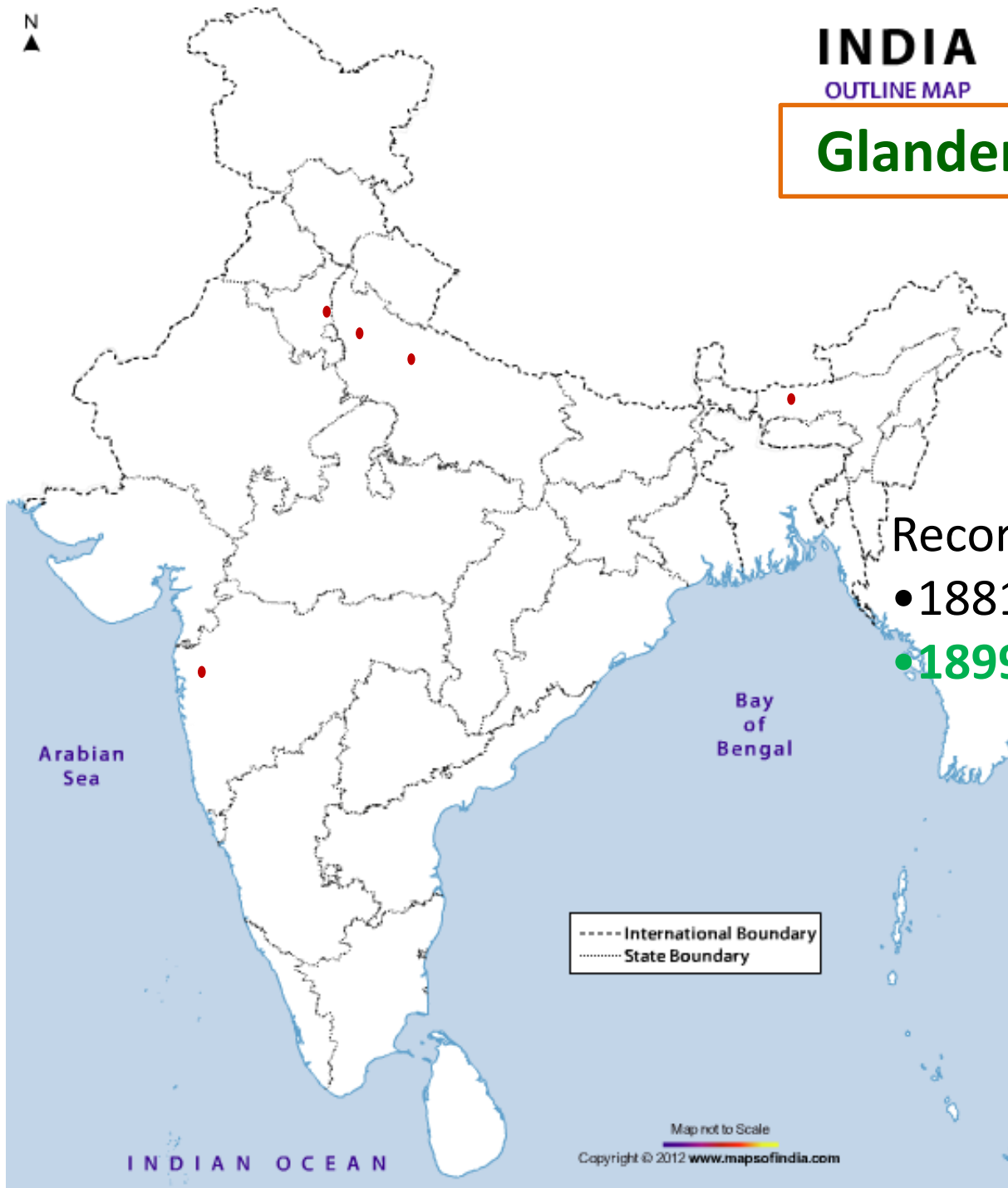




# INDIA

OUTLINE MAP

## Glanders History in India



Recorded case

• 1881-84

• **1899 Glanders and Farcy Act**

- 1950 & 56                      Bombay                      1 each
- 1961                              Chandigarh                      ?

**Indo China war (1960-61) and after, increase in incidence**

- 1962-63                      Haryana    5 (Hisar) and 1(Rohtak)
- 1975                              Babugarh (UP)                      11
- 1978                              Meerut (UP)                      4
- 1979                              Moradabad                      ?
- 1979                              Gauhati                      4
- 1979                              Delhi                      1
- 1984, 85, 86                      Haryana & UP                      14, 3, 10
- 1987                              HP                      6
- 1988                              Punjab                      9
- 1989                              Haryana                      2
- 1990-91                      Haryana                      2
- 1994-95                      HP                      2
- 1998-99                      Haryana                      1
- 1999-2000                      Baheri (UP)                      1 (unconfirmed)

