

INTO THE EYE

INTRODUCTION TO AVIAN OPHTHALMOLOGY

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WHY DO WE CARE?

- Ocular trauma is a common finding in injured birds
- 14-26% of injured raptors have ocular diseases
- Diagnosis of the problem is critical for treatment and prognosis
- Treatment may be difficult
- Has significant implications for prognosis and release

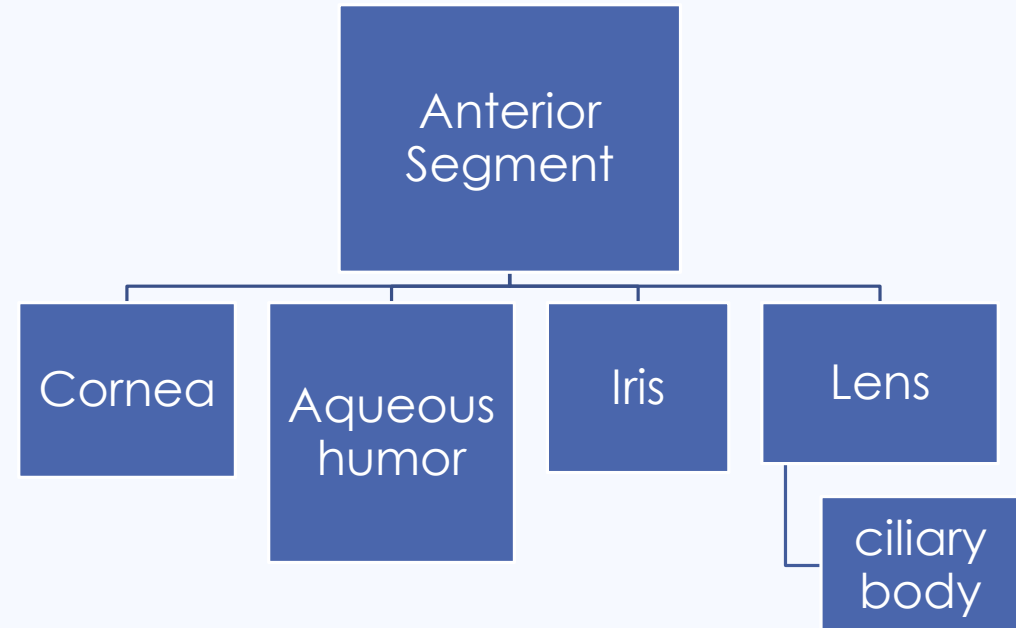
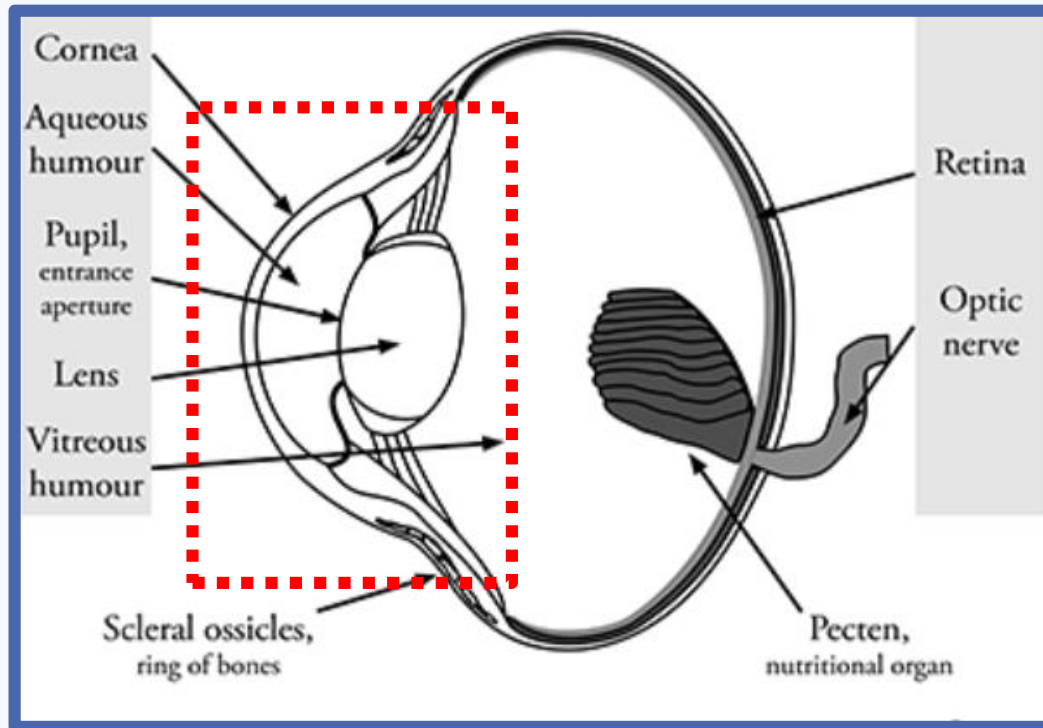
ANATOMY

AS YOU SEE IT...

