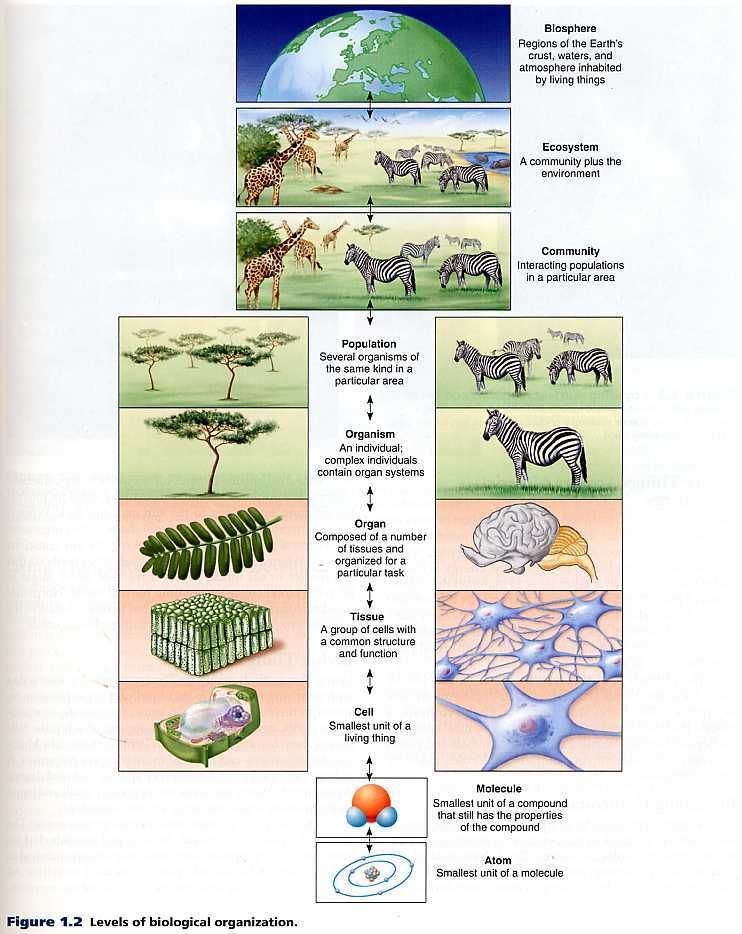
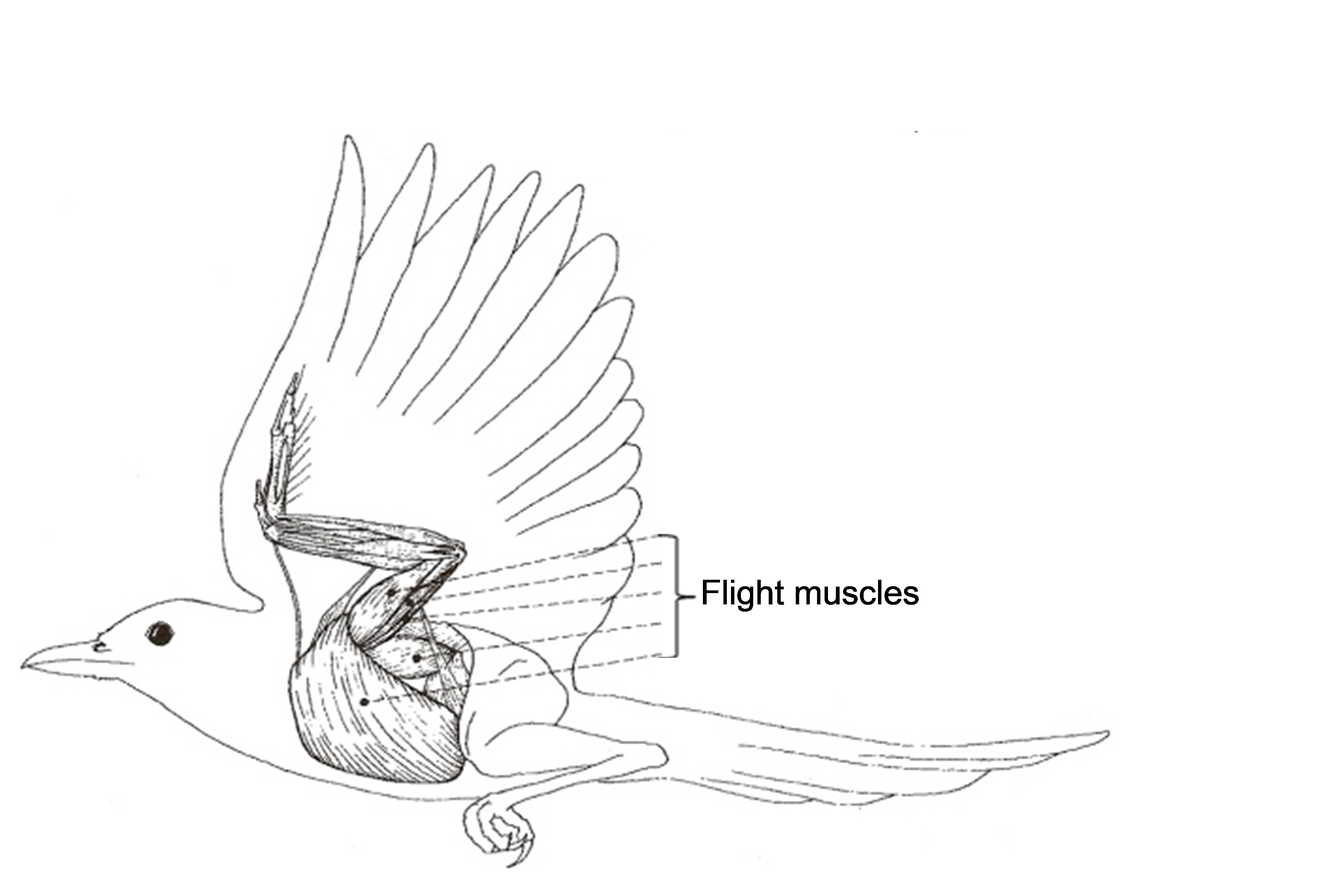
**Levels of Organization in Biology**[[1]](#footnote-1)

