

One Health: It's a Small World Health After All

Danielle Stanek, DVM

Zoonotic and Vectorborne Disease Program



One Health Is What?



The collaborative effort of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals and our environment.



Courtesy David Pearce Escambia CHD



I solemnly swear to use my scientific knowledge and skills for the benefit of society through the protection of animal health, the relief of animal suffering, the conservation of animal resources, the promotion of public health, and the advancement of medical knowledge.



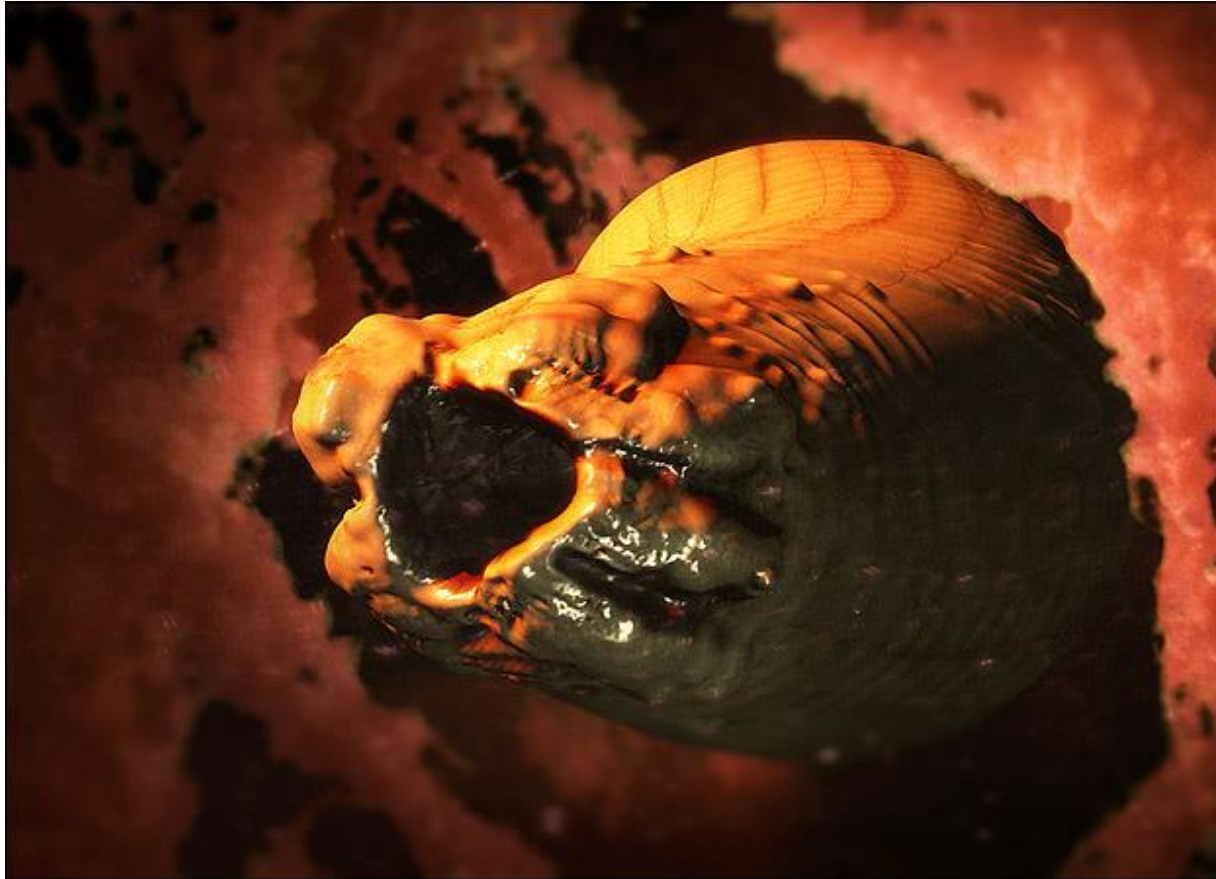
Zoonotic and Vectorborne Diseases reportable to FL DOH



- Anthrax
- Brucella
- Campylobacter
- Cryptococcus
- Dengue
- Ehrlichiosis
- Giardiasis
- Novel Influenza (AI)
- Leptospirosis
- Lyme
- Malaria
- Mosquitoborne encephalitis
 - EEE, SLE, VEE, WEE, WN
- Plague
- Psittacosis / avian chlamydiosis
- Q fever
- Rabies
- Rocky Mountain spotted fever
- Salmonella
- Toxoplasmosis
- Trichinellosis
- Tuberculosis
- Tularemia
- Murine typhus
- Outbreak events

Red font=reportable to FDACS & FDOH

Baylisascaris procyonis
Raccoon Roundworm



Baylisascaris



- Encephalitis in >130 species (mammals and birds)
- Prepatent period 9 weeks
- Eggs take ≥ 11 day to reach infectious stage and can persist in the environment for > 6 yrs
- Intermediate hosts such as rodents, lagomorphs and some birds can be infectious if ingested by raccoons