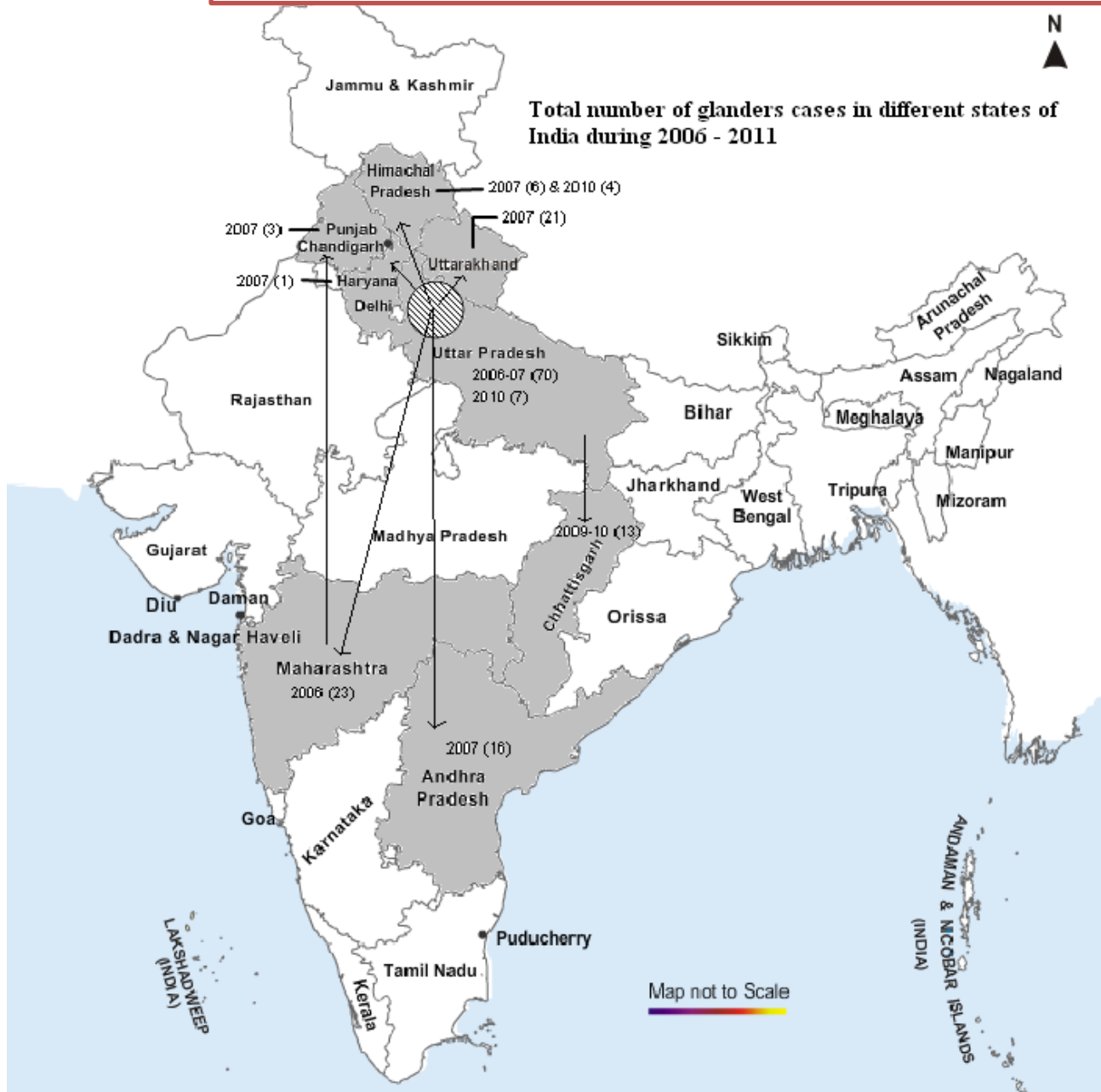
**Military  
horses-  
glanders  
free**

## Glanders surveillance in Army Horses and Organized Sectors

- Strict surveillance of equines in Defense Establishments and organized sectors (race courses, polo and turf clubs, stud farms etc.) resulted in the **nonappearance of glanders cases in these sectors since 1980** (Verma, 1981).
- **Six years (1983-1989) research scheme on glanders prevalence** in the army and civilian horses funded by Indian Council of Agricultural Research (ICAR) and conducted by CMVL, Meerut.
- The study revealed no cases in Army Equines, however, sporadic cases were found in civilian horses
- A promising avidin-biotin dot ELISA for glanders diagnosis was developed during this period (Verma et al., 1990). However, it was not validated or widely accepted.

