

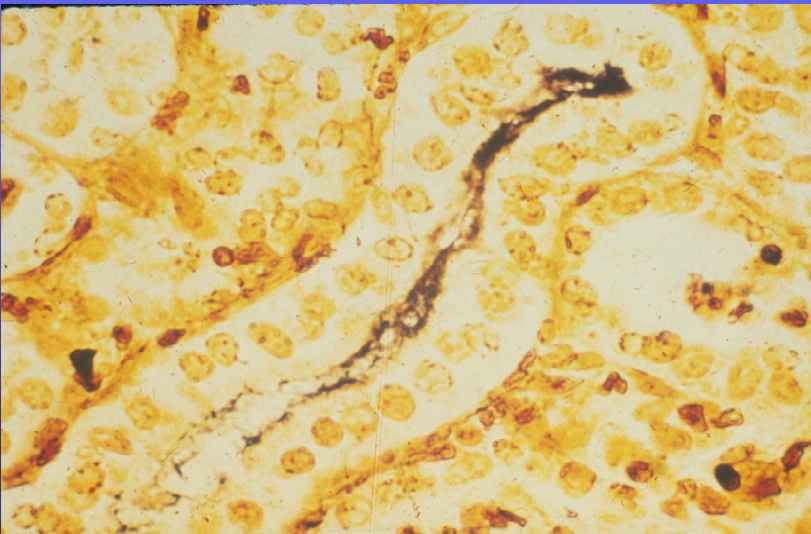
The re-emergence of canine leptospirosis in Ontario

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Leptospirosis concepts

- A zoonotic disease caused by the spirochete *Leptospira*
- Home is kidney, often shed in urine for life in maintenance hosts



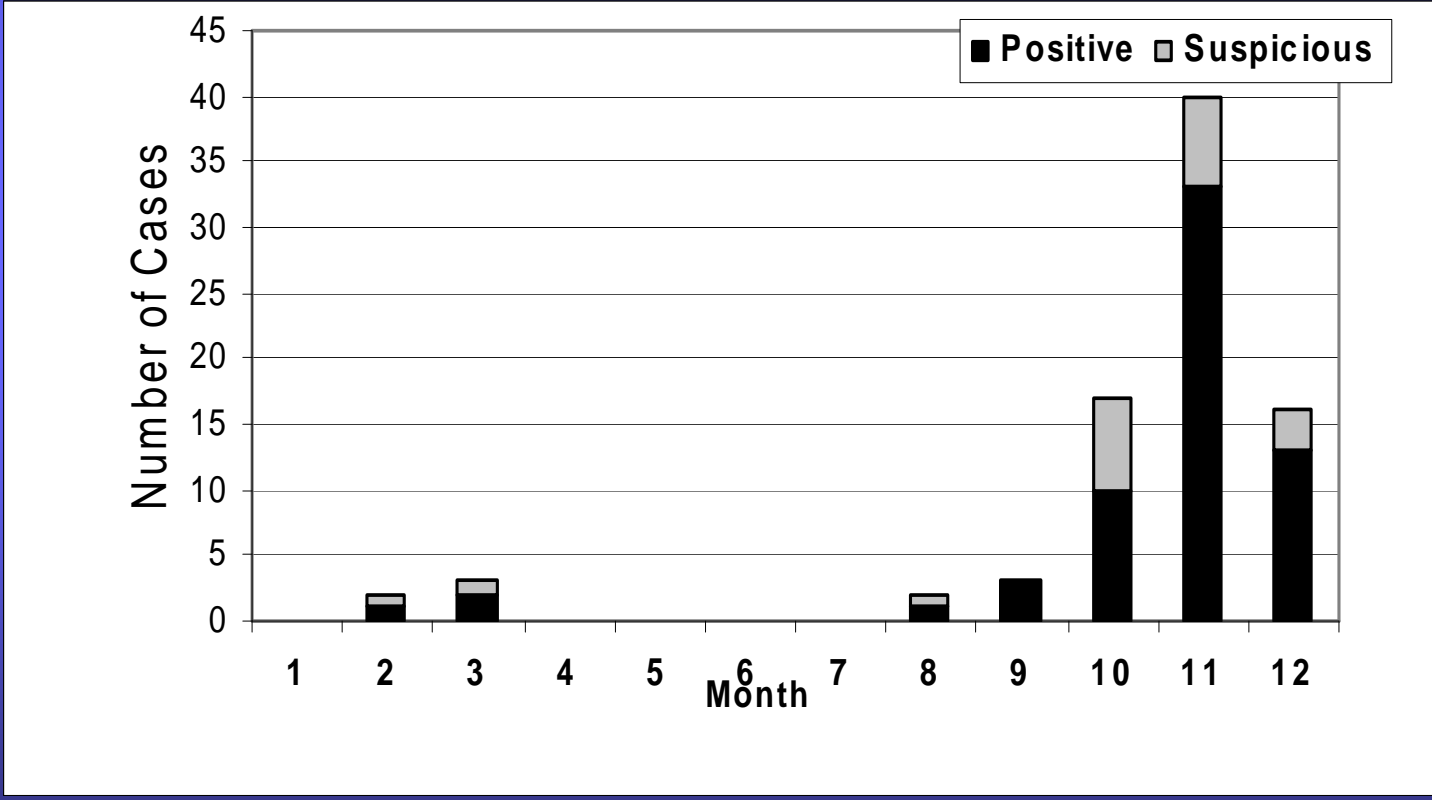
Serovars and maintenance hosts of pathogenic leptospire in Canada

