Amphibian Diseases and Pathology

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Definitions:
- Pathology = absence from normal.
- Disease = a condition that impairs normal function.
- Pathogen = organism that is capable of causing disease (viruses, bacteria, fungi, parasites).
- Not all pathogens cause disease all of the time.
- Not all diseases are caused by pathogens (ex: diabetes, most cancers).

PLEASE REALIZE:
- Symptom is used in HUMAN medicine NOT for animals.
  - Things we feel and the patient describes to the physician.
- Signs occur in Humans and Animals.
  - Things we can measure or observe.
Gross External Changes (what you might find in the field)

Swelling
Hemorrhage

Loss of pigment in keratin ‘teeth’ of tadpoles
Proliferation/thickening of skin

Missing Limbs
Extra Limbs

Lumps and Bumps

From Dr. Keel, SCWDS

Ulcerations

Gross Internal Changes: what you might see on necropsy

Tan areas (e.g., necrosis will look like this) on organs
Cysts and Nodules

Hemorrhages

Parasites!!!!!
Histopathological Changes: what you might see under the microscope

Common response: Increased pigment (melanomacrophages)

Common response = Granuloma formation
Hemorrhage and Necrosis

Muscle Degeneration

Kidney Vacuolar Change

Liver Normal
Other parasites

Ichthyophonus

Alveolate (anuraperkinsus)

Courtesy Dr. Kevin Keel, UGA SCWDS
The Basics

- Examine the outside for lesions (determine general body condition)
  - Using a scissors and holding tissue with thumb forceps, open the animal from oral cavity along ventral midline to cloaca (make note of any free fluid or hemorrhage within the body cavity and any parasites free within the cavity)
- Identify the organs
  - Heart
  - Gill
  - Developing lungs
  - Liver, gall bladder
  - Spleen
  - Kidneys
  - Developing reproductive organs
  - Fat bodies
  - Intestinal tract
- Look for abnormalities
- Begin to dissect/remove organs
- Look for lesions, parasites, fluids
  - External (serosal) surface of organs
  - Internal (parenchyma)
    - Examine tubing ridges organs (not only possible in som of amphibians)
    - Open tubular organs and note contents (color, consistency, quantity)
- After completing the above
  - Attempt to locate thymus (immune organ), which is a white organ behind the eyes
- Cause of Death AND pre-existing/secondary issues.
- List of differentials AND what to collect and what tests to run
Incision is made from the oral cavity to the cloaca. Intestines are most of what is seen when first opened.

Gills