



MINNESOTA ZOO™
Changing how you see the world

Geography: Tiger Triangulation Pre-visit Activity

MN Graduation Standards supported:

Grade 7 Strand I.A
The student will understand that science is a way of knowing about the world that is characterized by empirical criteria, logical argument and skeptical review.

Grade 8 Strand I.B
The student will understand that scientific inquiry is used by scientists to investigate the natural world in systematic ways.

Vocabulary:

Home range
Triangulation

Links:

<http://www.mnzoo.com>

<http://www.learner.org/jnorth>

http://www.wolf.org/wolves/experience/telemsearch/vtelem/telem_intro.asp

<http://www.wildmesquite.org/wolf.htm>

Background Information:

Scientists around the world use radio telemetry to track movement of animals to determine such things as home ranges and migration patterns. Data collected can help scientist learn more about habitat needs, interactions among individuals of the same species and interactions with different species. The more information scientists can collect on animals the better they can understand and help protect animals in their natural habitat.

In this activity, you will take the role of the scientist tracking an Amur tiger and wild boar in a preserve in Russia. Scientists can track tigers using radio telemetry from airplanes, satellites and on the ground. For this activity, you will be using data collected on the ground along an old logging road. The method used to pinpoint an animal's location is known as "Triangulation".

In triangulation, animals are captured and fitted with a radio transmitter collar set to a specific radio frequency and then released. The scientists can then use an antenna and receiver set to that collar's specific radio frequency to determine the location of that animal. Scientists go to at least two locations to take directional readings. The animal is located where the two directional lines cross.

Materials:

1. Radio Telemetry Article
2. Copy of Tiger Triangulation map
3. Two colored pencils
4. Ruler
5. Calculator

Procedure:

1. Have the students read Radio Telemetry article on the Amur tigers taken from the Minnesota Zoo website.
2. Use the data from Amur tiger Radio Collar #56. (Use one color for the tiger and another color for the wild boar).
3. Place your ruler on the antenna at Point A at 90o; lightly draw a line up from the antenna.
4. Using the same color, place your ruler on the antenna at Point B and draw a line at angle 35o. Make a dot where the two lines meet and record the time of 5PM.
5. Repeat these steps for all the times recorded for the tiger.
6. Connect the dots that were made to show the path of your tiger.
7. Change color pencils and repeat the procedure for the wild boar.
8. Be sure to make note in a legend on your map what color indicates the path of the tiger and what color you used for the path of the wild boar.

Questions:

1. How far did each animal travel in this time period? How fast did the tiger travel (use the scale on the map)
2. Describe what you think the tiger and the boar were doing this evening. