

TELEMETRY IN THERIOLOGY

Summary

This article presents the subject connected with wildlife researches, especially with tracking mammals in their natural environment. Telemetry is the most advanced method used in wildlife studies. It is a technique of gathering information about animals by using radio waves. It allows to accumulate data on location about an individual animal over time.

Three distinct types of telemetry are in use today:

- the very high frequency radio-tracking (VHF),
- satellite tracking,
- Global Positioning System tracking (GPS).

In VHF radio-tracking an animal wearing a transmitter can be tracked by a researcher with a receiver and directional antenna.

The satellite telemetry also uses a special transmitter attached to an animal. The device sends an ultra high frequency signal to satellites. The satellites calculate the position of the animal based on the Doppler effect and send this information to the receiver on the ground.

The GPS tracking, in contrast to the two previous methods, is based on a radio receiver, not transmitter, attached to the animal. The receiver picks up signals from several satellites and calculates the current position of the animal. This data can be stored or immediately send to the researcher. The sending of information can be made by two ways: first – by using another satellite and second – by using an antenna on the ground.

The VHF radio-tracking is the standard method used in researches on mammals, therefore the paper is concentrated on this technique. It describes: essential equipment, methods of tracking and possibilities of application of the VHF radio-tracking in theriology, especially in Poland.

The basic components of the radio-tracking system are: a transmitting subsystem consisting of a radio transmitter, a power source, a propagating antenna; and a receiving subsystem including a “pick-up” antenna, a signal receiver and power supply.

In the VHF radio-tracking transmitting subsystem there are some electronic components inside the transmitter to create the radio signal of special, individual frequency. As a source of power there are usually used lithium batteries or silver oxide batteries or solar cells, but not so often. The solar batteries can be used only for animals who live in wide open areas. The life of all transmitting subsystems is depended on the life of the batteries and it is connected with the size and weight of the transmitter. Very important thing is the method of attachment. There are lots of solutions. The most popular are collars, but there are also harnesses, glue-one transmitters or implantable transmitters.

In Poland, telemetry is mainly used in many wildlife studies, to monitor the populations of big predators – wolf and lynx, other animals like European bison and roe deer, and small mammals like doormouse or common vole and many others.

The radio-tracking permits to complete information such as: size of the home range, migration, spatial organization of population, breeding behaviour, and main causes of death, without any interference in the animals normal behaviour. The implantable transmitters are also able to collect many physiological parameters.

The development of radio-tracking is necessary to complete our knowledge about biology and ecology of animal species, because it is the basis of effective protection of nature.