***Baylisascaris* in Humans**



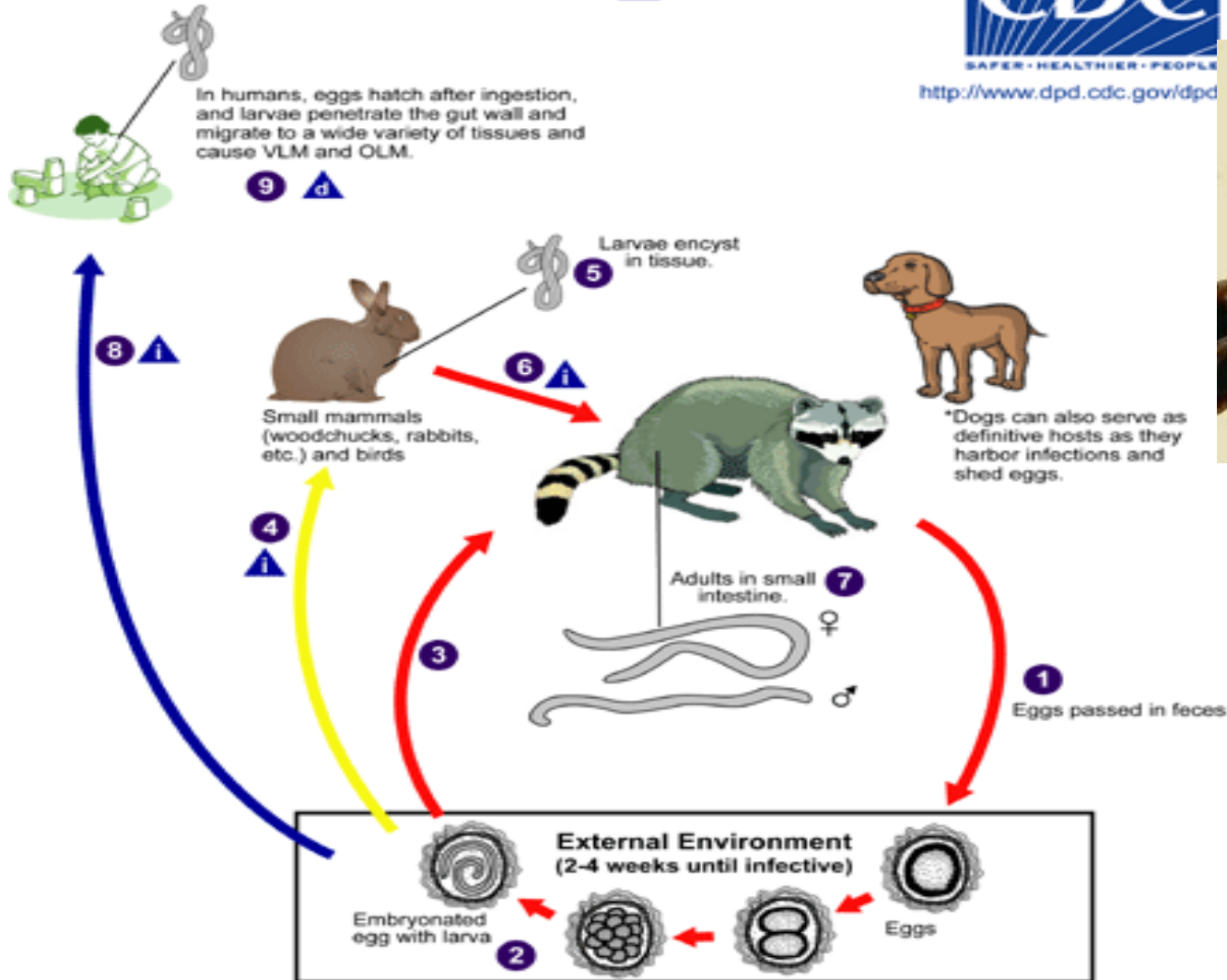
- Uncommon but limited treatment options once infection established
 - Albendazole effective if administered within 3 days of exposure
- Reported cases often involve children
- Larvae continue to migrate until they become eosinophilic granulomas
 - 300-1,900 μm
- Neuro, ocular and visceral syndromes
- Symptoms within 4 weeks of exposure
 - Muscle ache, fever, pneumonitis, neuro or vision abnormalities, eosinophilia

Baylisascaris procyonis

i = Infective Stage
d = Diagnostic Stage



<http://www.dpd.cdc.gov/dpd>

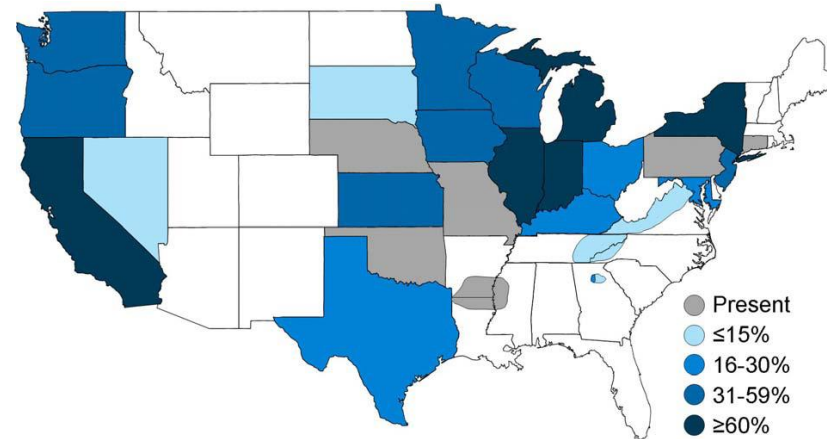


Baylisascaris procyonis



- Present in most states that have raccoons
- Prevalence from 22% up to 94% of raccoons, except in SE including FL
- Adults can also develop in some dogs resulting in patent infections
- Detected in NW, Central & SE FL raccoons

Historical Distribution



South FL Kinkajou Breeding Facility



- 4/8/10 alerted by TN DOH of positive FL kinkajou
- 4/12/10 Inspection with USDA AC and County Health Department Epi
 - Broodstock from Guyana last imported 2008
 - Facility fenced; kinkajou area separate from other stock and pet dogs
 - Raised caging with nest box, mesh flooring above bare ground
 - 2 animals per cage
 - 44 animals and 21 cages
 - Housing cleaned daily; steam cleaned once/week
 - Adults de-wormed twice a year; juveniles reportedly de-wormed pre-shipping



South FL Breeding Facility



- Questionnaire Miami-Dade EIS administered
 - Contact limited to 2 persons
 - No gloves, but regular hand washing
 - Asymptomatic
- Testing
 - 4/30 submitted 21 kinkajou samples (1 per enclosure) by veterinarian
 - All negative
 - 5/25 soil samples under cages of the 2 juveniles sent to TN by facility veterinarian & USDA AC
 - Sample 1 a single *Baylisascaris* egg
 - Sample 2 many *Baylisascaris* eggs