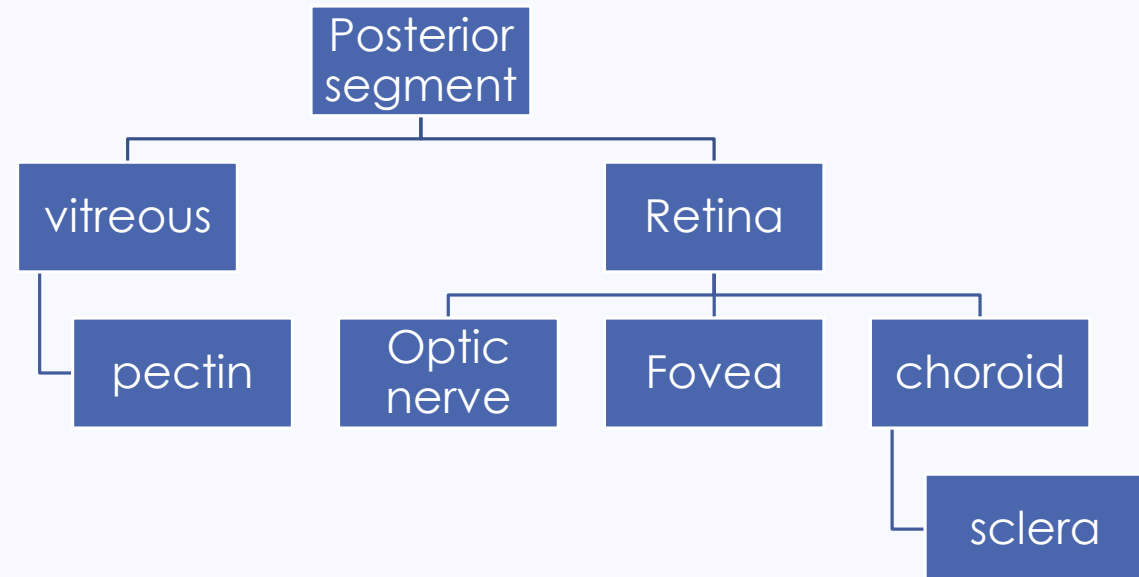
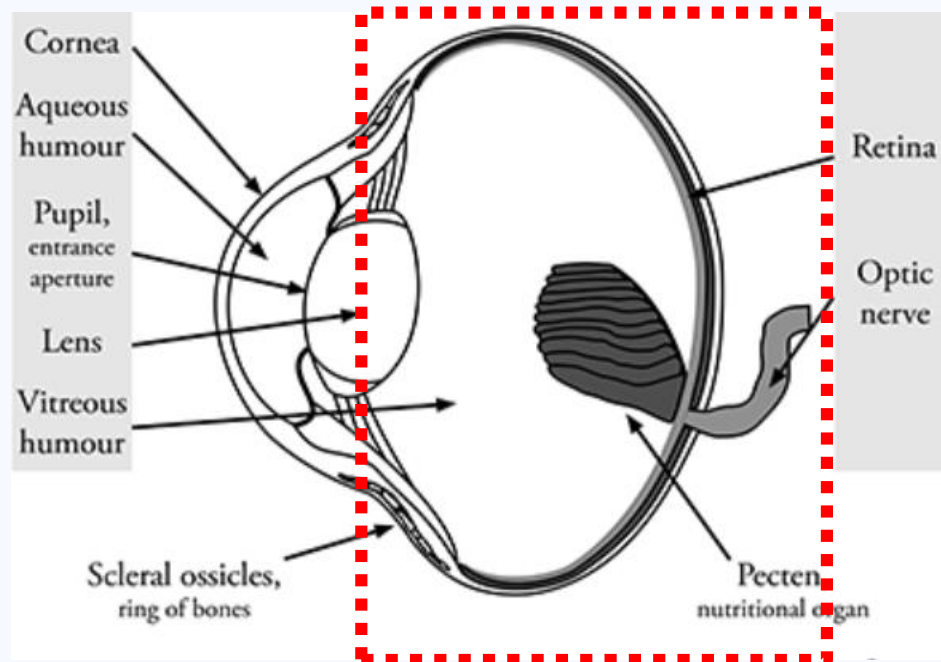
- 1) Eye lids
- 2) Conjunctiva
- 3) Third eyelid
- 4) Cornea
- 5) Iris
- 6) Pupil



