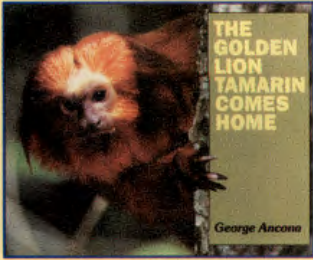


The Golden  
Lion Tamarin  
Comes Home



# Rescue in the Rain Forest

The "home" in *The Golden Lion Tamarin Comes Home* is the coastal rain forest of Brazil. It provides a **habitat** for a great variety of animals, even though, as the map on the right shows, the rain forest has been reduced to a fraction of its original size. How did this happen?

When human beings move into an area, their need for food and shelter may conflict with the needs of animals who make their home there. As they lose their habitat to human development, animals like the golden lion tamarin may even face **extinction**. This creates a **dilemma**: how to allow for development without threatening wildlife?

There is hope. The **reintroduction** of **captive** tamarins into the wild may help their numbers grow in what remains of the rain forest. Who is doing this work? Where does the work begin and end? The answers are in *The Golden Lion Tamarin Comes Home*.



California  
Standards

Standards to  
Achieve

Reading

- Discern main ideas (R2.3)
- Inferences/generalizations (R2.4)





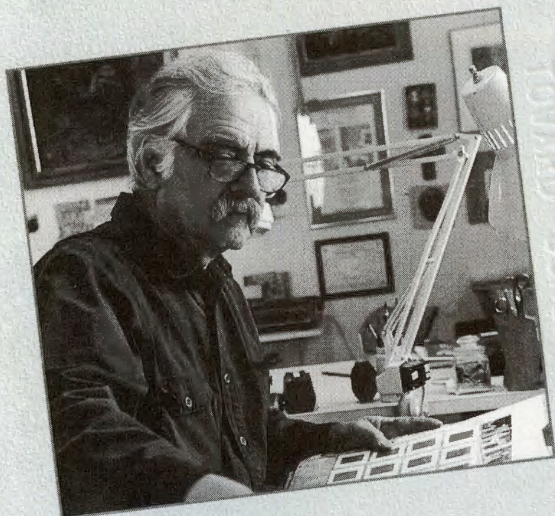
### Coastal Rain Forest of Brazil

■ Before Europeans arrived

■ Today







**Meet the  
Author/Photographer**

# George Ancona

**Future Traveler:** As a boy, Ancona visited the East River docks in New York City with his father. Watching freighters from around the world sparked an interest in other countries.

**Study Abroad:** While in art school, Ancona traveled to southern Mexico, where he met his parents' families for the first time.

**Early Work:** Before Ancona became a photographer, he worked for a carpenter, a mechanic, and at an amusement park.

**In His Own Words:** "I think people are fascinating and I love to find myself in strange places, meeting people, getting to know them and learning about them. This helps me to learn about myself."