Image courtesy K. Kazacos

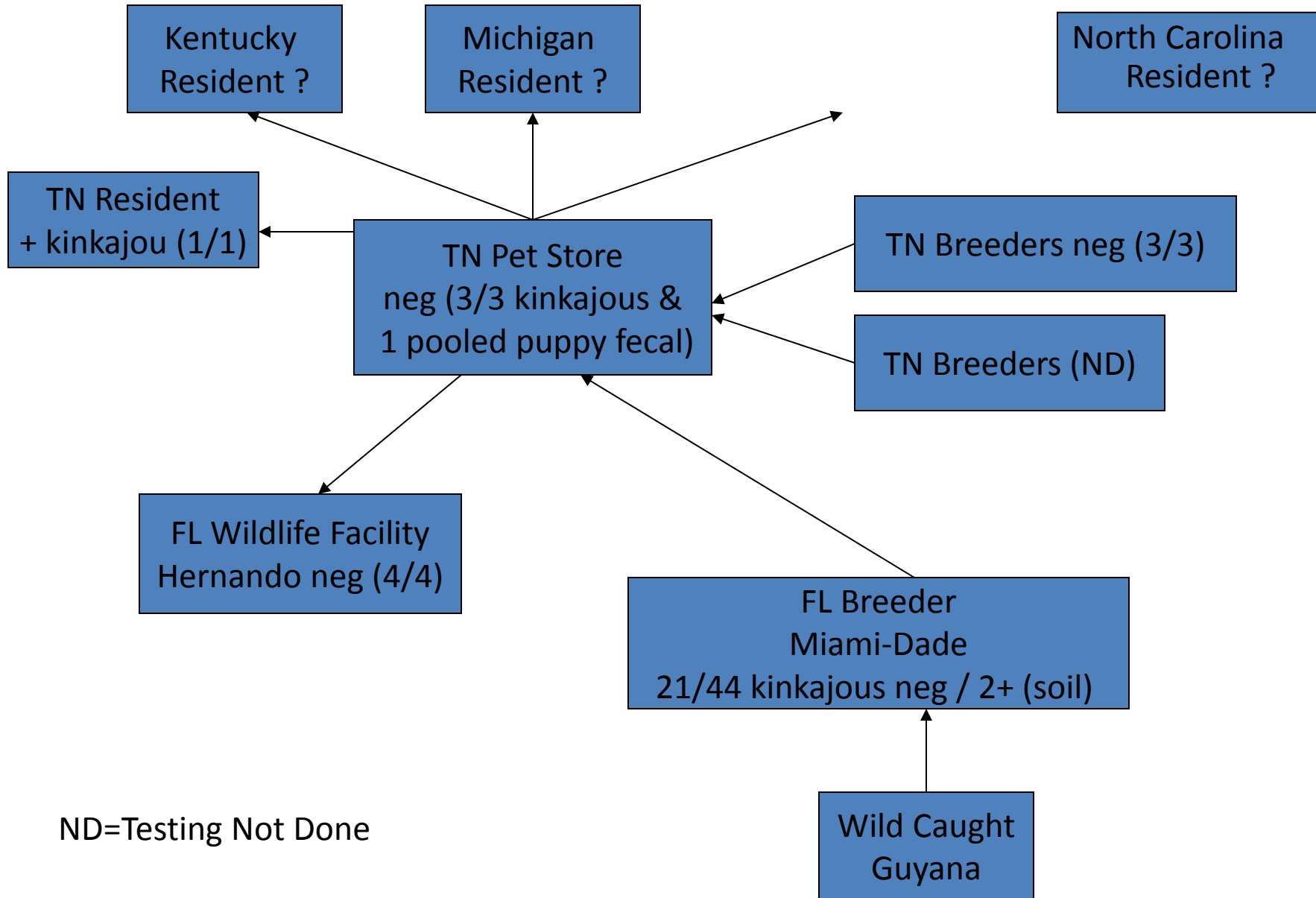
Central FL Wildlife Rehabilitation Center



- Two kinkajous from TN & 2 others
 - 5/13/10 Joint inspection with USDA AC and Hernando CHD
 - Public animal display
 - raccoons, coatimundi, ringtail, NHP's, big cats
 - Kinkajou contact possible with wildlife, domestic animals (dog), and the public
 - Annual de-worming for animals
 - Provided educational information
 - 5/17/10 kinkajou fecal submitted
 - negative



Baylisascaris Testing Performed at Purdue



Baylisascaris Resources



- Information from CDC:
<http://www.cdc.gov/parasites/baylisascaris/index.html>
- Electronic handout
- MMWR. 2011. Raccoon Roundworms in Pet Kinkajous --- Three States, 1999 and 2010;60:302-05.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6010a2.htm?s_cid=mm6010a2_e%0d%0a
- Raccoon Roundworm Encephalitis—Chicago, Illinois and Los Angeles, California, 2000. MMWR January 4, 2002/50(51);1153-5.
<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5051a1.htm>
- Raccoon feces in pools
 - <http://www.cdc.gov/healthywater/swimming/pools/animals/raccoons-and-pools.html>



Zoonotic Fecal Parasites



- Hookworms
 - *Ancylostoma braziliense*, *A. caninum*, *A. tubaeforme* in people
 - Easily preventable in pets with regular veterinary care
- Cutaneous larval migrans
- Contact transmission
- Intensely pruritic and often leaves scars
- Roundworms, *Toxoplasma*, enteric bacteria, etc.



WHO Bulletin. 2008. Epidermal parasitic skin diseases: a neglected category of poverty-associated plagues: <http://www.who.int/bulletin/volumes/87/2/07-047308/en/index.html#>

Summary of Confirmed Cases

Case #	Age	Gender	Exposure Date	Location 1	Location 2	Symptom Onset	Lesion Site
1	7	F	July/August	Site 1	Playground	1st wk September	Hands, Back, Buttocks
2	43	M	July 4th	Site 1	BBQ area	Early August	Feet
3	41	F	July 4th	Site 1	BBQ area	Early August	Feet, Legs
4	2	F	July/August	Site 1	Playground BBQ area	Early September	Feet, Legs
5	23	F	1st wk July	Site 2	Beach	1 wk after exposure	Buttocks, Legs, Feet
6	21	M	1st wk July	Site 2	Beach	4 wks after exposure	Back, Legs
7	22	F	1st wk July	Site 2	Beach	2-3 wks after exposure	Feet, legs
8	22	M	1st wk July	Site 2	Beach	2-3 wks after exposure	Feet, back
9	3	F	Early November	Site 3	Beach	4 wks after exposure	Left arm, Feet

** All were diagnosed and treated successfully

** All had residual scarring and discoloration in area of lesions

Zoonotic Parasite Prevention



- Regular veterinary care for pets including monthly dewormer product and fecal screens
- Remove fecal material from the environment regularly
- Wear gloves or other barriers (shoes, clothing) coming into contact with material with potential fecal contamination and wash well and wash well after removing gloves and other barriers
- Seek medical care immediately if ingestion of Baylisascaris eggs is suspected

