

# Newcastle Disease Virus (NDV) in Double-crested Cormorants

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**13 June 2013**



# Newcastle Disease Virus

What is NDV?

- Paramyxovirus - RNA
- Avian Paramyxovirus Type 1
- Contagious viral disease of birds
- One of the most important poultry diseases in the world
- Long lived in environment

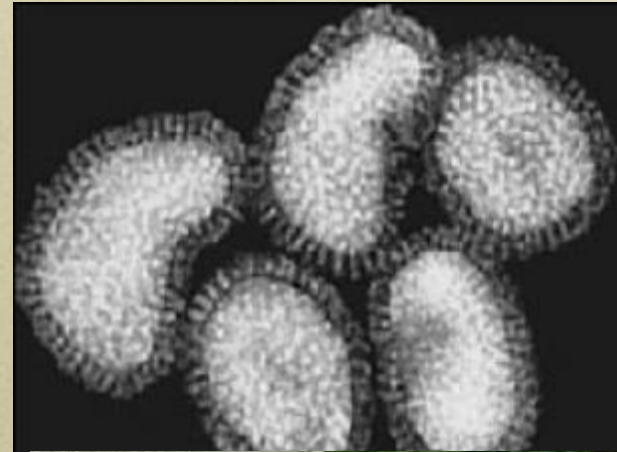


Photo: New South Wales Agriculture, Australia



# Newcastle Disease Virus

## Transmission:

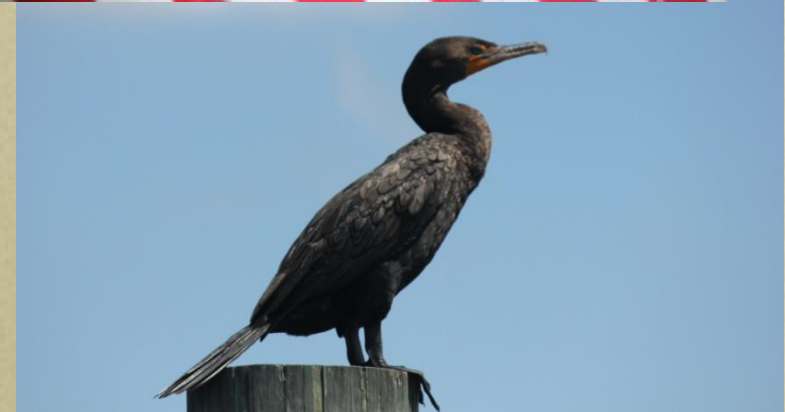
- Spread by direct contact with feces or respiratory discharge
- Transferred by fomites: shoes, clothing and equipment
- Incubation is typically 2-15 days
- Many variations- Mild to Severe



# Newcastle Disease Virus

Lentogenic

- Low virulent strains mainly found in wildlife
- Cause mild clinical disease with primary involvement in the respiratory tract
- Pathology not remarkable



# Newcastle Disease Virus

Mesogenic or Velogenic

- Acute or highly virulent strains cause neurologic deficits, depression, inappetence, muscular tremors, drooping wings, twisting of the head and neck, circling, complete paralysis, and rapid death



# Exotic Newcastle Disease Virus in US

- Exotic Newcastle Disease Virus (END) is a reportable foreign animal disease
- Devastating to poultry industry
- Several recent outbreaks in N America
- California 02-03:
  - 2,662 facilities depopulated
  - 4 million birds destroyed
  - Speculation- imported fighting bird



# Exotic Newcastle Disease Virus in US

Rare prior to 1990

Increasing reports of vNDV in  
wildlife in N America

1990 Canada Between 5,000 and  
10,000 cormorants died

1992 Northern US and Canada  
20,000

1997 California 2,000

2012 Saskatchewan 1000

Mostly sub-adults affected

Breeding colonies affected

March - September



# Double-crested Cormorants (DCCs) in Florida

Two populations

- *Phalacrocorax auritus* – migratory
- Atlantic and Great Lakes population – 96,000 pair
- *Phalacrocorax auritus floridanus*-resident
- Florida population estimated between 10,000 and 30,000 individuals.
- Gregarious
- Nesting in large colonies with out aquatic birds





# Neurotropic Velogenic NDV in DCCs in Florida

- One recorded finding prior to 2010
- 2002 Florida Keys 1 neurologic signs
- Evidence of END in overwintering DCCs in MS and AL
- And resident DCC eggs in FL (2001)- no adults tested positive



# Neurotropic Velogenic NDV in DCCs in Florida

- 21 DEC-2010 through 14 JAN 2011
- 2 Rehabilitation Clinics in FL Central Gulf Coast Region
- DCCs with neurologic signs including tremors, torticollis, wing and/or leg paralysis.
- All died or were euthanized.



# Neurotropic Velogenic NDV in DCCCs in Florida

- END isolated from 7 juvenile and adult DCCCS
- Swabs were matrix positive at Bronson Lab and confirmed positive at National Veterinary Services Lab.
- Quarantine set up on the two facilities



# Neurotropic Velogenic Newcastle Disease virus in double-crested cormorants in Florida

- Six rehabilitation clinics and one domestic animal facility were examined.
- Samples taken from other avian species at these facilities tested negative for END
- Proper biosecurity followed
- No spread of virus



# Surveillance for neurotropic velogenic NDV in DCCs in Florida

- Determine if NDV is present in migratory population, resident population or both.
- Environmental sampling
- Testing birds with neurologic signs



# Surveillance for neurotropic velogenic NDV in DCCs in Florida

- Two DCCs with neurologic signs tested positive
- To date, environmental samples are negative



# Raccoon Roundworm Study

## *Baylisascaris procyonis*

- Normal intestinal parasite in raccoons
- Dogs are also definitive host
- Previous studies have detected worm in several counties.
- Zoonotic potential



# Raccoon Roundworm Study

Examine 30–40  
intestinal tracts  
from each of 67 FL  
Counties

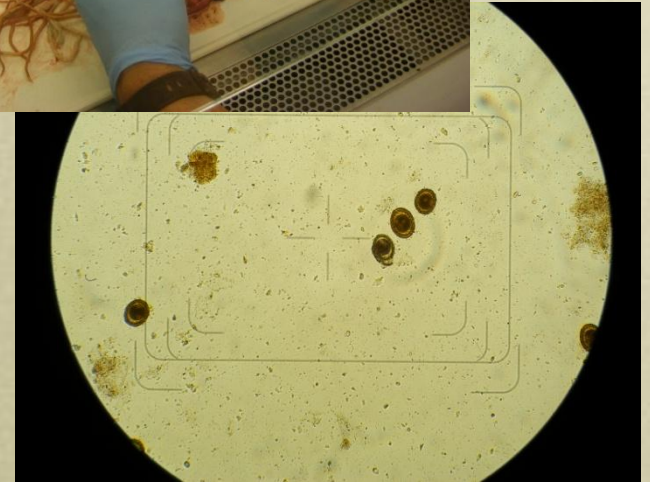
- Visually inspect  
for adult  
roundworm
- Verify with fecal  
floatation for eggs





# Raccoon Roundworm Study

- 780 tracts examined
- 47 counties with samples
- 18 counties with 10+ samples
- 14 counties- testing completed



# Raccoon Roundworm Study

- Positive counties:
- Bay, Broward, Charlotte, Escambia, Hillsborough, Leon, Orange, Pasco, Pinellas

