





Routes		
PEM to APA	2 hrs.	
PEM to ARA	4 hrs.	
PEM to TRC	7 hrs.	
APA to ARA	2 hrs.	
ARA to TRC	4 hrs.	
APA to TRC	6 hrs.	

TAMBOPATA

Reference Map

LEGEND

- Posada
- Amazonas
- Refugio
- Amazonas
- Tambopata
- Research Center
- INRENA Control Post
- International Limit
- Department Capital
- District Capital
- Town
- Paved Road
- Dirt Road
- Protected Area

Source: Instituto Geografico Nacional, 2002
Ministerio de Transporte
Cartografía original: GeoGeo Graphics 2005





What are Macaws?

TAXONOMY

- Parrots (*Psittacidae*)

PHYSICAL PROPERTIES

- Long tail
- Bare, light-coloured facial patch
- Strong, dexterous beak
- Zygodactyl feet

RANGE & SPECIES

- New World/Neotropics
(Mexico to Argentina)
- 16 species extant world wide
(6 found here at TRC)



Large Macaws: Scarlet Macaw



NOT
EVALUATED

NE

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DEFICIENT

DD

< **LEAST
CONCERN** >

LC

NEAR
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EXTINCT
IN THE WILD

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Large Macaws: Red-and-green Macaw



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Large Macaws: Blue-and-yellow Macaw



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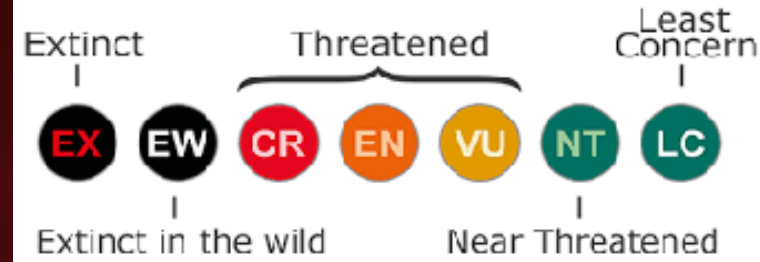
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Small Macaws



Chestnut-fronted
Macaw

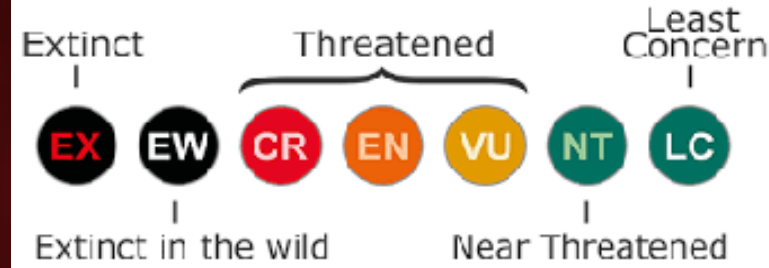


Red-bellied Macaw



Blue-headed Macaw

Parrots and Parakeets



Blue-headed Parrot



Mealy Parrot



Orange-cheeked Parrot



Yellow-crowned Parrot



White-bellied Parrot



Dusky-headed Parakeet



Cobalt-winged Parakeet



White-eyed Parakeet



Black-capped Parakeet

Why study Macaws?

IN DANGER

- Most endangered family of large birds
- All species potentially threatened

UMBRELLA SPECIES

- Large range
- Diverse habitats

‘POSTER SPECIES’

- Colourful and charismatic
- Increased attention and fundraising



Why are Macaws in danger?