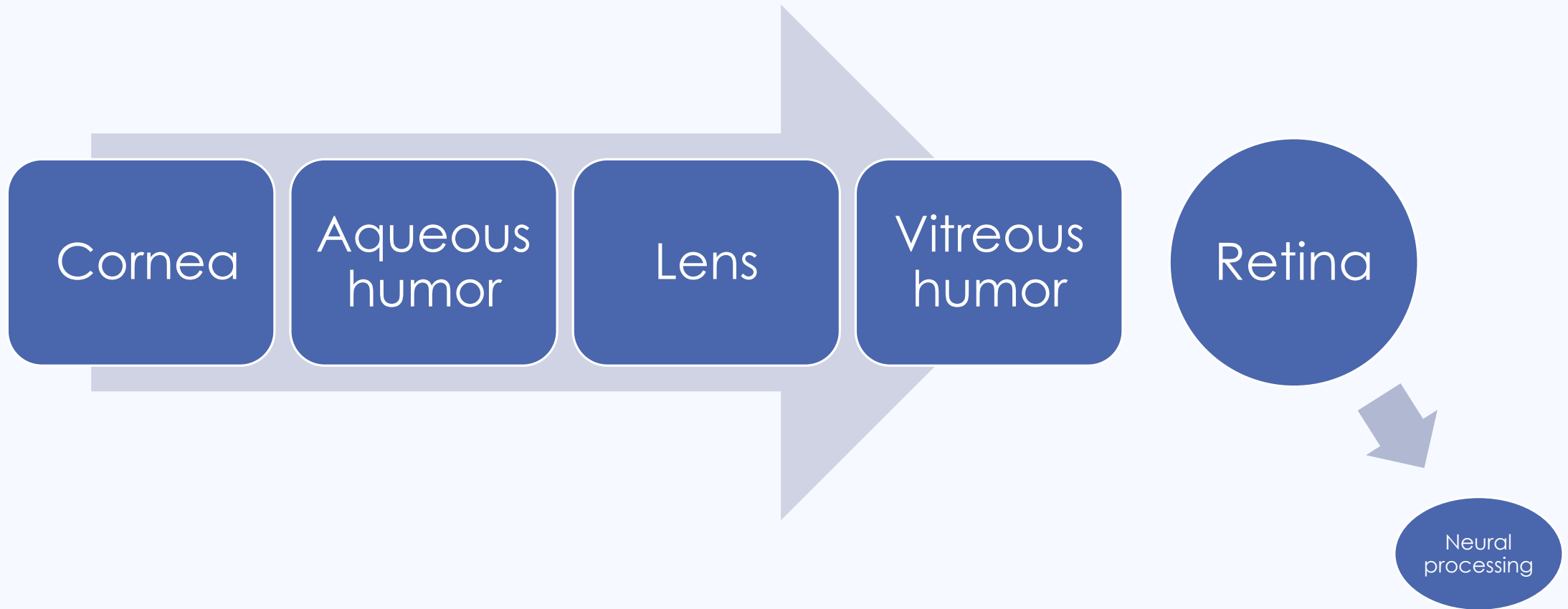
BEHIND THE SCENES...



BEHIND THE SCENES...