# Re-emergence of glanders- 2006

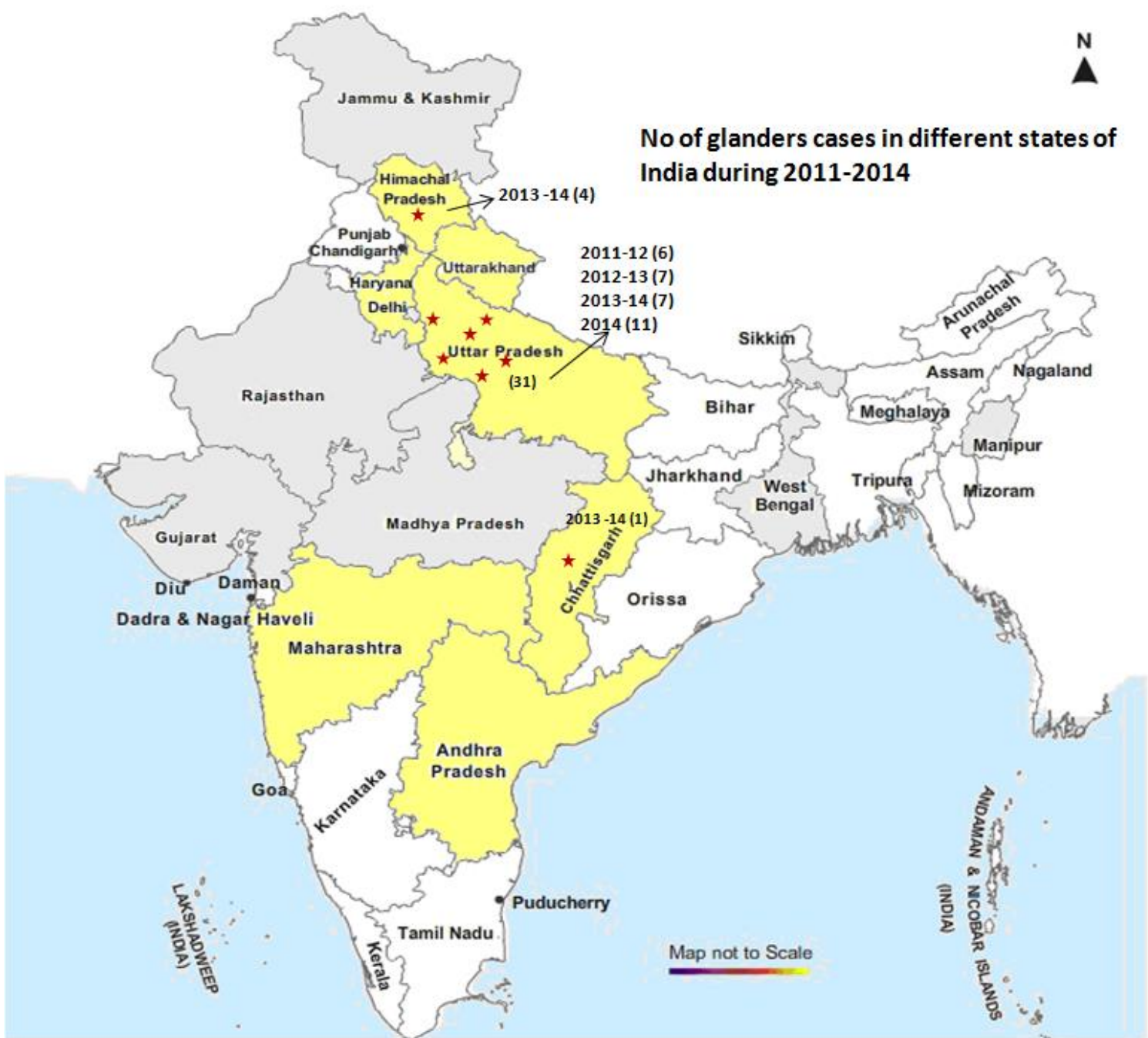
Total number of glanders cases in different states of India during 2006 - 2011







