

USING AND MAKING A BIOLOGICAL KEY

Introduction

Classification is a way of separating a large group of closely related organisms into smaller subgroups. With a classification system, identification of an organism is easy. The scientific names of organisms are based on the classification systems of living organisms. To classify an organism, scientists often use a key. A key is a listing of specific characteristics, such as structure and behavior, in such a way that an organism can be identified.

In this investigation, you will:

- use a key to identify fourteen shark families,
- study the method used in making statements of a key, and
- construct your own key which will identify organisms appearing on page I28.

Materials

metric ruler

Procedure

Students must refer to this diagram.

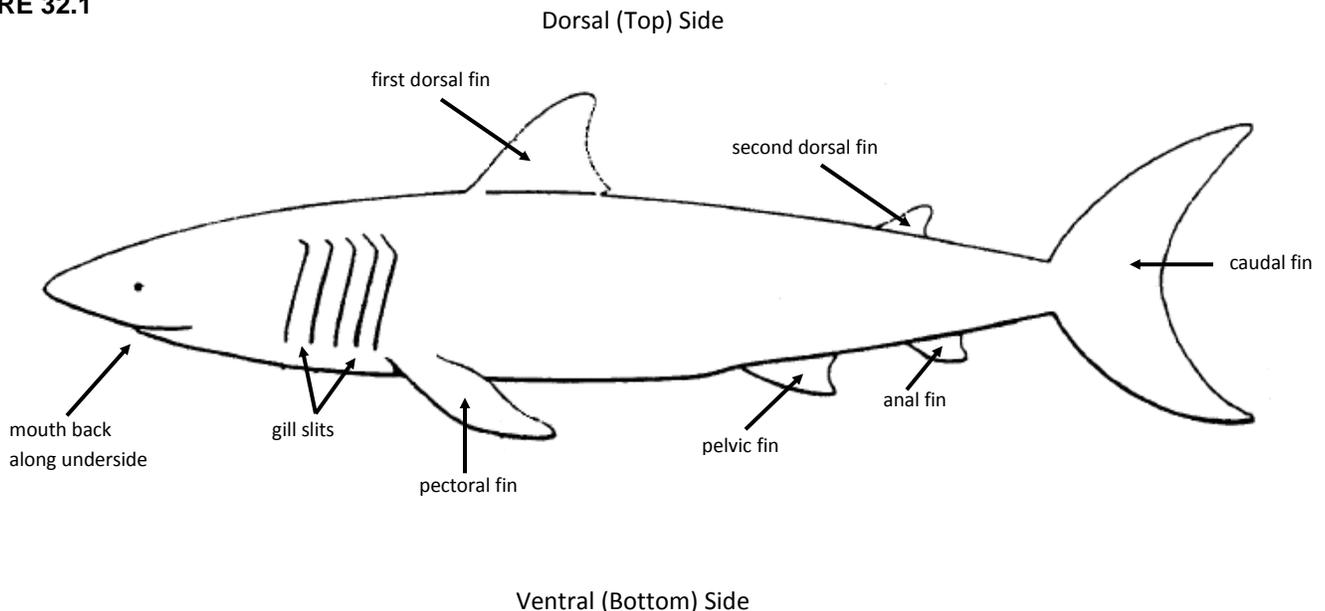
Use Figure 32-1 as a guide to the shark parts used in the key on Page I27.

Read sentences IA and IB of the key. Then study Shark I in Figure 32-2 for the characteristics referred to in IA and IB. Follow the directions in these sentences and continue until a family name for Shark I is determined.

For example, to key a shark that has an anal fin and a body that is not kite shaped, follow the directions of 1A and go directly to statement 2. To key a shark that lacks an anal fin and has a kite shaped body, follow the directions of IB and go to statement 10.

Continue this process with each shark until all animals have been identified. Write the family name on the line below each animal.

