

Capybaras and Brazilian Spotted Fever: Technical Guidelines for Population Management in the State of Sao Paulo

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Brazilian Spotted Fever

Zoonosis

Rickettsia rickettsii - obligate intracellular Gram-negative bacterium

Incubation period - seven days



Electron microscopy of *Rickettsia rickettsii*

Agent proliferation in the endothelium - thrombus, hemorrhage, perivascular infiltration and focal necrosis

Clinical signs - fever, nausea, vomit, migraine and myalgia

> Spots the palm of the hands and sole of the feet

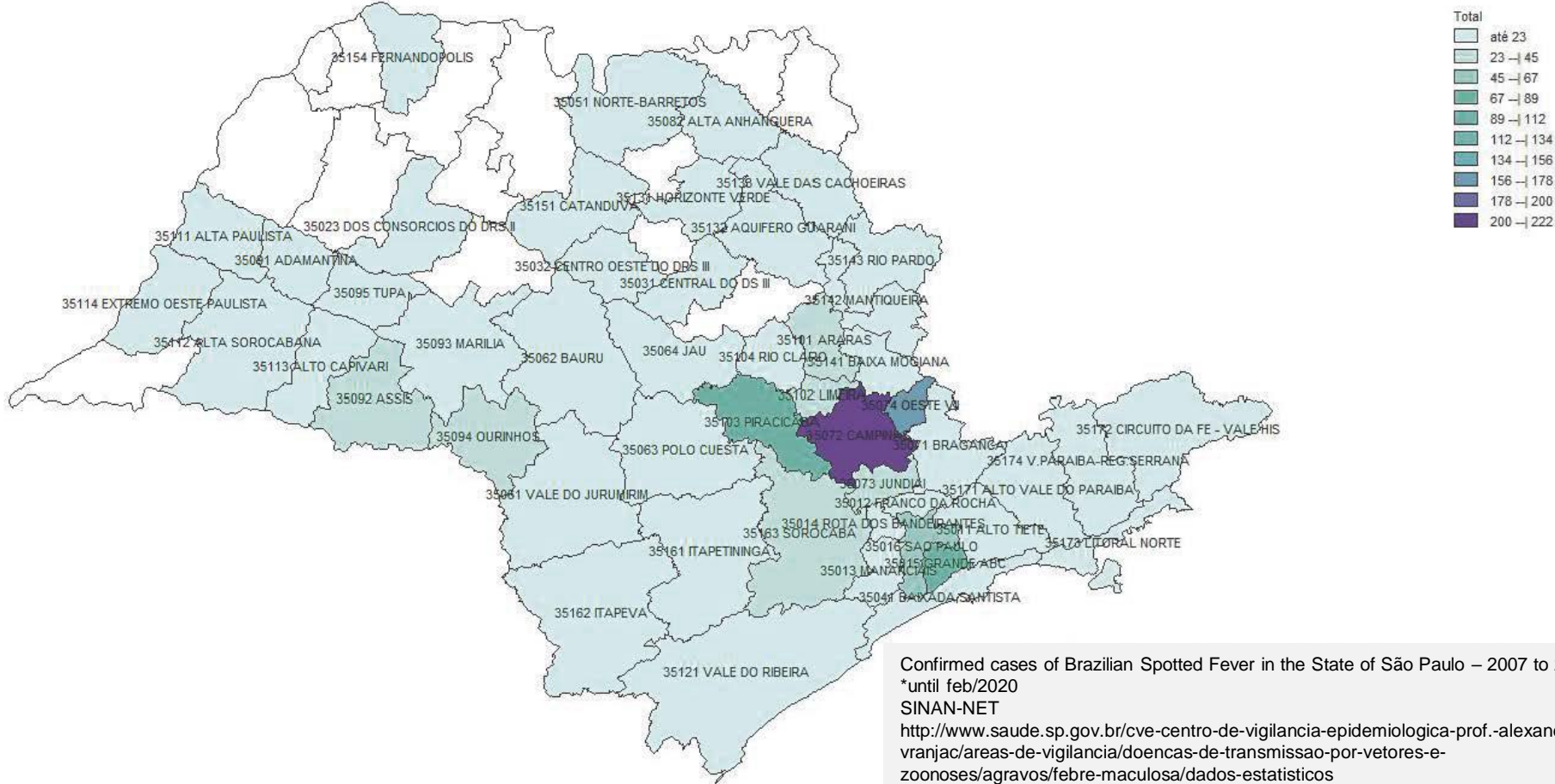
Antibiotic therapy immediately when clinical suspicion

Lethality can achieve 80%

São Paulo: Lethality last 5 years ~50-60%



Spots in the palm of the hand



The tick

Amblyomma sculptum

- “Star tick” or “Horse tick”