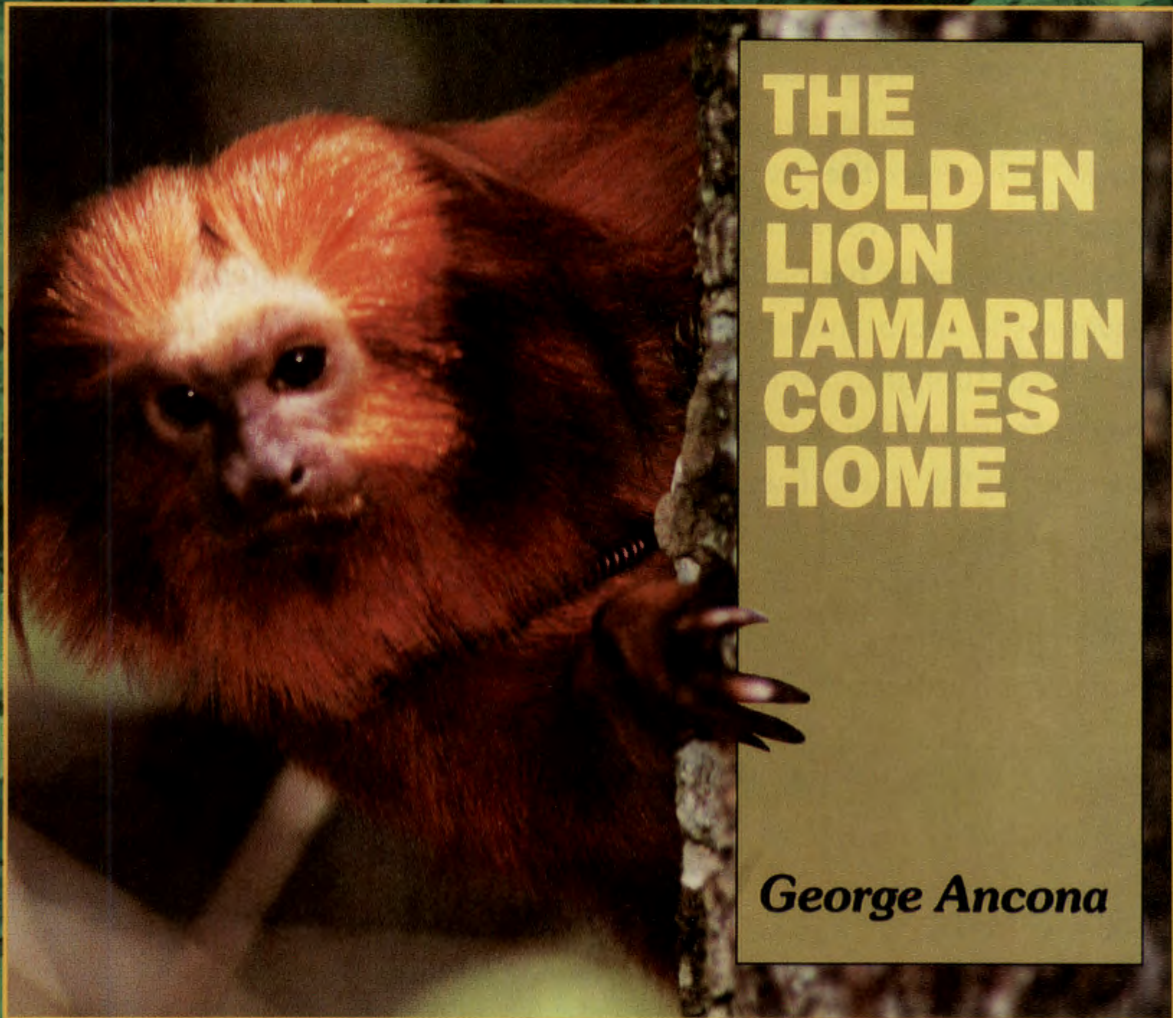
**Other Titles:** Ancona's books reflect his love of travel and other cultures. *Turtle Watch* and *Carnaval* also take place in Brazil, and *Pablo Remembers* was photographed in Mexico.

**Internet**



To find out more about George Ancona, log on to Education Place. [www.eduplace.com/kids](http://www.eduplace.com/kids)





# THE GOLDEN LION TAMARIN COMES HOME

*George Ancona*

## Strategy Focus

As you read, **monitor** your understanding of how people are trying to help the golden lion tamarin. If necessary, reread or read ahead to **clarify**.



**W**histling softly as she scans the upper canopy of leaves, Andreia Martins leads her sister Carolina and brother Renato through the rain forest. It is hot and humid. The small group is surrounded by the teeming life of the tropical forest.

Birds sing, insects buzz, cicadas chirp. Nearby they hear a tractor engine, cattle lowing, a rooster, and men at work on a *fazenda*, or "farm." They pick their way carefully along the narrow path to avoid the sharp spines of leaves and the tangle of vines underfoot.

Andreia raises her hand, and the group stops. Above them the leaves rustle and branches sway as streaks of orange-gold flash in the speckles of sunlight. "*Micos*," she whispers to the children, and points to the cluster of golden lion tamarins staring down at them from the branches of the trees. Their high-pitched whistles and squeaks pierce the air.

"Mico" is short for *mico leão dourado*, the Portuguese name for the golden lion tamarin of Brazil. About the size of a squirrel, the monkey is named for its color and lionlike mane.







