

2006-2007 WHRO Classroom Preview

Series Title: Biological Classification
Curriculum Area: Science, Life Science, Biology
Grades: 5 - 10
of Programs/Length: 20/10:00 minute programs

This series explores the characteristics in body structure, locomotion, mating, habitat adaptation, and other features that cause scientists to classify living things into biological groups. This key activity of the life or biological sciences is learned and refined throughout middle to secondary school science. Worldwide live-action location footage alternates with clear close-ups, freeze-frames and captions that reveal the distinctive features of each taxonomic group. This series also trains young minds how to observe and analyze in a scientific manner. Correlates with Classification (Taxonomy) in states' science standards, a key Life Sciences and Biology curriculum topic.

Clear footage and editing reveal the most important features of various groups, clarified with freeze-frames, arrows, and graphics. Worldwide location live-action footage provides many examples from diverse geographies of the typical characteristics of a particular group. High-interest footage will motivate students to understand and remember the many details of Taxonomy. Age-appropriate, young female narrator will engage students.

1. Bees & Other Hymenopterans

Introduces the members of the order, Hymenoptera, with their characteristic slim shape and two pairs of jointed, membranous wings. Distinguishes between social insects such as bees, wasps and ants, and solitary Hymenopterans such as carpenter bees or ichneumon flies. Pays close attention to the social divisions within a beehive and the life cycle of the honeybee. 08:03

2. Bony & Cartilaginous Fishes

Live-action footage introduces several species of bony fishes including turbot, brill, sole, and plaice. These flatfish side-swimmers are shown camouflaging themselves on the ocean floor. The stingray provides a transition to the characteristics of flat, but symmetrical, cartilaginous Fishes. Species statistics include 850 varieties of cartilaginous Fishes and 25,000 varieties of bony Fishes (half of all vertebrates). 08:17

3. Bugs & Other Hemipterans

Live-action footage isolates the distinguishing characteristic of Heteropterans, or true bugs: rigid fore wings covering tiny back wings and a piercing tool used for feeding. These include firebugs, shield bugs, cabbage bugs, water striders, the corise, saucer bugs, and the water stick insect. Examples of Homopterans such

as aphids, white flies and cicadas complete these two groups, together comprising Hemipterans. 08:06

4. Butterflies & Other Lepidopterans

Live-action footage captures a butterfly chrysalis warding off its enemies and notes the scaly wings that are characteristic of all Lepidopterans. Each stage of metamorphosis is filmed: mating, egg laying, hatching, molting, chrysalis formation and emergence of the adult butterfly. Close-up photography reveals how the proboscis draws nectar from deep inside flowers or from other liquid food sources. 08:25

5. Crabs & Other Crustaceans

Live-action film footage introduces the characteristics of Crustaceans, starting with decapods, ten-legged crustaceans such as crabs and shrimps. Reveals how they grow to adult size by shedding, and the characteristic cephalothorax. Includes freshwater species, such as the crayfish, and that the common barnacle, sand fleas and sow bugs are Crustaceans also. 08:33

6. Crickets & Other Orthopterans

Live-action film footage reveals the characteristics of crickets and other Orthopterans. In comparison to mantises, Orthopterans are seen as omnivores with voracious appetites. The purpose of ovipositors, the developmental patterns of offspring and Orthopterans' jumping abilities are highlighted. Distinguishing features of locusts and grasshoppers are also noted. 08:17

7. Deer & Other Ruminants

Starting with members of the deer family and their characteristics, explains that Ruminants are two-toed mammals that regurgitate their food from one of their stomach compartments for further chewing. Introduces Ruminants such as deer, giraffes, ibex, antelope, bison, and others, explaining that Ruminants include 191 species distributed throughout the world. 08:30

8. Earthworms & Other Annelids

Live-action films footage highlights Annelid features such as a soft, segmented body with defined head and anus, muscles for locomotion, and thick skin full of blood vessels that secrete a viscous liquid. Also shows the Annelid characteristics of leeches, including the mandibles that enable them to suck blood. Extends Annelid adaptations by revealing arenicola and giant worms found in the extreme depths of the ocean. 08:34

9. Flies & Other Dipterans

Reviews the characteristics of Dipterans: one set of wings, a pair of halteres, and a proboscis. Also shows the life cycle of Dipterans through larvae and pupa to adult. Species covered include houseflies, flesh flies, blowflies, bluebottles, bombylius, crane flies, mosquitoes, the tsetse fly, screwworm flies and

drosophila. Reveals that there are 150,000 species found in all environments.
08:41

