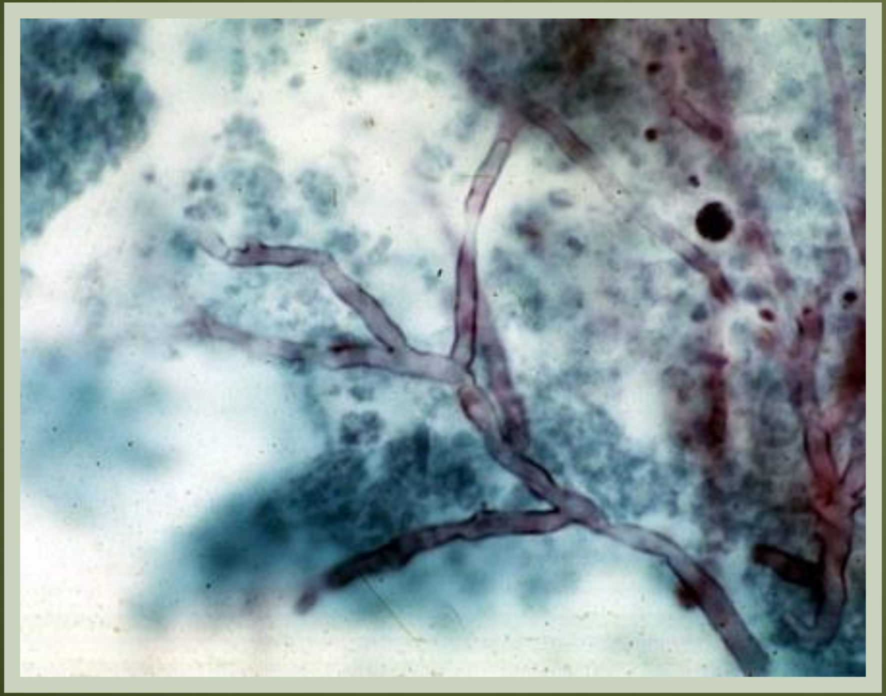
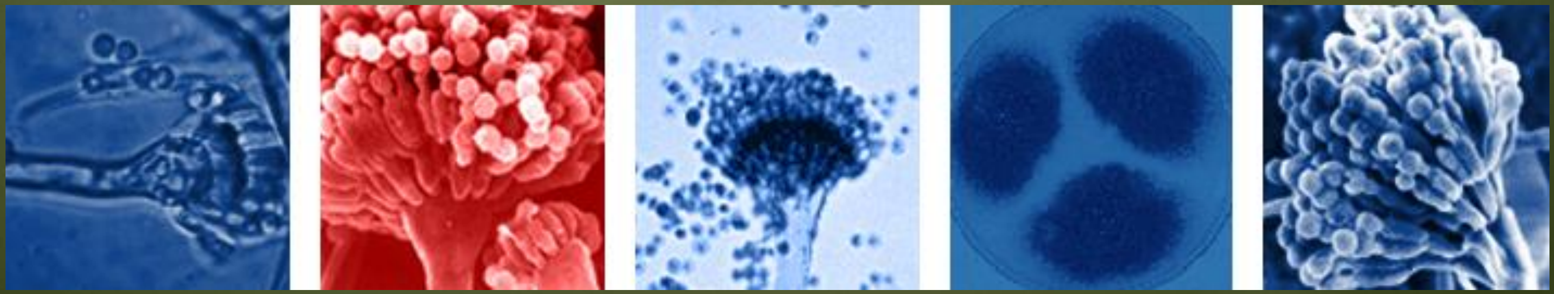
# *ASPERGILLOSIS*
# *WRNC JAN 17, 2026*



# Aspergillosis

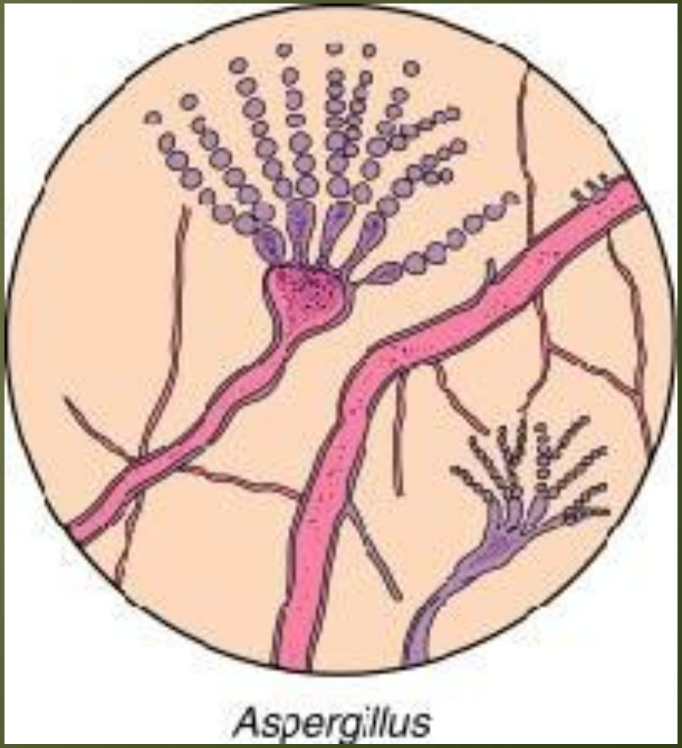
- Very important disease in raptors, especially juvenile RTHA's, seabirds ,etc.
- ***Fungus :*** *Aspergillus fumigatus*

**Ubiquitous**
**Saprophytic**
**Opportunistic**
**Infectious**
**Not contagious**
**Not zoonotic, but…**

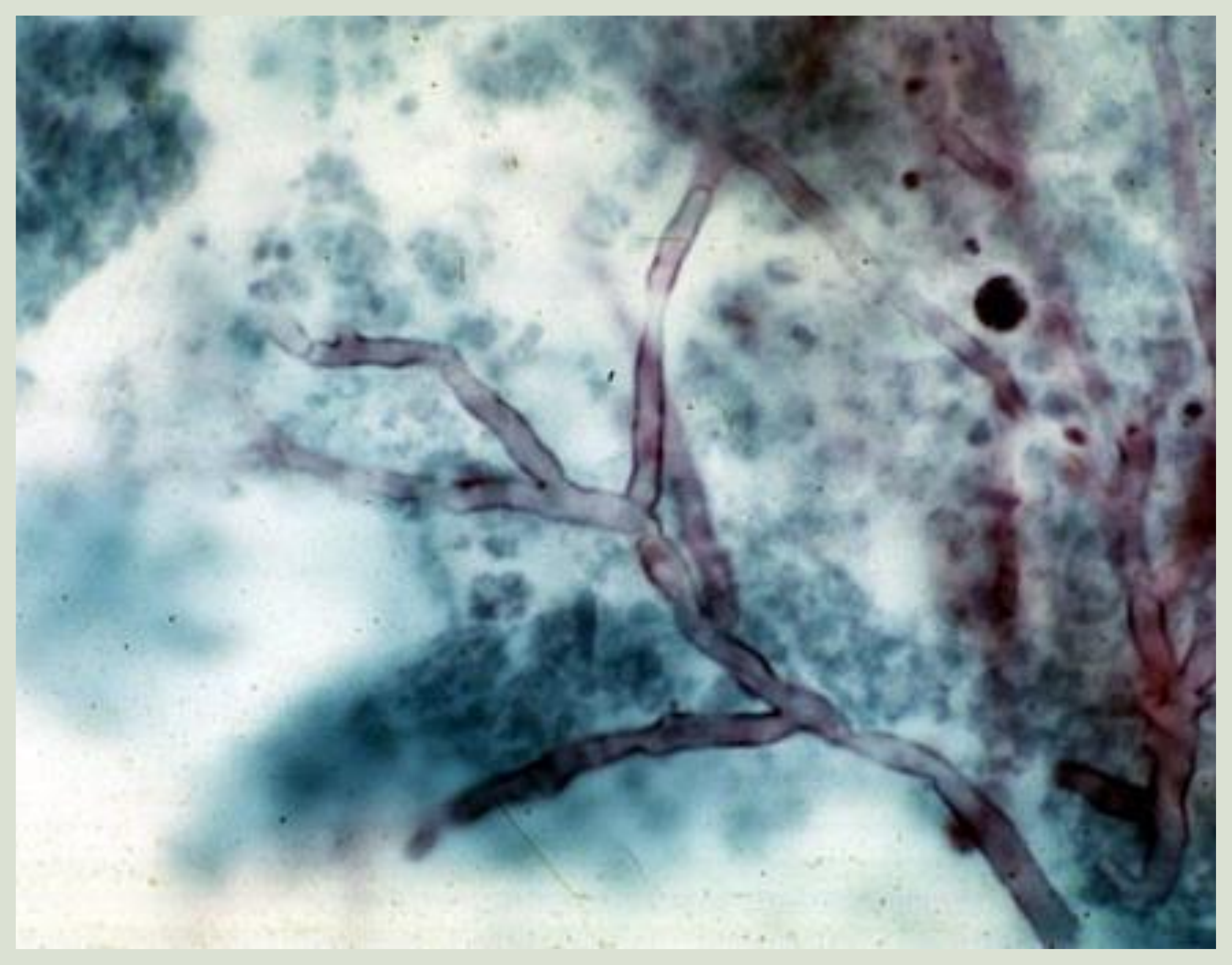


# Biology

- Spore is infectious form
- Once established, branched, septate hyphae form
- The hyphae swell and produce dark green conidia



# Hyphae

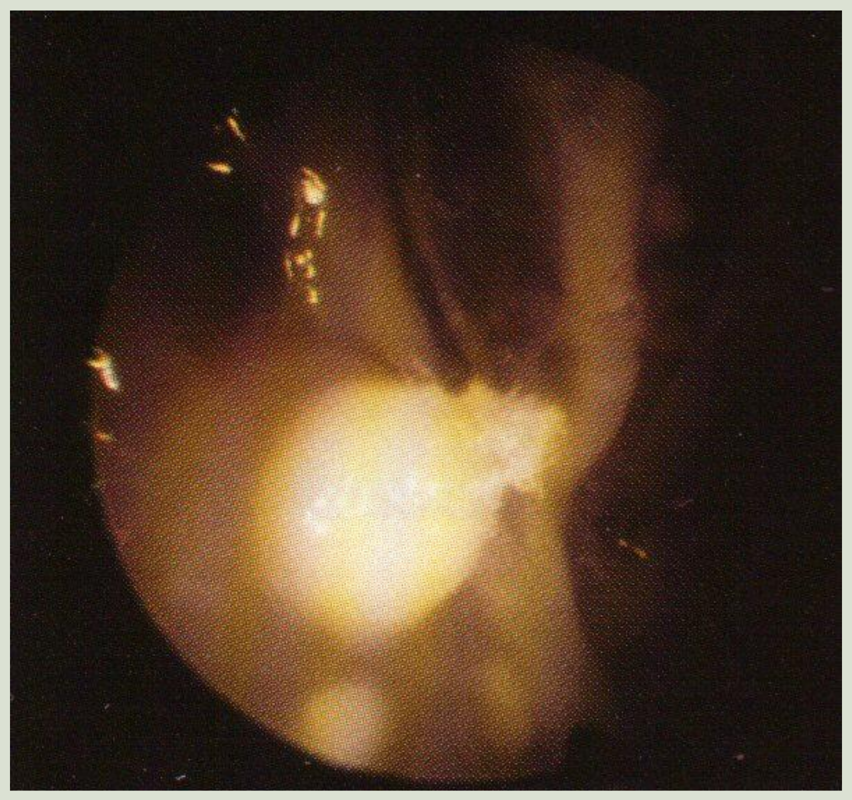


# Acute form

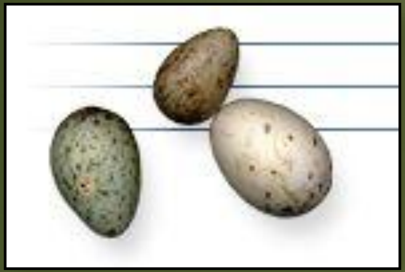
- Inhalation of a large mass of spores
- Tracheal granuloma
- Causes voice change, dyspnea and death

# Chronic form

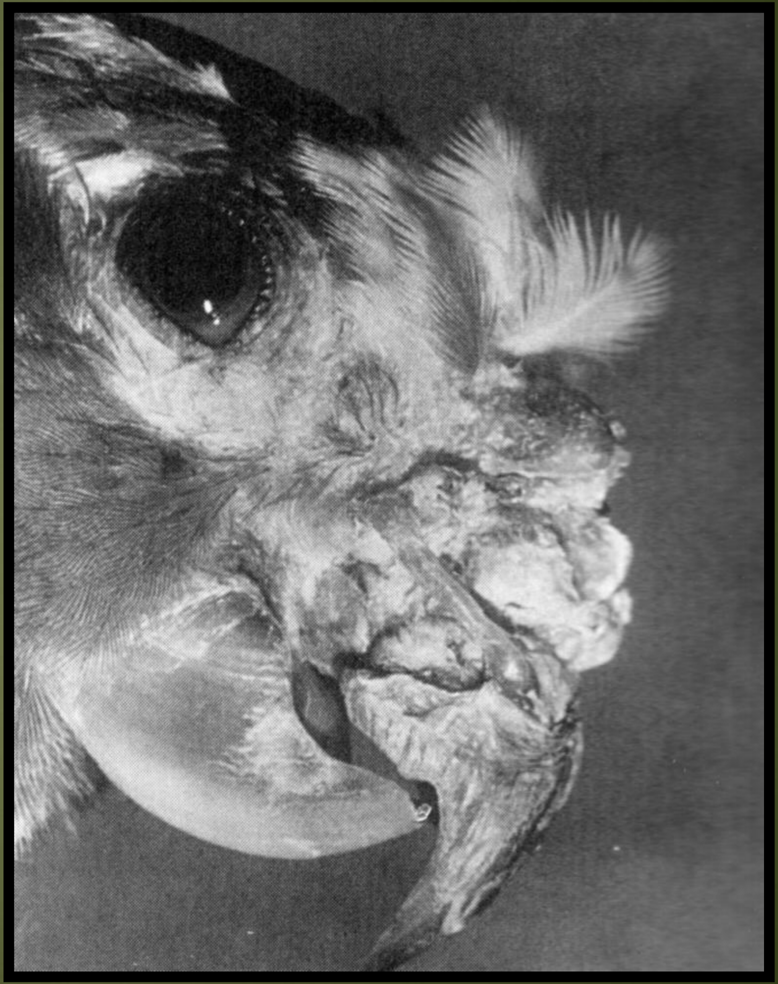
- Due to immuno-suppression or secondary to weakened state
- Emaciation, anorexia, depression, anemic
- "Ain't doin' right"
- Granulomas\fungus in air sacs and lungs
- Respiratory signs not seen until late in disease



# Other forms



Can also penetrate eggs

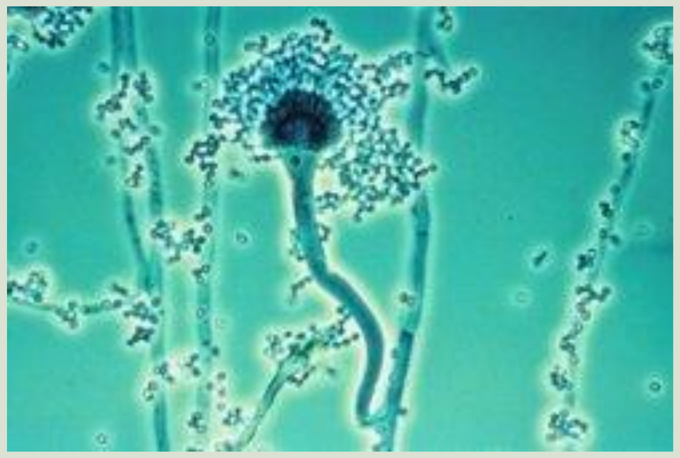


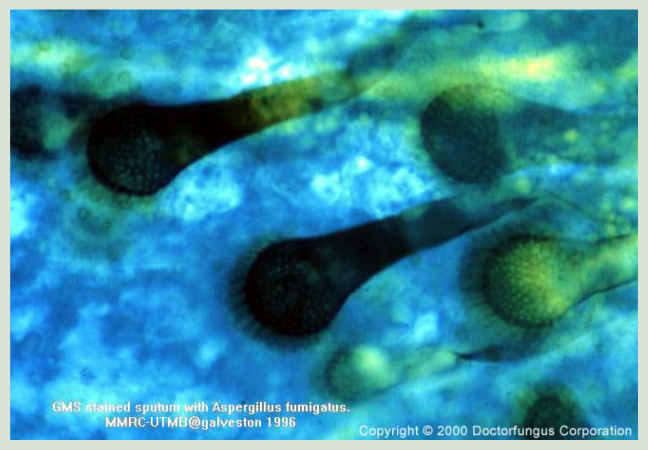
# Risk factors

- Anything that can compromise immune system or ability to hunt
- Injuries/fractures
- Lead poisoning
- WNV/AI
- In captivity
  - Chronic/inappropriate antibiotic use
  - Damp, organic bedding
  - Vitamin A deficiency
  - Poor ventilation

# Diagnosis

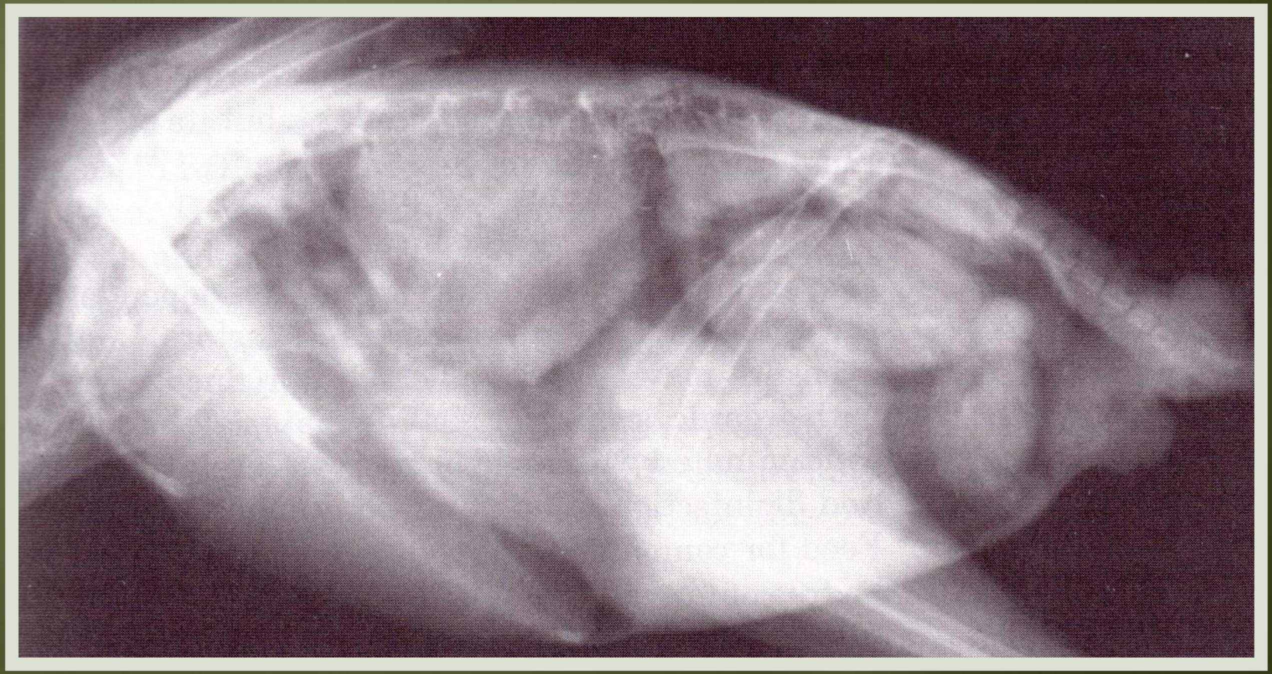
- CBC
  - Total count can be 30,000, 50,000+
  - Monocytosis
  - Anemia
  - Hyper or hypoproteinemia
- Cytology – cotton blue stain
- Tracheal culture





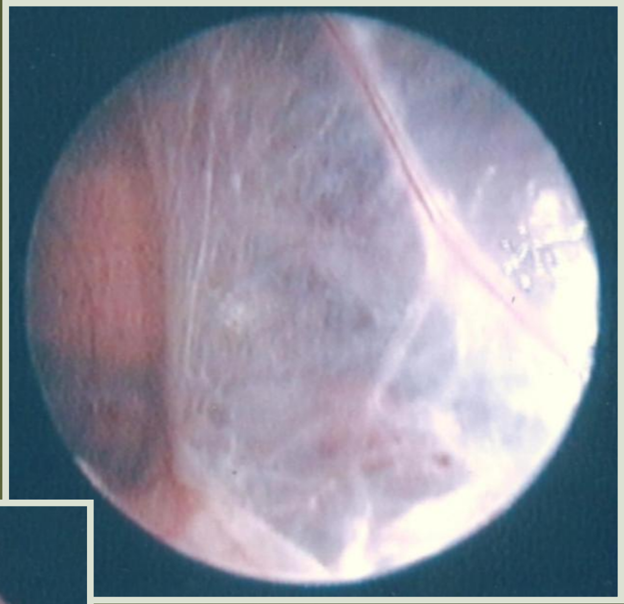
# Diagnosis

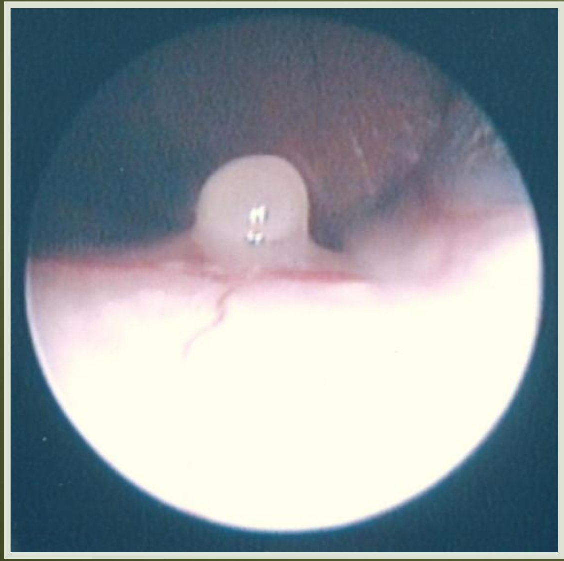
- Serology
  - ELISA to detect antibodies. Need to be pair, expensive.
  - Also tests for antigens
- Radiography

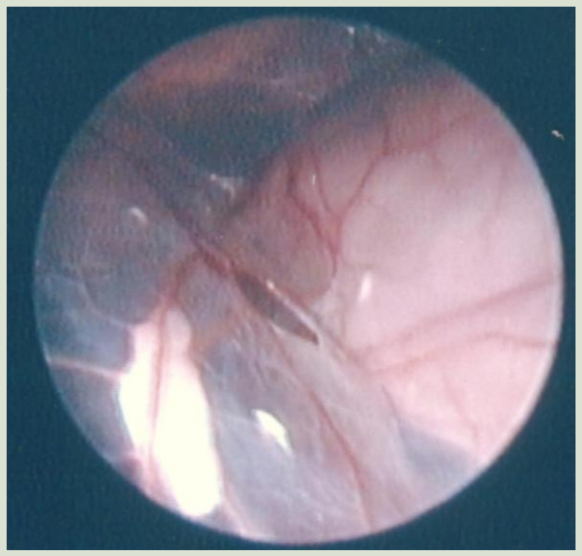


# Diagnosis

- Endoscopy
- Histopathology

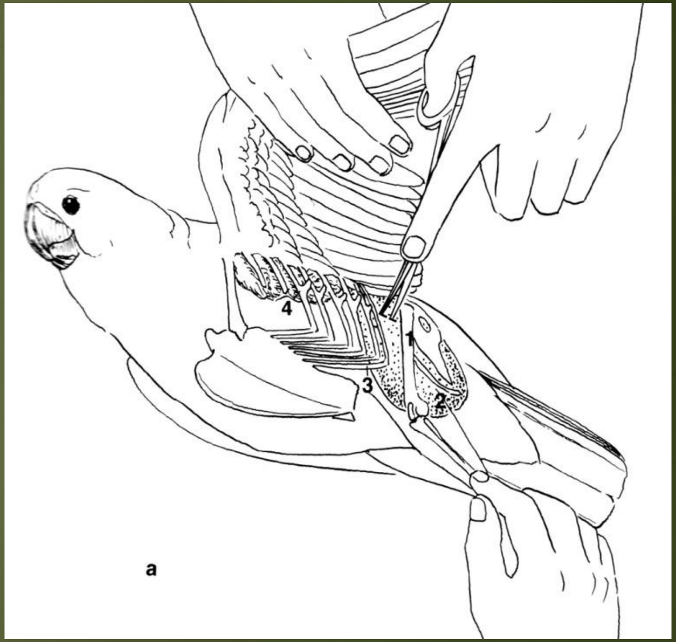






# Emergency treatment

- **Place air-sac tube!**
- Can attempt to remove granuloma endoscopically or blindly with suction.
- Intratracheal Amphotericin B (1 mg\kg TID)
- Nebulize various antifungals or F10




**Clinical signs due to tracheal obstruction**

# Treatment of chronic cases

- Lower stress and supportive care
- Fluids – slowly via subcutaneous route is usually better
- Tube feeding if necessary
- Supplemental heat
- In the past: Amphotericin B 1.5 mg\kg IV\IO TID x 3 days. Dilute in D5W (maximum allowable bolus)
- **Voriconazole is now the treatment of choice. 12.5 mg/kg PO or can be used IV/IO.**
  - Itraconazole make not work very well.
- Nebulize saline or F10 (1:250 dilution in NaCl) 20 minutes BID x 7 days
- Iron dextrans IM q7d
- Monitor CBC's, PCV, TP, weight

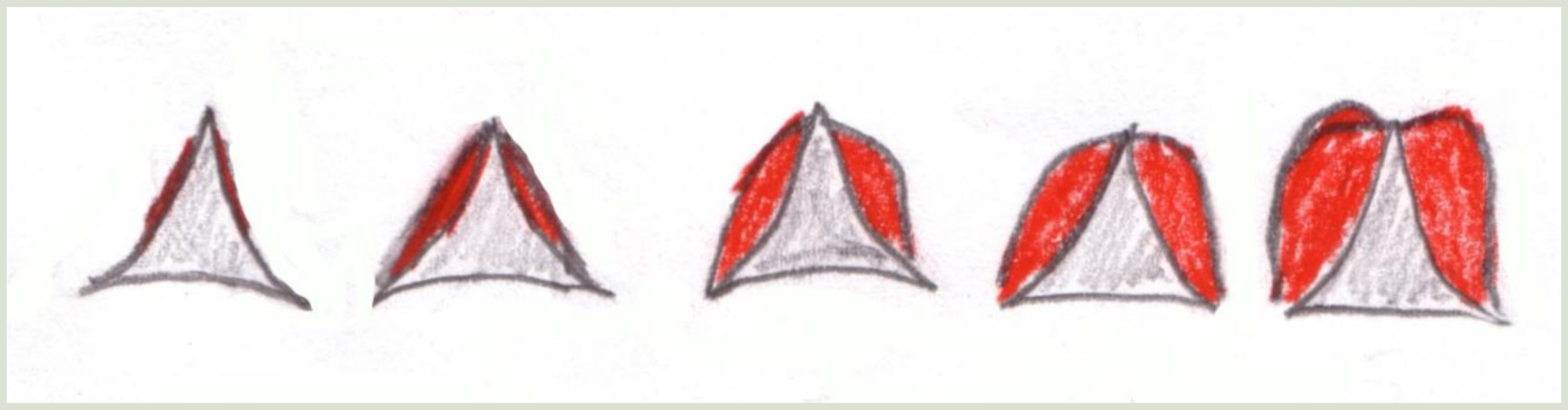
# Emaciation

- Not a disease itself, but the result of other conditions such as fractures, chronic disease, etc.
- Accompanied by immuno-compromise
- Most seen in Dec-Feb
  - First year birds experiencing their first winter
  - Mid-winter anemia (Redig)

# How bad can it get?

- Keel score of 1 out of 5
  - RTHA 650-750 g (Normal > 1000)
  - GHOW 900-1000 g (Normal > 1300)
- Total solids < 1 (I've seen 0.2)
- PCV < 20 (I've seen < 10)
- Extreme lethargy, hypothermia

# Keel score



1 2 3 4 5

# Question

**When treating an emaciated bird, what is the MOST important thing to do first:**

A. Pull blood for PCV\TP
B. Begin small amounts of food
C. Rehydrate
D. Radiograph to look for lead pellets
E. All of the above

# Question

**In an emaciated bird, a total solids of less than ______ is associated with a poor prognosis.**

A. 0.5
B. 1.0
C. 1.5
D. 2.0
E. 2.5

# Fluid Therapy

- Daily maintenance = 50 ml\kg\day
- Can generally assume either 5 or 10% dehydration
- Replace deficits in 48 hours
- Can provide in multiple routes
- IO catheter
  - Distal ulna
  - Can maintain for 3 days max
  - Max bolus = 25 ml\kg

# Fluid Therapy

- Example
  - 900 g bird, 10% dehydrated
  - Deficit = 900 X 10% = 90
  - Maintenance = 45 ml\day
  - Bird needs 90 + 90 = 180 over next 48 hours

# Feeding

- Furless whole mice
  - Begin after 12 hours
  - Start slow 10-30 g\kg TID
  - Ramp up over next three days
  - Continue aggressive hydration
    - Monitor PCV\TP??
- Formulas
  - Maybe useful if regurgitating whole food

# Prevention

- Prophylactic antifungals - especially in highly-susceptible species
  - Start 1 week before a stressful change
  - Terbinafine 15 mg/kg BID PO
- Avoid all risk factors
  - **Handling is a huge stressor**

# Prognosis

- Can be good if there isn't a serious underlying cause.
- Treatment can be complicated, prolonged and expensive
  - Use bloodwork to guide therapy
  - Voriconazole $7/day x 8 weeks, for example
- Prevention is key

# Typical case

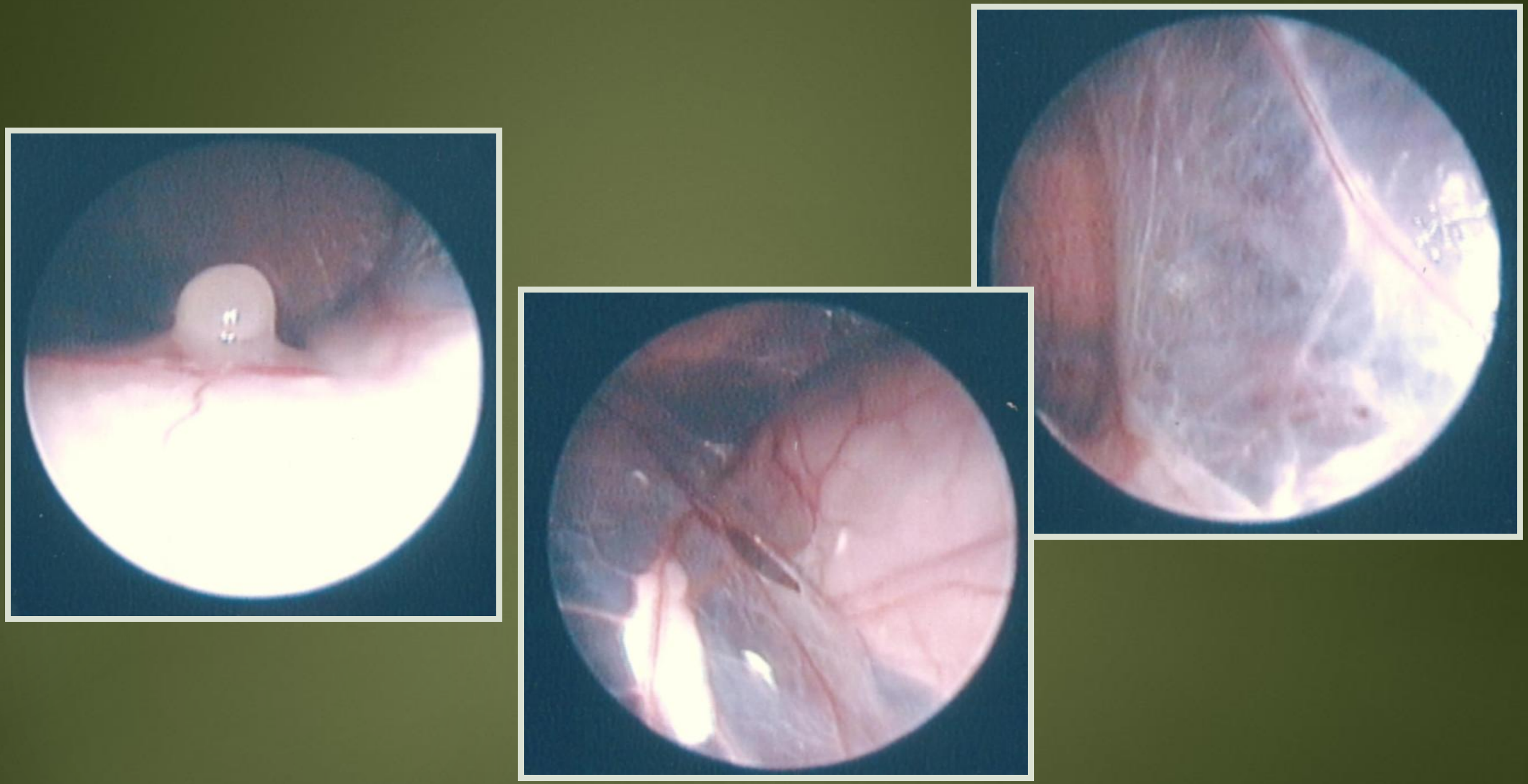
- Hatch year RTHA admitted in October
- Keel score 3/5, weight 1236 grams
- Started on prophylactic itraconazole
- Exam findings: Radiographs showed right wing, minimally-displaced, somewhat stable fracture of distal humerus, no joint involvement. Elected to stabilize fracture with bandage. Range of motion in the elbow is good.