Local hunting and illegal poaching



Illegal pet trade and trafficking



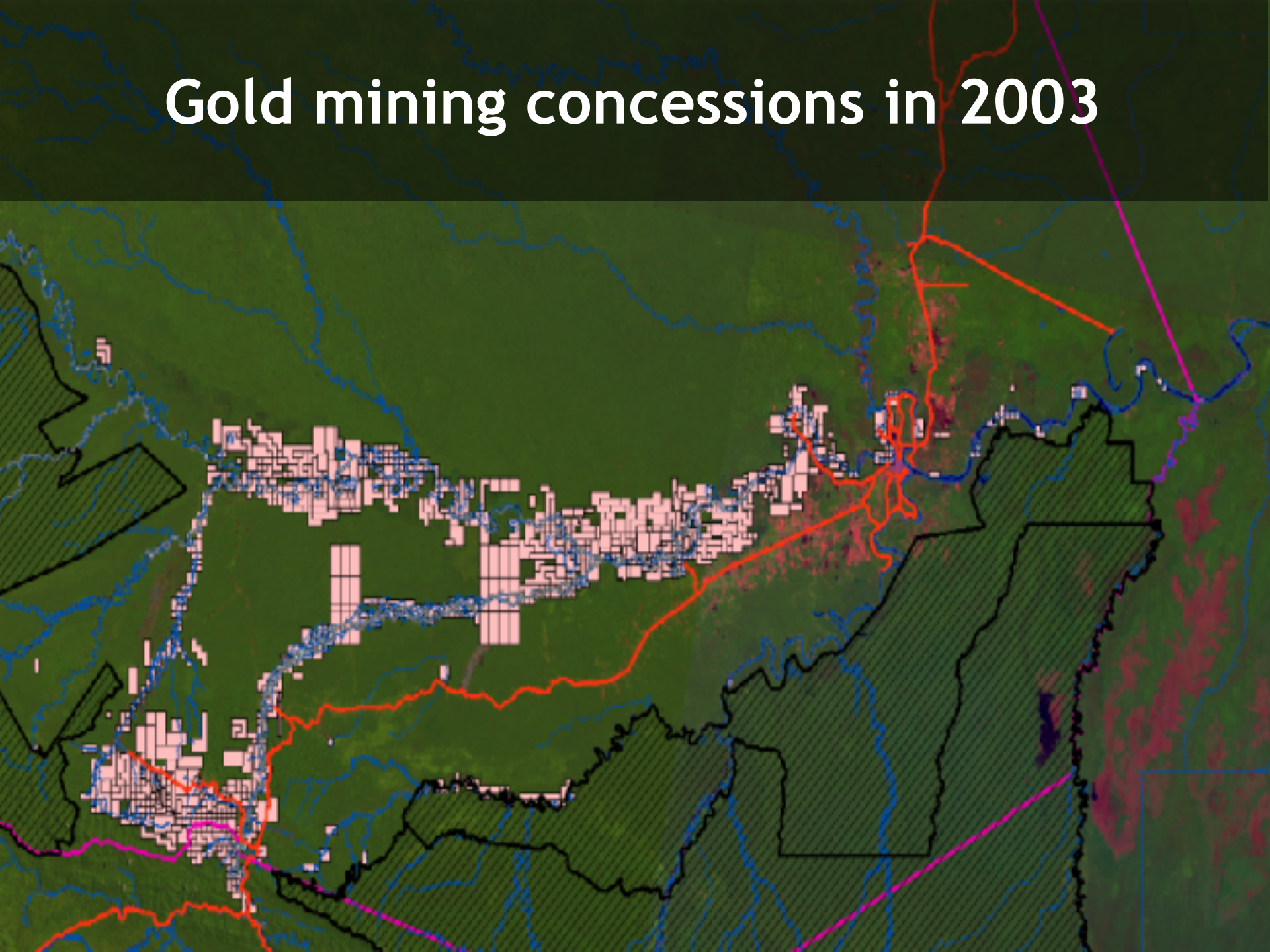
Rapid habitat loss and degradation



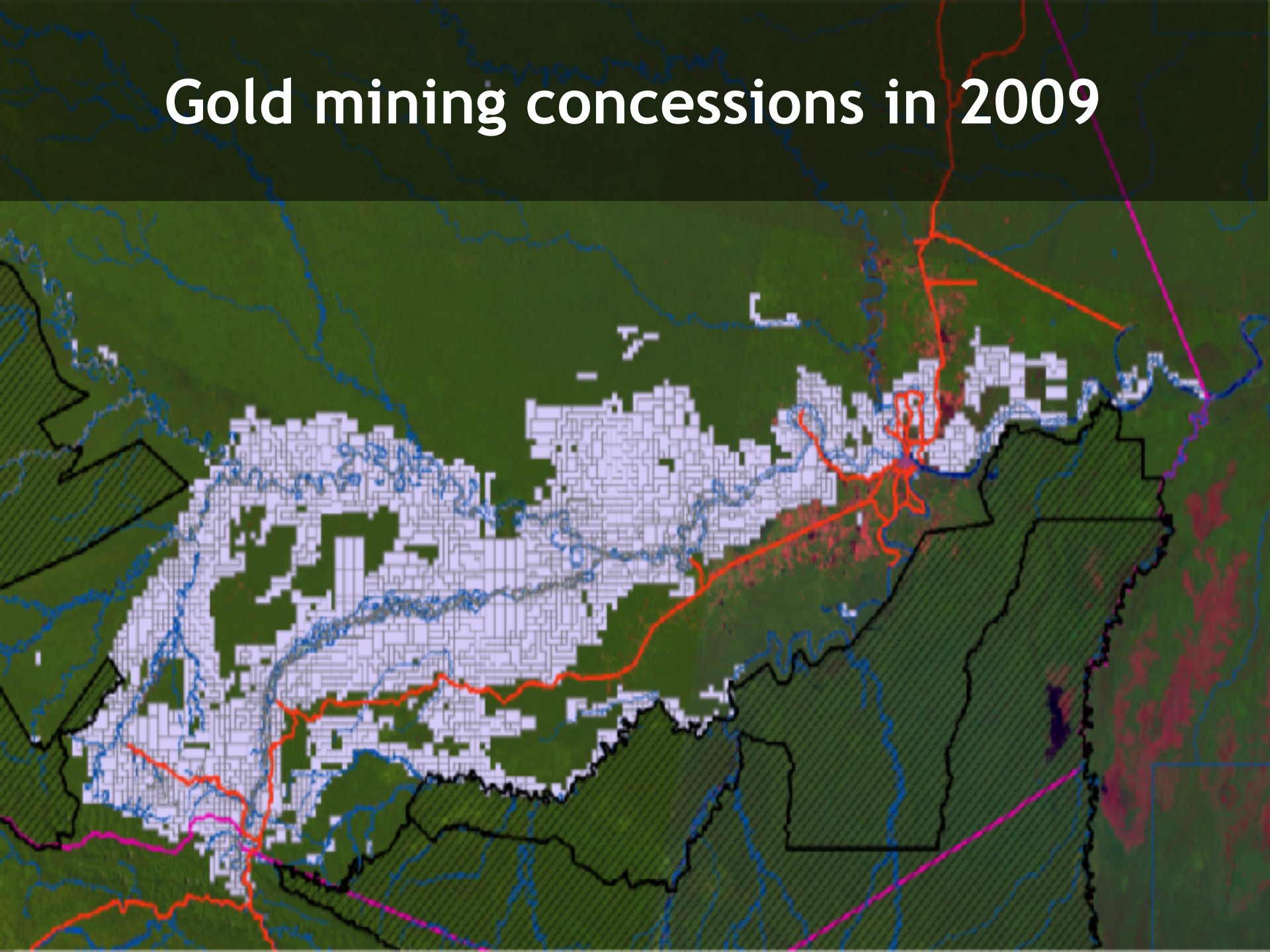
Gold mining



Gold mining concessions in 2003



Gold mining concessions in 2009



The use of Mercury (Hg) in gold mining



Project History

- Design of artificial nests for Macaws
- 1989 - 1999 run by Peruvian architect Eduardo Nycander



Project History

- Monitoring of natural and artificial nests
- 1992-1995, rescue and hand raise Macaw chick ('Chicos'); releasing into wild



The 'Chicos'



Project History

- November 1999
Don Brightsmith,
(Texas A&M
University) took over
running of the project



Field Research 1999 - Present



Seasonal abundance patterns
Clay lick use annual patterns
Bacterial fauna in the gut
Nest site management
Movement patterns
Genetic diversity
Soil composition
Fecal parasites
Nest success
Geophagy
Foraging
Diseases
Nutrition
Chick growth
Artificial nests
Nesting behaviour
Satellite telemetry
Group compositions
Clay lick use behaviour
Aggressive interactions
Ecotourism for conservation
Spatial distribution of clay licks