PATH LIGHT MUST TRAVEL FOR VISION TO OCCUR

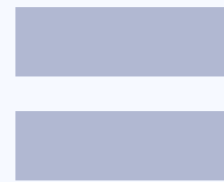


IMPORTANT ABBREVIATIONS

OD =
oculus
dexter =
right eye



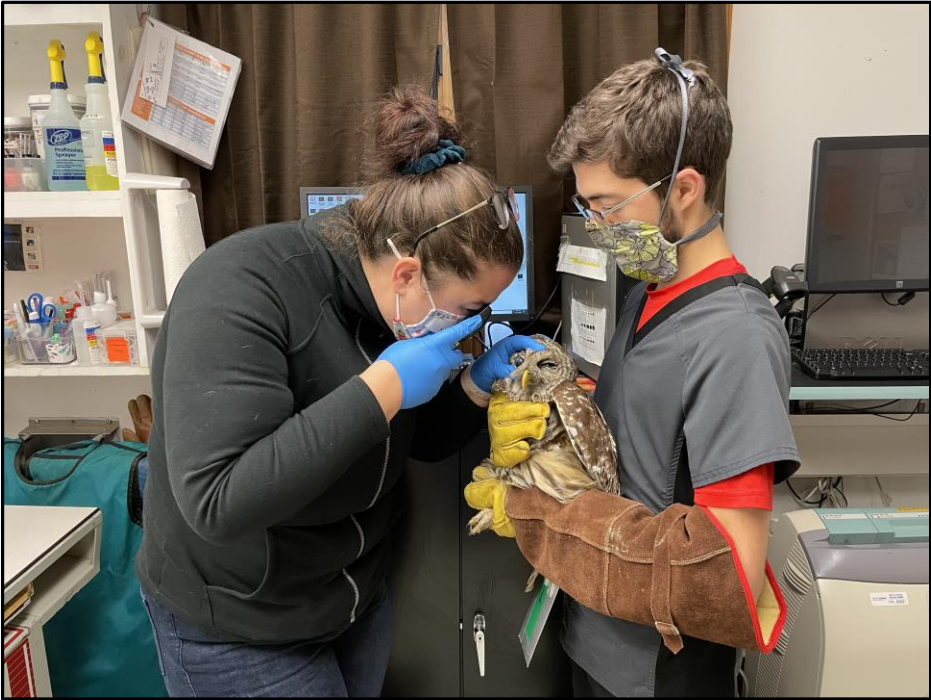
OS =
oculus
sinister =
left eye



OU =
oculus
uterque =
both eyes

EYE EXAM

COMPONENTS OF AN OCULAR EXAM



1) Distance exam

2) Globe/orbit

2) Visual reflexes

3) Eyelids/adnexa and conjunctiva

4) Anterior segment

5) Posterior segment

6) Evaluation of vision/releasability

DISTANCE EXAM

- Look for symmetry
 - Swelling around the eye
 - Lids open to the same degree
 - Size and protrusion of the globes
 - Size and symmetry of the pupils



GLOBE AND ORBIT EVALUATION

- evaluate the shape of the globe
- should retropulsion equally
- evaluate and palpate the bones that make up the orbit
- Look in the ears!



TONOMETRY



measure the pressure of the inside of the eye to determine Intraocular pressure



some published normal values exist



elevated IOP

Glaucoma?

Can also elevate due to stress and restraint → compare to other eye and re-evaluate



decreased IOP

Uveitis, ruptured eye

COMMON ISSUES
-
GLOBE/ORBIT
DISTANCE EXAM

asymmetry



ruptured globe



blepharospasm



VISUAL REFLEXES

PLR

- Shine a bright light in the eye and the pupil constricts

Menace

- Animal blinks in response to something moving towards the eye

Palpebral

- Lightly touch the medial and lateral corners of the eye and the animal blinks



Eyelids/adnexa and conjunctiva



- Eyelids

- look for swelling, lacerations, bruising, masses

- Third eyelid

- Normal movement, tears, bleeding, masses

- Conjunctiva

- Edema, redness

- Surrounding skin

- Lacerations, bruising, masses

- Discharge

- note which eye, quantity, consistency and color

COMMON ISSUES - EYELIDS/ADENEXA



- Eyelid lacerations



- Conjunctivitis



- Bruising



- Masses and necrosis

- Avian pox, fungal, bacteria plaques

ANTERIOR SEGMENT

- Cornea
 - Evaluate for ulcers, clarity
- Anterior chamber
 - Shine a vertical light through – should see light reflecting the cornea and light reflecting the lens and darkness between, anything catching light is abnormal
- Iris
 - should move uniformly and freely, look for tears or places that are stuck (synechia)
- Lens
 - Should be clear, often won't see it unless something is abnormal



EVALUATING FOR AQUEOUS FLARE



FLUOSCENE STAIN

- 1) Place a drop of sterile saline on fluroscene strip
- 2) Touch moist strip to conjunctiva or allow of drop of stain to fall into the eye
- 3) Allow patient to blink, then flush with saline
- 4) Evaluate for stain uptake with woods lamp or cobalt blue light

