

Shark Dichotomous Key

Standards:

GLE 0507.5.1 Investigate physical characteristics associated with different groups of animals

GLE 0807.5.1 Identify various criteria used to classify organisms into groups.

GLE 0807.5.2 Use a simple classification key to identify a specific organism.

Supplies:

- 12 Laminated Shark Tooth Charts
- Binder with lesson and student worksheet copies
- 6 bags of shark teeth.

This activity is about learning to use a dichotomous key to sort biological items of a certain category. The first half of the activity is a worksheet called "*Name That Fish*". The students will get the page with the key and the fish pictures. The first page is instructions for the teacher or fellow to use. The second half of the activity is creating a dichotomous key based on the *Common Vertebrate Fossils* chart and then sort their real shark teeth using that key.

Students should use the laminated chart with *Common Vertebrate Fossils* on one side and shark and tooth name parts to create a shark tooth dichotomous key. Once they have created a key they should then sort their bags of shark teeth. This activity can be a group or solo activity depending on your class needs.

Please try to handle the fossils with care and make sure the students don't take what they are not supposed to take.

Name That Fish

OBJECTIVE

The student will be able to use a *dichotomous key* to identify shark and batoid families.

MATERIALS

- copies of *Name That Fish* funsheet on page 10
- copies of *Key to Families* on page 11
- pens or pencils

BACKGROUND

All sharks and batoids belong to a group of fishes called the *Chondrichthyes*. To help learn about them, scientists divide them into groups called families. All the sharks in one family usually will look more like each other than sharks in other families.

To find out which family a shark is in, you would examine the shark carefully. You would count the gill slits on the sides of the shark's head. You would look at the shark's paired pectoral fins and paired pelvic fins, its one or two dorsal fins, and its anal fin (if it has one—not all sharks do). And you would look at the shark's tail, called a caudal fin.

A useful tool for listing characteristics and identifying a shark's family is a dichotomous key. The key presents a sequence of questions. Each question offers two choices.

ACTION

1. Distribute copies of the *Name That Fish* funsheet and *Key to Families* to the students. For this activity, students may work individually or in learning groups.
2. Instruct students to always begin at number one of the *Key to Families* for each shark on the *Name That Fish* funsheet.

Students read sentences 1A and 1B of the key. They study Shark 1 for the characteristics referred to in 1A and 1B. For each shark, they choose either 1A or 1B, and then follow the directions given in that letter. When they can identify the shark family, they write the family name on the line below each animal. Lead them through one or two examples.

ANSWERS

1. Rajidae
2. Scyliorhinidae
3. Lamnidae
4. Squalidae
5. Heterodontidae
6. Hexanchidae
7. Alopiidae
8. Pristiophoridae
9. Carcharhinidae
10. Rhincodontidae
11. Dasyatidae
12. Pseudotriakidae
13. Sphyrnidae
14. Mobulidae

Shark Dichotomous Keys

Dichotomous key

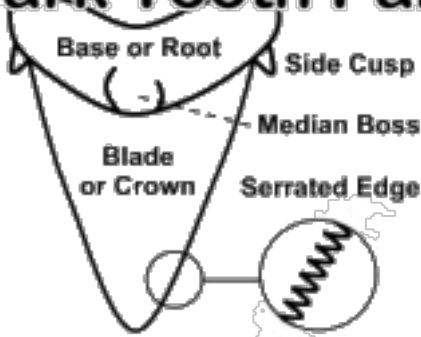
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1. a key used to identify a plant or animal in which each stage presents descriptions of two distinguishing characters, with a direction to another stage in the key, until the species is identified

In a dichotomous key each step has two questions hence, the di- prefix. Based on the answer to the question, the user then moves on to a different number in the key and selects which question answers the attributes of the specimen in question and moves on until the key yields the correct classification.

This activity will have a dichotomous key activity in which you will find various species in the shark family. Use the key to identify all of the fish on the page. If you are unfamiliar with the terms there is a labeled shark on the laminated sheet. After you have completed that worksheet it is your turn to design your own dichotomous key for the shark's teeth pictured on the chart. Use the technical name for the shark tooth parts in your key. Once the key is created based on *Common Vertebrate Fossils* sort your bag of shark teeth according to your key.

