

## Dian Fossey

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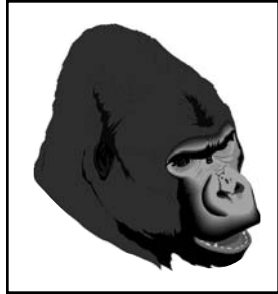
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**Dian Fossey**  
**Animal Behaviorist**  
**1932-1985**



*Unit developed by*  
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## Who was Dian Fossey?

Dian Fossey was an occupational therapist turned primatologist. Spending almost 20 years of her life studying rare mountain gorillas, she was known as the “Lone Woman of the Forest” by her African workers. Dian Fossey was sent to Africa by Louis Leakey, a famous British paleontologist, to live and study among these gorillas. While spending many hours observing the gorillas, she mimicked their vocalizations, gestures, and postures; thus, they became used to her presence or *habituated*. As a result of imitating them, she was the first person to have physical contact with the gorillas.



Dian Fossey told her story in the nationally acclaimed book, *Gorillas in the Mist*, which was also made into a film by the same name. The book and movie are an account of her experiences at the Karisoke Research Center in Rwanda, Africa, where she observed and interacted with the gorillas, and of her hard-fought battles to protect them. She described the pressures placed on the gorilla population due to poaching, human encroachment, land clearing, and the presence of tourists. For example, during the 1970s, an average of 15 gorillas per year were lost due to poaching. Poachers decapitated and chopped off the hands of the gorillas. Then they sold the heads for \$1,200 and the hands, which were used as ashtrays, for \$600.

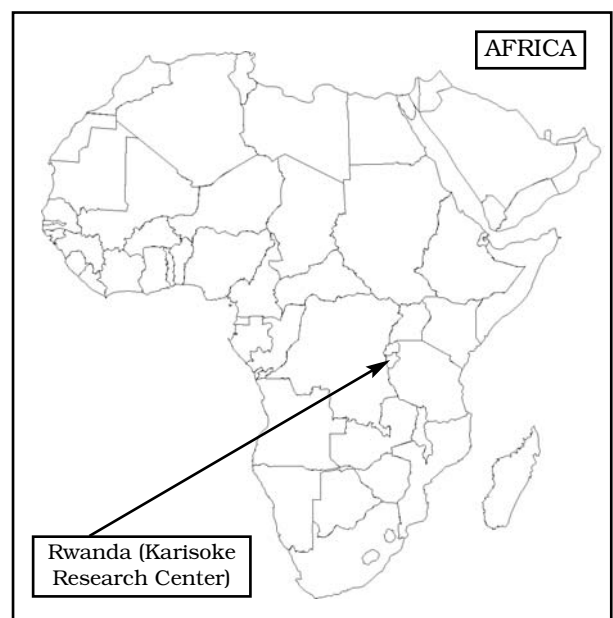
Dr. Fossey practiced “active conservation” by destroying traps and otherwise preventing poachers from capturing and killing the gorillas. She also opposed the efforts of some government officials who wanted to promote tourism and increase the number of persons observing the gorillas in the national park where they lived.

During her 19 years of study, Dian Fossey spent time away from the gorillas pursuing her doctorate degree at Cambridge University (1976) and working as a visiting associate professor at Cornell University (1980-1985).

## What is The Dian Fossey Gorilla Fund?

After the senseless death of her favorite gorilla, Digit, Dr. Fossey established The Digit Fund in 1978, which is now called The Dian Fossey Gorilla Fund. The mission of the Fund is to support continued *ethnological* (ethnology is the study of behaviors in animals and the evolution of those behaviors) observations on the habituated gorilla families, to destroy traps set by poachers, and to support the work done by the Karisoke Research Center where Dian Fossey worked.

Dian Fossey was murdered on December 26, 1985. Her death is still a mystery, although one of her graduate students, Wayne McGuire, was convicted of the murder. The people close to Dr. Fossey do not believe the graduate student was guilty. Did poachers murder her? Did government officials arrange for her murder? After all, some



influential people saw Dr. Fossey as an impediment to the potentially profitable exploitation of the gorillas and the park.