Serovar	Maintenance host
bratislava	Pigs (horses, dogs)
canicola	Dogs
grippotyphosa	Raccoons , skunks, voles
hardjo	Cattle, sheep
icterohaemorrhagiae	Rats
pomona	Pigs, skunks , cattle, raccoons?

Leptospirosis: epidemiology

- Contact with *maintenance (reservoir)* host or its urine causes infection in *incidental* hosts
- Leptospire are fastidious
- Survive optimally where wet and moderate temperatures (fall), about 6 weeks

Number of serologically positive and negative canine leptospira cases, year 2000, AHL

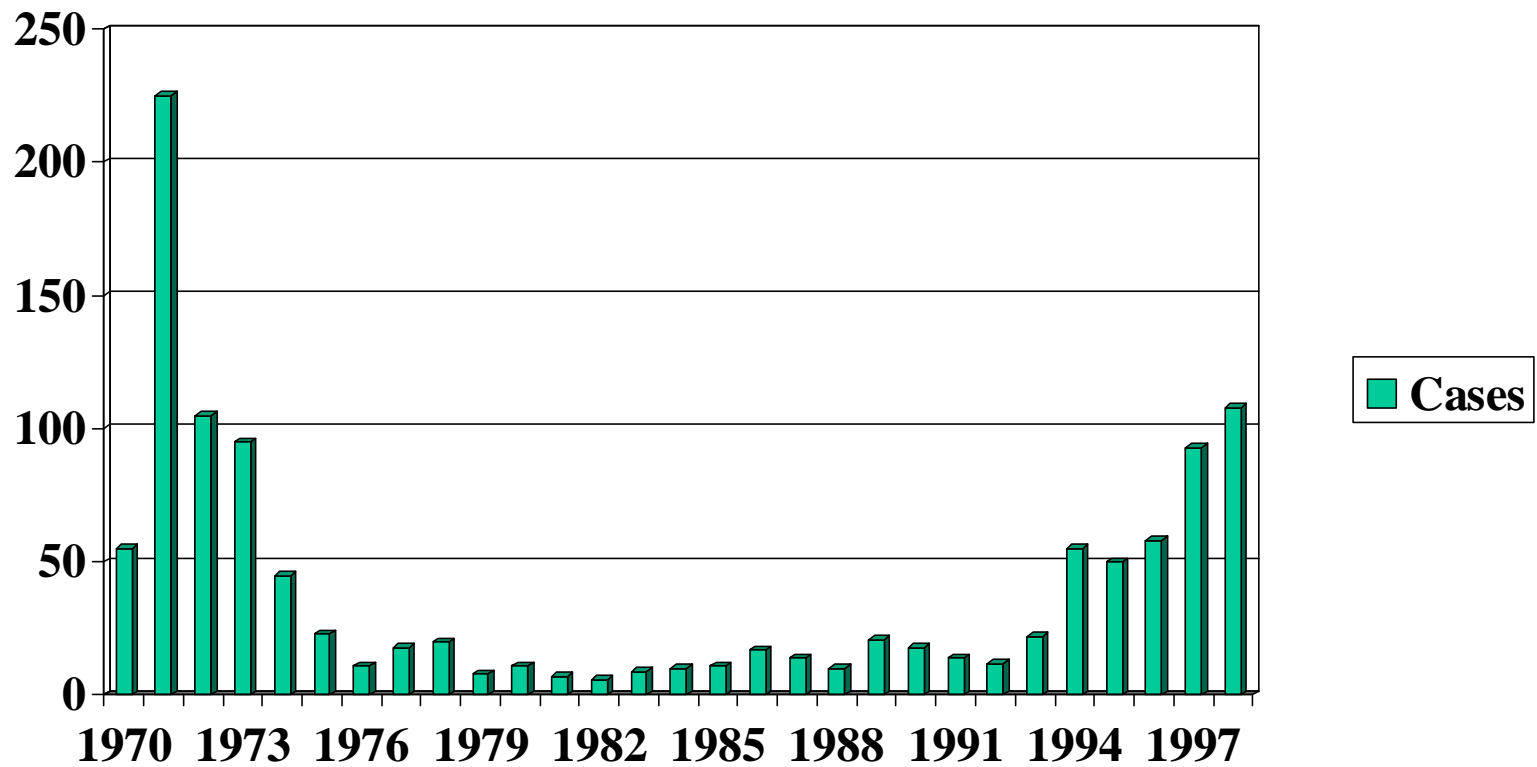


Historical background: leptospirosis in dogs



- Maintenance host of canicola
- Infections in children in 1970s
- No longer reported in United States or Canada
- Icterohaemorrhagiae, incidental infection, rat derived, rare disease
- Controlled by routine vaccination

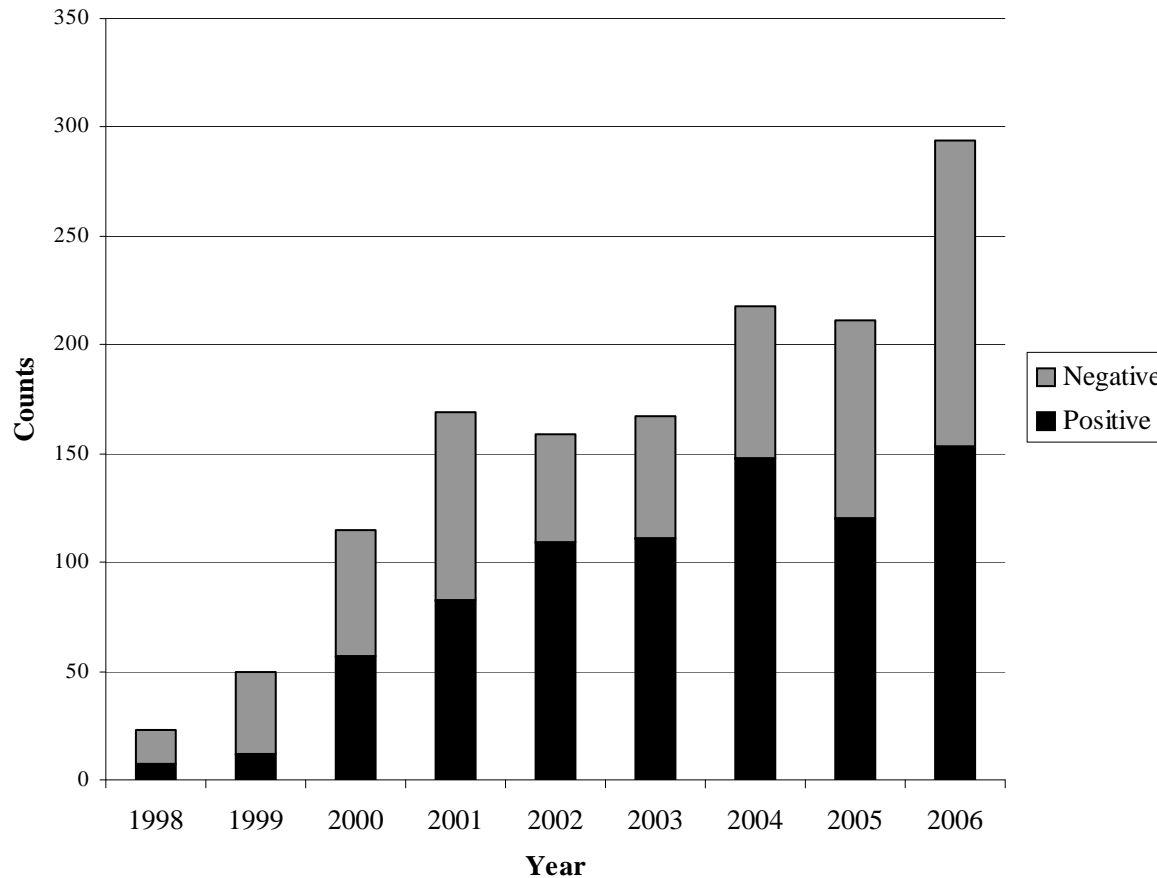
Annual prevalence of leptospirosis/100,000 dogs at 22 veterinary teaching hospitals in USA and Canada



