

ZOONOSIS

What you don't know may hurt you.

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ZOONOSIS

(1) The hookworm latches on the walls of the colon with its sharp teeth where it feeds on blood. (2) The tapeworm is the longest parasite. A mature adult can lay a million eggs a day. (3) Tapeworm eggs embedded in the colon. (4) The roundworm can grow to be 20 inches (50 cm) long and lay 200,000 eggs per day. (5) Pinworms migrate outside the colon during the night to lay their eggs around the anus. This causes the nightly itching of many unsuspecting victims.

SO MANY THINGS LURKING OUT THERE THAT THESE ANIMALS CAN PASS ON TO US

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ZOONOSIS

- * Zoonoses Defined
 - Importance to Wildlife Rehabilitators
- * Causative Agents:
 - Bacteria, Viruses, Parasites & Fungi or Mycotic
- * Disease Prevention & Control
 - Handwashing Techniques
- * Emerging Issues and Human Health Concerns:
 - Increase in vector born illnesses
 - Microbial resistance
 - Biosecurity & Bioterrorism

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ZOONOSIS

* Diseases that pass between animals and humans.....

Or

Eat Poop and Die!

* You should focus on:

How you can get

&

Ways to protect yourself from disease

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ZOONOSIS

Disease Control & Prevention

Disease Transmission:

Directly from one vertebrate host to another via direct contact
 Indirect transmission via intermediate host (vectors) ticks
 Indirect transmission involving aerosol particles or fomites

Disease enters the body by 1 or more of 6 routes:

Inhalation	Ingestion
Inoculation-bite	Through a break in the skin
Through mucosa	Passing through the skin

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ZOONOSIS

Causative Agents:

Bacteria (Bacterial Diseases)
 Chlamydiosis/Psittacosis/Ornithosis, Leptospirosis, Lyme Disease, Rocky Mountain Spotted Fever, Salmonellosis, Tularemia, Ehrlichiosis

Viruses
 California Encephalitis/La Crosse Encephalitis, Hantavirus Pulmonary Syndrome (HPS), Lymphocytic Choriomeningitis, Rabies, West Nile Disease, COVID-19

Parasites
 Ascariasis, Babesiosis, Baylisascaris procyonis (raccoon roundworm), Cryptosporidiosis, Giardiasis, Toxoplasmosis, Toxocariasis (Visceral Larval Migrants), Trichinosis

Fungi/Mycoses
 Aspergillosis, Cryptococcosis & Histoplasmosis, Ringworm

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ZOONOSIS

Causative Agents

BACTERIA:

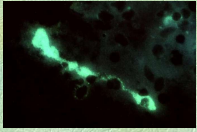
Chlamydiosis/Psittacosis/Ornithosis

*chlamydia psittaci

*aerial transmission of dried secretions by pet birds, turkeys and ducks

*fever, chills, headache, muscle aches, dry cough

*can be difficult to diagnose



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Causative Agents

Bacteria:

Leptospirosis

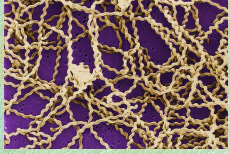
*leptospira

*exposure to urine contaminated water by cattle, pigs, horses, dogs, rodents and squirrels (rodents shed their entire lifetime w/o clinical signs)

*2 days to 4 weeks

*1st stage = fever, chills, headache, muscle aches, vomiting & diarrhea

*2nd stage = Weil's disease = kidney/liver failure or meningitis



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ZOONOSIS

Causative Agents

Bacteria:

Ehrlichiosis

Lone Star Dog Tick


Causes disease in dogs, deer, coyotes and humans

1-2 wks after bite

Fever, chills, severe headache, muscle aches, nausea, vomiting/diarrhea, sometime rash

Treatment = Doxycycline

If not treated: seizures, coma, heart failure, sepsis, internal bleeding, renal failure, respiratory distress, brain inflammation



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Causative Agents:

Bacteria:

Lyme Disease

*borrelia burgdorferi

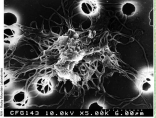

*first characterized in US in 1976

*white-footed mouse-fox, raccoon, opossum, deer - 3-host tick

- 1st stage = rash at bite site, flu like symptoms

- 2nd stage = weeks to months later = cardiac & neurological abnormalities

- 3rd stage = months to years later = arthritis of large joints & chronic skin infections

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ZOONOSIS

Causative Agents:

Bacteria:

Rocky Mountain Spotted Fever

American Dog Tick

*Rickettsia rickettsii


*American Dog Tick and Rocky Mountain Wood Tick

*White-footed mouse, fox, raccoon, opossum, deer - 3-host tick

Flu-like symptoms including intense headache and fever and stiff neck within 3-14 days. Rash at the bite site or on wrists and ankles

Treatment = antibiotics

If left untreated symptoms get worse and cause organ damage and death



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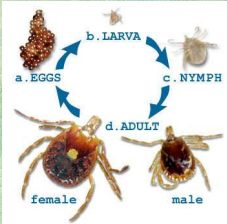

ZOONOSIS

Causative Agents: Bacteria:

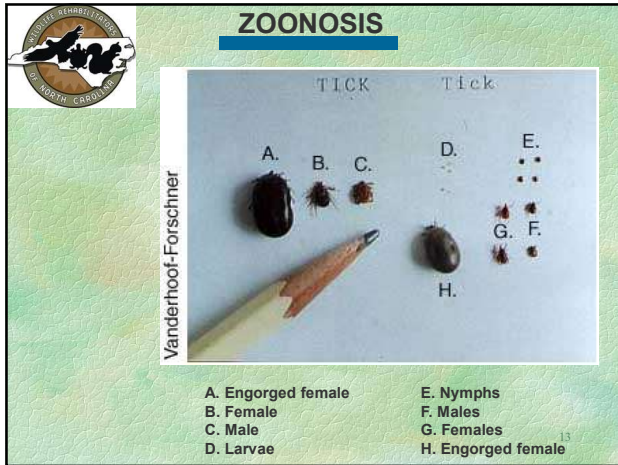
Rocky Mountain Spotted Fever

*transmitted through saliva after several hours of attachment

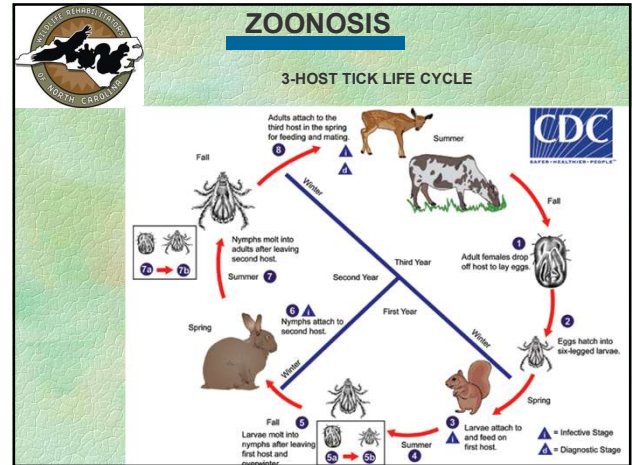
* ticks b/c infected in either larval, nymphal or adult stages

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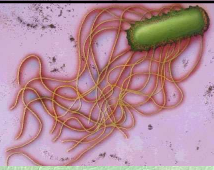
ZOONOSIS

Causative Agents:

Bacteria:

Salmonella

- *Salmonella
- *Occurs in mammals, birds, & reptiles
- *One of the world's most widespread diseases
- *12 to 72 hours
- *Diarrhea, fever and abdominal cramps
- *Lasts 4 to 7 days and is usually self-limiting



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ZOONOSIS

Causative Agents:

Bacteria:

Tularemia

- *Francisella tularensis
- *Occurs in rodents, rabbits, & hares
- *Transmission by infected tick, deerfly or insect
- *Handling infected animal carcasses
- *Eating/drinking infected food/water
- *Inhaling the bacteria
- *3 to 5 days but as long as 14 days
- *Sudden fever, chills, headaches, diarrhea, muscle aches, joint pain, dry cough, progressive weakness, pneumonia chest pain, trouble breathing
- *Consult your doctor at first sign of illness



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ZOONOSIS

Causative Agent:

Bacteria


Cryptosporidiosis

Cryptosporidium Oocyst

Symptoms:

- Dehydration
- Weight loss
- Stomach cramps or pain
- Fever
- Nausea
- Vomiting

usually last about 1 to 2 weeks.
The symptoms may go in cycles in which you may seem to get better for a few days, then feel worse again before the illness ends



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ZOONOSIS

Causative Agents:

Virus

La Crosse Encephalitis

- *chipmunks, squirrels, mosquitoes
- *survives the winter in the mosquito
- *5-15 days after bite
- *None to flu-like symptoms
- *Seizures, disorientation, coma & paralysis, inflammation of the brain, CNS signs






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ZOONOSIS
Causative Agents:

Virus
Hantavirus Pulmonary Syndrome (HPS)

- *deer mouse in SE
- *shed virus in urine, droppings and saliva = aerosolization
- *fever, deep muscle aches (thighs, hips & back) headache, chills, nausea, vomiting, diarrhea
- *rapidly progress into severe respiratory failure







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ZOONOSIS
Causative Agents:

Virus
Lymphocytic Choriomeningitis (LCMV)

- *Mice, rats, hamsters, guinea pigs
- *Shed virus in urine, droppings and saliva = aerosolization, break in skin, bite, organ transplant
- *Flu like symptoms for up to 2 weeks, meningitis, paralysis, coma

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ZOONOSIS
Causative Agents:
Virus

Rabies:

- * All warm-blooded mammals can transmit the disease,
- *High rates of infection in Skunks, Raccoons and Foxes
- *Rare in Rodents, Lagamorphs, and Opossums

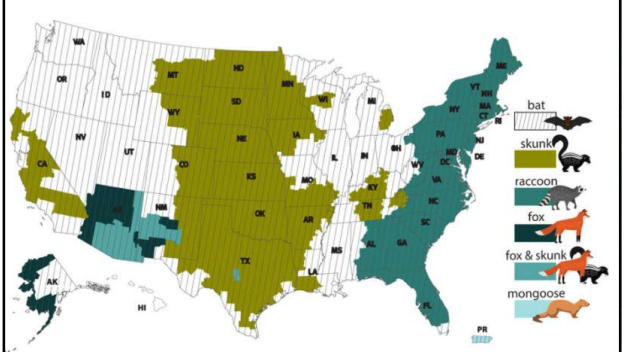
The best protection for you and the animal in your care is to.....

AVOID BEING BITTEN, SCRATCHED OR LICKED!!


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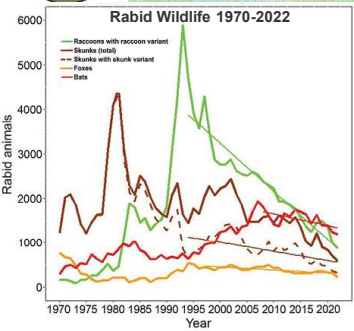
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Rabid Wildlife 1970-2022



Top States for Animal Rabies (2022 Data)

- Texas: 395 cases (highest).
- Virginia: 337 cases.
- Pennsylvania: 329 cases.
- New York: 267 cases.
- North Carolina: 264 cases.
- California: 241 cases. AVMA Journals

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ORV Rabies Vaccine Targeting



ORV Distribution by County for 2023

County	Fixed Wing V-RG CS	General V-RG CS	FPV	Heavy Wing V-RG CS	Total
Alamogordo	1,300				1,300
Burtonsville	27,000	5,400	39,034	81,442	142,876
Hayward	68,371		13,051	81,372	142,876
Frederickson	4,251		841	7,082	11,022
Madison	70,022			70,022	140,044
Madison	50,207			50,207	100,414
Madison	63,106		671	64,831	128,668
Michigan	23,564			23,564	47,128
Swain	28,066			28,066	56,132
Transylvania	52,133			52,133	104,266
Florida	40,751	1,190		42,501	85,002
Texas	369,897	6,400	95,900	430,397	869,594


ORV Distribution by County for 2023

County	Fixed Wing V-RG CS	Total
Cherokee	65,735	65,735
Clay	28,974	28,974
Graham	10,261	10,261
Macon	59,503	59,503
Swain	10,073	10,073
Totals	174,546	174,546






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ZOOONOSIS

Causative Agents:


VIRUS

West Nile Virus

- *Mosquito
- *3 to 14 days after being bitten
- *80% of people don't show symptoms
- *20% = fever, headache, body ache, nausea, swollen glands

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ZOOONOSIS


Causative Agent:

PARASITES:

- * Baylisascaris procyonis (raccoon roundworm)
- * Baylisascaris columnaris (skunk roundworm)
- * Babesiosis
- * Cryptosporidiosis
- * Ehrlichiosis
- * Giardiasis
- * Toxoplasmosis
- * Trichinosis
- * Toxocariasis (Visceral Larval Migrants)

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ZOOONOSIS

Causative Agent:

PARASITES


Baylisascaris procyonis (raccoon roundworm)

- *millions of eggs produced in intestine and passed out in feces
- *does not affect raccoon
- *nausea, tiredness, liver enlargement, loss of coordination, lack of attention to people/surroundings, loss of muscle control, coma, blindness

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ZOOONOSIS

Causative Agents:

FUNGI OR MYCOSIS:





Typical rash appearance

- Aspergillosis – lung fungus from moldy hay also called farmer's lung
- Cryptococcosis – yeast like lung fungus that sometimes spreads to the brain
- Histoplasmosis – fungus found in bird and bat droppings; not serious if confined to lungs but fatal if spread throughout body
- Ringworm – also closely related to athlete's foot or jock itch, caused by fungus

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ZOOONOSIS


Causative Agents:

PROTOZOAL DISEASE:

- *Giardiasis - Most frequently diagnosed intestinal parasitic disease in the US
- *Toxoplasmosis – *Eating undercooked meat (pork, lamb, *venison) or shell fish (oysters, clams or *mussels)
- *rodents & birds droppings

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ZOOONOSIS

Zoonoses

Disease Control & Prevention


Rationale: You can't provide good rehabilitative care if you are sick

Prevention of Disease Transmission:

- Good Handwashing
- Good Cleaning protocols
- Careful handling of animals
- Proper disposal of fecal materials
- Proper protective gear
- Using your common sense

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ZOOONOSIS

Emerging Issues & Human Health Concerns:

- *Increased vector born illness
West Nile, tick-borne encephalitis
- *Microbial resistance –
Overuse of antibiotics
Bacteria, viruses, fungi & parasites
no longer respond to medicines
- *Biosecurity & Bioterrorism
The intentional use of micro-organism to bring about ill effects or death to humans, livestock or crops

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Mitchell, Mark A., DVM, *Emerging Infectious Diseases in Reptiles and Amphibians*, NWRRA Symposium, March, 2002.

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ZOOONOSIS

Zoonoses

Useful WEB Sites:

Emerging Infectious Diseases, CDC
<http://www.cdc.gov/ncidod/eid/vol4no3/murphy.htm>

Field Manual of Wildlife Diseases,
http://www.nwhc.usps.gov/pub_metadata/field_manual/field_manual.html

Health Concerns to be Aware of When Working With Wildlife (a.k.a.-Zoonoses)
The Humane Society of the United States
www.tc.umn.edu/~dev0028/zoonos.htm

Melissa Kaplan's Herp Care Collection
<http://www.anapsid.org/main/zoonoses.html>


Overview of Zoonoses, LA Public Health, Veterinary Public Health
<http://www.lapublichealth.org/vet/guides/vetzooman.htm>

Parasitic Pathways, Division of Parasitic Disease, CDC
<http://www.cdc.gov/ncidod/dpd/parasiticpathways/animals.htm>


ZOOONOSIS or Everything I Didn't Want to Know About Wildlife Diseases
www.anglefire.com/nj/woundedknee/zoonoses.html

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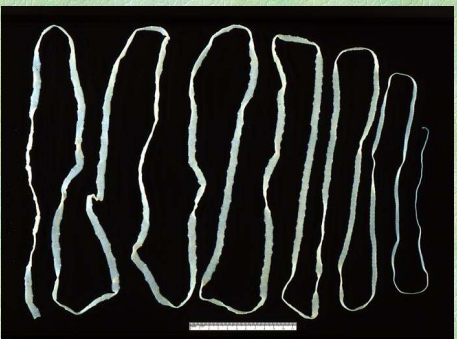


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ZOOONOSIS




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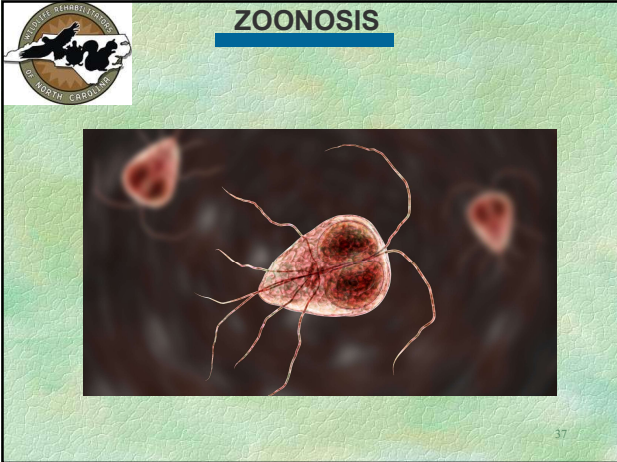