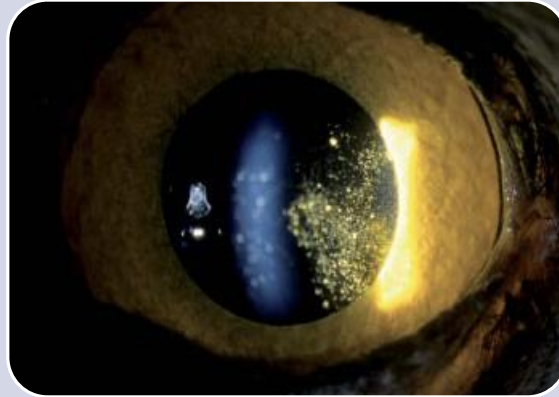


Common issues – Anterior segment



Corneal ulcer

- Confirm with fluoresceine stain



Anterior Uveitis

- Inflammation in the anterior chamber
- Confirm with flare test



Hypopyon

- Infection and/or purulent debris in the anterior chamber



Hyphema

- Blood in the anterior chamber

Common issues – anterior segment



Synechia/Iris tear

- Iris adhesions
- Likely due to previous trauma and inflammation
- A sequela to uveitis



Cataract

- Opacification of the lens
- Can be congenital, can be due to previous trauma and /or inflammation



Lens luxation

- Lens becomes detached and falls forwards (anterior luxation) or backwards (posterior luxation)

