

Disease and Mortality Monitoring of Rusty Blackbirds

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Presentation's Aims

- What is the role of disease in population decline?
- Diseases to consider monitoring
 - Viral
 - Parasitic
- Mortalities
 - How to submit specimens

Role for Infectious Disease?

- Recent review (*Smith et al 2006*)
 - IUCN Red List + Web of Science search
 - A factor in extinction: 3.7 % of 833 plants and animals since 1500
 - A factor in listing a species as critically endangered: < 8.0% of 2582 species
 - Reporting bias?
- WNV
 - Local population extirpation/reduction
 - Caffrey et al 2005: 65% reduction in local crow pop
 - Naugle et al 2004: 25% reduction in survival in Powder River Basin greater sage grouse population
 - Kilpatrick and Marra *in press*: WNV impacts...?

Immunity is Costly

- Chicken weight loss
 - Sheep red blood cell inoculation: -13%
 - Endotoxin injection: -18%
- Human, protein catabolism
 - Sickle cell disease: +32%
- Human, energetic cost
 - Sepsis: 30%

Thus

Disease markers could make for interesting covariates in upcoming RB work!

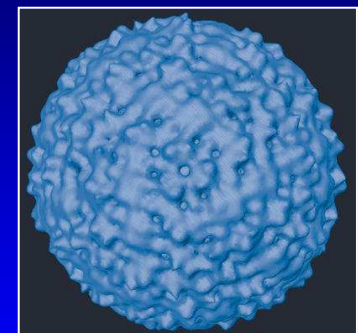
- Fecundity repression?
- Altered predator-prey interactions?
- More data to better decipher role of infectious disease in population dynamics or extinctions

Viral Pathogens

- No virus positive rusty's in NWHC records
- One record at SCWDS: trauma
- Flaviviruses
 - West Nile virus
 - Eastern equine encephalitis
 - St. Louis Encephalitis
- Avian pox
 - Not likely

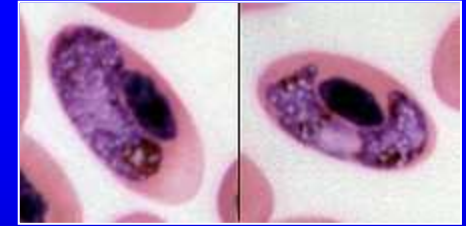
Flavivirus Monitoring

- No flavi-positive blackbirds in database (of 5)
- Live bird sampling
 - Serum
 - Virus isolation in Vero cell culture
 - PCR detection
 - Antibody detection by PRNT (plaque reduction neutralization test)
 - 75 μ ls serum required
 - Cost estimate = \$15/bird
 - Cloacal or oral swabbing
 - Live virus or PCR detection
 - Some birds shed only orally, some both



West Nile virion

Parasite Monitoring



Hemoproteus

- 2 parasitism cases in database
 - Brewer's blackbird (nematode)
 - Rusty blackbird (ascariasis)
- Blood parasites
 - Leukocytozoan
 - Hemoproteus
 - Plasmodium
 - Blood smears; 2 per bird ~ \$20/bird
- Coccidia
- Full necropsy ~ \$70/bird

Mortality Monitoring



- Field investigation team – diseases ecologists
- Veterinary pathologists
- Necropsy, bacteriology, virology, parasitology and toxicology labs
- Research vs. diagnostic processing
- Contact us for submission guidelines

Contacts

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Stay in Touch