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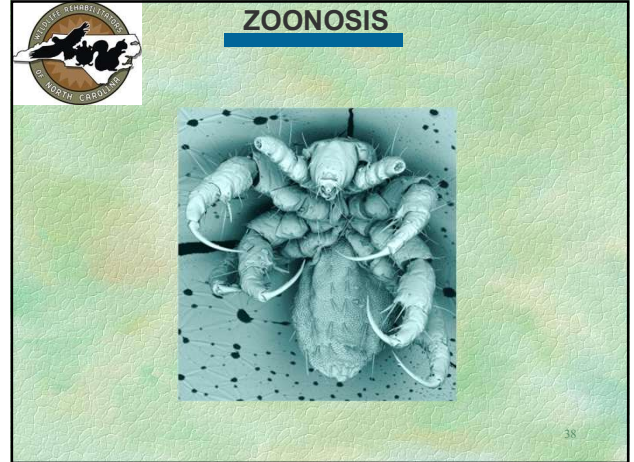


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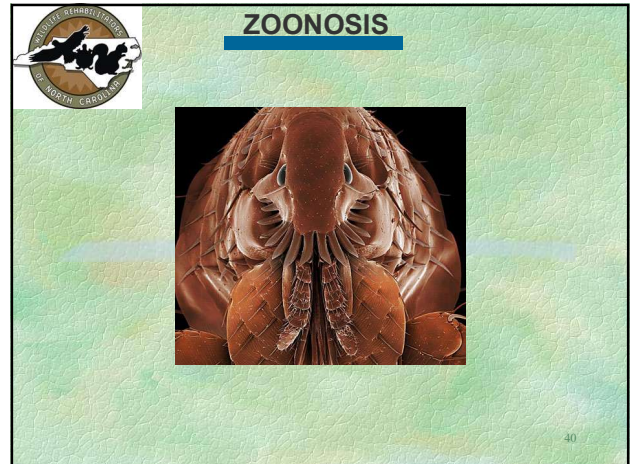
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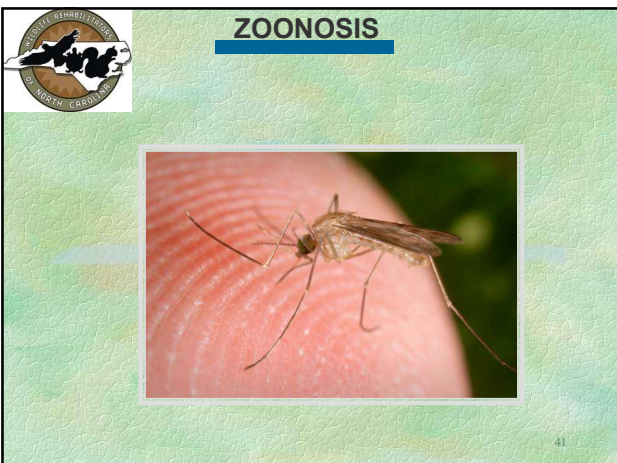
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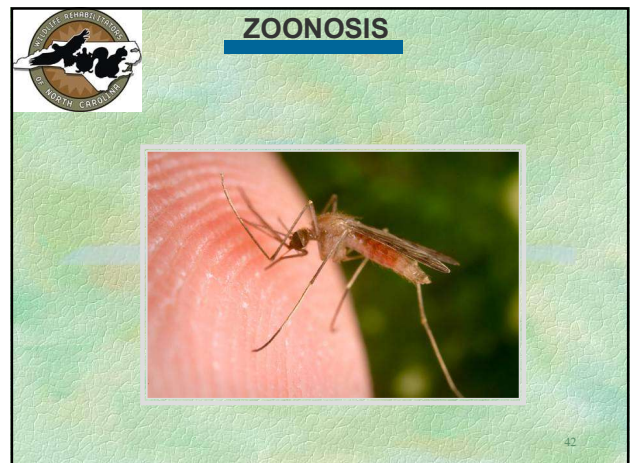
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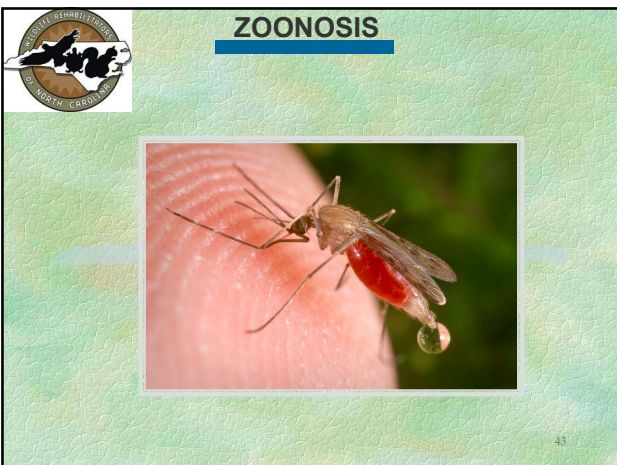
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