Leptospirosis in dogs: emergence of the new serovars

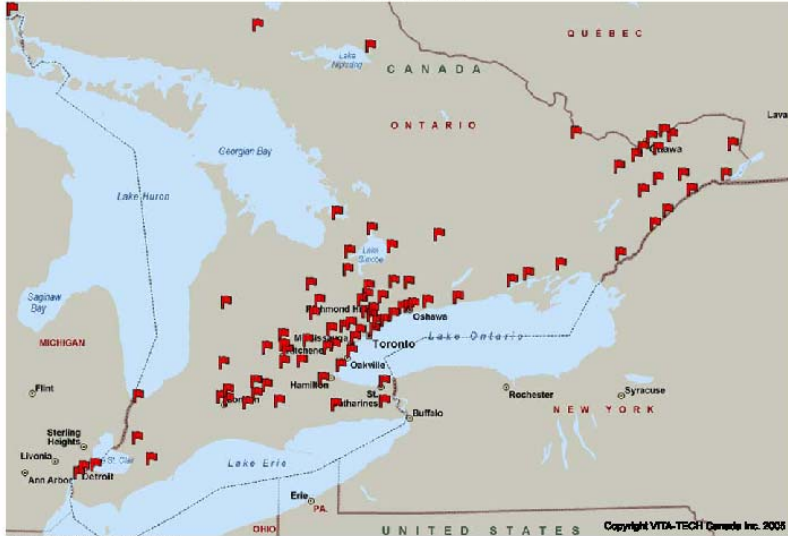
- Increasing reports since 1990 of grippityphosa, pomona in United States and Canada
- Dramatic increase in eastern Canada

Annual submission of serum samples to AHL for canine leptospirosis, positive and negative for the MAT, 1998 to 2006



Alton et al (2009)