FIGURE 32.1



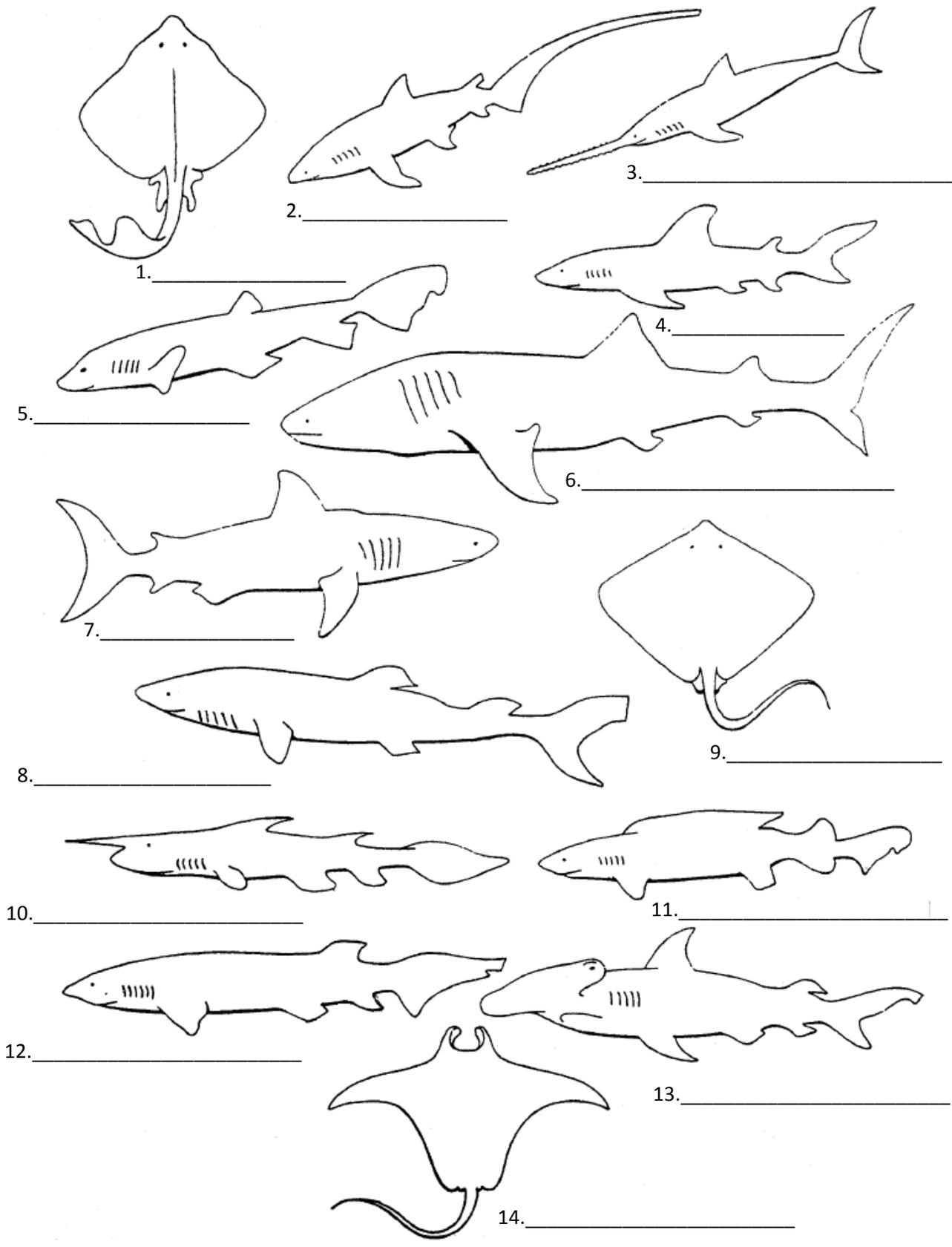


FIGURE 32.2

Key

1. A. Body kite-like in shape (if viewed from the top).....Go to statement 12
B. Body not kite-like in shape (if viewed from the top).....Go to statement 2
2. A. Pelvic fin absent and nose saw-like.....Family Pristiophoridae
B. Pelvic fin present.....Go to statement 3
3. A. Six gill slits present.....Family Hexanchidae
B. Five gill slits present.....Go to statement 4
4. A. Only one dorsal fin..... Family Scyliorhinidae
B. Two dorsal fins.....Go to statement 5
5. A. Mouth at front of head rather than back
along underside of head.....Family Rhinocodontidae
B. Mouth back along underside of head.....Go to statement 6
6. A. Head expanded on side with eyes at end of expansion..... Family Sphyrnidae
B. Head not expanded.....Go to statement 7
7. A. Top half of caudal fin exactly same size and shape as bottom half..... Family Isuridae
B. Top half of caudal fin different in size and shape than bottom half.....Go to statement 8
8. A. First dorsal fin very long, almost half total length of body.....Family Pseudotriakidae
B. First dorsal fin regular length.....Go to statement 9
9. A. Caudal fin very long, almost as long as entire body.....Family Alopiidae
B. Caudal fin regular length.....Go to statement 10
10. A. A long needlelike point on end of nose.....Family Scapanorhynchidae
B. Nose without long point.....Go to statement 11
11. A. Anal fin absent.....Family Squalidae
B. Anal fin present.....Family Carcharhinidae
12. A. Small dorsal fin present near tip of tail.....Family Rajidae
B. No dorsal fin present near tip of tail.....Go to statement 13
13. A. Front of animal with two hornlike appendages.....Family Mobulidae
B. No hornlike appendages.....Family Dasyatidae

Analysis

1. What is a biological key and how is it used? _____

2. List four different characteristics or traits that were used in the shark key. _____

3. (a) What main trait could be used to separate shark 4 from shark 8? _____
(b) What main trait could be used to separate shark 4 from shark 7? _____
(c) What main trait could be used to separate shark 5 from shark 12? _____

4. Prepare your own key for the five fish in Figure 32-3. Use the same format as the shark key. The family names to be used are the numbers I, II, III, IV, and V. Your key should correctly use traits that will lead to each fish family. To help you get started, we have given you a suggestion for part of the first statements.