10. Frogs & Other Amphibians

Introduces Amphibians by comparing the habits and physical characteristics of frogs, tritons (newts), toads and salamanders. Films the mating habits of common toads, green frogs and alpine newts and the metamorphosis from embryo to tadpole to adult. Explains that there are over 5,000 species of frogs and toads that live on our Earth and that new species are constantly being discovered. 08:10

11. Ladybug Beetles & Other Coleopterans

Opens with close-up photography of aphids providing food for ants, which in turn are being eaten by ladybugs. Shows that the ladybug has two membranous folding wings protected by two rigid wing covers that are typical of Coleopterans. Also notes the grinding mouth apparatus common to all beetles, which contains the largest number of species of any group in the animal kingdom. 08:03

12. Mice & Other Rodents

Live-action footage introduces characteristics of Rodents such as mice, voles, muskrats, and gerbils, highlighting the upper and lower incisors, which distinguish rodents from non-rodents such as hedgehogs, rabbits, and bats. Close-up photography of the chisel-shaped incisors of Norway rats reveals that all rodents have to gnaw constantly to keep their teeth from growing too large. Rodents are prolific and widespread. 07:49

13. Mussels & Other Bivalve Mollusks

Live-action footage introduces typical Bivalve Mollusks including mussels, oysters, clams, cockles, and oysters. Explains that there are over 12,000 species in the world, each distinguished by a shell with two halves (valves) and siphons through which the animal filters its food. Shows the byssus that anchors mussels to rocks. Also reveals how mussels release their eggs and spermatozooids into water. 08:03

14. Owls & Other Raptors

Beginning with the common barn owl, extends the concept of birds of prey (Raptors) to include eagles, vultures, buzzards and kites. Live-action footage highlights raptors' hooked beaks and talons, and their hunting and feeding habits. They are shown to range in size from tiny owls to huge condors. 08:11

15. Paramecia & Other Protists

Introduces paramecia as examples of ciliates, unicellular members of the Protist Kingdom. Live-action microphotography captures these single-celled organisms moving, reproducing and feeding. Unicellular Protists are more numerous than multicellular ones such as rotifer. Includes daphnia, euplates, cyrtomonas,

stentors, vorticella, amoeba, euglena, brown & green algae, trypanosome and plasmodium. 08:39

16. Sea Anemones & Other Cnidarians (PREVIEW PROGRAM)

Cnidarians include a variety of simple organisms such as sea anemones, jellyfish and coral, which possess stinging tentacles (cnidocytes) and exhibit complex behaviors in spite of their simple body structures. Live-action footage shows how these animals capture their prey, reproduce, and expel wastes. Coral sequences explain reef structure, its support for biodiversity and its sensitivity to human activities. 08:09

17. Snails & Other Gastropod Mollusks

The brown garden snail highlights the characteristics that make this animal a Gastropod Mollusk. The concepts of gastropods (“stomach in its foot”), branchiae and eye-bearing antennae are further illustrated in the habits and physical characteristics of edible snails, glass snails, slugs, periwinkles, limpets, mud snails and sea slugs. In comparison, the chambered nautilus is discovered to be a cephalopod mollusk (“head in its foot”). 08:12

18. Snakes & Other Scaled Reptiles

Close-up photography of the rat snake and lizards highlight the characteristic scaly skin that serpents and lizards have in common. The fangs of poisonous vipers and the shape of their heads are compared to the teeth and rounded heads of the constrictors such as grass snakes. Chameleons, geckos, and worm lizards are compared to limbless serpents such as pythons, boas, cobras and vipers, suggesting common ancestry. 08:09

19. Spiders & Other Arachnids

Comparisons between spiders, Daddy-long-legs and acarids (mites, ticks) stress that spiders are not the only Arachnids. In addition to the eight walking legs that are typical of Arachnids, true spiders are characterized as having abdomens that are separated from their cephalothoraxes and as being carnivorous and venomous. Stinging tails and two pincers distinguish true scorpions, which are also Arachnids. 08:15

20. Starfish & Other Echinoderms

Live-action footage isolates the characteristics of Echinoderms (“animals with spiny skins”), whose 6,000 species include starfish, sea urchins, and sea cucumbers. Stunning close-up photography of spiny starfish, cushion starfish, serpent starfish, sea urchins, and sea cucumbers focuses on their methods of locomotion, their five-armed structure, their calcareous skeletons, their branchiae, and their carnivorous behaviors. 08:20