Core Studies

Clay Lick Use



Nest Availability & Breeding



Chick Development

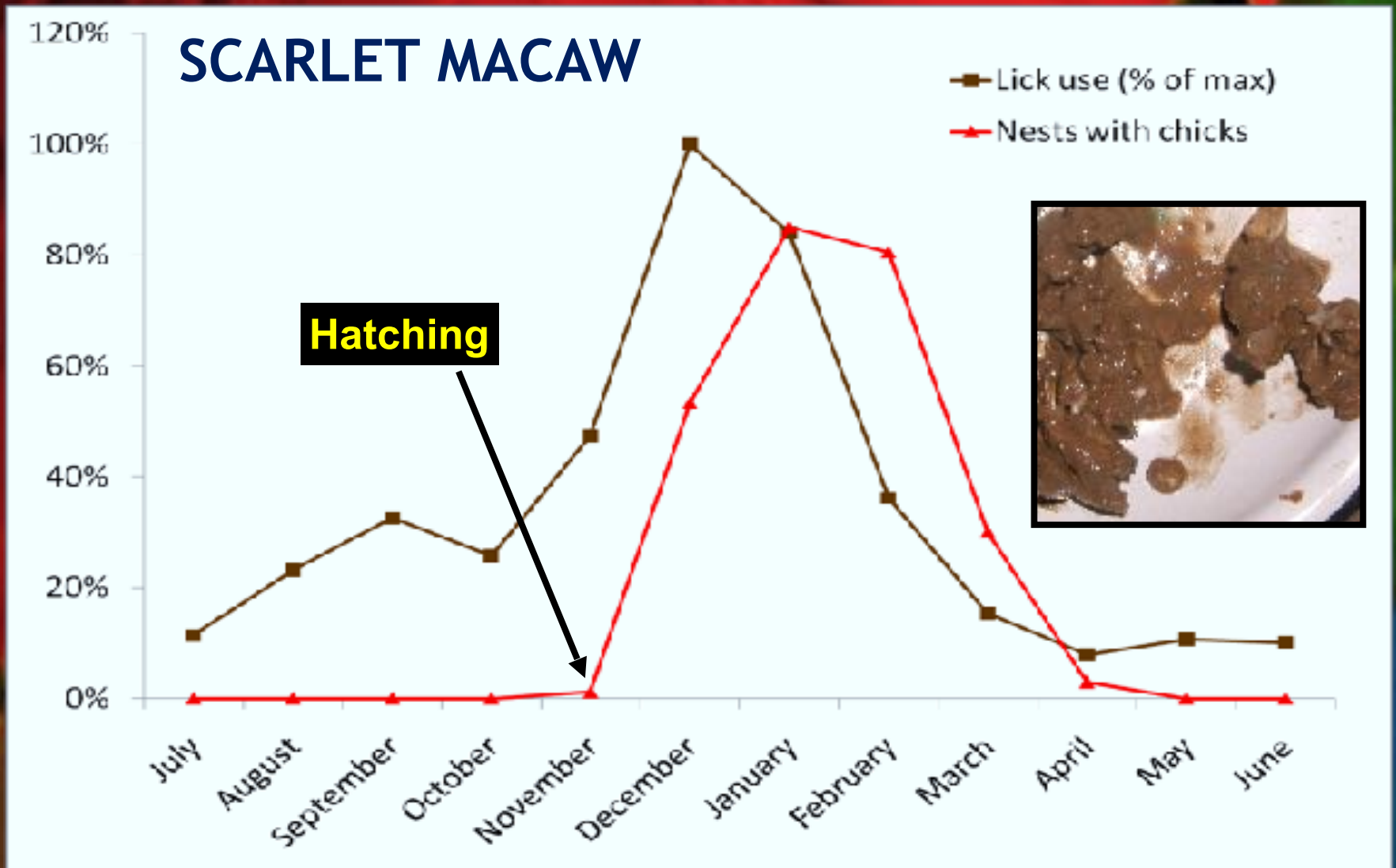


TRC Claylick



- Parrots 17 spp.
- Guans 3 spp.
- Pigeons 3 spp.
- > 99% parrots

Claylick use and breeding



Why they eat a soil?

