

14-1

A STUDY OF CLASSIFICATION

Purpose

To become familiar with the use of a scientific classification key as a means of identifying unknown organisms.

Related Information

One of the biologist's essential skills is the ability to place an organism in its correct classification group and to identify it by name. In identifying an organism such as a fish, you might look for the presence or absence of scales, the position of the fins, shape and position of the mouth, or the length of the body.

Part 1 USING A CLASSIFICATION KEY

The characteristics that are useful in identification may be arranged in the form of a key such as the one for game fish shown in the diagram.

Materials

no materials or apparatus required

Procedure and Observations

Study the terms defined below, all of which refer to structures of a fish. Certain of these terms are used in the classification on page 100. Then examine closely one of the drawings of a fish shown on page 101. Read both statements listed under number 1 in the classification key. One of these statements should fit the fish you have chosen; the other should not. Refer to the number after the statement that fits your fish and go directly to this number in the key. Again select the statement that fits the fish you selected. Continue through the key until you come to a name after one statement. This should be the name of the fish you selected. Practice using the key to identify several of the fish shown.

Suppose you want to find the name of the fish shown in the drawing numbered 2 in the figure. Look at the classification key. Note that each numbered item on the left side of the key presents two possibilities. Reading item 1b of the key, we see that our fish has no scales, or at least we cannot see any. So we go down the page to number 12b on the left-hand side of the key. Our fish is not elongated or snakelike, so we go to number 13a of the key. The fish we are classifying has barbels growing from its lips and the top of its head, so we go to number 14b of the key. Since our fish has a caudal fin that is rounded, and a blunt head, we know that it is the *Bullhead catfish* (also known as *horn pout* in some parts of the country).

Terms Referring to the Structure of Fish

Barbel—a fleshy projection from the lips or head.

Fins

Adipose—a small fin on the top mid-line of the body near the tail fin.

Anal—a fin along the lower mid-line of the body near the tail fin.

Caudal—tail fin.

Dorsal—the fin or fins along the top mid-line of the body; may be either spiny, with hard rays ending in sharp spines, or soft and lacking spines.

Pectoral—the paired fins nearest the head, corresponding to front legs or arms.

Pelvic—the paired fins nearest the tail, corresponding to hindlegs.

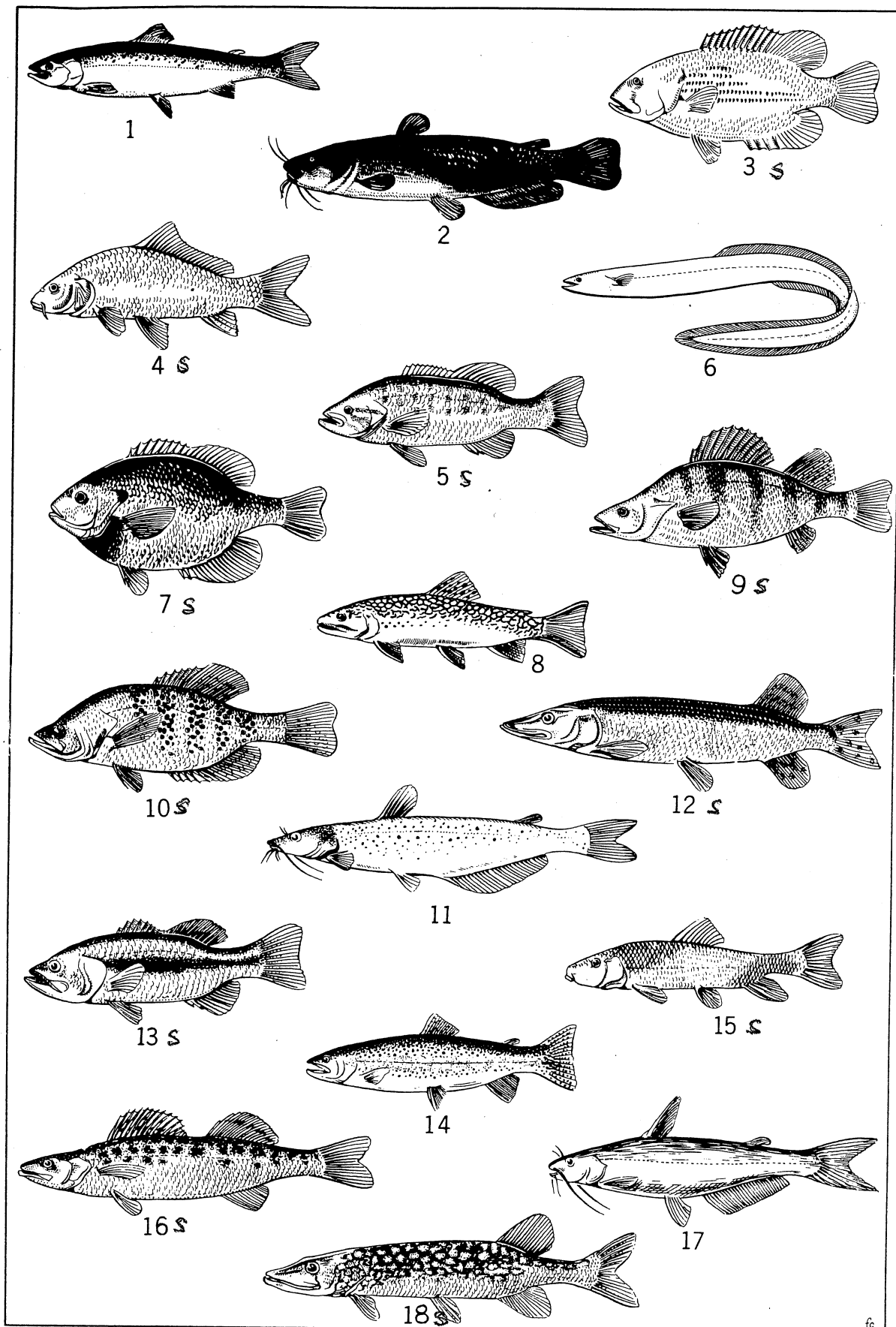
Scales—transparent overlapping outgrowths of the skin.