Brucellosis in Florida

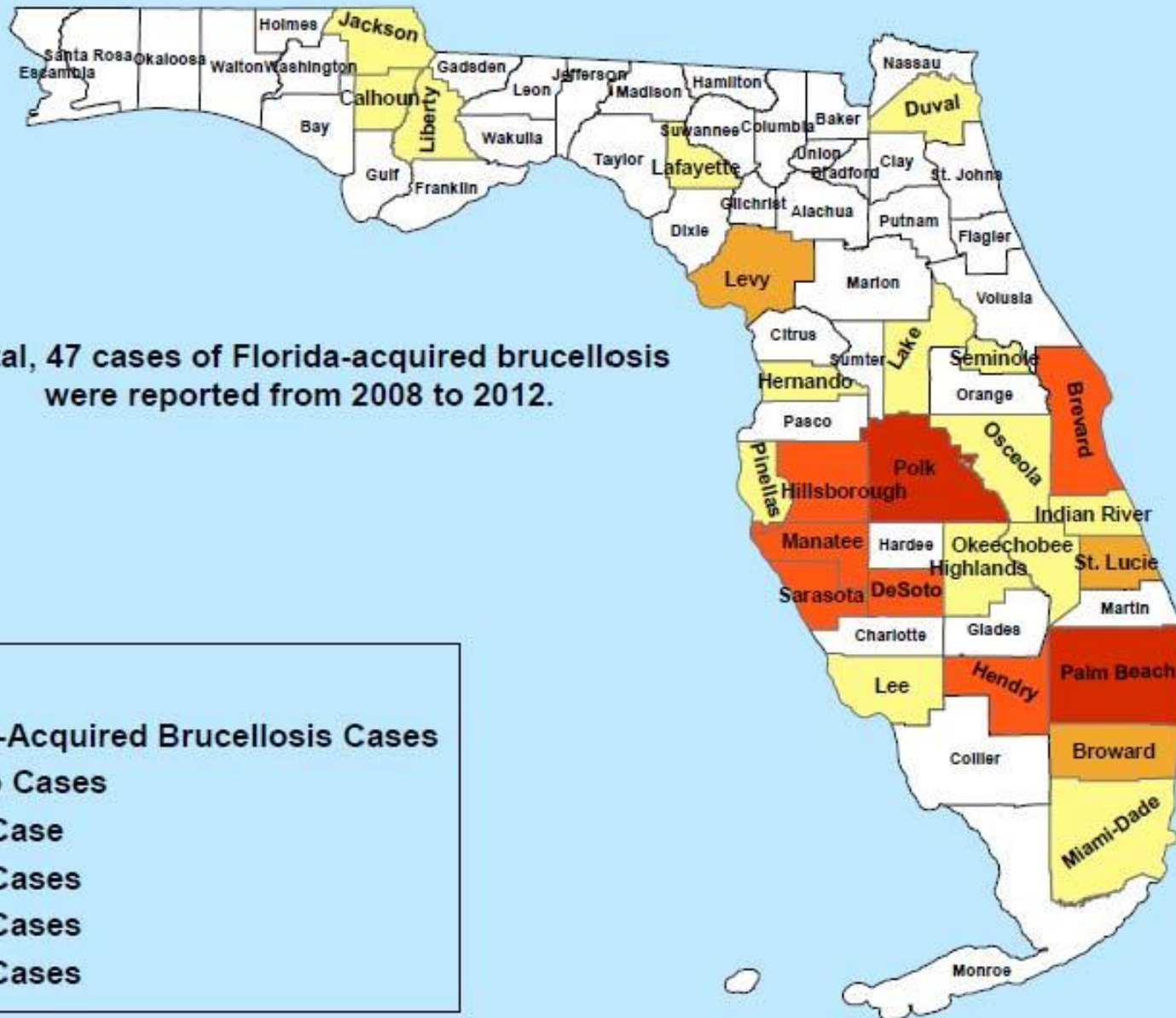


- Cattle *B. abortus*
 - 1998 last case in Florida cattle
- Feral swine *B. suis*
 - particularly in central and southern FL regions
 - Cross-over into people, “domestic” pigs, cattle
 - 10-15 positive cattle annually
- Dogs *B. canis* especially sexually intact animals
- Marine mammals *B. ceti* (and *B. pinnipedialis*)
- Imported-people exposed in other countries
 - Domestic animals in developing countries
 - *B. melitensis* (goats/sheep)
 - *B. abortus* (cattle)



Courtesy Cindy Seegers

Cases of Brucellosis Among Florida Residents by County of Residence, 2008-2012



Legend

Florida-Acquired Brucellosis Cases

- No Cases
- 1 Case
- 2 Cases
- 3 Cases
- 4 Cases

Cases for 2012 are those reported through October 2nd, 2012

Brucella in Animals



- Reportable to FDACS
- Infectious material from animals
 - Animal reproductive tissues, products of parturition, milk (localize in udder), blood and meat (greater risk with *B. suis*?)
 - *B. suis* infected pigs
 - continuous bacteremia 5 wks
 - intermittent bacteremia up to 34 wks
 - often followed by persistent local infection



Brucellosis in FL Historically

- 936 human cases from 1930-1975
- 505 cases identified between 1940-1949
- USDA Cattle Brucellosis Eradication Program 1949
- 1963-1975 61 reported cases
 - 61% occupational
 - 31% cattle related
 - 39% swine related
 - 13% pig hunters

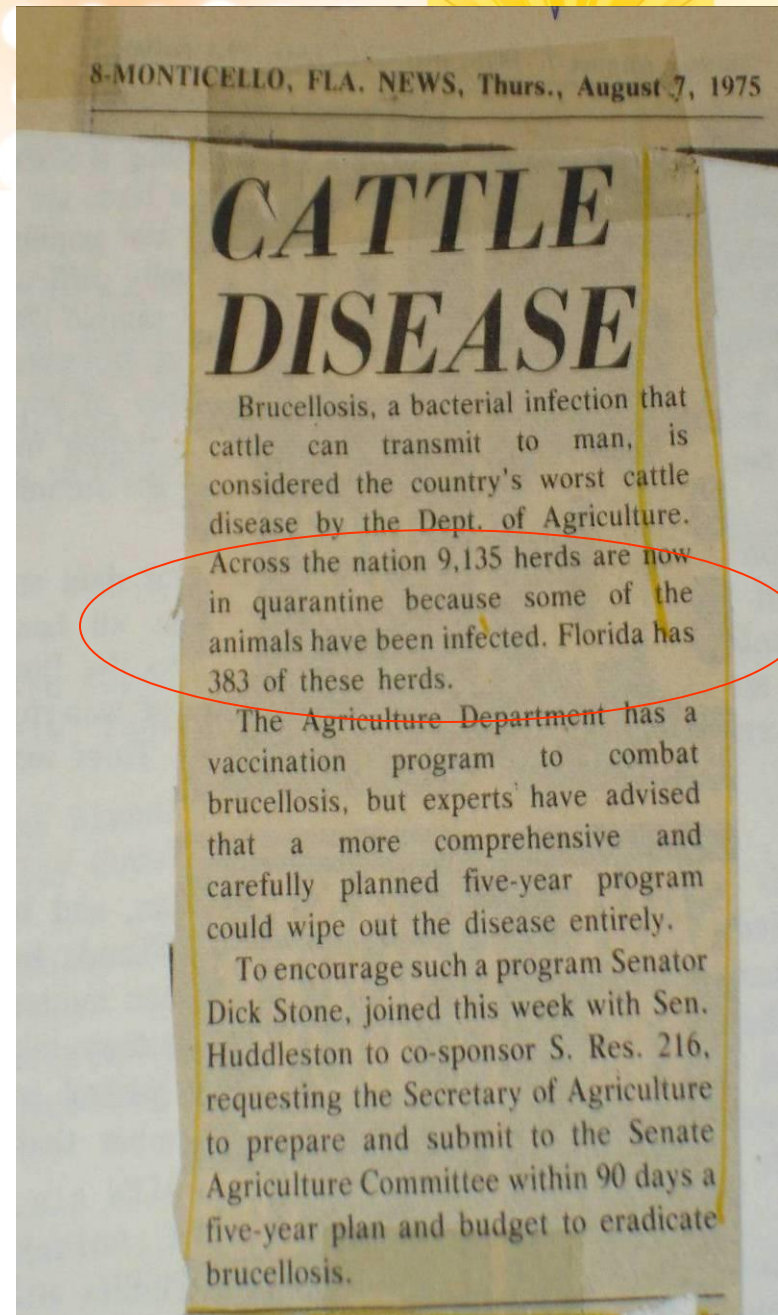




Photo credit: Mark Krause USDA-APHIS, VS

Brucella suis 1999-2008 (n=36*)