Sodium (Na)
supplementation

Minerals (Ca, Mg, Fe)

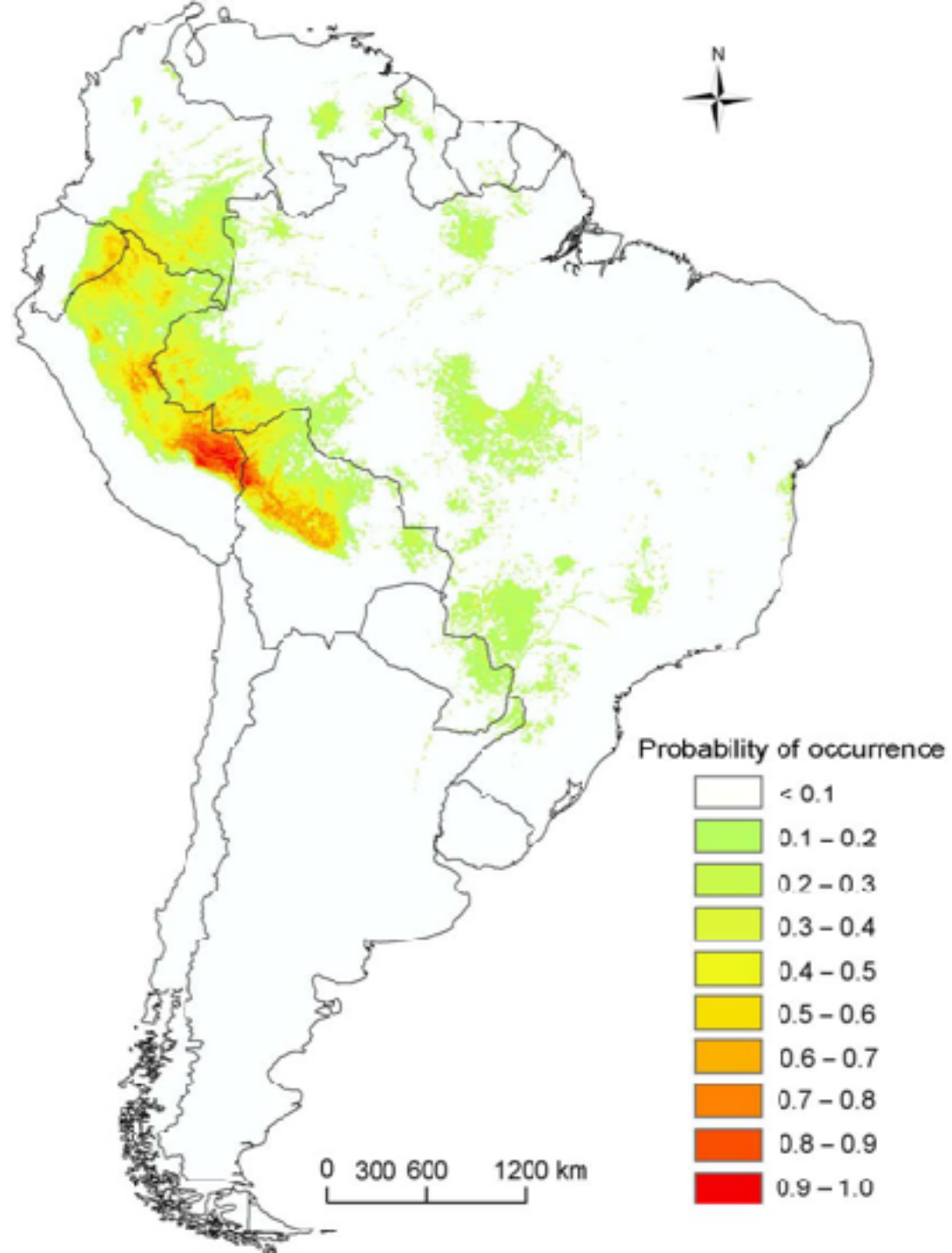
Protection from dietary
toxins





Na+ Na+ Na+ Na+

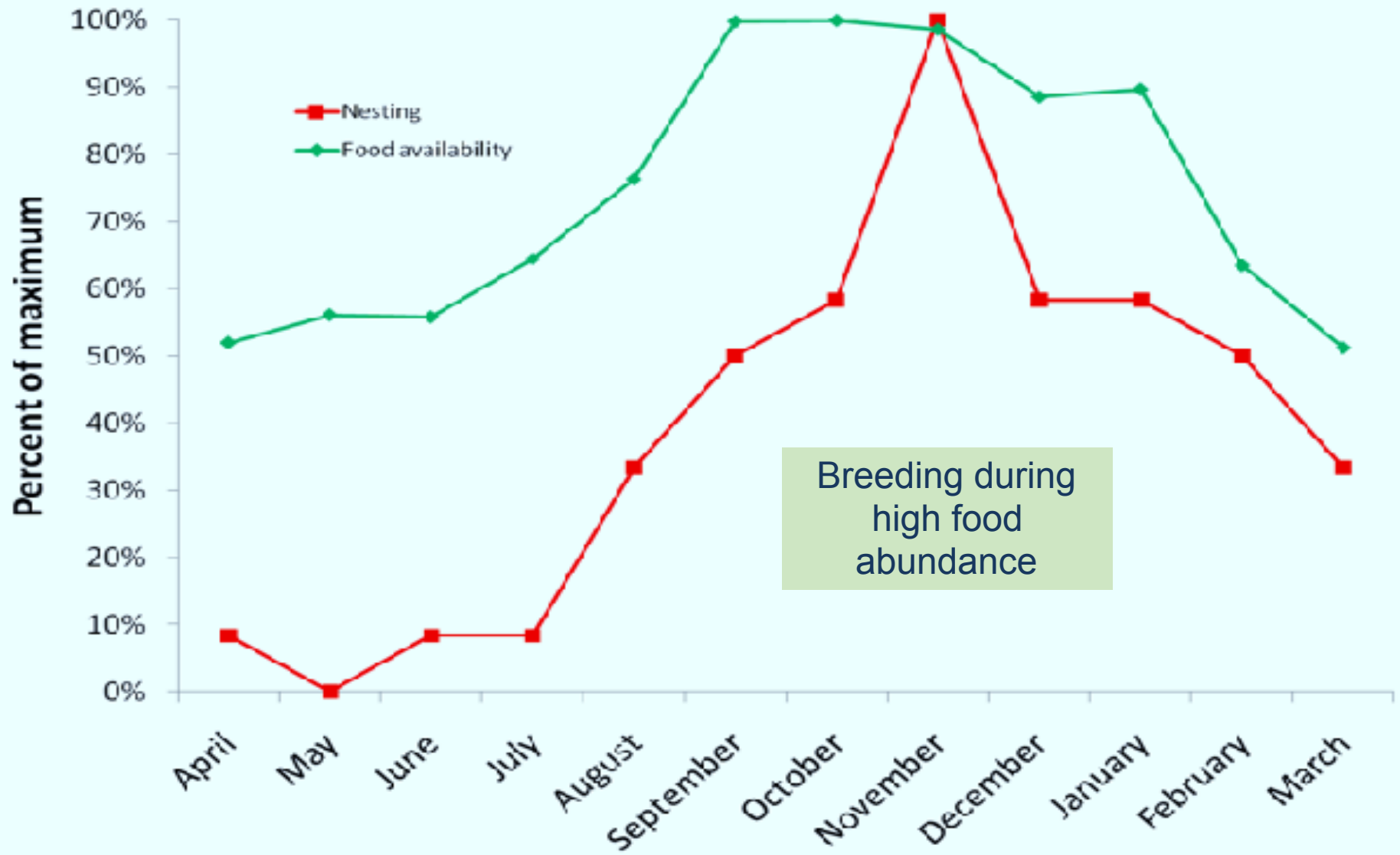




Nest availability and breeding



Breeding and food



Chick development

1. How do they grow?
2. When are they most vulnerable?
