

TVA KINGSTON ASH RECOVERY PROJECT ROANE COUNTY EDUCATIONAL INITIATIVE

“TERRESTRIAL WILDLIFE SAMPLING”

Abstract: TVA and other research organizations have conducted a variety of studies in order to assess affects of the spill to terrestrial wildlife resources in the area and to determine whether the ash spill has exposed wildlife in the region to trace elements found in coal ash. Wildlife species selected include osprey, great blue heron, Canada goose, tree swallow, upland chorus frog, spring peeper, American toad, snapping turtle, common musk turtle, softshell turtle, and raccoon. Tissues tested include contents of eggs (birds), whole body (amphibian and bird nestlings), blood (turtles and mammals), and hair and organs (mammals).

A brief discussion of a site conceptual site model will be discussed. In addition, sampling techniques associated with collecting various tissue types will be demonstrated to the students with some “hands on” and observational activities.

Conceptual Site Model

Terrestrial wildlife groups in these studies include species from a number of trophic levels and feeding ecologies within the food chain. A trophic level of an organism is the position it occupies on the food chain. It is important to evaluate species from different trophic levels because what an animal eats and where it lives in the ecosystem can determine how it is exposed and affected by the spill. Collected species include: piscivorous, insectivorous, and herbivorous birds; spring breeding amphibians; aquatic reptiles; and terrestrial mammals. Presenters will review the conceptual site model diagram for the river system, pointing out specific species that were evaluated.

Egg Collections

Sizes of heron, osprey, goose, and tree swallow eggs will be compared with that of a chicken egg. Students will practice measuring a chicken egg using a digital micrometer.



Length of osprey egg measured with digital micrometer.

Turtle Collections

Three species of turtles were collected for analysis, including snapping turtles, common musk turtles, and

softshell turtles. Samples of blood, toenails, and carapace tissue (softshells only) were collected from each turtle and analyzed for metals. In addition, the size, weight, and sex of each turtle were collected. Before release, each turtle was marked with a unique code, called a “scute code” in order to track turtles that were recaptured from year to year. Students will practice weighing and measuring a sample turtle using the spring scales and calipers.



Snapping turtle measured using a spring scale.



Snapping turtle restrained with a bite stick. Preparing for sample collections.

Amphibian Collections

Three species of amphibians were collected for analysis of metals, including upland chorus frogs, spring peepers, and American toads. Students will listen to the three different amphibian calls and try to identify what species they hear.



Spring peeper calling (Photo credit: Naturesound.com).