The golden lion tamarin is found only in the coastal rain forest of southeastern Brazil. Flanked by a mountain range on the west and the Atlantic Ocean on the east, the forest once stretched for 1,500 miles.

When the first Europeans arrived, they cut down the trees to build their homes and towns. They burned the rest of the forest to clear the land for settlements, for coffee and sugar plantations, and for pastures on which to graze livestock. The city of Rio de Janeiro grew and spread. Today only 2 percent of the original rain forest remains, scattered like small islands in a sea of farms and towns.

As its native habitat disappeared, so did the golden lion tamarin. By 1960 there were so few left that Dr. A. Coimbra-Filho, a Brazilian biologist, warned of its imminent extinction. He urged the Brazilian government to set aside the remaining forest as a wildlife refuge. The Poço das Antas Biological Reserve, a protected habitat, was established in 1973.

The tall trees in the tropical rain forest offer the tamarins food, protection from predators, and a network of routes through their territories. The cupped centers of bromeliads, plants that live in host trees, hold water and insects for the monkeys to drink and eat. Tamarins are omnivorous. They eat not only fruits, seeds, and nuts but also bird eggs, insects, frogs, and snakes, which provide additional protein.

The rain forest is alive both day and night with a diversity of wildlife. Among the trees can be seen sloths and other species of monkeys.

Tamarins must always be on guard for predators. Above them fly owls, while on the ground prowl ocelots, feral dogs, and — the most dangerous of all — humans. Poachers trap the tamarins and sell them in illegal animal markets for high prices. If discovered, these pets are confiscated and returned to the reserve.





Today golden lion tamarins are bred in many zoos around the world. These animals do not have the skills to survive in the wild on their own. A captive tamarin lives in a confined space, climbs sturdy poles that don't move, and is served its food in a bowl at regular hours by a familiar keeper. It has never leaped from a vine to a delicate tree branch that sways under its weight. It doesn't know how to forage for its food. It hasn't experienced weather changes — cold, rain, thunder, and lightning. It would be killed by predators or get lost and starve. It needs the help of humans and that of native-born tamarins to learn to survive independently in its original habitat.

Since 1983, Dr. Benjamin Beck and his staff at the National Zoological Park in Washington, D.C., have been trying to find ways to prepare captive-born tamarins for their return to the rain forest. Dr. Beck coordinates the reintroduction of the tamarins into their natural habitat for the Golden Lion Tamarin Conservation Program.

The tamarins being reintroduced often come from other zoos and are examined carefully when they arrive at the National Zoo. A different number is tattooed onto each animal's leg and entered into a record of all the tamarins born in captivity.





As an experiment, tamarins are being permitted to live free in a wooded section of the zoo. Because they are territorial, they stay close to their nesting boxes, which are wired vertically high in the trees. The nesting box is a modified picnic cooler with two chambers inside, one above the other. In the top chamber is a hole through which the tamarins enter and leave. Should a predator attack, the tamarins huddle in the lower chamber, where a groping paw cannot reach them.

A tamarin claims its territory by rubbing a scent from its body onto tree limbs. The ones that will someday be reintroduced into the wild wear radio collars that transmit a constant beep, enabling the keepers to locate them in the woods. The tamarins are fed by food trays raised to the height of their nesting boxes.

Ropes are hung to simulate vines and to provide a network of treetop highways for the monkeys. The ropes and the nesting boxes are often changed while the tamarins are asleep to help prepare them for the unexpected.

The dilemma for the zoo is how to protect the animals and still expose them to the experiences and dangers they will meet in the wild.