Through the book and film, *Gorillas in the Mist*, Dr. Fossey's work endures even after her death. Poaching has lessened, and the mountain gorilla population has stabilized. A veterinary clinic, the only clinic in the world created to serve a wild animal population, was also established. However, the Fund set up by Dr. Fossey encountered an unfortunate setback in January, 1988. Dr. Fossey had written and signed a will in 1984 leaving money to the Fund and to four friends. This will was found in her cabin. However, a New York judge ruled the will was invalid and Dr. Fossey's mother received the entire estate of \$4.9 million in royalties from the book and movie.

### **Did Dian Fossey face any career obstacles?**

According to Stacey Coil, Dr. Fossey's personal secretary at Cornell University, Dr. Fossey never felt she was a part of the true scientific ranks because many of her publications were found in lay magazines instead of scientific journals. She felt excluded because of her lack of an affiliation with a university. When she was asked to be a visiting associate professor in 1980 in the department of Neurobiology and Behavior at Cornell University, she eagerly accepted.

### **Dr. Fossey's views on learning**

Dr. Fossey always believed males and females were equal in ability and talent. The notion that women were inferior to men in intelligence never occurred to her. Given the appropriate initiation to scientific endeavors, she believed women were just as capable as men. Ironically, Dr. Fossey was not successful in her chemistry and physics courses and she failed her second year at the University of California-Davis where she was a pre-veterinary student. She then transferred to San Jose State College, changed her major, and began studying occupational therapy. She graduated in 1954.

Dr. Fossey hoped that children interested in the mountain gorillas' plight would not simply donate money to the cause. Rather, she envisioned them actively learning as much as possible about the animals and then staging benefits to educate whole communities about helping the mountain gorillas.

## SUGGESTIONS FOR TEACHERS

### ACTIVITY #1: Analyzing a Mountain Gorilla Family Tree ACTIVITY #2: Analyzing the Vocalizations of Mountain Gorillas

#### Purpose

To become familiar with the techniques used to interpret gorilla behavioral patterns and their vocalizations.

#### Objectives

- 1) To distinguish between the dominant male and the females in a group of mountain gorillas.
- 2) To identify the members of the group that emigrated during the years of 1967–1980.
- 3) To interpret data from a family tree about a group of mountain gorillas.
- 4) To identify those gorillas born to particular females in the group.
- 5) To predict the vocalizations used by mountain gorillas in various situations.

#### Materials

Activities #1 and #2

- paper and pencil

#### Before You Begin

Activity #1

- 1) Gather materials.
- 2) Present some background information to students about the mountain gorillas, using the sources in the “References and Resources” section. Post pictures of gorillas around the room.
- 3) Have students read the Resource Sheet on page 197, “Vital Information About Gorillas.”
- 4) Divide students into teams.

Activity #2

- 1) Gather materials.
- 2) View the movie, *Gorillas in the Mist*, and seek segments where vocalizations occur. Show these segments in class so students can hear examples of the vocalizations.
- 3) Have students read the Resource Sheet on page 198, “Characteristics of Mountain Gorilla Vocalizations.”
- 4) Divide students into teams.

#### Safety Considerations

None.

#### Questions to Ask

- What can be learned about humans by studying gorillas?
- How are humans and gorillas similar?
- Describe the family unit of the mountain gorilla.
- As the gene pool for gorillas decreases, what are possible ramifications to the entire population of gorillas?

#### Where to Go From Here

- Analyze other books from your library describing the behavior of animals such as chimpanzees, wolves, and baboons. Compare their behaviors with that of the gorillas. How are they the same? Different?
- Prepare an action plan describing ways to protect the gorillas in Rwanda. Be sure to include a plan for conservation measures, research agenda, and possible ecological tour agendas.

#### Ideas for Assessment

- As a concluding activity, ask students to prepare an essay, editorial, poem, poster, advertisement, or other creative project describing their concerns, feelings, or beliefs about the mountain gorillas.
- Have students create an experimental design that Dian Fossey could have used with the gorillas in order to answer questions about food preference, mate selection, or infant behavior patterns.
- Have students create a vocalization chart for humans or other animals.

#### References and Resources

Allen, T. B. (1972). *Living with Mountain Gorillas. The Marvels of Animal Behavior*. Washington, DC: National Geographic Society.  
The Dian Fossey Gorilla Fund, 800 Cherokee Avenue SE, Atlanta, GA 30315, (404) 624-5881, (800) 851-0203.

✓ *By Dian Fossey:*

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✓ *Photo credit:*

- Photo on pages 191 and 193 courtesy of The Dian Fossey Gorilla Fund, Atlanta, GA.