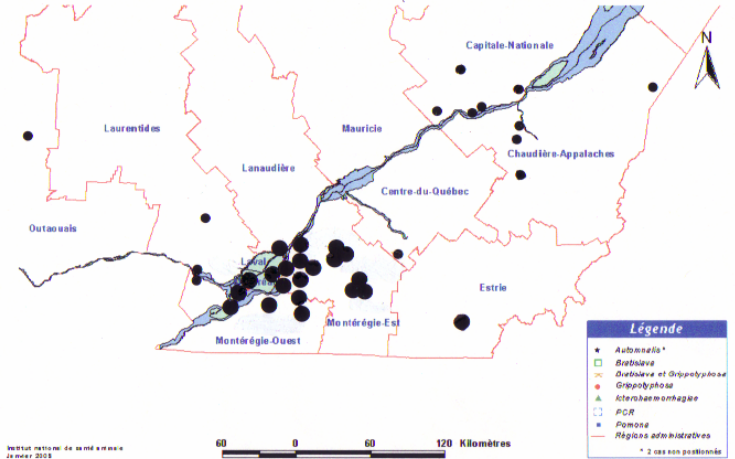
Leptospirosis 2004



2004 LeptoMap_020805_v1

Copyright VITA-TECH Canada Inc. 2005

Cas confirmés de leptospirose canine au Québec en 2004



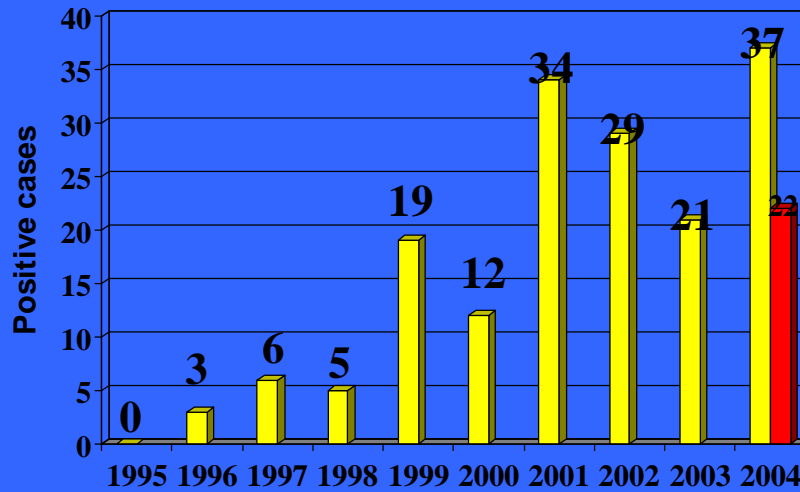
Légende

- *A. canicola**
- *Brachella*
- ⊕ *Shoblova et Shpynalyshev*
- △ *Grippophilus*
- ▲ *Asterbacrombagus*
- PCR
- *Pomona*
- Régions administratives

* 2 cas non positionnés

Institut national de santé animale