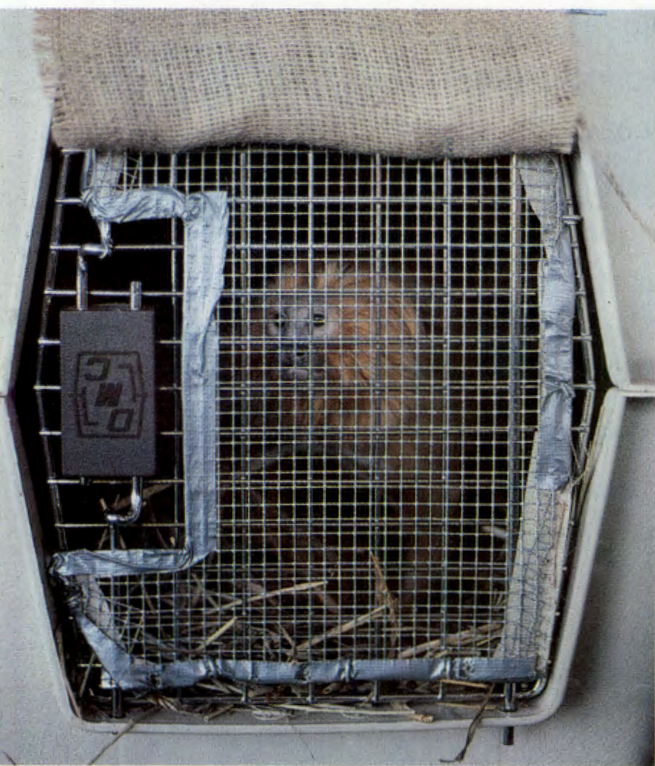


Observers watch and record everything the monkeys do. To tell the tamarins apart, they mark the tails with hair dye. Each member of the tamarin family has its own distinctive tail marking.

When the time is right, the monkeys are shipped by air from Washington, D.C., to Rio de Janeiro.

Andreia Martins is one of the many people in Brazil and abroad working to save the golden lion tamarin. She coordinates a team of observers who roam the rain forest, tracking tamarins and observing their behavior. The team's notes are sent to the National Zoo, where scientists in the conservation program use them to help prepare captive-born tamarins for their reintroduction into the rain forest.

In Rio de Janeiro, Andreia and Dionizio Moraes Pessamilio, director of the reserve, carry bags of fruit when they meet a shipment of seven tamarins that arrives from Washington, D.C.





After the overnight flight, the squealing monkeys are hungry, and they gobble up the pieces of fruit that Andreia and Dionizio squeeze into the cages. Then the noisy cages are loaded into a van for the two-hour trip to the reserve.

Golden lion tamarins tend to be monogamous, which means a male and female will live together and mate only with each other. This shipment includes a family of four from one zoo: the mother, the father, and a pair of one-year-old twins, one male and one female. The other three tamarins come from three different zoos and will be used to create new families.

Because there are so few tamarins left in the wild, they keep reproducing among themselves. Introducing animals that are born in distant zoos helps to strengthen the gene pool of the native tamarins. Genes carry the characteristics of a species from one generation to the next.

The van and the observation team meet on a narrow road in the forest. The tamarins are unloaded and carried into the woods, where large cages await the immigrants. They are released into the cages, where they will grow accustomed to their new surroundings.







Everything is different: the heat, the tall trees, the noises. The tamarins will get to know their potential prey, such as the insects and small reptiles and mammals that scoot in and out of their cages. Beyond the cages stalk their predators, which they must learn to avoid.

The reserve is located a few kilometers from the town of Silva Jardim, where Andreia lives with her mother and ten brothers and sisters. Every morning Andreia and her sister Arleia, who is also an observer, cut up fruit and canned marmoset food. The canned food, which provides needed protein, is exactly what the tamarins ate in the zoo.





The pieces of food are then stuffed into feeders made of plastic tubes wired together to make a square, with holes drilled along the tubes. Andreia crams bits of food into the holes. This encourages the tamarins to use their long fingers and nails to extract the food, just as they will probe in trees and rotted logs once they are released.

