November 22, 2004

Order Chelonia = Testudinata
2 muscles systems for respiration - top shell carapace, bottom shell plastron

Order Squamata
Æ Lizards – Iguanas
Example of lizard: Crotaphylus collaris “collared Lizard”
Æ Skinks can lose its tail (adaptation to avoid predations) – smooth skin saw in lab
Æ Elgaria “Alligator Lizards”

Suborder Serpentes
Æ Snakes
Family Colubridae
Æ Gopher Snake
   Genus Pituophis

Rattle Snakes
Æ Crotalus
Æ Pit Vipers – infrared vision – regular vision not very good.
Æ Eat rodents – Night hunters

Tree Snakes – Good vision – regular light vision
   Eat birds

Order Sphenodonta
Æ Tuatara
   70 + years age
Æ N. Zealand

Order Crocodilia
Æ Nesting and parental care

BIRDS
Class Aves (9,000 species) (4,000 migratory)
- Diapsida
- Feathers
- High Pressure Respiratory System
- Homoeothermic
Class Ratites
• Flightless

Class Carinates
• Flight

Order Galliformes
• Chickens
• Turkey
• Pheasants

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Week 15
Intro to Zoology
(11/29-12/12/3)

November 29, 2004
AVES cont…

Pneumatic bones – air sacs in bone
• Fusing of direr bones to strengthen skeleton

Sternum – used to attach breast muscles (keel)

Feathers – Midvein
  Barbs
  Barbules

Types of Feathers
• Contour – body covering
• Flight – used for flight
• Down – insulation

***Tree-down hypothesis – gained feathers to glide
***Ground-up – insect eaters used feathers to scoop up bugs
***Feathers homologous to scales

Anterior and Posterior air sacs
4 chambered heart
Red blood cells – nucleated
Endotherms like mammals
High metabolism
High body temp   Avg = 100+

Excrete uric acid – byproduct crystallizes – eggs aren’t harmed
- Birds don’t have bladder
- Have cloaca

Migrate in winter months
- Many winter habitats destroyed as rainforests are cleared

Order **Falconiformes** (falcons)
- Birds of prey
- Eagles, falcons, hawks, buzzards, vultures
- Specialized feeders (meat)
- High lift wings

Order **Ciccioniformes**
- Turkey vultures
- Scavengers
- Great eye sight and smell (miles away)

Order **Strigiformes** (owls)
- Night vision
- Wings similar to raptors

Order **Passeriformes** (songbird)
- Found around world
- Named after *passer domesticus* “English sparrow”
- *Sturnis valguris* – starling

Order **Charadriformes** (shore birds)
- Long, narrow wings
- Scavengers

Order **Galliformes** (chickens)
*Gallus Gallus* - Chicken
- Scratching birds – seeds, bugs, etc…
- Quick flyers

Order **Anseriformes** (aquatic)
- Webbed feet
- Compressed beak

Order **Struthioniformes**
- Ostrich
December 1, 2004

Study session Dec 5th 4-8 PM Manter Hall

Bird navigation
  - Solar and Star navigation
  - Landscape nav
  - Magnetic Field nav

MAMMALIA (4,500 species 21 orders)
  - Hair – quills, hollow hair
  - Mammary glands
  - Seat glands
  - Scent glands
  - Sebaceous glands – oil
  - External pinnae
  - Moveable eyelids
  - 4 chambered heart
  - Dihram
  - No nucleus in Red Blood Cells – carry more oxygen
  - Endotherms
  - Viviparous

Heterodont dentition – differ types of teeth
  - Incisors – nipping
  - Canine – grabbing
  - Premolars and molars – chewing food

Cheek teeth → carnassials teeth → slicing

Mammal lower jaw composed of dentary bone

Ear – Incus, Malleus, stapes (bone)

Joint between dentary and squamosal = mammal

Head Gear
  - Antlers – composed of bone, shed every year
• Horns – horns not shed, females have them also!
  o Bone(inside)Caritin (Outside)
  RHINO has no bony core

**Sub Class Prototheria** “First beast”  
**Infra Class Ornithodelphia** – “Bird womb”  
**Order Monotremata** “one whole”

Platypus – ornithorhyncus anatinus (bird nose, Duck like)
• Lay eggs
• Electrical sensors – used to find food
• One of few – produce toxins
  o Spine on hind foot (male)

**Sub Class Theria** “Wild Animals”  
**Infrared Class – Metatheria**  
**Order – Marsupialia** – kangaroos, wombats, opossums (*Didelphis Virginianus*)
  - Prehensile tail

Red kangaroo – *Macropus rufus* (big foot, Red)

**Infra Class Eutheria** “True Beast”  
**Insectivora** “insect eating” shrews, moles

December 3, 2004

Monotremes – egg laying mammals
  - echidnas

**Order Monotremata**
**Order Marsupialia**
  - Little pouched animals
  - Babies attach permanently to nipple until old enough

Listowia – found in montremes and marsup’s

Life cycle began 70 MYA

Marsupials --- Reasons they don’t occur in N. America and Africa? Evolved after S. America and Africa came apart before marsup’s evolved.

*Chironectes minimus* – Water Opossum (Mexico to Patagonia)
- Webbed feet
- Big pads on front feet
- Swim like muskrats
- Pouch is water proof

*D. virginianus*

Opossum diversity in S. America is VERY diverse

Eutheria – Shrews, moles,…
Insectavora “Insect Eaters”