Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Biology

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**Using a Dichotomous Classification Key to Identify Common Fish in Pennsylvania**

Objectives:

SWBAT use a dichotomous key to properly identify fish that are found in their local water resources.

SWBAT Choose the correct path on the dichotomous key to distinguish given pictures of fish.

SWBAT Demonstrate the ability to use a dichotomous key.

SWBAT Name common fish of Pennsylvania and write scientific names using binomial nomenclature.

Background:

A dichotomous key is a tool that allows the user to determine the identity of items in the natural world, such as trees, wildflowers, mammals, reptiles, rocks, and fish. Keys consist of a series of “either or” choices that lead the user to the correct name of a given item. "Dichotomous" means "divided into two parts". Therefore, dichotomous keys always give two choices in each step. Dichotomous keys are extremely important tools in science and even in fields like auto repair and crime investigation. This lab uses the identification of some common types of North American fish as an example of how to use a dichotomous key.

1. What does dichotomous mean? (1pt)
2. In what other fields are dichotomous keys used? (1pt)
3. What will we be identifying with the dichotomous key? (1pt)

**Dichotomous Classification Key of Some Common Fish in Pennsylvania**

*How to use this key:*  Always start at number 1. Read both 1a and 1b.  Choose the description which best matches your fish and follow the directions to move to the next description.  Each description has two choices.  Each description will lead you to either another description or to the name of the fish.

|  |  |
| --- | --- |
| **1a** Body noticeably covered with scales | **Go to 2** |
| **1b** Scales not covering body or too small to be seen | **Go to 12** |
| **2a** Dorsal fin single | **Go to 3** |
| **2b** Dorsal fins two or more, joined or separated | **Go to 6** |
| **3a** Body more than four times as long (front to back) as deep (top to bottom); front edge of dorsal fin starts far back on body, the mouth is large, hinge of the mouth starts in back of eye | **Go to 4** |
| **3b** Body less than four times as long (front to back) as deep (top to bottom); front edge of dorsal fin starts about halfway between head and tail; mouth not large, hinge of mouth is in front of eye | **Go to 5** |
| **4a** Dark lines forming netted design on body; fins not spotted | **Pickerel** *Esox americanus* |
| **4b** Body covered with spots; fins spotted | **Northern Pike** *Esox lucius* |
| **5a** Mouth turned down; barbels absent; dorsal fin not elongated | **White Sucker** *Catostomus commersonii* |
| **5b** Mouth not turned downward; barbels present; dorsal fin elongated | **Carp** *Cyprinus carpio* |
| **6a** Two dorsal fins separated, the anterior spiny and the posterior soft | **Go to 7** |
| **6b** Two dorsal fins united, forming an anterior spiny portion and a posterior soft portion | **Go to 8** |
| **7a** Top of head concave, forming a hump in front of dorsal fin; dark vertical bars on body | **Yellow Perch** *Perca flavescens* |
| **7b** Top of head not concave, body sloping to dorsal fin and not forming a hump; dark blotches on body | **Walleyed Pike** *Sander vitreus* |
| **8a** Body more than three times as long as broad | **Go to 9** |
| **8b** Body less than three times as long as broad | **Go to 10** |
| **9a** Hinge of jaws behind the eye; notch between spiny and soft dorsal fin deep and nearly separating into two fins | **Largemouth black bass** *Micropterus salmoides* |
| **9b** Hinge of jaws below the eye; notch between spiny and soft dorsal fin not nearly separating into two fins | **Smallmouth black bass** *Micropterus dolomieu* |
| **10a** Mouth large, hinge below or behind eye | **Go to 11** |
| **10b** Mouth small, hinge in front of eye | **Bluegill** *Lepomis macrochinus* |
| **11a** Five to seven spines in dorsal fin; dark spots forming broad vertical bars on sides | **White crappie** *Pomoxis annularis* |
| **11b** Ten or more spines in dorsal fin; sides flecked with dark spots | **Rock bass (redeye)** *Ambloplites rupestris* |
| **12a** Body much elongated and snakelike; dorsal, caudal and anal fins continuous | **Eel** *Anguilla rostrata* |
| **12b** Body not elongated and snakelike; dorsal, caudal, and anal fins separate; adipose fin present | **Go to 13** |
| **13a** Barbels growing from lips and top of head; head large and broad | **Go to 14** |
| **13b** Barbels lacking; head not large and broad | **Go to 16** |
| **14a** Caudal fin deeply forked; head tapering | **Go to 15** |
| **14b** Caudal fin rounded or slightly indented but not forked; head blunt | **Bullhead catfish** *Aneiurus nebulosus* |
| **15a** Dorsal fin rounded at top; body silvery, speckled with black markings | **Channel catfish** *Ictalurus punctatus* |
| **15b** Dorsal fin long and pointed at top; body bluish gray without speckles | **Blue catfish** *Ictalurus furcatus* |
| **16a** Caudal fin deeply forked; back not mottled and with few spots | **Atlantic salmon** *Salmo salar* |
| **16b** Caudal fin square or slightly indented; back mottled or spotted | **Go to 17** |
| **17a** Back and caudal fin spotted; broad horizontal band along sides | **Rainbow trout** *Oncorhynchus mykiss* |
| **17b** Back mottled with dark lines; caudal fin not spotted; fins edged with white | **Brook trout** *Salvelinus fontinalis* |

Binomial Nomenclature: Scientific Naming

1. Made up of two parts
2. The first part is called the genus
3. The second part is called the species
4. The genus name is always Capitalized and either underlined or *italicized*
5. The species name is always lowercased and either underlined or *italicized*

Directions: (2pts) common name, (2pts) scientific name, (2pts) Process

Identify and name all the pictures of fish. Write the common name of the fish followed by the scientific name. Make sure to follow the scientific naming rules. Show the process of how you determined the type of fish.

Example: Common name-Pickerel, Scientific name- Esox americanus, Process- 1a, 2a, 3a, 4a

Fish 1:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fish 2:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fish 3:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fish 4:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fish 5:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fish 6:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fish 7:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fish 8:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