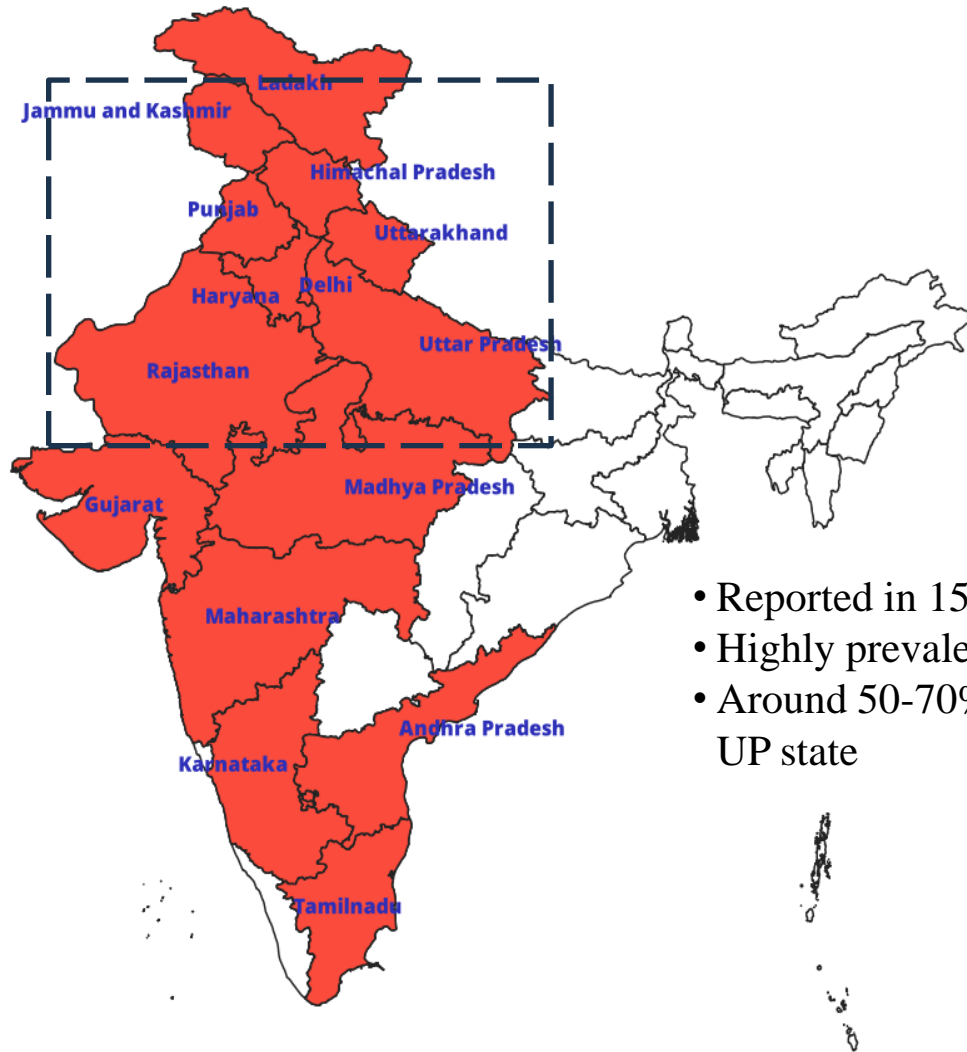
### No of glanders cases in different states of India during 2011-2014



Map not to Scale



# Glanders Reported States in India (2018 -2023)

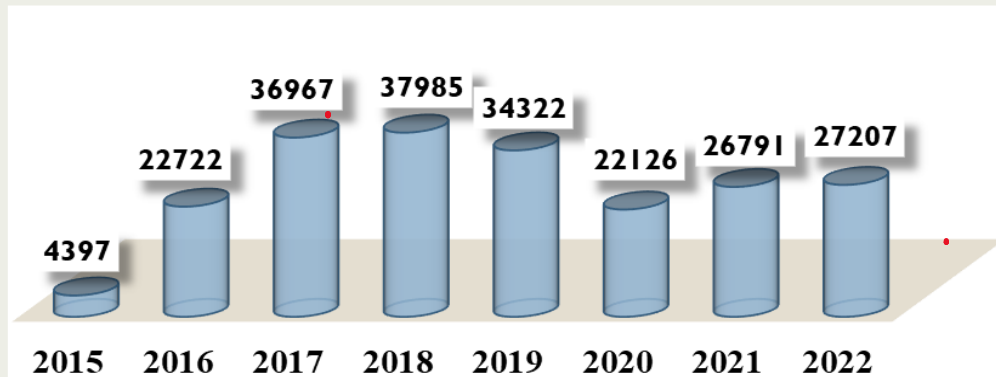


- Reported in 15 states
- Highly prevalent in northern states in India
- Around 50-70% cases were reported from UP state

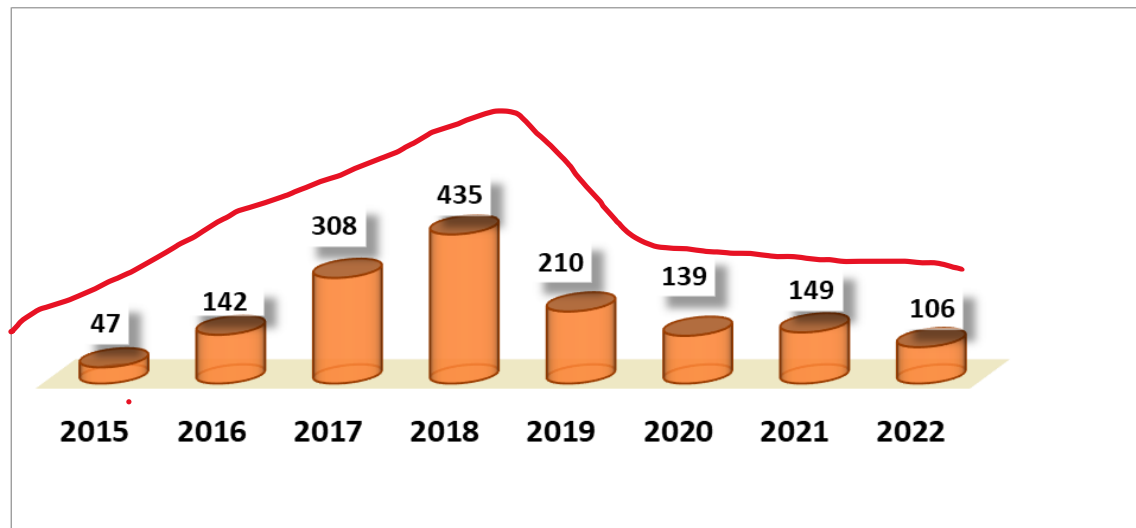
Reemergence of glanders were not observed in Military horses and in organized sectors (race horses, polo clubs, stud farms)