# Intake radiograph

# Initial case progress

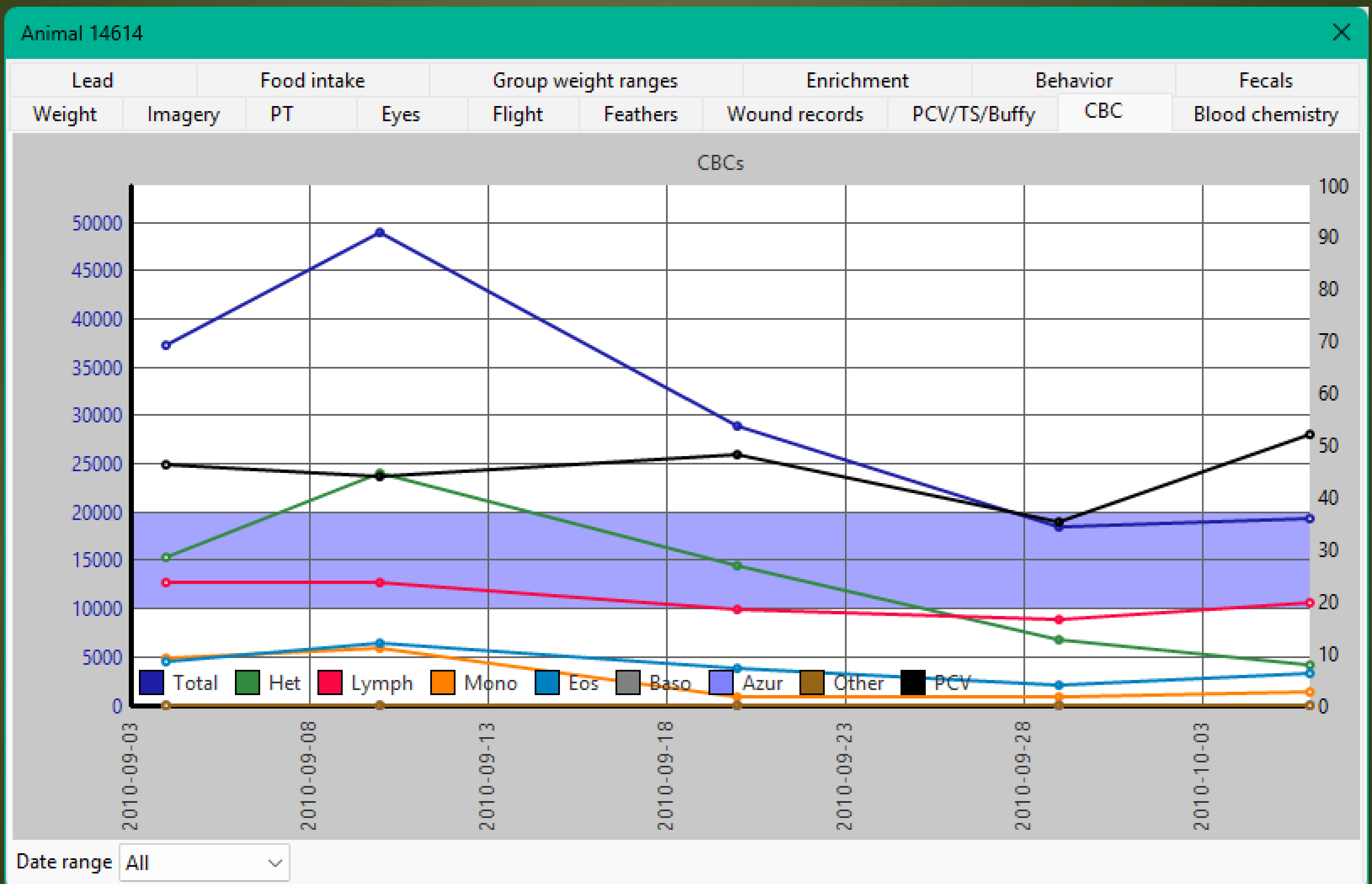
- Eating and doing well
- PT going well
- Move to small flight cage
- Noticed slight wing droop at about 30 days.
  - Rads showed increased bone density in distal ulna
  - TS was 5.6 g/dl
  - WBC 36,400, almost 5000 monocytes

# Endoscopy



Began voriconazole PO since still eating well.
Plan: monitor CBC

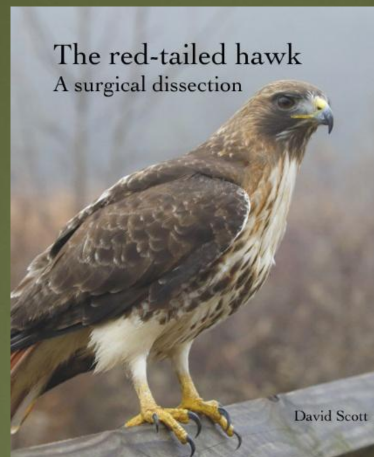
# CBC trendlines



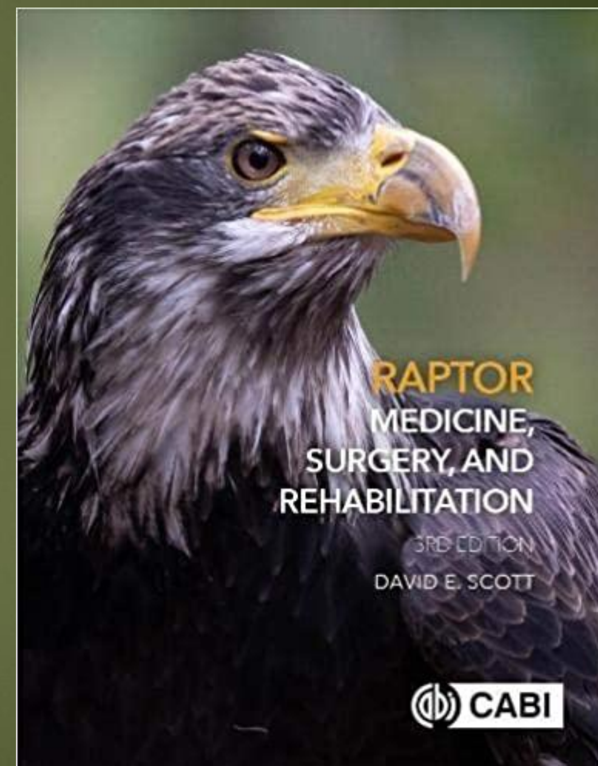
# Questions?

***Dave Scott, DVM***

descott12@gmail.com




www.blurb.com




Amazon

www.raptormed.com