Janvier 2005

60 0 60 120 Kilomètres



MAPAQ
Vitatech

It's an urban-suburban disease of dogs

Why has leptospirosis in dogs increased?

Why has leptospirosis in dogs increased?

- Increase in infection in wildlife vectors (raccoons, skunks) in urban, suburban areas
- Climatic factors (impact on vector, survival)
- Awareness by vets



Raccoon populations



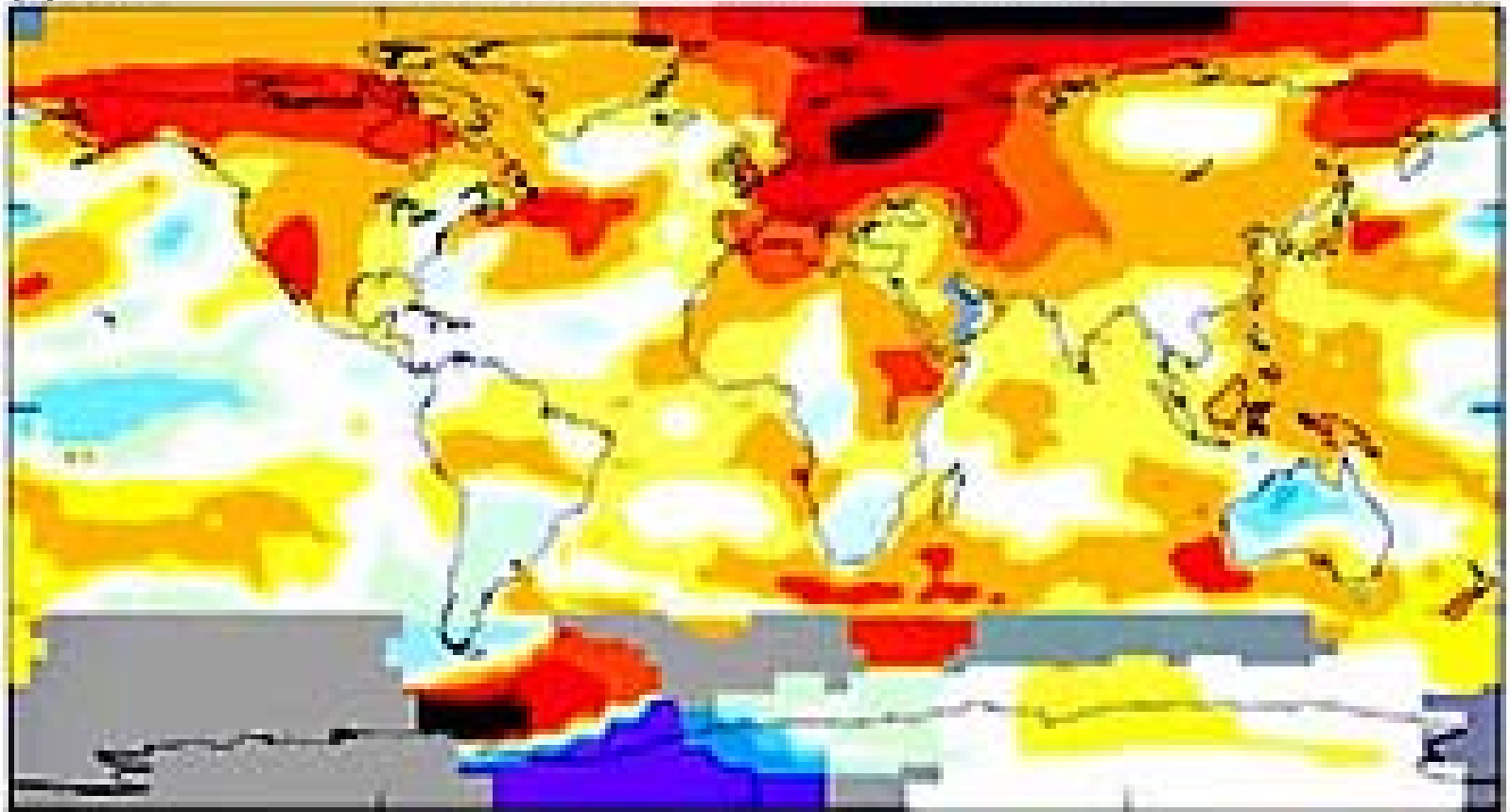
100 raccoons per square kilometer
suburban Toronto