# Glanders surveillance during last 8 Years: National Status

## TOTAL SAMPLES TESTED



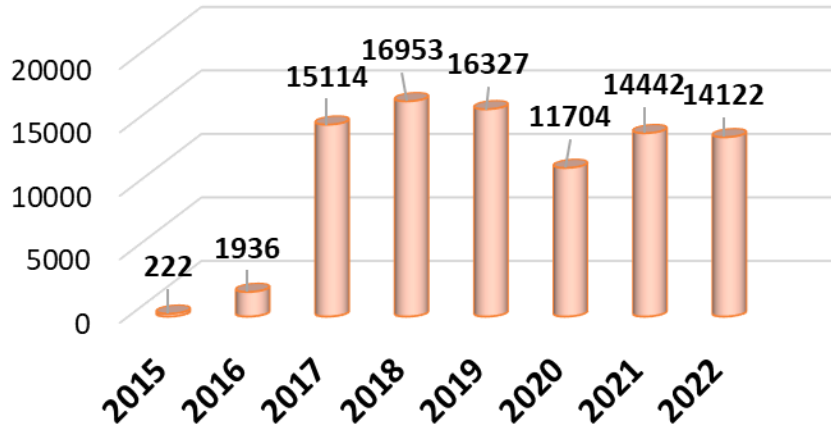
- This data does not include organized sectors
- Around 5000 samples are tested every year from the organized sectors
- However, no cases were reported



