

Activity #1 - Using a Dichotomous Key for Invertebrate Phyla

Objective:

Students will use a key to determine the phyla of invertebrates.

Materials:

- keys
- pictures of invertebrate organisms
- definition of terminology

Procedures:

1. Teacher puts a letter on back of each picture.
2. Students are broken into groups.
3. Each group gets a stack of pictures and uses the key to determine which phyla the animals belong to.
4. Students can use the definition sheet to help them with the key.
5. Teacher reviews the correct answers to the pictures.

Discussion:

- A. Was the key helpful in identifying the invertebrates? Why?
- B. Write the characteristics of each animal pictured, its phylum, and common name.
- C. Would you change the identification key? How?



Taxonomic Key to the Major Invertebrate Phyla

Most taxonomic keys are “dichotomous,” (two branches), which is to say they are written with a series of two choices to be made about the anatomy of an animal (or photograph of an animal) you are looking at. Keys are not made to be read from start to finish like a book or a poem. In each numbered series you should read both choices, determine which choice best applies to the specimen you are looking at, then go where the key tells you to go, often skipping other steps in between that don’t apply.

1. Radial symmetry or asymmetry.....2
Bilateral symmetry.....4
2. Highly porous surface, not true tissues.....**Phylum Porifera**
Surface is not highly porous, true tissues present.....3
3. Exhibits pentamerous symmetry and tube feet.....**Phylum Echinodermata**
Lacks pentamerous symmetry and tube feet, possesses tentacles
(with nematocysts).....**Phylum Cnidaria**
4. Macroscopic colony of sessile, microscopic individuals, individuals < 0.5 mm
in size.....**Phylum Ectoprocta (Bryozoa)**
Solitary or colonial in form, individuals of colony > 0.5 mm in size.....5
5. Gelatinous.....6
Not gelatinous.....7
6. Solitary individuals with 8 rows of comb plates.....**Phylum Ctenophora**
Solitary and/or colonial with incurrent and excurrent siphons, and a gelatinous exterior called a
tunic.....**Phylum Chordata**
7. Possesses segmentation.....8
Lacks segmentation.....9
8. Exoskeleton with jointed appendages.....**Phylum Arthropoda**
No exoskeleton, appendages, if present, not jointed, segmented worm-like body, possibly in a tube (if
in a tube, may have tentacles).....**Phylum Annelida**
9. Possesses a foot, radula, arms and/or shell.....**Phylum Mollusca**
Lacking all of above, dorso-ventrally flattened to a thickness of less than
1 mm.....**Phylum Platyhelminthes**

Note: This investigation may be enhanced by using the photographs found in the UCLA OceanGLOBE Beach Debris Guide. Download from:

<http://www.msc.ucla.edu/oceanglobe/>

VOCABULARY for INVERTEBRATE KEY

appendages	Any part of an animal coming from the main body, trunk, such as arms, legs, antennae
asymmetry	Having no symmetry
bilateral symmetry	Having a body displaying two similar halves.
colonial	A group of organisms of the same species living together.
dorsoventrally	From back to front.
exoskeleton	An external skeleton, shell.
gelatinous	Looks like jelly.
nematocyst	The stinging barb of coelentrates.
pentamerous symmetry	Divided into five parts.
porous	Full of tiny holes.
radial symmetry	Having similar parts radiating from a central point.
radula	A tongue-like toothed structure used in chewing and rasping.
segmented	The division of the body into similar parts.
sessile	Attached to one place.
siphon	An extension of the mantle in molluscs for drawing water into the mantle cavity.
solitary	By oneself.
tentacles	Long cylindrical tubes for sensory reception or food capture.