Global Climate Change

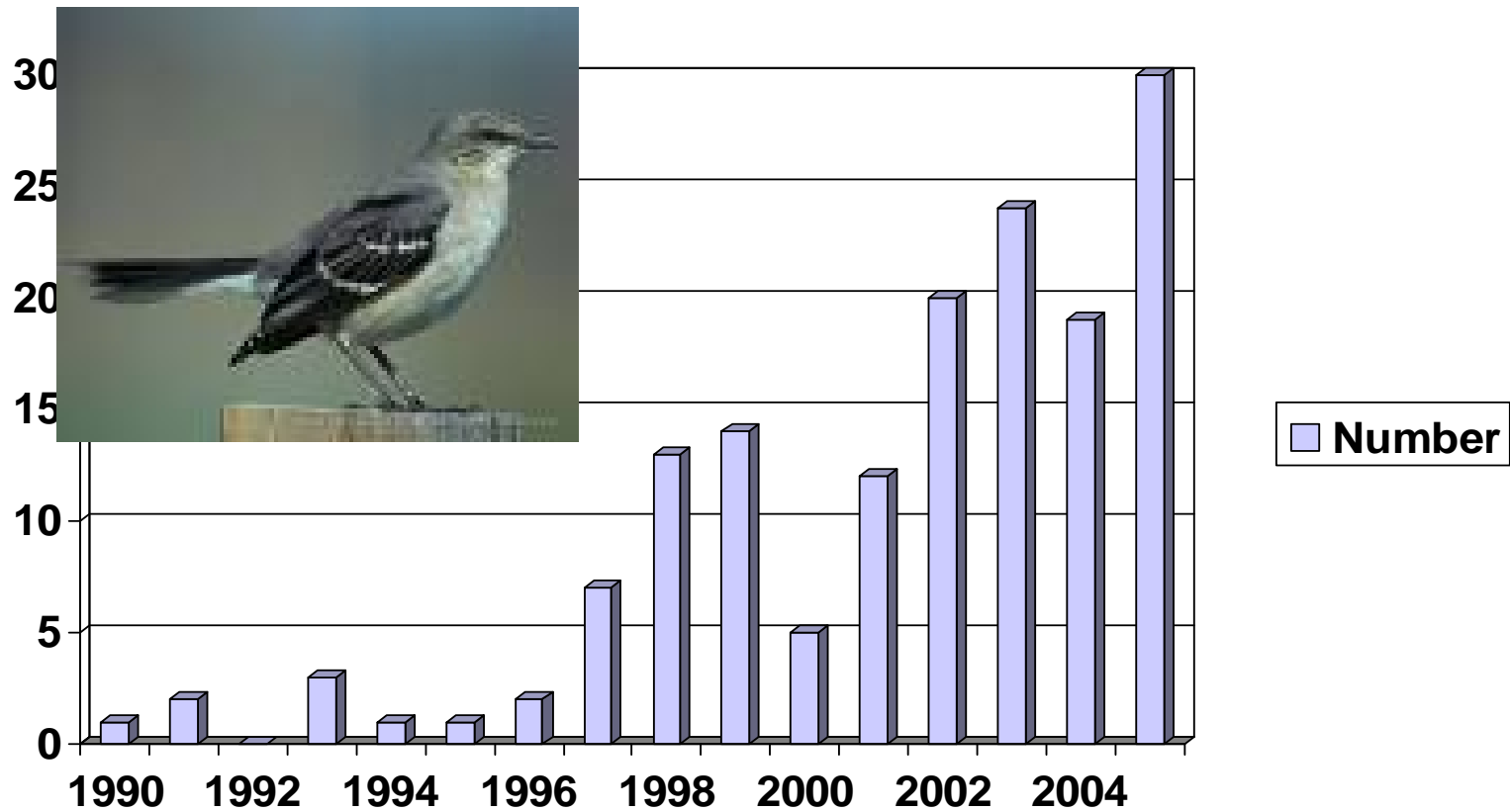
(a) 2000

Surface Temperature Anomaly (°C)

38



Northern Mocking Bird: Toronto Christmas Bird Count

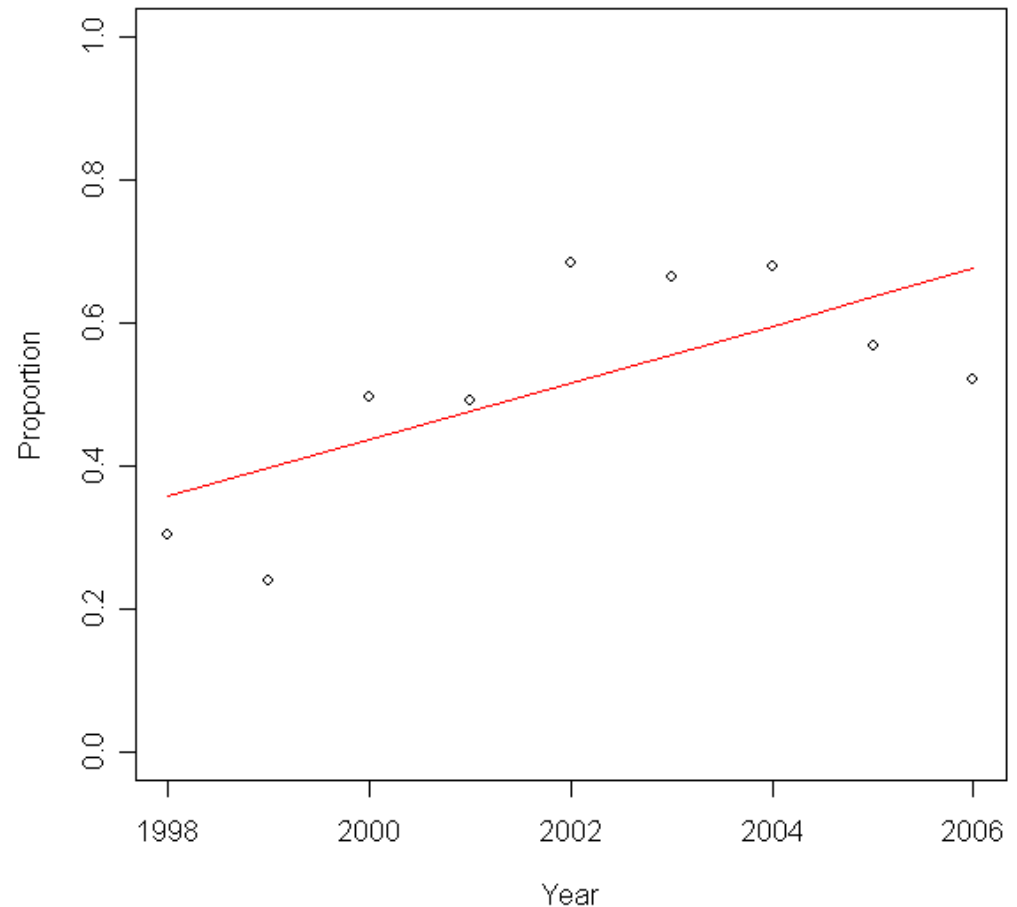


Awareness by vets?