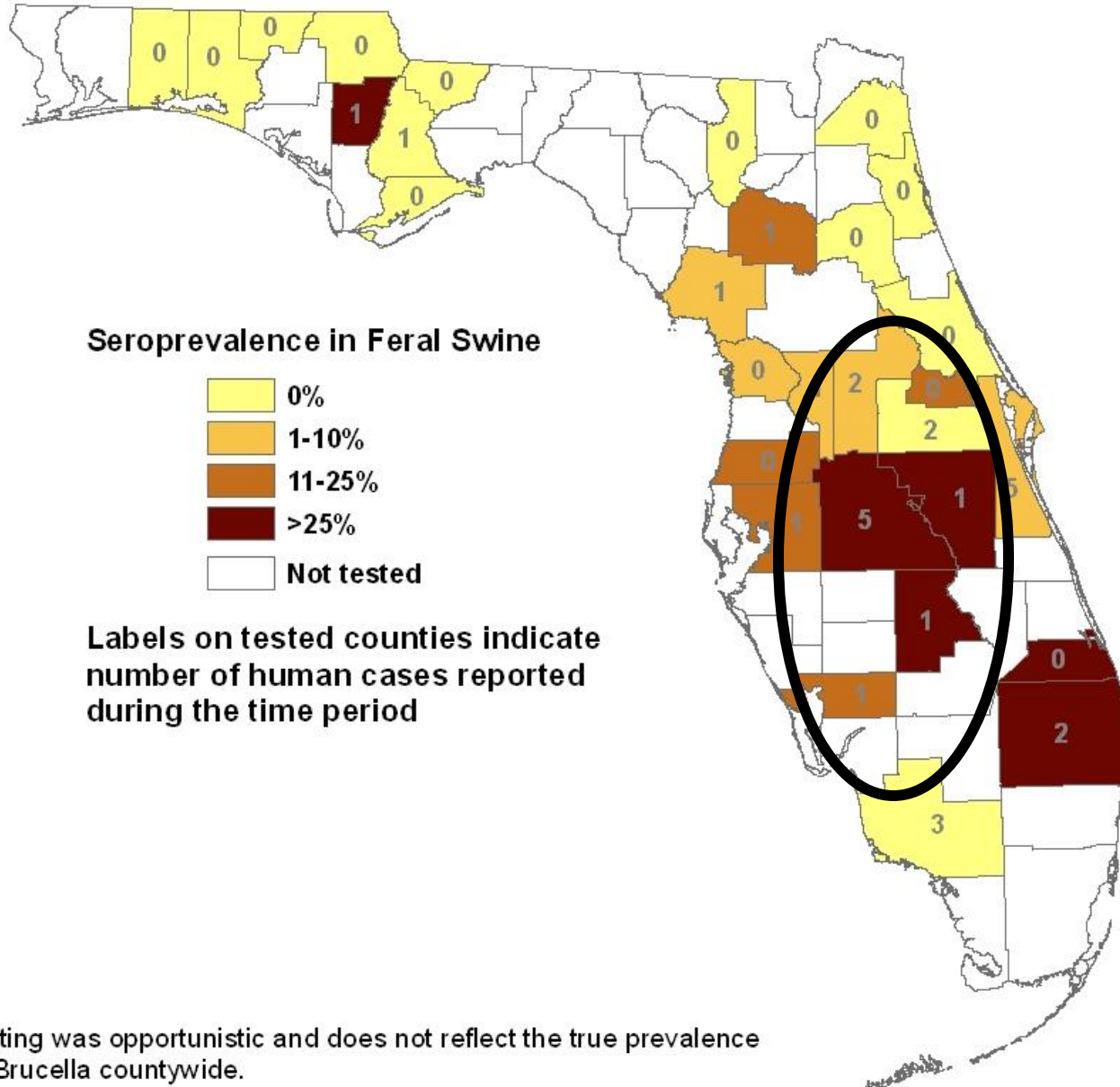


- *B. suis* risk factors
 - 81% (29) hunting, **handling raw hog meat**
 - 25% (9) cuts
 - 25% (9) eating hog meat; 6% (2) undercooked
 - 17% (6) No gloves; 6% (2) with gloves
 - 6% occupational (1 vet tech, 1 taxidermist)
 - Sexual transmission?
- Clusters
 - Private hunting facility
 - Two families (MMWR, father-daughter-lab)
 - Hunter- spouse??