Shark Tooth Parts



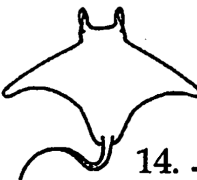
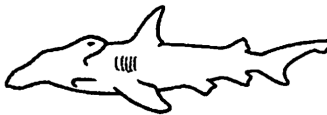
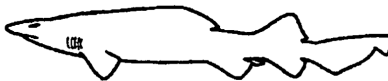
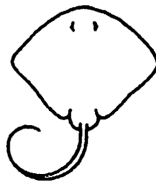
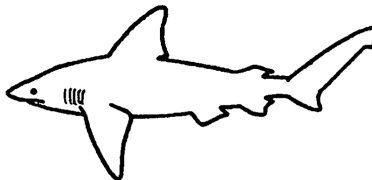
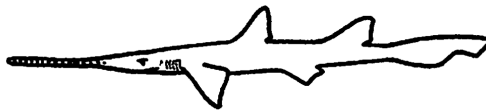
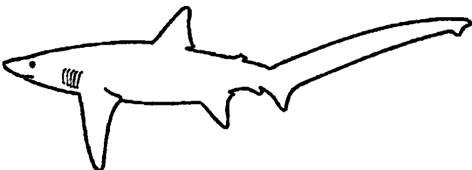
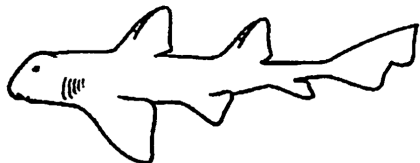
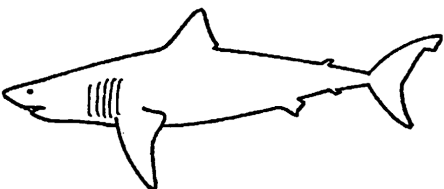
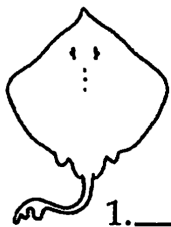
Key to Families

1. A. body kitelike if viewed from the top go to 12
B. body not kitelike if viewed from the top go to 2
2. A. anal fin absent go to 11
B. anal fin present go to 3
3. A. six gill slits present Family Hexanchidae
B. five gill slits present go to 4
4. A. dorsal fin with spines Family Heterodontidae
B. no spines on dorsal fins go to 5
5. A. mouth at front of snout (rather than
on underside of head) Family Rhincodontidae
B. mouth on underside of head go to 6
6. A. head expanded with eyes at ends of expansion Family Sphyrnidae
B. head not expanded go to 7
7. A. top half of caudal fin about the
same size as bottom half Family Lamnidae
B. top half of caudal fin different
in size than bottom half go to 8
8. A. first dorsal fin very long, almost
half the total length of the body Family Pseudotriakidae
B. first dorsal fin regular length go to 9
9. A. caudal fin very long, almost as long as entire body .. Family Alopiidae
B. caudal fin "regular" length go to 10
10. A. base of first dorsal fin behind pelvic fins Family Scyliorhinidae
B. base of first dorsal fin in front of pelvic fins Family Carcharhinidae
11. A. long point on the end of snout Family Pristiophoridae
B. snout without long point Family Squalidae
12. A. front of animal has two hornlike appendages Family Mobulidae
B. no hornlike appendages go to 13
13. A. small dorsal fin present near tip of tail Family Rajidae
B. no dorsal fin present near tip of tail Family Dasyatidae

Name _____

Name That Fish

Use "Key to Families" to help you identify the family of each shark or batoid on this page.



Name: _____

Class: _____

1a. _____

1b. _____

2a. _____

2b. _____

3a. _____

3b. _____

4a. _____

4b. _____

5a. _____

5b. _____

6a. _____

6b. _____

7a. _____

7b. _____

8a. _____

8b. _____

9a. _____

9b. _____

10a. _____

10b. _____

Name: _____

Class: _____

11a. _____

11b. _____

12a. _____

12b. _____

13a. _____

13b. _____

14a. _____

14b. _____

15a. _____

15b. _____

16a. _____

16b. _____

17a. _____

17b. _____

18a. _____

18b. _____

19a. _____

19b. _____

20a. _____

20b. _____

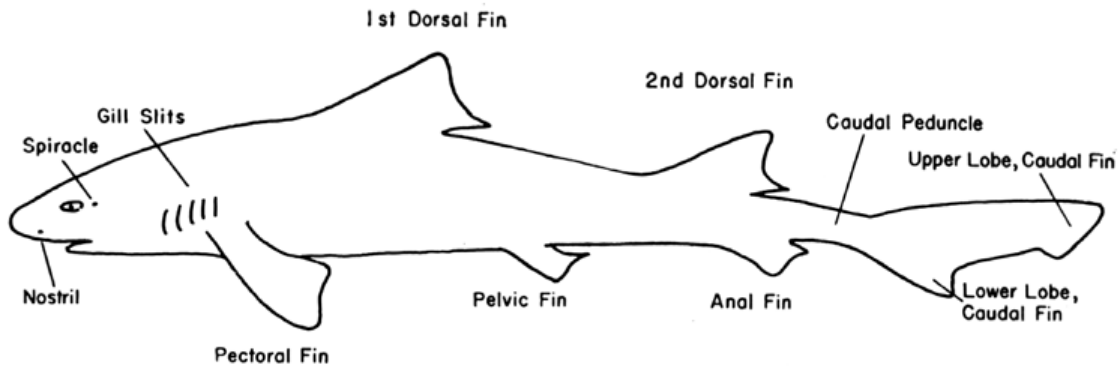


FIGURE 6. The external parts of a shark

COMMON VERTEBRATE FOSSILS FROM THE MIOCENE OF MARYLAND AND VIRGINIA