3. Why do some chicks survive & others die?



Guide to chick development

Day 0 - Egg membrane



Guide to chick development

Day 22 - Eyes open



Guide to chick development

Day 47 - Crown feathers complete



Guide to chick development

Day 83 - Ready to fly



Fate of chick

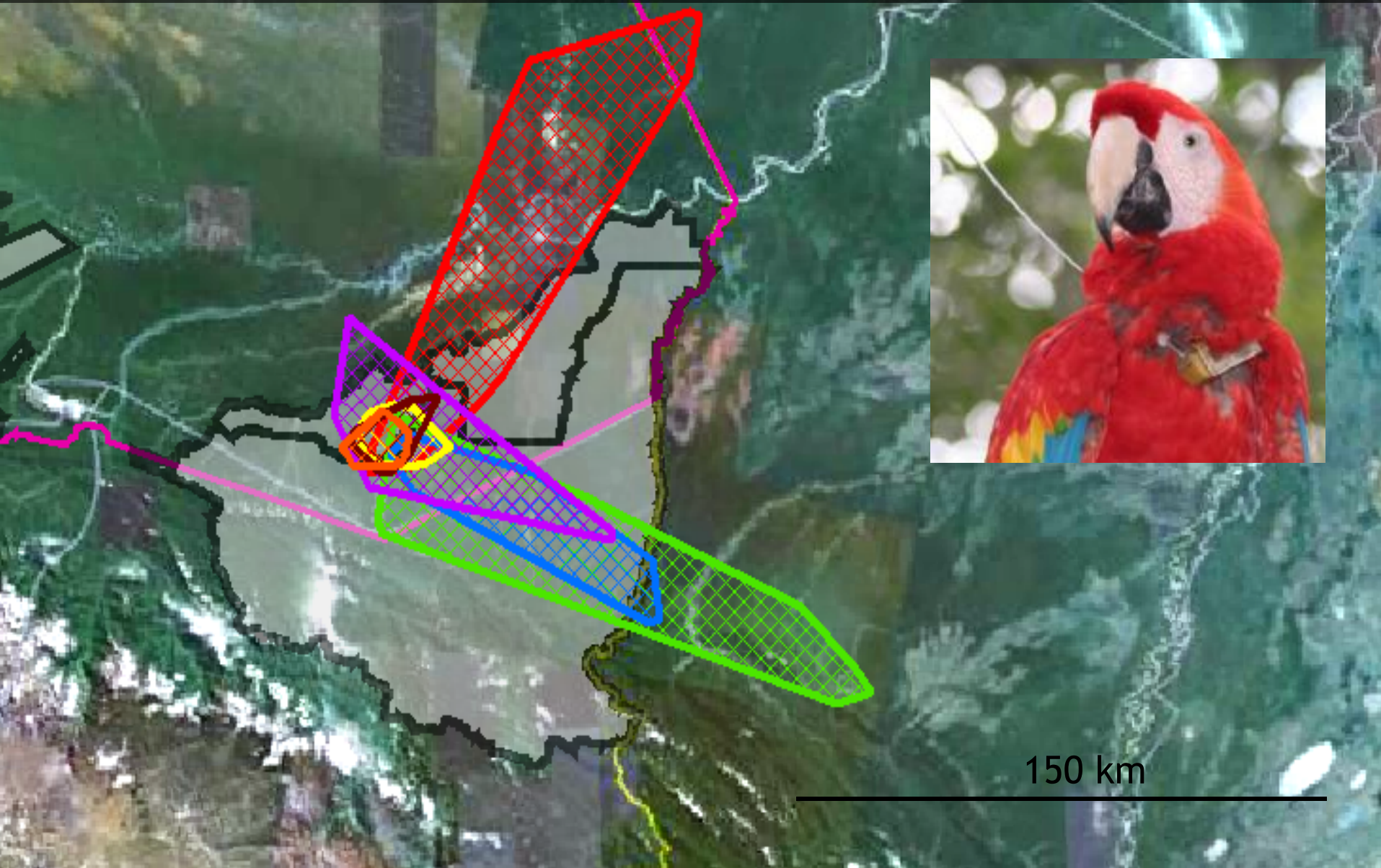


Chick fate	
Fledge	56%
Death by	
Starvation	26%
Unknown	6%
Nest conflict	4%
Other	4%
Disease	2%
Predation	1%
Total N	93

Nest Video



Satellite telemetry



150 km

More, and more...

Robotic eggs

- Temperature
- Rotation
- Placeholders

Chick translocations

- Saving chicks from starvation
- Testing adult acceptance



Thank you!



QUESTIONS?