## Resource Sheet #1

### *Vital Information About Gorillas*

- There are three subspecies of gorillas: the western lowland gorilla, the eastern lowland gorilla, and the mountain gorilla. Dian Fossey studied the mountain gorilla, found in the mountainous regions of Zaire, Rwanda, and Uganda.
- All gorilla populations are endangered. Currently, only about 50,000 gorillas remain in Africa. Of these, 2,500 are eastern lowland gorillas, and only 600 are mountain gorillas.
- Adult female gorillas weigh about 200 pounds and stand 4-5 feet tall. Adult males average 400 pounds and are 5-6 feet tall. Newborn gorillas weigh only 3-4 pounds.
- Gorillas have massive heads with bulging foreheads, ears that lie close to the head, and small, dark brown eyes.
- The faces of individual gorillas vary from flat to prominent, and from round to oval — the animals can be distinguished by their nose regions, which are very distinctive.
- The gorilla's skin is dark and covered by black or reddish hair except on the fingers, armpits, soles of the feet, and palms of the hands. Males acquire a "saddle" of silver-gray fur on the back at sexual maturity and are therefore called *silverbacks*. As gorillas mature, their hair turns gray.
- Gorillas appear to be pot-bellied, due to an enlarged intestine necessary to digest the bulky foods that they eat.
- Gorillas eat fruit, leaves, bark, shoots, flowers, bulbs, roots, stems, ants, and termites. They seldom drink water, since they receive enough of it in the succulent foods that they eat. Gorillas have never been observed hunting or feeding on any animals other than invertebrates such as termites and ants.
- Gorillas are *diurnal*, or active chiefly during the daytime. They are passive, shy animals.
- Gorillas spend the night in nests of leaves and branches that they build each night.
- Gorillas travel in bands with a dominant silverback, several adult females, and offspring of various ages. Sexually mature males and females leave the group at times — males and females join other groups, and some males roam alone.
- The female gorilla reaches sexual maturity at the age of 8 and usually raises 3 young to maturity in her lifetime. Males mature at the age of 12. Only the dominant silverback in the band breeds with adult females.

(Adapted from the Sea World-Busch Gardens site on the World Wide Web, <http://www.bev.net/education/seaworld/gorilla.>)



## Resource Sheet #2

### *Characteristics of Mountain Gorilla Vocalizations*

#### Aggressive Calls

**Roars:** These are heard from silverbacks in situations of stress or threat. They are directed at humans or buffalo herds and are followed by displays of bluff charges.

#### Alarm Calls

**Screams:** These shrill sounds last for 2 seconds and may be repeated 10 times. They are heard from all ages and sexes, but most frequently from silverbacks. They may be heard during intragroup disputes or used toward humans as an alarm, but not a threat.

**Wraaghs:** These are explosive outbursts heard most frequently from silverbacks. They are precipitated by sudden situations of stress like rock slides, thunder, or loud wind. They serve to scatter group members, but are never accompanied by aggressive displays of behavior.

**Question Barks:** These short sounds mean, "Who are you?" and are heard from silverbacks during times of curiosity, mild alarm, or when they hear branches break.

**Cries:** These resemble the wails of human infants and last up to 19 seconds. They are heard from infants or youngsters when left alone. The cries build to a temper tantrum if the youngster is left alone for a long period of time.

#### Coordination Vocalizations

**Pig Grunts:** These occur when gorillas are traveling, when trail disputes and altercations over limited food resources are most apt to occur. They also are effective rebuttal vocalizations and disciplinary enforcements between parents and juveniles.

**Belch Vocalizations:** These are throat-clearing vocalizations that sound like "naoom, naoom, naoom." They are the most complex sounds and can change into purrs, hums, and moans during times of maximum contentment. They are heard at the end of a long sunny resting period or in a lush feeding site. They are made by gorillas of all ages and both sexes. Silverbacks belch when establishing a location in dense vegetation. Short belches can be used as disciplinary measures with youngsters.

**Chuckles:** These vary in intensity depending on the degree of play (wrestling, tickling, chasing).

#### Intergroup Vocalizations

These vocalizations occur between two different groups during encounters.

**Hoot Series:** This series sounds like "hoo-hoo-hoo" and is followed by chest beats. These vocalizations don't reveal the precise location of a group. Silverbacks most frequently emit hoot series.

(Adapted from data provided in Fossey, D. (1983).  
*Gorillas in the Mist*. Boston, MA: Houghton Mifflin, Appendix E, p. 251-257.)