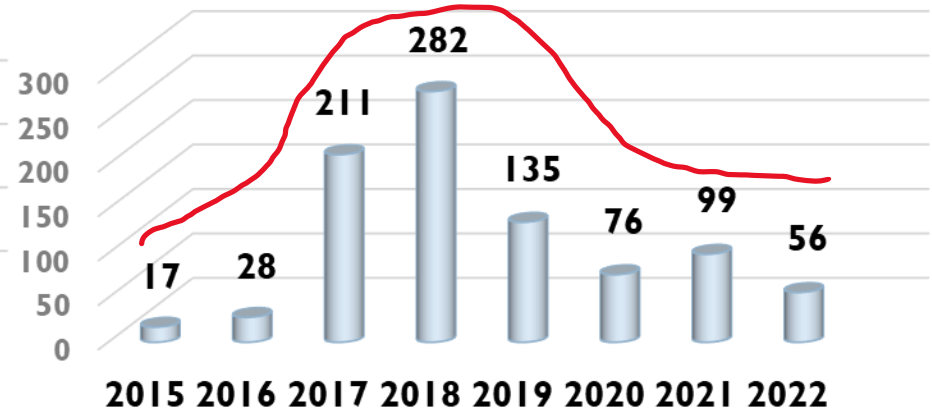
Total number of glanders positive cases

# Glanders status in UP State

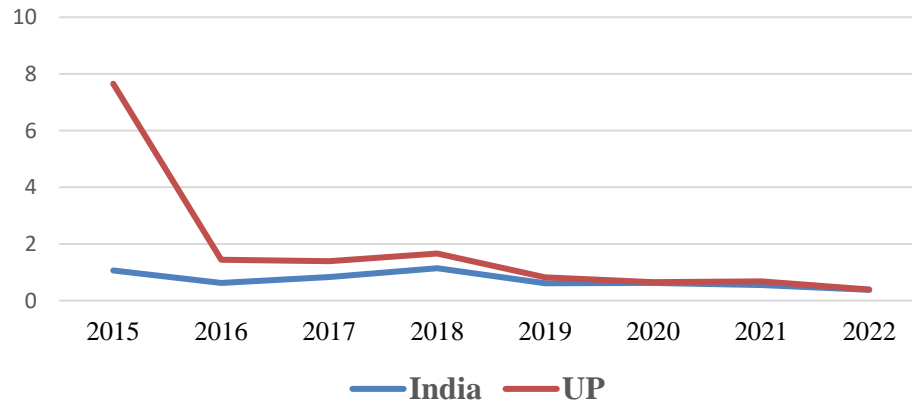
## Total samples tested from UP



## Glanders cases in UP



## Glanders sero-positivity



# National Action Plan on Glanders 2019

**Objective** - surveillance, control and eradication of Glanders in equines from India.

➤ **Two-tier sero-diagnosis approach**

1. ELISA - initial screening
2. CFT – confirmation of positive case  
Supportive- Culture isolation, PCRs

➤ **National Reference Laboratories (NRL)**

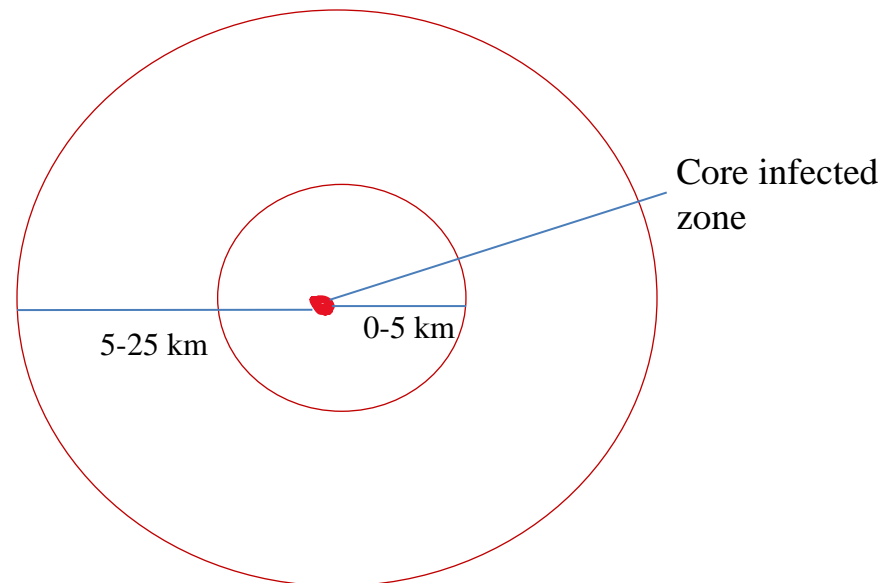
1. ICAR –National Research Centre on Equines, Hisar
2. Central Military Veterinary Laboratory (CMVL), Meerut for equids from the defense services

➤ **Development of 21 Network laboratories (DL) for glanders**

- RDDDLs/CDDL/State Diagnostic Laboratories
- Capacity building of laboratory personnel and supply of reagents
- Verified for repeatability and reproducibility of their test results

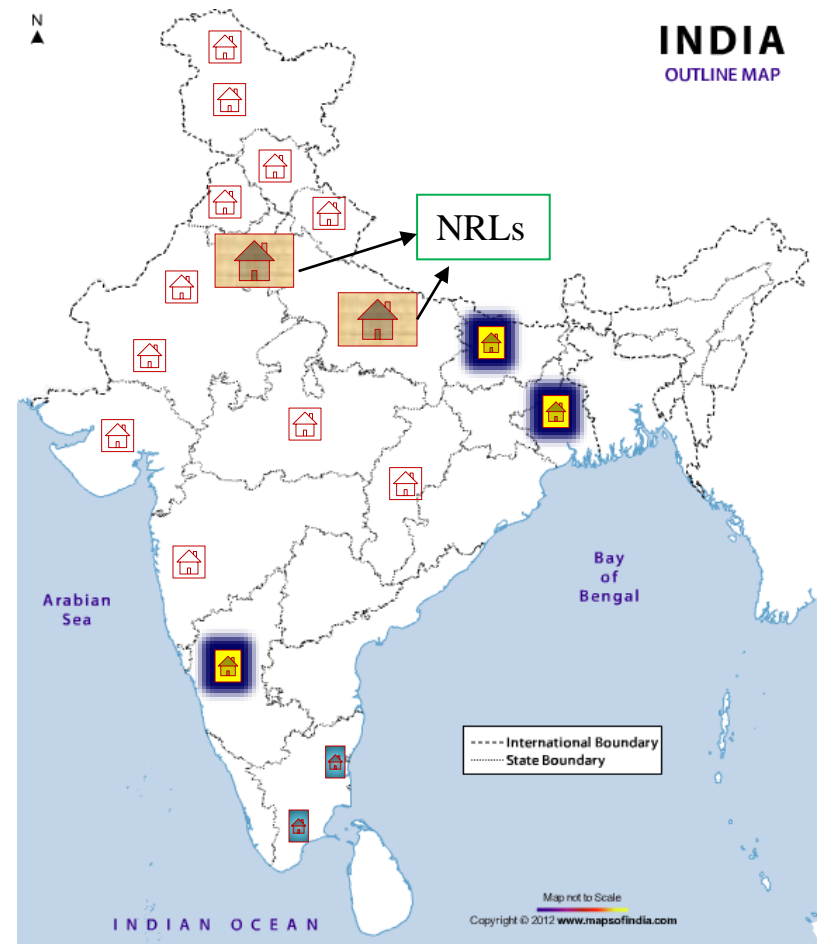
# Surveillance Plan

- This surveillance plan is applicable to all the states in India
- Continuous, and random surveillance strategy – 10 – 20% equine population in a year
- In case of positive report – 25 km radius surrounding core infection zone is notified area. Animal movement and equestrian events are prohibited.
  - Three times surveillance around 25 km radius of the infected zone
  - 100% surveillance around 0-5 km
  - 25% surveillance around 5-25 km
  - Negative results allow denotification