1. A. Fish with long tubelike body
- B. Fish with regular body shape

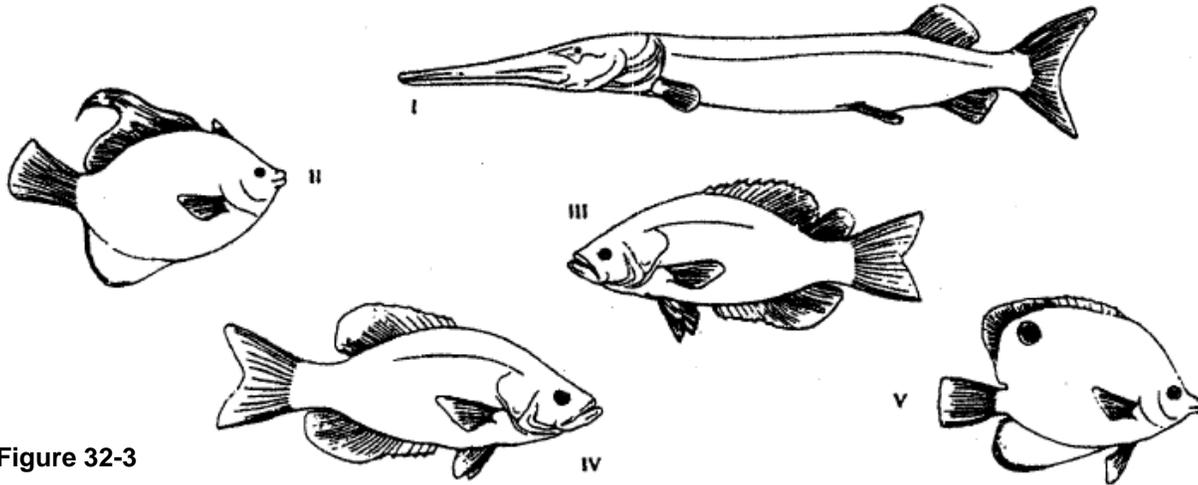


Figure 32-3

5. These leaves (needles) in Figure 32-4 are all from different pine trees and are drawn life size. Note that each bundle contains different numbers and lengths of leaves. Design a key which will classify each tree.

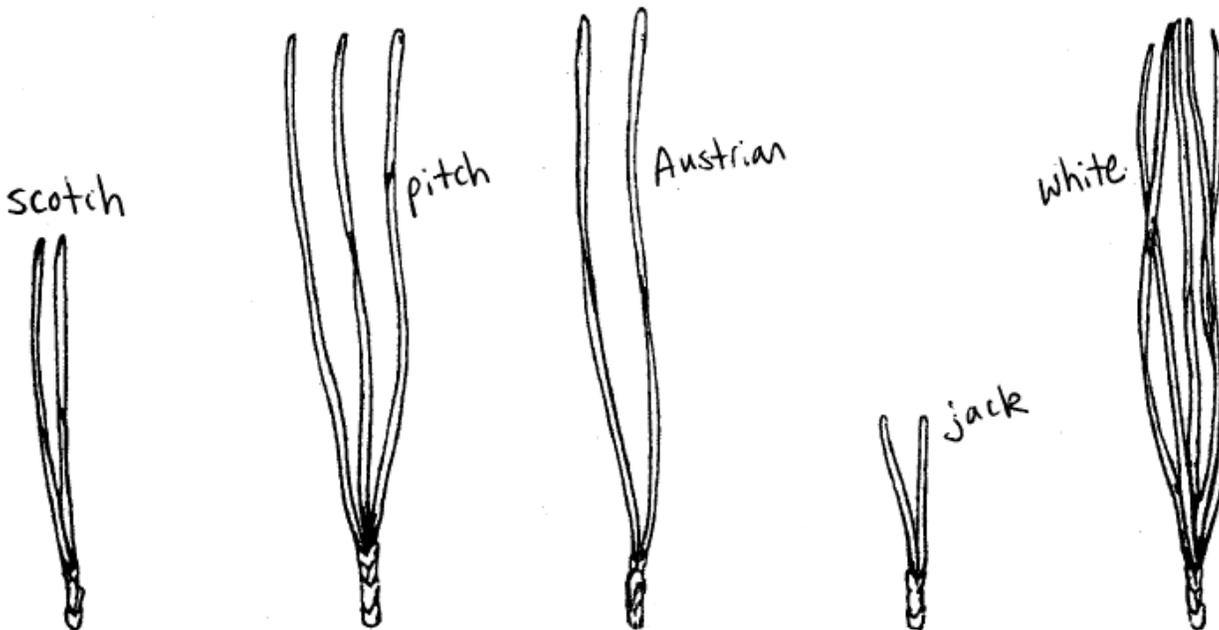


Figure 32-4