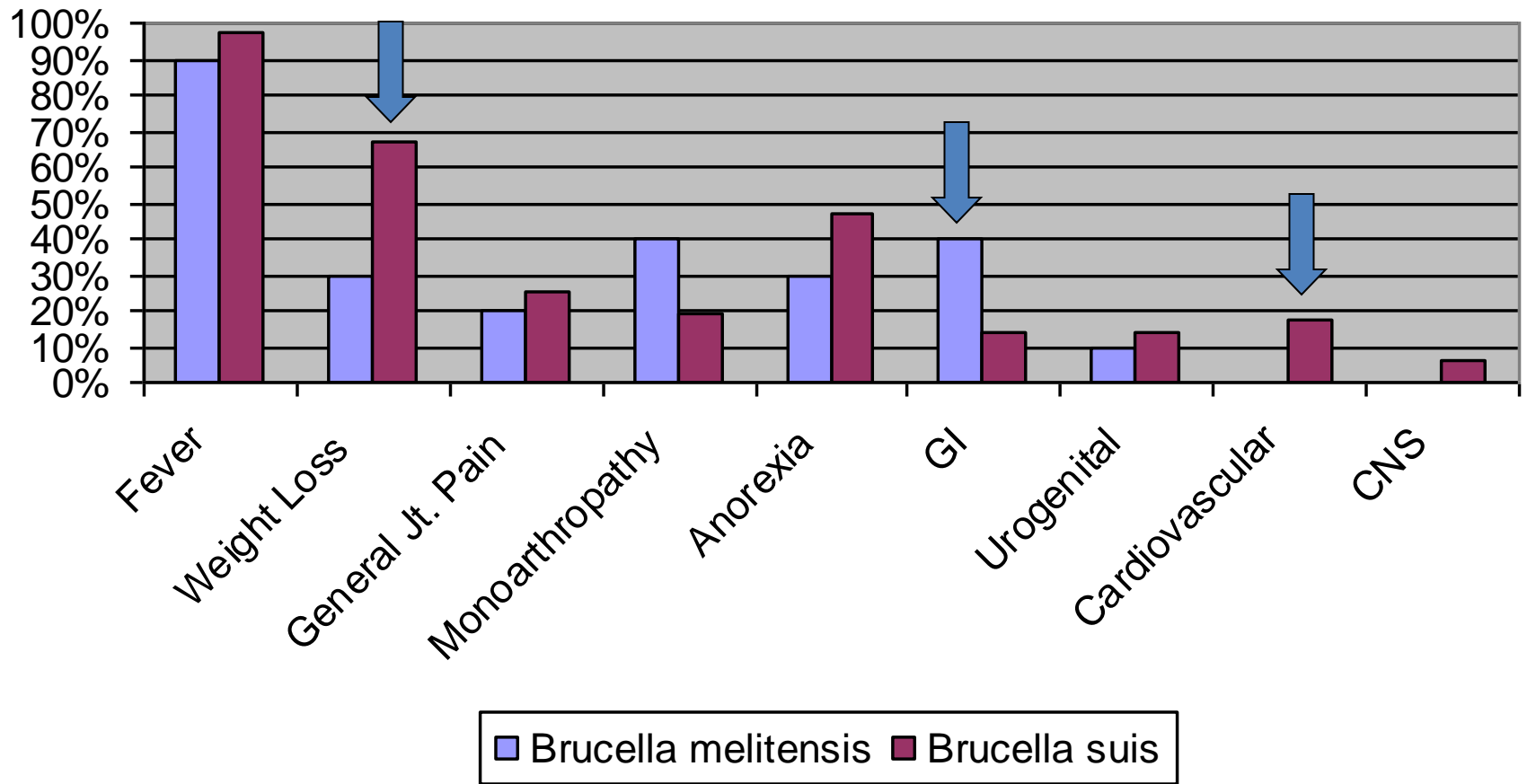


*33 culture confirmed, 1 epi-linked, 2 serologic confirmation

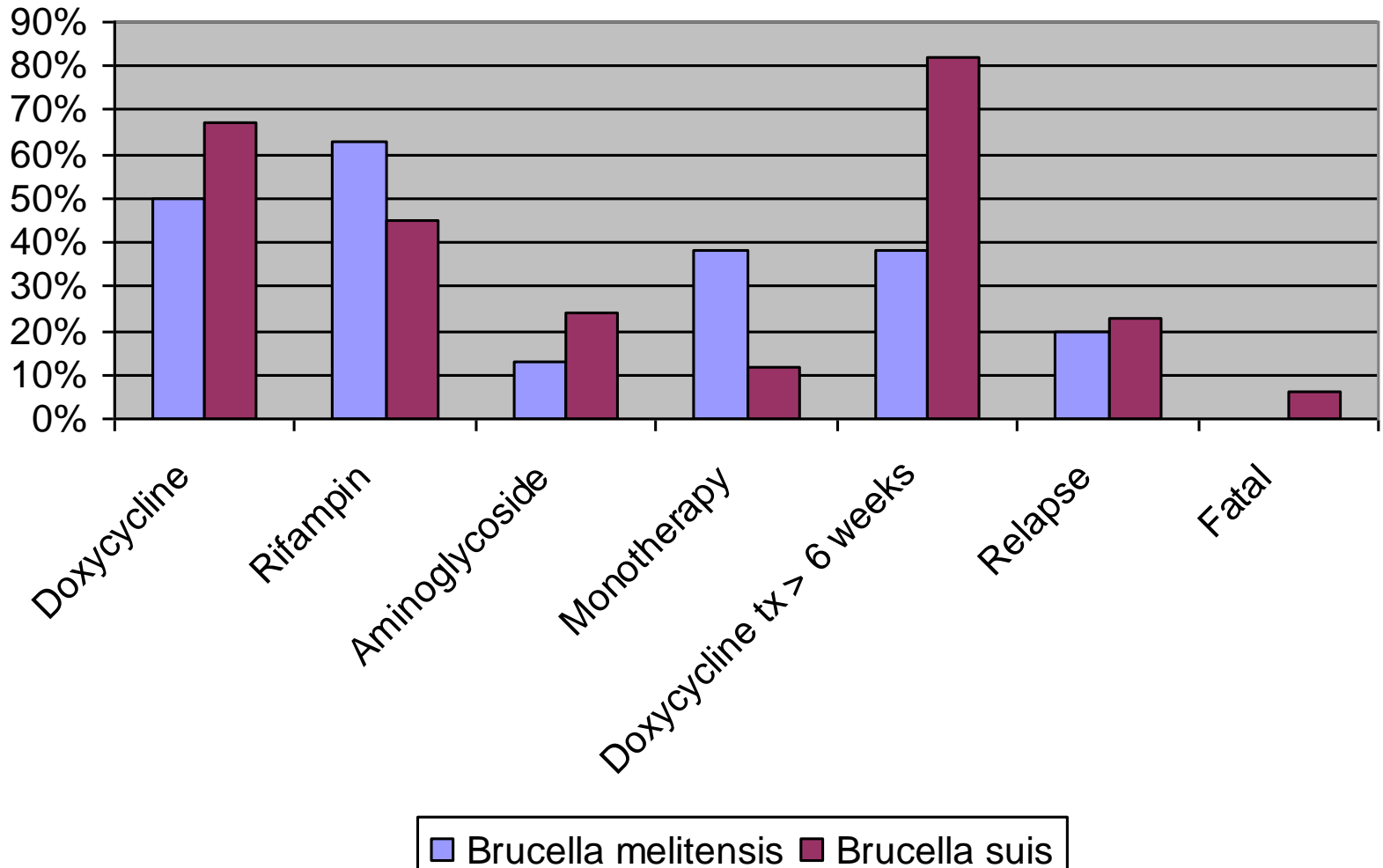
Proportion of Brucella Positive Feral Swine, 1997-2009



FL Cases 1999-2008 Clinical Presentation



FL Cases 1999-2008 Prescribed Treatment & Outcome



Hunter Prevention

- Avoid all contact with visibly ill animals or those found dead.
- Use clean, sharp knives for field dressing and butchering.
- Wear eye protection and rubber or latex gloves (disposable or reusable) when handling carcasses.
- Avoid direct contact (bare skin) with fluid or organs from the hog.
- Burn or bury disposable gloves and inedible parts of the carcass after butchering.
- Wash hands as soon as possible with soap and warm water for 20 seconds or more and dry hands with a clean cloth.
- Clean all tools and reusable gloves used in field dressing and butchering with a disinfectant—such as dilute bleach.



