



## Tour de Turtles 2010 Satellite-Telemetry FAQ Sheet

### What is satellite telemetry?

Satellite telemetry involves following an object on the Earth's surface through the use of orbiting satellites. Researchers at Sea Turtle Conservancy use this technology to track the migratory patterns of sea turtles in the Caribbean and Atlantic Oceans. Satellite telemetry allows researchers to obtain up-to-date location data every time the sea turtle rises to the surface for air.

### How are the turtles' movements tracked?

A Platform Terminal Transmitter (PTT) is attached to the back of a sea turtle. The PTT sends a signal full of information to an orbiting satellite each time the turtle surfaces. The satellite re-transmits the data to a receiving station on Earth. Researchers can then access this information through their computer.



### How are the transmitters attached?

Satellite transmitters can be attached several different ways. For hard-shell turtles, such as Green, Loggerhead or Hawksbills, the Marine Epoxy Method or the Fiberglass and Resin Method are used. Both methods are safe for the turtles, neither hurting their shells nor restricting their movements in the ocean. Transmitters are designed to safely fall off the turtles after about a year and a half. Leatherback turtles, which lack a hard shell, require a different method because of their size and the texture of their carapace. A harness that goes over the shell is used to secure a transmitter. The harness tends to last longer than the Epoxy or Fiberglass methods, allowing researchers to track leatherbacks for up to two years before the harness falls off harmlessly.

### How does satellite telemetry work?

- The small, low-wattage PTT is attached to a turtle.
- The PTT is controlled by a microprocessor, which is connected to a computer.
- The computer tells the microprocessor how to store information and when to transmit the information to polar orbiting satellites, which are used to track global weather patterns and animals.
- Attached to these satellites are special instruments designed to listen for transmitters.
- Each satellite orbits Earth six to eight times a day, for 10 minutes each.
- Once the transmitter surfaces, it takes three to five minutes for the satellite to determine the location of the transmitter and send it to a computer. A sea turtle must come up for air for at least three minutes to be detected by the passing satellite.
- Sea Turtle Conservancy biologists use these tracking patterns to determine where sea turtles need more protection and to understand the sea turtle species' unexplained migration patterns.