## ACTIVITY #1: Analyzing a Mountain Gorilla Family Tree

### Purpose

The goal of this activity is to gain experience interpreting family trees and behavioral data of primates. Your team will determine dominance, migration patterns, and overall hierarchical standing in a group of mountain gorillas.

### Procedure

Look at the “Group 5 Family Tree” on page 201. On this chart, the dominant female mountain gorillas are connected to the dominant male. Your team must interpret the family tree (use the “Key” on the same page) and then answer the questions below.



### Questions to Answer

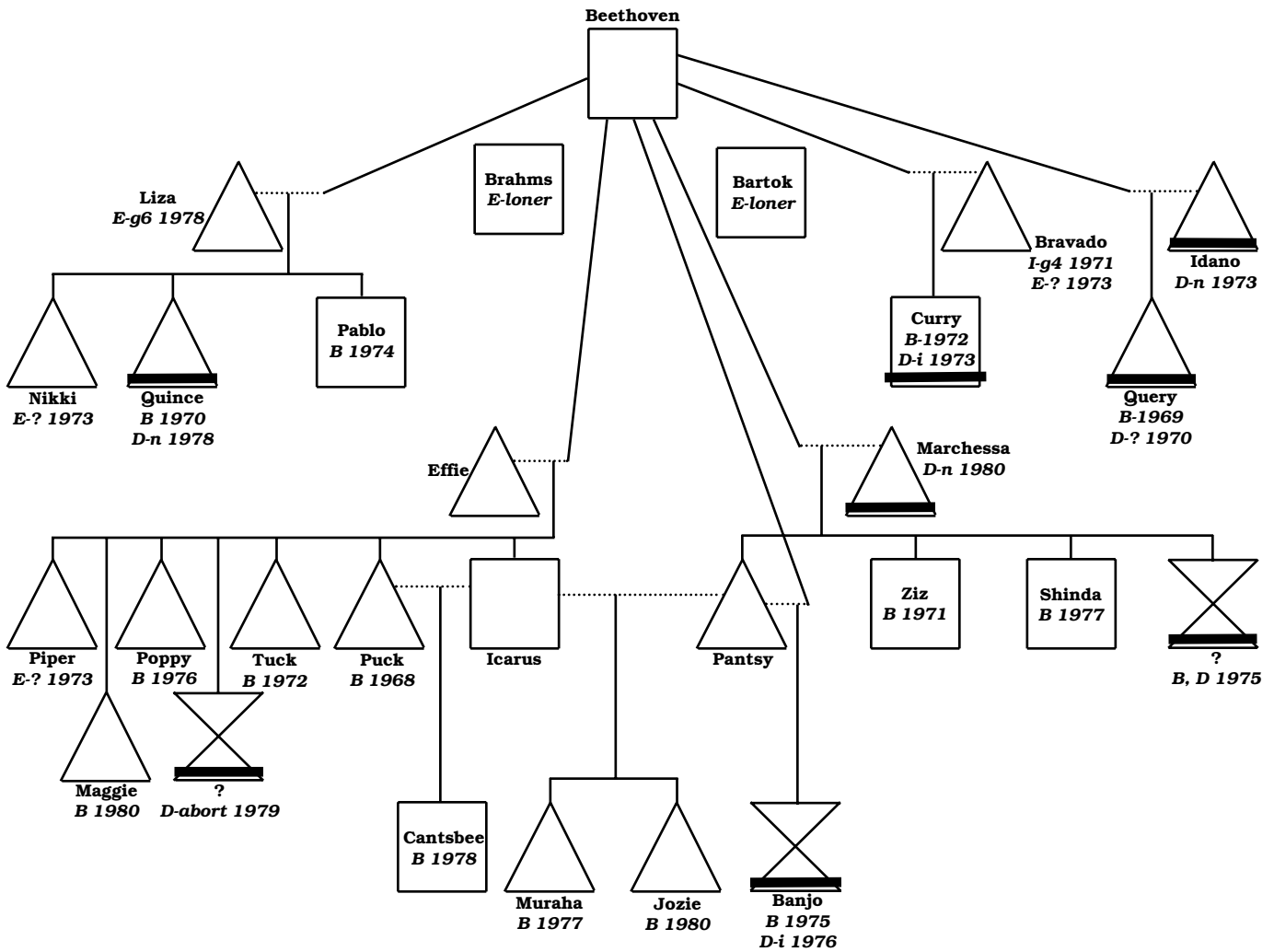
1. What was the name of the dominant male in *group 5*?
2. How do you know he was the dominant male?
3. What was the name of the female who had the most offspring?
4. How many females produced offspring from the dominant male?
5. Which of the females produced offspring from the dominant male?
6. Which of the primary females emigrated from *group 5*? What reasons can you propose for her departure?
7. Name the oldest son of Beethoven.
8. Marchessa had webbing between her toes and fingers. This condition is called *syndactyly* and may be due to inbreeding. What offspring in *group 5* have the greatest chance of displaying *syndactyly*?
9. Bravado emigrated in 1973. Which gorilla emigrated with her?
10. Beethoven had a child with one of his own children. Name the child with whom he mated. Name the child resulting from this union.
11. When Beethoven dies, which gorilla do you think will become the leader of the group? Why?

