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 flavivirus-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 μls serum required
    - Cost estimate = $15/bird
  - Cloacal or oral swabbing
    - Live virus or PCR detection
    - Some birds shed only orally, some both
Parasite Monitoring

- 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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