Classification Key to Certain Fish

1a. Body more or less covered with scales	2
1b. Scales lacking or too small to be seen	12
2a. Dorsal fin single	3
2b. Dorsal fins two or more, joined or separated	6
3a. Body more than four times as long as broad (top to bottom); front edge of dorsal fin far back on body; mouth large, hinge back of eye	4
3b. Body less than four times as long as broad; front edge of dorsal fin about midway between head and tail; mouth not large, hinge in front of eye	5
4a. Dark lines forming netted design on body; fins not spotted	<i>Pickering</i>
4b. Body covered with yellow spots; fins spotted	<i>Northern pike</i>
5a. Mouth turned downward; barbels absent; dorsal fin not elongated	<i>White sucker</i>
5b. Mouth not turned downward; barbels present; dorsal fin elongated	<i>Carp</i>
6a. Two dorsal fins separated, the anterior spiny and the posterior soft	7
6b. Two dorsal fins united, forming an anterior spiny portion and a posterior soft portion	8
7a. Top of head concave, forming a hump in front of dorsal fin; dark vertical bars on body	<i>Yellow perch</i>
7b. Top of head not concave; body sloping to dorsal fin and not forming a hump; dark blotches on body	<i>Wall-eyed pike</i>
8a. Body more than three times as long as broad	9
8b. Body less than three times as long as broad	10
9a. Hinge of jaws behind the eye; notch between spiny and soft dorsal fin deep and nearly separating into two fins	<i>Large-mouth black bass</i>
9b. Hinge of jaws below the eye; notch between spiny and soft dorsal fin not nearly separating into two fins	<i>Small-mouth black bass</i>
10a. Mouth large, hinge below or behind eye	11
10b. Mouth small, hinge in front of eye	<i>Bluegill</i>
11a. Five to seven spines in dorsal fin; dark spots forming broad vertical bars on sides	<i>White crappie</i>
11b. Ten or more spines in dorsal fin; sides flecked with dark spots	<i>Rock bass (Redeye)</i>
12a. Body much elongated and snakelike; dorsal, caudal, and anal fins continuous	<i>Eel</i>
12b. Body not elongated and snakelike; dorsal, caudal, and anal fins separate; adipose fin present	13
13a. Barbels growing from lips and top of head; head large and broad	14
13b. Barbels lacking; head not large and broad	16
14a. Caudal fin deeply forked; head tapering	15
14b. Caudal fin rounded or slightly indented but not forked; head blunt	<i>Bullhead catfish</i>
15a. Dorsal fin rounded at top; body silvery, speckled with black markings	<i>Channel catfish</i>
15b. Dorsal fin long and pointed at top; body bluish-gray without speckles	<i>Blue catfish</i>
16a. Caudal fin deeply forked; back not mottled and with few spots	<i>Atlantic salmon</i>
16b. Caudal fin square or slightly indented; back mottled or spotted	17
17a. Back and caudal fin spotted; broad horizontal band along sides	<i>Rainbow trout</i>
17b. Back mottled with dark lines; caudal fin not spotted; fins edged with white	<i>Brook trout</i>

Summary

On a plain sheet of paper, construct a key to the names of at least ten, randomly selected, students in your class based on their individual characteristics.



Native fish