**Questions to Answer (continued)**

12. Between the years of 1965 and 1980, how many children did Beethoven sire?
13. When Pansy was 8 years old, she frequently “kidnapped” the youngest member of the group to practice her mothering skills. Which gorilla did she kidnap? How do you know?
14. In 1974, Liza’s status in the group was elevated as evidenced by the increased amount of time she spent with Beethoven. What event could have caused her status to be elevated?
15. During the years Dr. Fossey observed *group 5*, she noticed two instances where females resorted to juvenile behavior after their infants (aged one year old or less) disappeared. Use the family tree to identify the females and name the infants who disappeared.
16. Ziz was caught in a poacher’s trap. Beethoven freed Ziz by chewing through the wire trap. What is Ziz’s relationship to Beethoven?
17. Name Beethoven’s grandchildren.
18. One of Beethoven’s offspring died of malaria at the age of 8 years old. Which offspring was this?
19. Which one of the dominant females died of natural causes?
20. In 1968, Dr. Fossey collected a set of critical observations which finally put to rest the notion of the strong, rough “King Kong” temperament of male gorillas. She observed Beethoven, who “lifted the baby up by the scruff of the neck to dangle the exuberant baby over his body before casually grooming it...he displayed extraordinary gentleness with his offspring” (Fossey, 1983, p. 64). Which of the offspring was Beethoven coddling?



## Group 5 Family Tree (First met, 1967)



Key																									
	= male		= deceased		= bred with		= female		= no name given		= unknown sex	B	= born	D-i	= died by infanticide	D-?	= died of unknown cause	E-(group)	= emigrated from {group}	E-loner	= emigrated, lone travel	E-?	= emigrated from unknown	I-(group)	= immigrated to {group}

(Adapted from Fossey, D. (1983). *Gorillas In the Mist*. Boston, MA: Houghton Mifflin, p. xx.)

## ACTIVITY #2: Analyzing Mountain Gorilla Vocalizations

### Purpose

Mountain gorillas use a series of vocalizations, which Dr. Fossey spent years recording, listening, and analyzing. The goal of this activity is to provide you with experience in predicting what vocalizations mountain gorillas might use in various situations.

### Procedure

Dr. Fossey divided the gorillas' vocalizations into several categories: aggressive calls, alarm calls, coordination vocalizations, and intergroup vocalizations, as described in the Resource Sheet, "Characteristics of Mountain Gorilla Vocalizations." With your team, answer the questions below.

### Questions to Answer

1. A group of mountain gorillas are busily feeding in a lush vegetation site. The day is warm and sunny. Several gorillas have finished eating and are settling down for an afternoon's nap. What vocalization is most likely prevalent? Why?
2. *Group 5* is traveling to a new area to forage for food. Marchessa and Effie have a dispute over some food. What vocalization takes place between them? Baby Tuck is left alone as Effie disputes with Marchessa. What kind of vocalization will Tuck use?
3. *Group 5* encounters *group 4*. Describe Beethoven's possible vocalization and mannerisms.
4. *Group 5* is busily foraging and resting. Beethoven sees men coming at him with spears. Describe Beethoven's vocalization to his group.
5. Dr. Fossey begins to hear a series of "wraagh, wraagh" sounds. Propose what might be occurring in *group 5*.
6. When Dr. Fossey approached the gorillas, what type of vocalization do you think she used? Why?
7. Describe three possible situations between members of *group 5*. Describe the kinds of vocalizations you might hear.