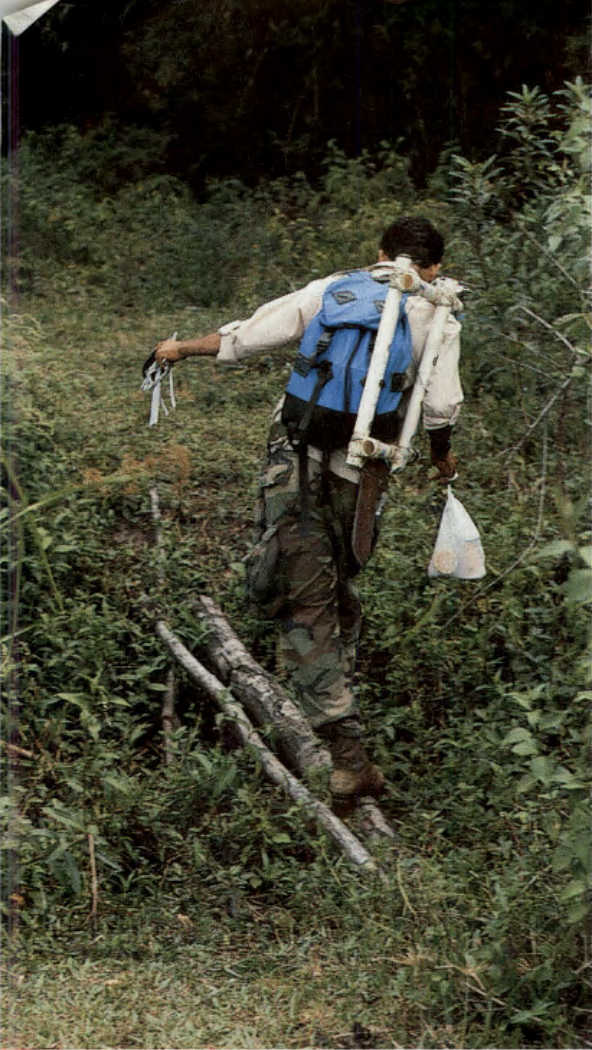
Meanwhile, Arleia fills canteens with water. By 7:30 A.M. the van is loaded with feeders and canteens. The sisters tuck their camouflage pants into their socks to keep out insects and jump into the van.

The Golden Lion Tamarin Conservation Program has provided many jobs for people in Silva Jardim. A small town, it is located near the main highway to Rio. The *praça*, or "plaza," with its tall shade trees, bandstand, and playground, sits in the center of town.

Andreia stops at the plaza to pick up more of the observation team. While waiting for them to arrive, she works out the assignment for each one. Every day, an observer is assigned to a different group of tamarins.







The observation team is split into two groups. One group goes to the reserve, while the other goes to the fazendas where tamarins have been reintroduced. Originally the *fazenderos*, or "farmers," were hesitant about accepting the monkeys on their forestland. But now they speak of them as "my micos."

Andreia drives through the forest, stopping every so often to drop off an observer. Each carries a canteen and a machete on a belt, as well as a backpack with food, rain gear, a snakebite kit, and mosquito repellent. Everyone carries a compass, a digital watch, a notebook, and an antenna and radio receiver for tracking the tamarins. A full tamarin feeder, carried on the shoulder, completes the equipment each observer takes into the woods.

Today the newly arrived tamarin family of four will be released. They have spent enough time in the large cage to become accustomed to the climate of the rain forest. In addition to its own tail marking, each monkey has another mark on its body that identifies the family to which it belongs. One tamarin in the group wears a new radio collar.

Andreia and Paulo Caesar, another observer, carry the nesting box into the woods. They have selected a tree in an area that the tamarin family can claim as its own. Paulo Caesar nimbly climbs the tree with a rope and wire on his shoulder. When he reaches a fork about twenty feet above the ground, he drops one end of the rope to Andreia. She ties the end to the nesting box, and Paulo Caesar hoists it up and wires it in place. With the rope draped over a branch, he drops both ends to Andreia so she can raise a feeder up to the box. Finally, Paulo Caesar uncovers the opening of the nesting box and slides down to the ground. Then they both sit down to see what will happen.





A young tamarin pokes its head out of the box, looks around, and squeals. Then the other golden heads appear to take a look. After some tentative moves, the juvenile darts out to the feeder, pokes into it, and stuffs food into its mouth.

Below, Andreia glances at her watch and writes in her notebook. For the first hour, she describes what the entire group is doing — the way they eat, socialize, and rest, and the sounds they make. Then she notes what each member of the family does.

In order not to give the tamarins human characteristics, the observers do not give them names. Instead they identify the monkeys by letters that represent the zoo they came from and numbers that symbolize their position in the group. For example, KO1 is the adult female from the zoo in Cologne, Germany, KO2 is the adult male, and KO3 and KO4 are their offspring.





At first the newcomers stay close to their nesting box. Away from their new home, they may become disoriented and get lost. Alone, a newly reintroduced tamarin can die of starvation, become injured, or fall prey to a predator.

