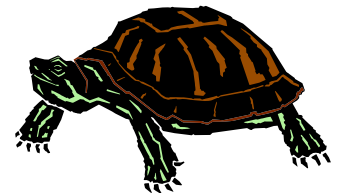
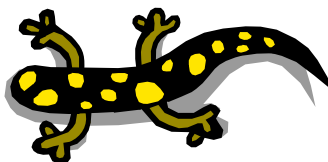




- **Lead** is a highly toxic metal, exposure to which can produce a wide range of adverse health effects in all living organisms; humans, birds, mammals, reptile and amphibians.
- Wildlife are generally exposed to lead following ingestion of shot pellets, bullet fragments, or from consuming lead fishing jigs and sinkers.
- Before laws were introduced in North America to restrict the use of lead in ammunition, annual losses of waterfowl to lead poisoning were up to 3 million birds.



- Waterfowl and birds of prey are at greater risk of exposure to lead than are mammals and other species of birds because of feeding habits that involve ingesting lead shot as grit or consuming lead shot from the tissues of prey animals, respectively.
- Lead poisoning has been mainly reported in birds but has also been documented in wild mammals that presumably have fed upon lead-contaminated prey and amphibians and reptiles that live near areas of high lead concentrations.





The Process of Lead Poisoning in Birds:

- In waterfowl, the highly muscular stomach grinds and erodes metallic lead which then is rapidly distributed through the circulatory system to other body tissues. Similar action occurs in birds of prey which have less muscular stomachs, but are more acidic than those of waterfowl.
- Once absorbed within the body, lead can interfere with body functions that rely heavily upon the activity of calcium.
- Lead interferes with the production of the oxygen carrying component of blood called hemoglobin, leading to a decreased ability of red blood cells to carry oxygen.
- Lead has also been documented to damage and modify the function of kidneys, bone, nervous system, circulatory system and gastrointestinal tract.
- If a sufficiently large number of metallic lead is ingested, death can be rapid (acute poisoning); or if a small amount of lead is ingested, death may occur after several weeks following chronic ill-health.

Outward signs of lead poisoning in birds include:

- Emaciation:reduction in the size of breast muscle; breast-bone becomes prominent and is referred to as a “hatchet”-shaped breast.
- Lethargy and lack of appetite
- head tremors
- esophagus impacted with food; gizzard stained a green colour
- green or bile-stained feces
- paralysis of lower legs
- blindness
- impaired locomotion and balance
- the head of some geese may appear swollen
- drooping wings
- lack of fat in the abdominal cavity



When a bird is analyzed for lead poisoning, metallic lead fragments may be present in the stomach. The absence of such fragments in lead-poisoned birds indicates that complete erosion and subsequent absorption of the fragments may have occurred, that the fragments were eliminated in the feces, or in the case of raptorial birds, voided in a regurgitate (pellet).