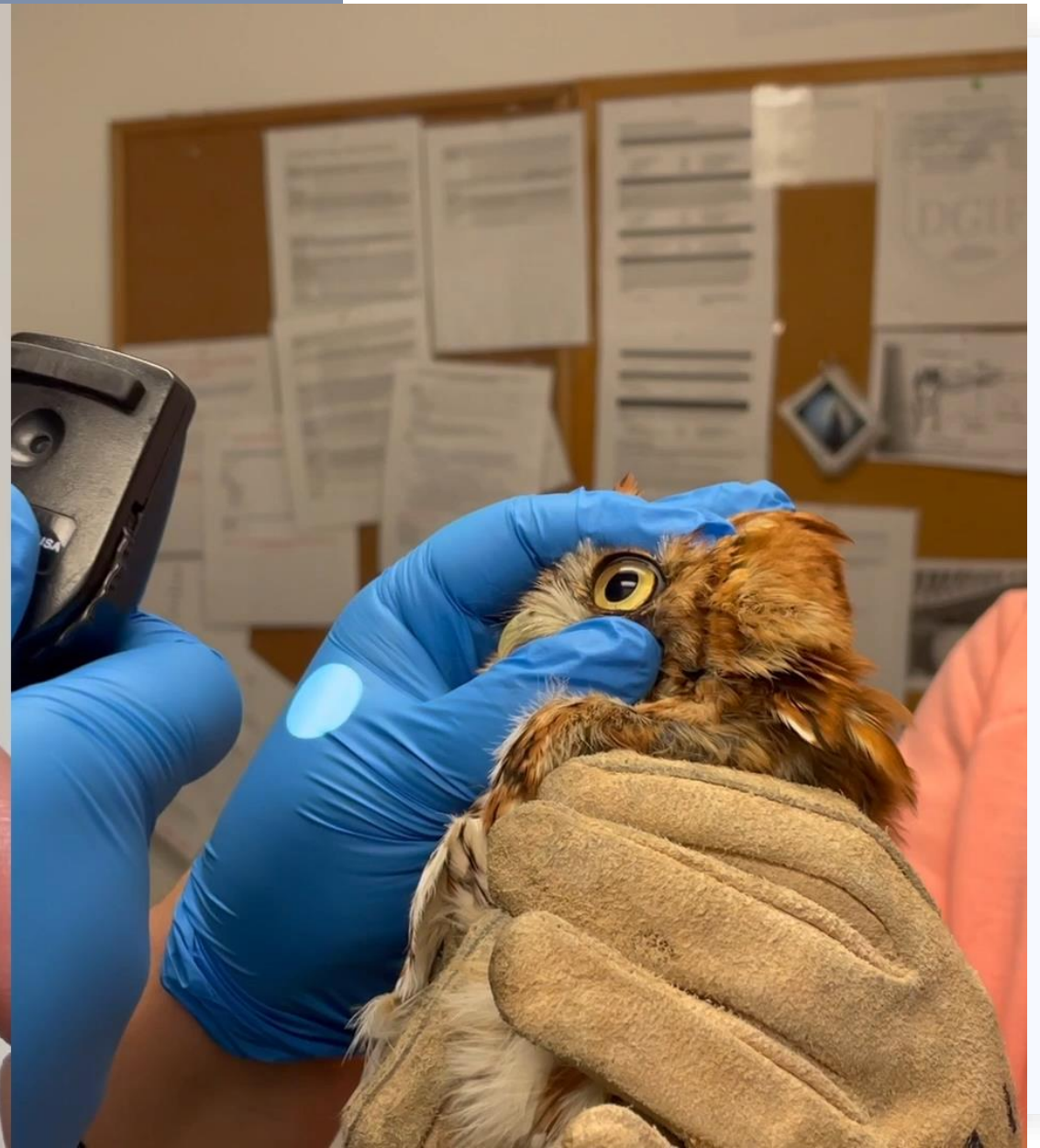
POSTERIOR SEGMENT

- takes practice, ophthalmology equipment and familiarity with normal anatomy of the species
- evaluate clarity of the vitreous
 - Note any fresh hemorrhage, blood clots, fuzziness of fibrin
- evaluate pecten
- Evaluate entire retina
 - Tears, detachment, scarring, chorioretinitis

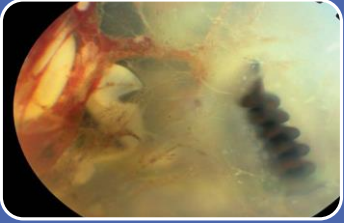




USING AN OPHTHALMOSCOPE FOR FUNDIC EXAM



Common issues - posterior segment



Vitritis

- inflammation in the vitreous chamber of the eye
- often presents as “haze” in vitreous
- do not confuse with inability to focus ophthalmoscope



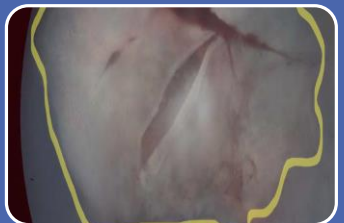
Hemorrhage

- can be fresh wisps or accumulation of bright red blood in vitreous
- can be old black/dark red clots floating in vitreous



Retinal tear

- cut or slash through the retina
- Commonly due to trauma
- Looks like a tear in cloth



Retinal detachment

- Retinal pulls away from underlying choroid
- looks like fabric billowing

EVALUATION OF VISION

Ultimately, the best diagnostic is evaluation of the birds ability to “bird”

Can patient navigate things that are species appropriate?

- Consider maze testing or flight obstacles

Can the patient hunt appropriate food for species?

- Consider a camera trap to evaluate technique and success

PROGNOSIS FOR RELEASE

Location of injury Fovea, lens

Chronicity Old retinal scars/tears

Age High mortality in HY with normal eyes

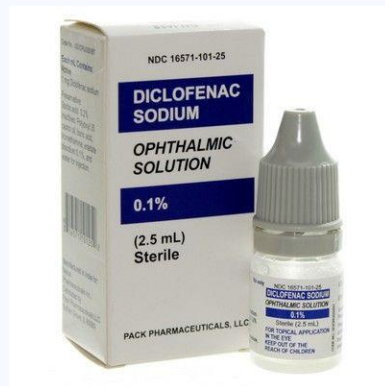
Species Diurnal versus nocturnal

Other injuries Decrease prognosis

OCULAR THERAPIES

Anti-inflammatory

NSAID	Indication	Contraindication
Diclofenac	inflammation, uveitis, analgesia	vultures?
Flurbiprofen		infected ulcers
Ketorolac		



ANTI-MICROBIAL

Antibiotic	Indication	Contraindication	Benefit
Neo-Poly-Bac	conjunctivitis, corneal ulcer, anterior segment infection, eyelid infection		
Gentamicin	corneal infections/bacterial conjunctivitis	perforated cornea	
Tobramycin	bacterial infections		
Ciprofloxacin	bacterial infections inside and around eye		broad spectrum antibiotic
Ofloxacin			
Erythromycin		rabbits/rodents	

Other!



Ancillary	Indication	Contraindication
Atropine	anterior uveitis	lens luxation, glaucoma
Tropicamide	prevent synechia and break down	
Proparacaine	short ophthalmic analgesia	can delay healing
Serum	Deep corneal ulcers	



THE END

QUESTIONS?

WHOVA OR KPIERCE@WILDLIFECENTER.ORG