Courtesy CDC

Brucellosis



- *B. suis* canine cases and management
- NASPHV *B. canis* white paper
<http://www.nasphv.org/documentsCompendia.html>
- *Brucella ceti* in dolphins



Rabies



Courtesy David Pearce Escambia CHD

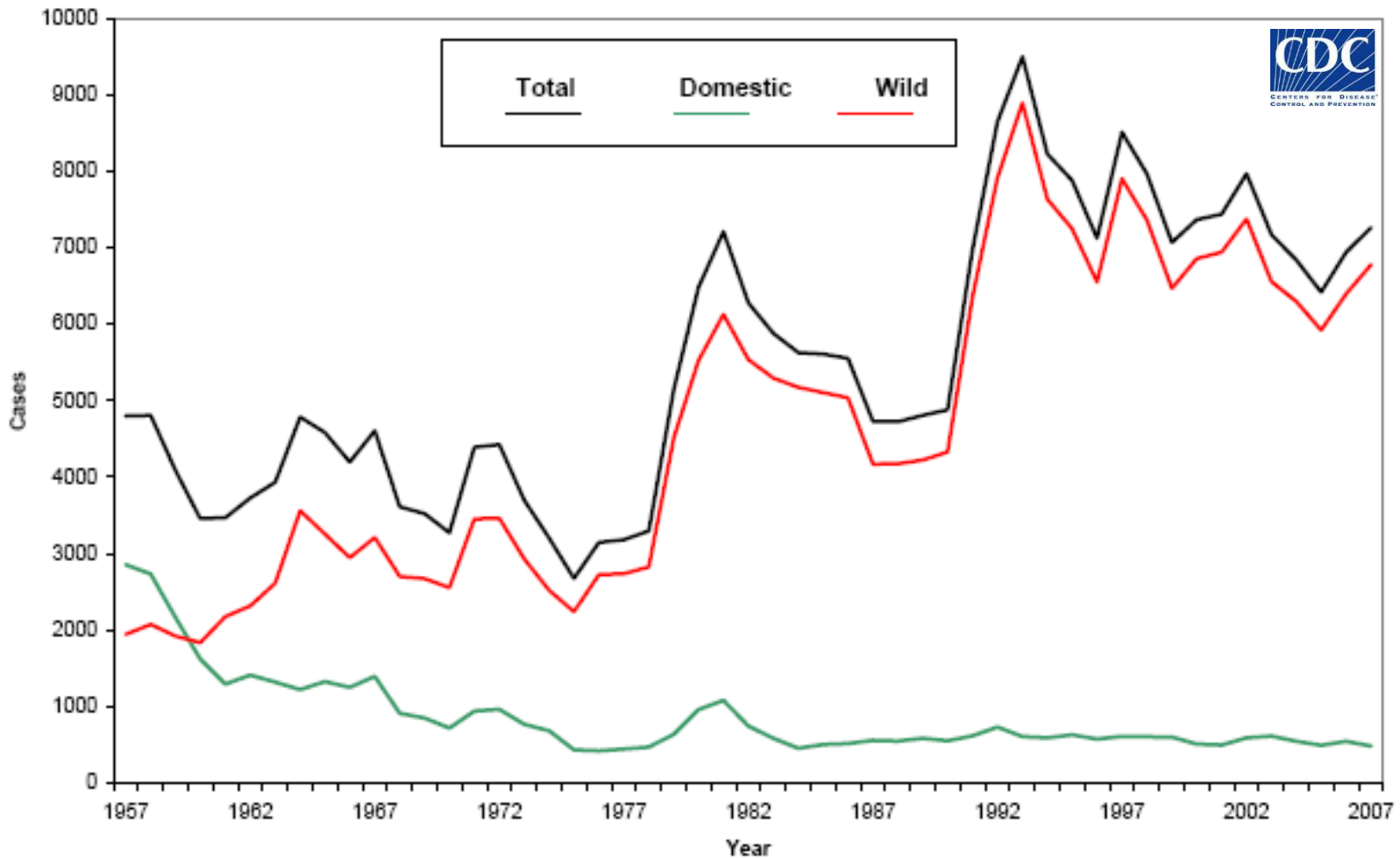


Florida DOH Rabies Guide and other resources:
<http://www.doh.state.fl.us/environment/medicine/rabies/rabies-index.html>

US Rabies



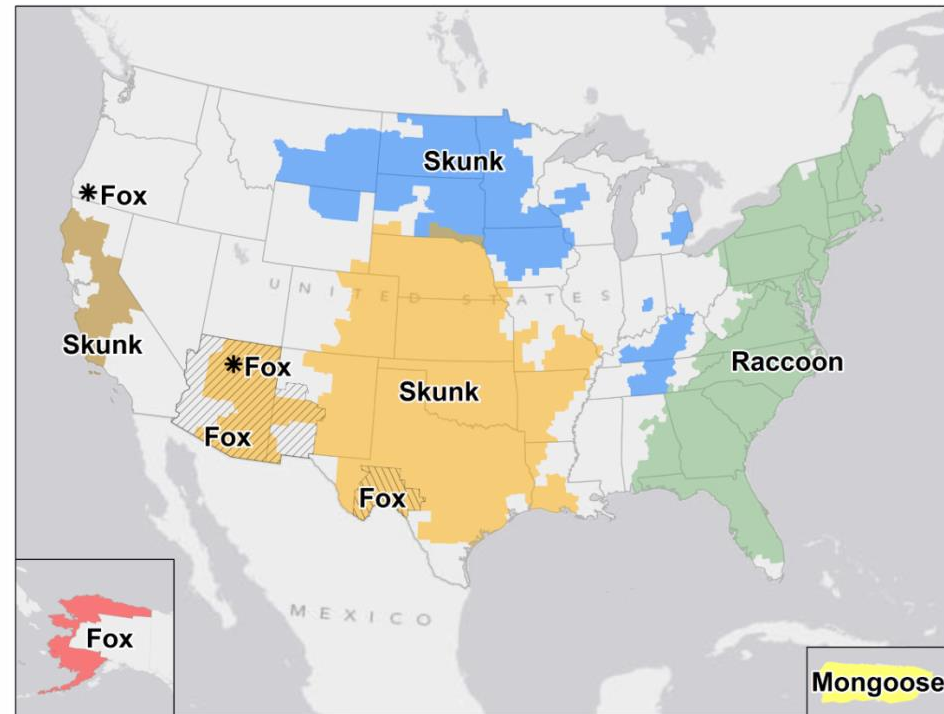
Cases of Animal Rabies, 1957-2007



Rabies Virus Variants



- Minor antigenic and genetic differences
- Usually maintained in a single animal species
- Spillover into any susceptible mammal
- A variety of bat variants nationwide