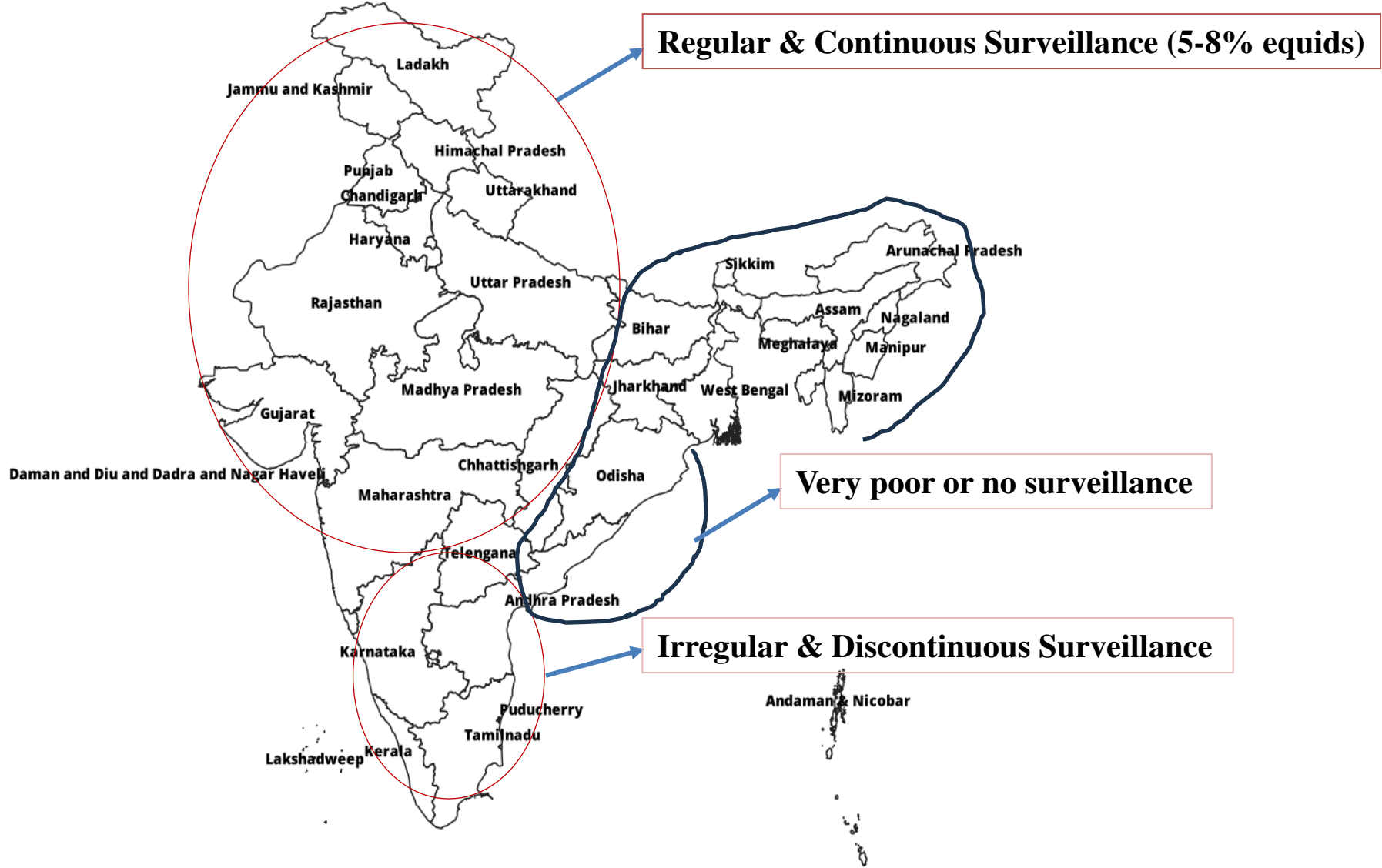
# Network Labs for glanders surveillance

	RDDLs	State DI Lab
State Name	Punjab	Gujarat
	Maharashtra	Haryana
	West Bengal	Himachal Pradesh
	Karnataka	Rajasthan (2 Labs)
		Madhya Pradesh
		Jammu
		Kashmir
		Uttarakhand
		Chhattisgarh
		Bihar



- Established 14 network diagnostic facilities in 14 states
- 10 Labs regularly involved in the surveillance
- In 2023, two network labs are proposed to develop in Tamil Nadu