**1**. For each level of organization from molecule to ecosystem, give an example from our analysis of pelicans flying.



**2.** This diagram shows the major flight muscles of a bird. Draw in the brain, spinal cord and nerves to the muscles. Explain how the nervous system and muscles work together to produce flight.



**3a**. Define reductionism.

**3b.** Explain how reductionism helps us to understand how birds fly.

|  |  |
| --- | --- |
| This diagram shows the circulatory system of a bird. Each labeled part (other than the heart) shows the location of small blood vessels where molecules like oxygen can enter or leave the blood.  **4**. Explain how the parts of the circulatory system work together to help the bird fly. |  |

**5a.** Define an emergent property.

**5b.** Explain how bird flight is an emergent property that results from the interaction of multiple organ systems.

**6**. Match each item in the list on the left with the best match from the list on the right.

\_\_\_\_\_ Biosphere A. All living things on earth and the parts of the earth they inhabit

\_\_\_\_\_ Cell B. A group of atoms bonded together

\_\_\_\_\_ Community C. A group of one kind of organism living in an area

\_\_\_\_\_ Ecosystem D. A group of similar cells working together

\_\_\_\_\_ Molecule E. Populations of different types of organisms living together

\_\_\_\_\_ Organ F. A living individual which contains one or more cells

\_\_\_\_\_ Organ System G. A structure with several tissues that work together to

accomplish a function

\_\_\_\_\_ Organelle H. All the living and nonliving things in the same environment

\_\_\_\_\_ Organism I. Parts of a cell such as the nucleus

\_\_\_\_\_ Population J. A group of organs working together

\_\_\_\_\_ Tissue K. Smallest level at which life exists

**7.** Put the levels of organization listed above in order from smallest to largest, and give an example of each level of organization for a population of squirrels living in a forest.

|  |  |
| --- | --- |
| Level of Organization | Example for a Population of Squirrels Living in a Forest |
| Smallest: |  |
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|  |  |
|  |  |
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|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
| Largest: |  |

1. By Dr. Ingrid Waldron, Department of Biology, University of Pennsylvania, and Bradley String, Ridley High School, © 2019. This Student Handout, a PowerPoint presentation, and Teacher Notes with suggested questions and points to include in the PowerPoint presentation are available at <https://serendipstudio.org/exchange/bioactivities/LevelsOrganization>. [↑](#footnote-ref-1)