Low host specificity

Great number of natural reservoirs

Wide geographic distribution

Natural reservoirs and vectors of the disease

Vertical transmission

Transtadial transmission

Naturally infected ticks – reproduction affected by disease



Capybaras

Hydrochoerus hydrochaeris

Largest living rodent

Semi-aquatic

High prolificacy

Rapid growth rate

Herbivorous diet

Social behavior

Relative tameness

Agent reservoir in nature

No clinical signs of disease



Capybaras

Hydrochoerus hydrochaeris

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- Semi-aquatic
- High prolificacy
- Rapid growth rate
- Herbivorous diet
- Social behavior
- Relative tameness

- Agent reservoir in nature
- No clinical signs of disease



Epidemiological cycle



Capybaras in São Paulo

Degraded environments
+
High reproductive rate
+
Lack of predators
(including poaching and hunting)
+
Wide food supplies
(sugar cane)
=
High population growth



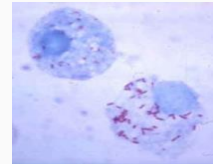
Capybaras in São Paulo



Resolution SMA/SES n° 01/2016

Criteria (qualitative analysis):

- Presence of ticks *Amblyomma*
- Presence of the etiologic agente *Rickettsia rickettsii*
- Presence of vertebrate hosts
- Human frequency



Resolution SMA/SES n° 01/2016



Alert Area



Predisposed Area



Risk Area



Transmission Area



Resolution SMA/SES nº 01/2016

Recommended measures:

- Information
- Individual safety equipments
- Environmental management



Resolution SMA/SES n° 01/2016

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Resolution SMA/SES n° 01/2016

Recommended measures:

- Population control:

Removal (euthanasia)



Surgical sterilization







Next challenges

Add new scientific knowledge about the disease to the Resolution SMA/SES nº 01/2016

Establish long-term reproductive management procedures in open areas

Landscape analysis to identify capybaras source population

Regional management of capybaras to prevent new human cases of the disease

Promote human-wildlife coexistence



80%

Reduction of the capybara birth rate needed to eliminate *Rickettsia rickettsii* in 4 years.

Polo G, Mera Acosta C, Labruna MB, Ferreira F (2017), Transmission dynamics and control of *Rickettsia rickettsii* in populations of *Hydrochoerus hydrochaeris* and *Amblyomma sculptum*.

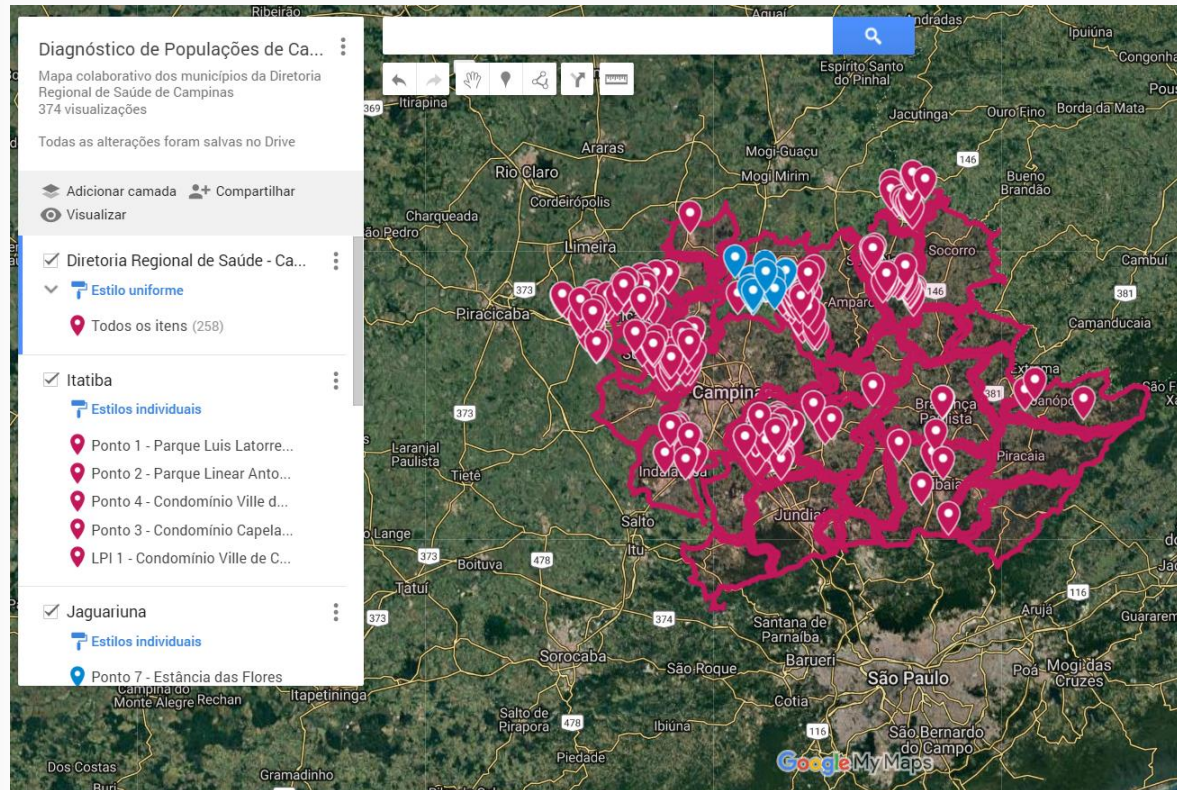
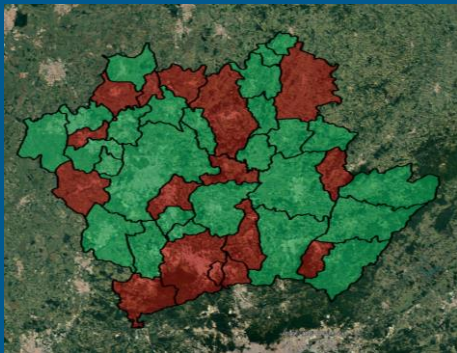


