Field Notes

Oak Hammock Marsh Interpretive Centre **June 2006**

Avian botulism

What is it?

- Avian botulism is a form of poisoning of wild and domestic birds caused by a toxin produced by the bacterium, *Clostridium botulinum* (type C). It is a recurring problem, often killing many thousands of waterfowl and shorebirds.

- Avian botulism occurs naturally and is a leading cause of bird deaths, especially in migratory waterfowl. Ducks are most frequently affected, but avian botulism is known to affect all waterfowl, including geese and swans. Pelicans, gulls, shorebirds, raptors, and upland birds are also susceptible.
- While the source of the poisoning is thought to be well known, ways of effectively controlling botulism outbreaks remain uncertain.
- Outbreaks of avian botulism occur intermittently, generally on water bodies with little or no outflow. Botulism occurs most often in mid to late summer, on shallow lakes, during periods of hot dry weather. Incidents are frequently associated with a lack of oxygen in the water that often occurs after blue-green algae has bloomed.

Did you know?

That in a severe outbreak over 1 million dollars was spent on clean up.

That across the prairies in a severe outbreak millions of birds die.

That avian botulism has been around for hundreds of years.

100's

100's

That the toxins in birds pose no threat to humans.

We are located only 20 minutes North of Winnipeg between Hwy 7 and 8 on Hwy 67 at 220.
Call us at 467-3300 for more information or visit us online at www.ducks.ca/ohmic.

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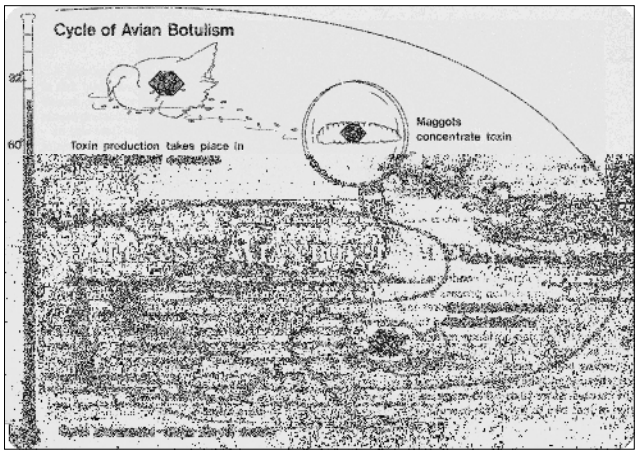
How is it transmitted?

- For avian botulism to occur, a virus must infect type C *Clostridium botulinum* bacteria, causing the bacteria to produce toxin.
- The botulism spore, or resting stage of the bacteria, is commonly found in wetland soils, and can survive for years, as well as withstand freezing and drying. Many birds inadvertently eat these spores while feeding, these spores live in their tissues with no effect on the birds' health. When a bird dies, its decaying carcass often offers three conditions that type C botulism bacteria need to grow and produce toxin: high temperatures, protein rich material, and an absence of air.
- Botulism toxin is transferred to birds by maggots and other invertebrates that feed on the decaying carcasses. The botulism toxin does not harm the invertebrates, but it accumulates in their tissues to levels where one maggot can kill a duck. Large numbers of maggots on a bird carcass can attract live birds that then become poisoned by ingesting toxic maggots. The cycle repeats itself, each time involving more and more birds.



What are the symptoms?

- The toxin prevents nerve impulse transmissions to muscles that results in paralysis. The paralysis is progressive and an infected bird would show the following symptoms:
  - difficulty taking off or landing
  - leg weakness and drooping wings
  - not moving unless stirred up
  - paralysis of legs and wings
  - paralysis of eyelids
  - discharge from eyes, eyelids become cemented together
  - head sags
  - respiratory failure
  - death

How can epidemics be prevented?

- A 3-year field experiment recently took place to determine how effective carcass removal was in preventing the spread of a botulism epidemic.
- Regardless of the size of the wetland, it was concluded that carcass removal is not effective in reducing the spread of botulism because at best only 40% of the carcasses were retrieved. The remaining infected birds continue to spread the disease.
- Focus is now on better understanding botulism to find the causes.