This is when the tamarins need the most help. They are given plenty of food and water. Oranges and bananas are hung on branches for them. Because the tamarins have always eaten chopped fruit, they don't know how to peel whole fruit. The bananas are partially opened for them, and the oranges have "windows" cut into them.

As the months go by, the feeder is placed farther from the nesting box. Fruits are placed on saplings that will sway when the tamarins leap onto them.







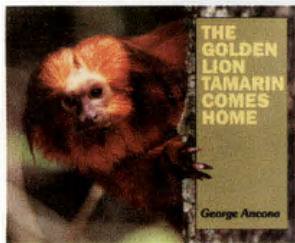
When the tamarins begin to forage and eat natural foods, the observers reduce their visits to three times a week, then to once a week, and finally to once a month. When the tamarins become independent, all feeding is stopped.

Bit by bit, the family becomes familiar with the rain forest, the younger ones adapting faster than the parents. But only about 30 percent of all reintroduced tamarins survive more than two years. Some die by eating poisonous fruits or snakes. Some are killed by Africanized, or "killer," bees, which sometimes take over a nesting box to make a hive. The infants that are born in the wild fare much better than the reintroduced tamarins. They are more acrobatic and confident as they leap from limb to limb. They are able to deal with surprises, and they don't have to unlearn behaviors that were adequate for zoo life but are useless in the forest.

*The goal of the Golden Lion Tamarin Conservation Program is to have two thousand tamarins living in the wild by the year 2025. For this to happen, the people who live in and around the rain forest have to help protect the tamarins and their environment. That way, human beings and tamarins will be able to share the Brazilian landscape for years to come.*



# Responding



## Think About the Selection

1. Do you think the settlers' reasons for cutting down the rain forest were good ones? Why or why not?
2. Why do you think tamarins born in the wild do better than tamarins who return to the rain forest after living in captivity?
3. Find evidence in the text to support this idea: Tamarins need the most help just after they return to the rain forest.
4. Do you agree with the observers' decision on page 639 not to name the tamarins? Why or why not?
5. Would you want to be part of a conservation program? If so, what would you like to do? If not, why not?
6. Do you think the efforts to return tamarins to the forest are worthwhile, even though only 30% of them survive? Explain.
7. **Connecting/Comparing** Which animal's survival do you feel more hopeful about — the grizzly's or the golden lion tamarin's? Why?



### Informing

## Write a Fax Message

A conservation team leader might send a fax to tamarin observers. Write a fax that tells what jobs they will do, what equipment they will need, and where and when they will be picked up.

### Tips

- Keep your message brief and clear.
- Include a cover page giving your name and the name of the person you're faxing.



## Science

### Make a Fact Chart

Use the information in the selection to make a chart of facts about the golden lion tamarin. Create rows with category headings such as *Size*, *Color*, *Habitat*, *Food*, *Predators*, and *Family*. Then fill in the rows to show what you have learned.

**Bonus** Make a similar fact chart for another kind of monkey, and then compare the two animals.

Golden Lion Tamarin	
Size	
Food	
Color	

## Listening and Speaking

### Give a Talk

Are you concerned about the golden lion tamarin? Do you agree that it should be returned to the rain forest? Use the selection to prepare a talk about the Golden Lion Tamarin Conservation Program and present it to your class.

#### Tips

- Use note cards instead of writing out your whole talk. Practice using your notes.
- Speak at an even pace. Be sure that everyone in your audience can hear you.

## Internet

### E-Mail a Friend

What did you learn from reading *The Golden Lion Tamarin Comes Home*? What did you think about what you read? Send an e-mail message to a friend, telling about the selection.



### Skill: How to Read a Technology Article

#### Before you read . . .

- Identify the **topic** of the article.
- Look for **diagrams** or **illustrations** that help explain the technology.

#### As you read . . .

- If you come to an **unfamiliar term**, reread or read ahead to find its definition.
- If you come to an **unfamiliar abbreviation**, scan back to the first time the full name appears.