90%

Reduction of the capybara birth rate needed to eliminate *Rickettsia rickettsii* in 2 years.

Diagnosis of the capybaras population in the Campinas Health Region

- Structured questionnaire; and
- Collaborative map.



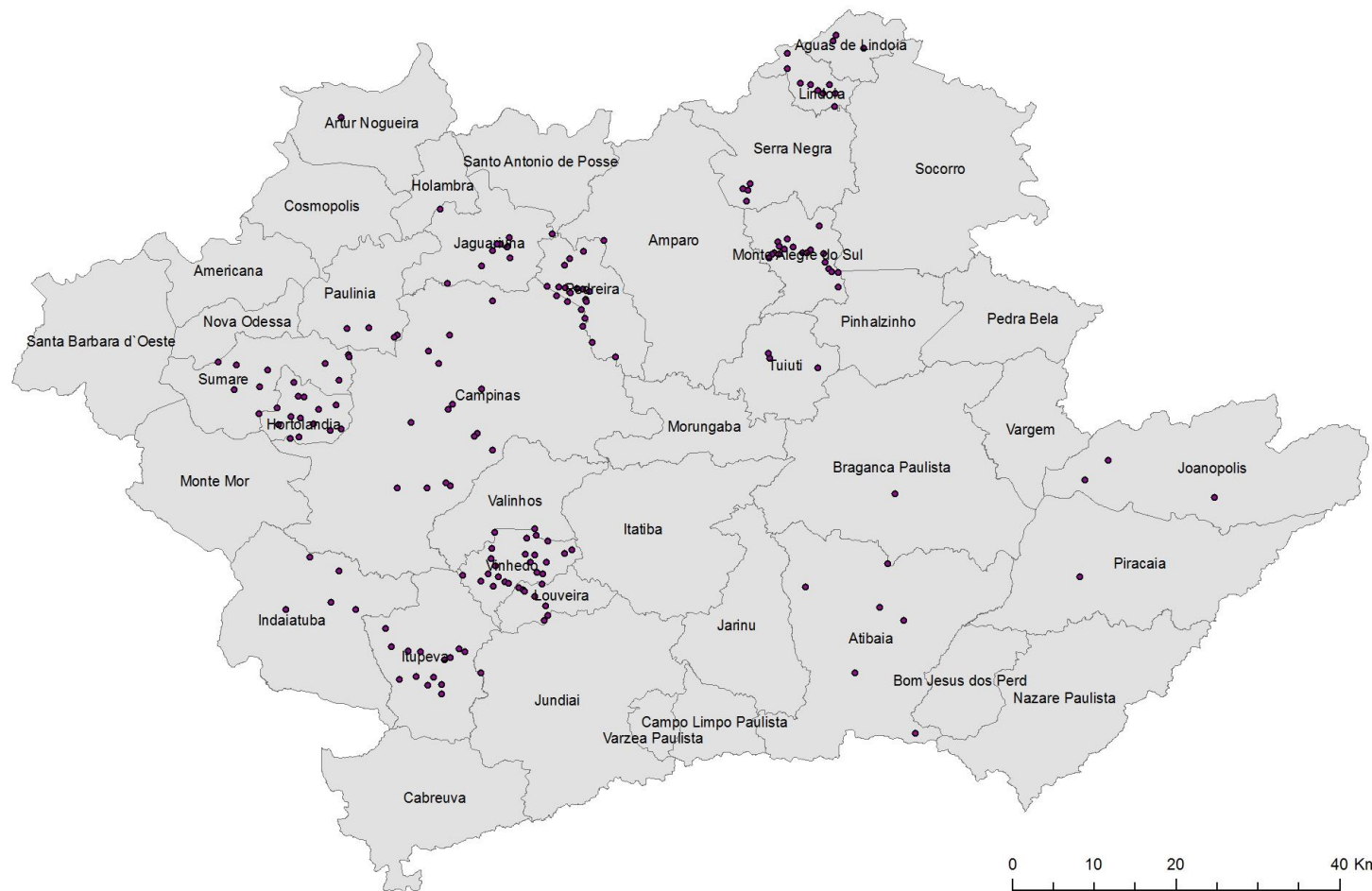
Definition of priority areas for each city considering the risk of transmission

- i. Large groups of capybaras;
- ii. Water collection;
- iii. Food supplies; e
- iv. Human frequency.