# Present Surveillance Status





# Animal movement & spread of glanders

## Sensitive zone/nucleus

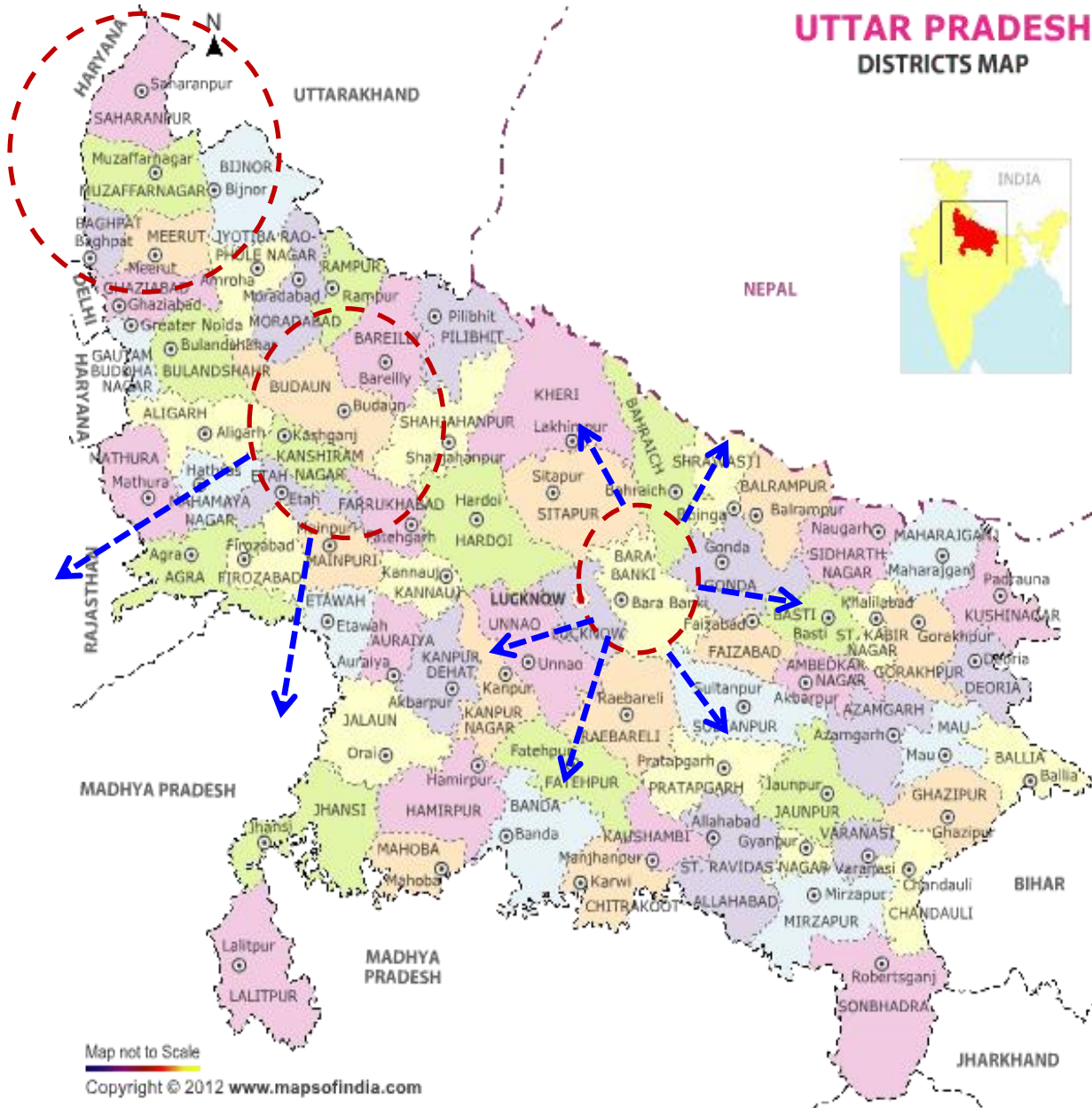
Bareilly,  
Badaun,  
Kashganj,  
Auraiya

Saharanpur,  
Shamli,  
Baghpat  
Ghaziabad,  
Meerut,  
Yamunanagar  
Haridwar

Animal fair  
Deva  
Mela-  
Barabanki



# Inter state movement



**Working equids**

Brick Kiln

**Seasonal variation**

- Feb-May

- Sept-Nov

**Animal fair**

# Management of glanders outbreak

Reporting of  
positive cases  
Quarantine

Laboratory  
Confirmation

Notification:  
SAH, DADF,  
WOAH

Elimination of  
positive reactors

Follow-up  
surveillance

1. Test positive and clinical positive
2. Test positive, in-contact animals but no clinical appearance
3. Test positive but no clinical appearance – **repeat testing with second sample**
4. **Repeat testing in case of 2, if equine keeper insists so**

# Challenges and Opportunities

## Opportunities

1. **Accurate and cost-effective diagnostic systems**
2. **Network Laboratory set up**
3. **Glanders Action Plan supported by Govt of India**
4. **Less number of equids**

## Challenges

1. **Lack of funding to run the programme**
2. **Reluctance of competent authority of various states to participate in the programme**
3. **Low priority of equids as livestock animals**
4. **Lack of awareness among equine keepers**
5. **Very less compensation to eliminate the positive equid (~ 300 USD/250Euro)**
6. **Partial Antibiotic Treatment and trading of equids**
7. **Traceability**

# Acknowledgement

- Indian Council of Agricultural Research (ICAR)
- Defense Research & Development Organization (DRDO)
- World Organization for Animal Health(WOAH)

Thanks