California  
Standards

### Standards to Achieve

#### Reading

- **Understand text features (R2.1)**
- **Analyze literary forms (R3.1)**

# Tuning in on Animals

**Golden lion tamarins are not the only species scientists are listening to. New technologies have changed the way we keep in touch with animals, and have taught us surprising things about their behavior.**



**I**n the fall of 1994, a Florida manatee, an endangered sea mammal, was spotted off the coast of Maryland. Scientists know that manatees migrate north over the summer, but they were puzzled that this one had not returned south yet. Clearly there was a lot more they needed to know about manatees. They caught the animal, but before bringing it back to Florida waters, they fitted it with a special radio collar around the base of its tail. From this collar, the scientists could track the manatee's movements and location and learn more about manatee migration.

Animal tracking means following the location of an animal as it walks, runs, swims, or flies. By tracking many single animals over time, scientists can learn how a whole species migrates with the seasons. They also learn details about animal behavior that may help them in protecting endangered species.



## Tags and Telemetry

The simplest way to track an animal is to follow one and keep it in view. But physically tracking an animal is not always possible. (Think of how quickly a bird can fly out of sight.) So, almost two hundred years ago, researchers began catching individual animals, fitting them with tags, and letting them go. This method was better, but still flawed: if scientists wanted to learn about the animal, they would have to catch it again later.

The next development was *telemetry* — using radio signals to track animals.

Here's an example of how it works. A single animal, such as a lynx, is fitted with a small device that transmits a radio signal. Using a receiver, scientists pick up the signals from a distance on land or from an airplane. Over days or weeks, they chart where the lynx goes. This method is still used today, but it has limitations. The receiver must be within a few hundred yards of the transmitter. And telemetry won't work everywhere. Radio signals cannot penetrate heavy jungle vegetation or below the surface of the ocean.



Once this lynx is fitted with a radio transmitter (left), it can be tracked using a portable radio antenna and receiver (above).



## Satellite Signals

Perhaps the most accurate and powerful type of animal tracking today is the Global Positioning System (GPS). This system uses 26 satellites orbiting 11,000 miles above the earth to follow the animals being tracked.

Instead of carrying a transmitter, a waved albatross, for example, would be fitted with a receiver. At regular intervals, the receiver automatically selects the four GPS satellites that are closest to the albatross. The receiver picks up the signals from these satellites and passes them on to a computer. The computer then calculates the position of the albatross by processing the information collected from the four satellites. The location that the GPS system calculates is accurate, on average, to within 30 meters (33 yards).

Satellite tracking has revealed fascinating and important information about many kinds of animals. Scientists have learned that albatross parents fly thousands of miles to find food for a single chick.

**To feed their young, albatrosses scan the ocean for fish. Trackers scan for albatrosses.**

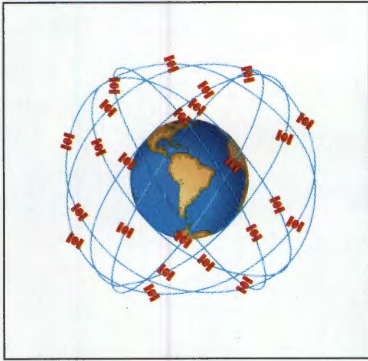
They have discovered that leatherback turtles swim more than a thousand miles in the open sea, along routes that they return to again and again. And studies have shown that great white sharks hunt around the clock, not just in the daytime as researchers had previously believed.

Scientists are constantly working on improvements in animal tracking. One group of researchers fits sharks with special tags that relay information to receivers on buoys floating in the water. Radio transmitters as light as seven-tenths of an ounce can be attached to even very small birds, and scientists are working to make them still lighter.

Perhaps the most exciting aspect of present-day animal tracking is that, using the Internet, anyone can find out the most up-to-date information that scientists are gathering. By logging onto the Web sites of animal trackers, you can learn where an animal goes each month or week, or even every day. And maybe the next time a manatee surfaces in an unusual place, you'll be one of the first to know.







In GPS tracking, 26 satellites with transmitters orbit the Earth (left). At regular intervals, the four satellites closest to a waved albatross (below) send signals to the bird's receiver, which records its location.

Using this data, biologists with the Albatross Project are able to track the flights of waved albatrosses with great accuracy from the birds' breeding site on tiny Española, one of the Galapagos Islands off the coast of Ecuador.