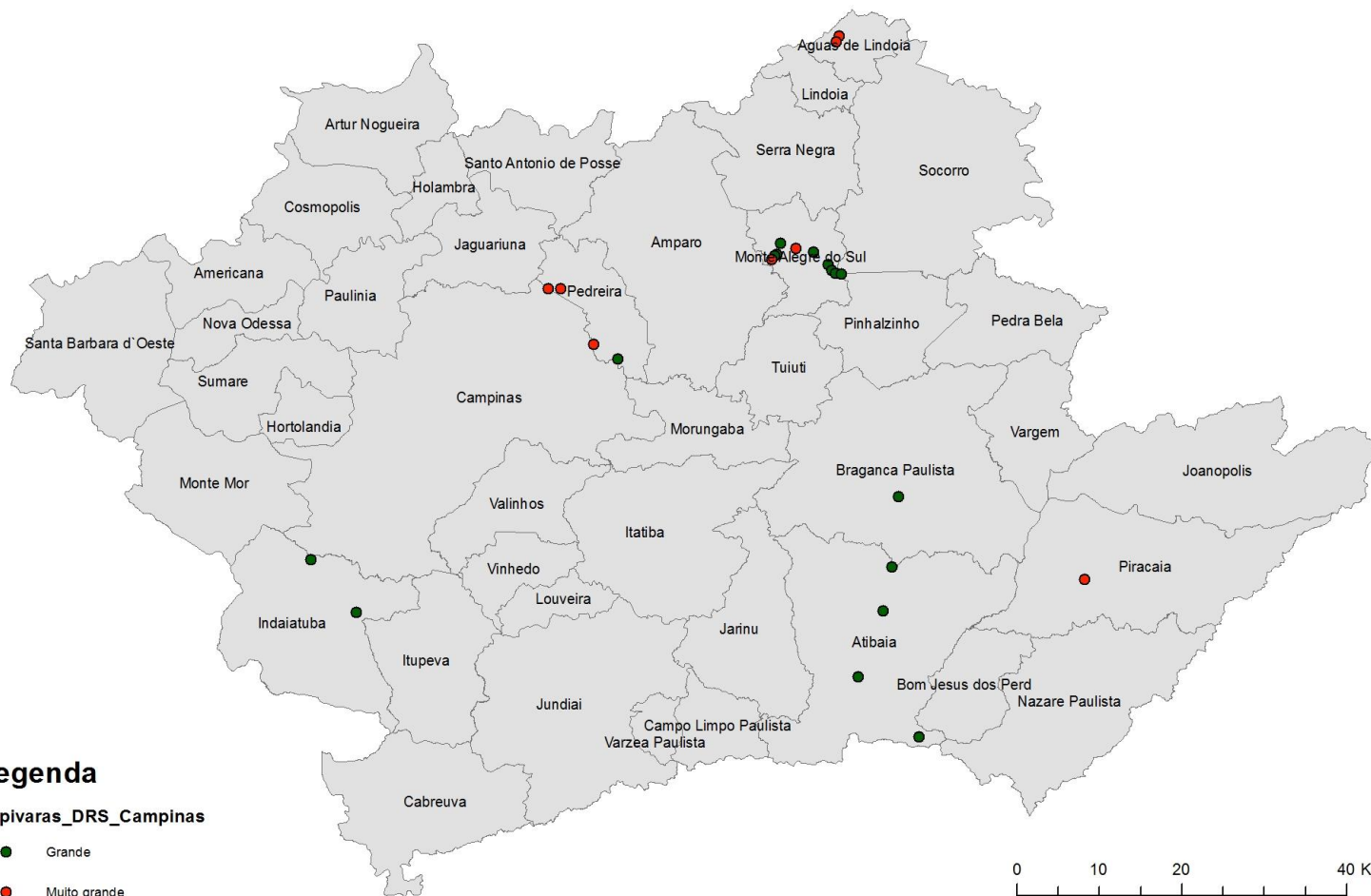
- Landscape analysis
- Field survey



Pontos com histórico de Capivaras DRS Campinas



Pontos com grupos grandes e muito grandes de capivaras - DRS Campinas



Thank you!

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