Animal Rabies FL

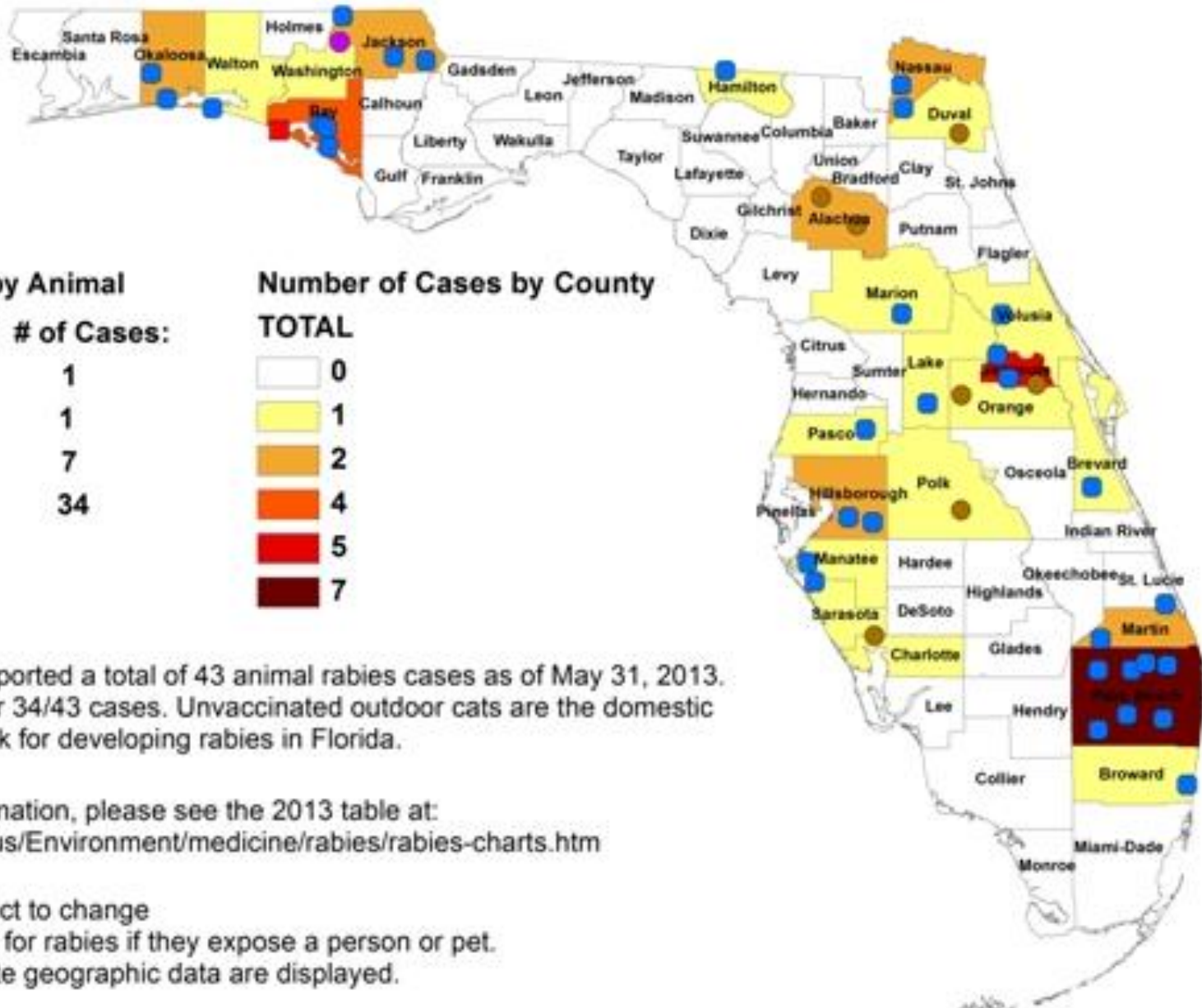
Year	Bat	Bobcat	Cat	Coyote	Dog	Fox	Horse	Otter	Raccoon	Skunk	Total
2009	23	2	11	0	1	21	1	1	92	2	154
2010	15	4	15	0	0	15	1	3	75	0	128
2011	18	2	11	0	1	6	1	0	79	1	119
2012	14	3	8	1	2	11	2	0	59	2	102
20 yr avg	18	2	14	0	3	24	1	1	123	1	188

Only suspect rabid animals having contact with humans or domestic animals are tested.



Reported Animal Rabies in Florida

January 1, 2013 - May 31, 2013



Number of Cases by Animal

Rabid Animal:	# of Cases:
CAT	1
SKUNK	1
BAT	7
RACCOON	34

Number of Cases by County

TOTAL	Count
(White)	0
(Light Yellow)	1
(Orange)	2
(Dark Orange)	4
(Red)	5
(Dark Red)	7

Twenty-four counties reported a total of 43 animal rabies cases as of May 31, 2013. Raccoons accounted for 34/43 cases. Unvaccinated outdoor cats are the domestic animal particularly at risk for developing rabies in Florida.

For more detailed information, please see the 2013 table at:
<http://www.doh.state.fl.us/Environment/medicine/rabies/rabies-charts.htm>

Preliminary data - subject to change
 Animals are only tested for rabies if they expose a person or pet.
 Only cases with accurate geographic data are displayed.

Rabies Pre-Exposure Vaccination



- At risk persons in rabies endemic areas
 - Veterinarians & staff
 - Animal Services
 - Wildlife biologists
 - Lab Staff
 - Travelers
- Vaccination Series
 - 3 doses IM in deltoid
 - days 0, 7, & 21 (or 28)
- Post-Exposure Vx
 - Pre-vx after 1981
 - 2 doses IM days 0 & 3



Rabies Serology



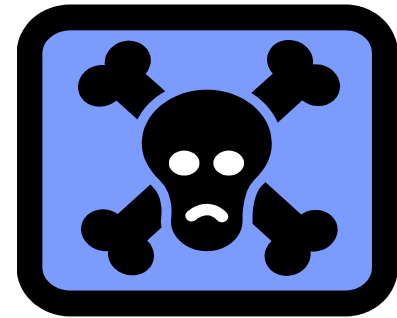
- Frequent Risk: vets and staff, animal control officers, wildlife and animal workers, spelunkers
 - Titer every 2 years
 - Booster <1:5 Rapid Fluorescent Focus Inhibition Test (RFFIT)
- Infrequent Risk: Travelers
 - Serology not necessary
- Serology Labs
 - KSU Rabies Lab & Atlanta Health Associates



Occupational Hazard



- Veterinarians at greater risk for infections with:
 - avian and swine influenza viruses, *Brucella* spp., *Coxiella burnetii*, avian and feline *Chlamydophila psittaci*, human and swine hepatitis E virus, MRSA, and *Bartonella* spp.
- Veterinarians as case reports
 - *Brucella* spp., *Salmonella* spp., bovine papular stomatitis virus, *Sporothrix schenckii*, *Blastomyces dermatitidis*, *Listeria monocytogenes*, *Leptospiriosis interrogans*, *Trichophyton verrucosum*, Hendra virus and avian influenza virus



Veterinary Expert



- Parasitology (and other zoonoses), comparative medicine, population medicine training
 - Ethical and legal
- Protecting clients from pet infections
 - Rabies, enterics, parasites, vector-borne.....
- And pets from client infections
 - MRSA, TB, H1N1
- Important role in early detection of disease activity
 - WNV, EEE, rabies, TB, AI....



***So Please Remember-It's all
One Health!***



One Health



Bruce Kaplan, DVM, Laura Kahn, MD, Thomas Monath, MD, Dr. Lisa Conti, DVM

<http://www.onehealthinitiative.com>



Florida One Health Newsletter

Editor Dr. Beth Radke



Questions?



- Dr. Danielle Stanek 850-245-4117
Zoonotic and Vectorborne Disease
Program
- Dr. Carina Blackmore 850-245-4732
State Public Health Veterinarian