Regression line
showing linear
increase in the
proportion of positive
tested dogs, Cochran-
Armitage trend test

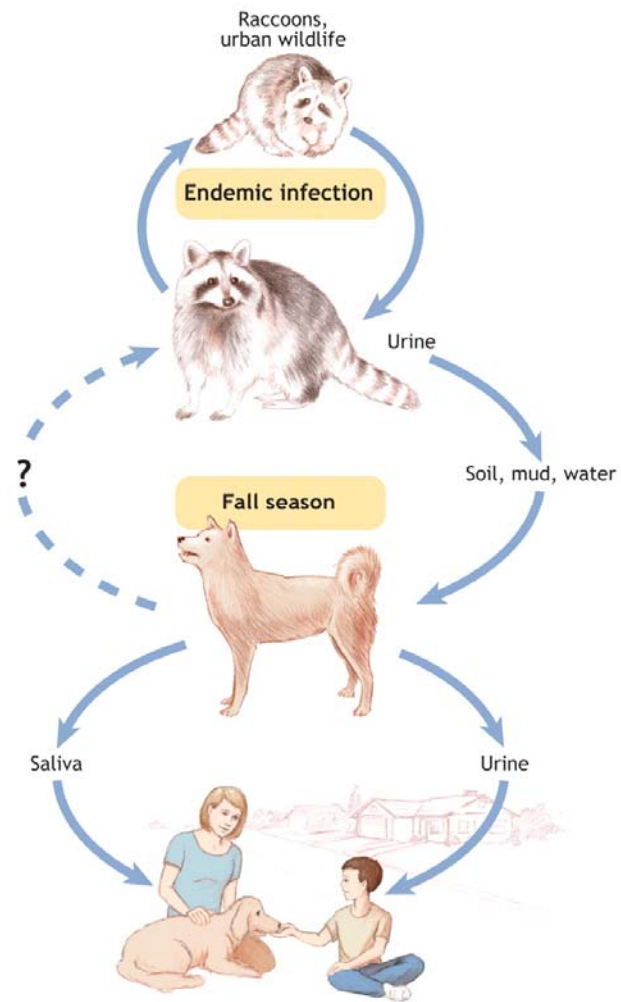
Genuine increase,
not just “awareness”

Alton et al., 2009



Canine leptospirosis

- Typically acute renal failure
- Sometimes hepatitis
- Other, various



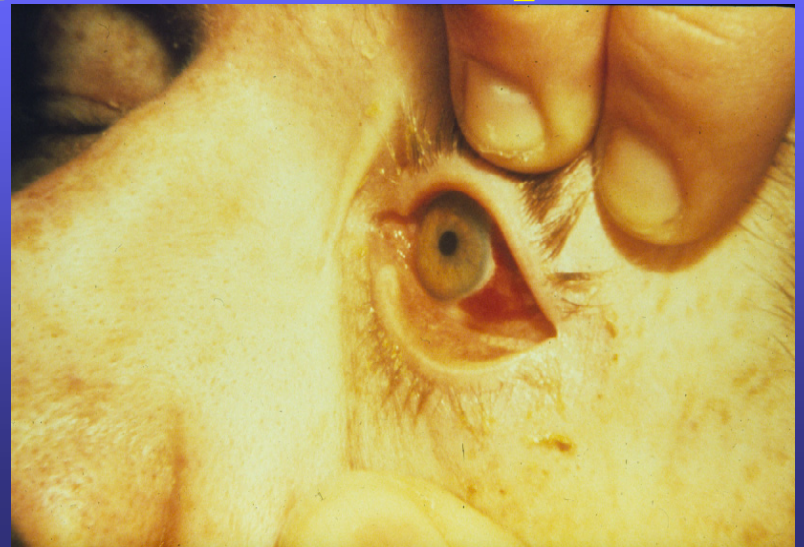
Brown, K. et al. CMAJ 2008;178:399-401

Human infections

- Anecdotally 6-8 infections acquired from dogs in Ontario and Quebec in last few years
- Have involved DVMs, AHTs, and owners
- Some very delayed diagnosis

Disease in humans

- “Biphasic”: acute phase, immune phase
- Most mild or subclinical
- Recognized cases: acute onset fever, chills **severe** headache, **myalgia**, abdominal pain, conjunctival suffusion



Disease in humans

- Aseptic meningitis $\leq 25\%$
- Severe: generally similar to dogs, more emphasis on endotoxic, vascular damage effect
- Chronic: uveitis, persistent headaches, chronic hepatitis

Current state of canine leptospirosis?

- Appears to be leveling off or declining
- Effect of vaccination with “new” serovars?
- Work to be done on seroprevalence, shedding by dogs, vectors, human exposure, public education

Acknowledgements

- Bev McEwen, Davor Ojkic, AHL
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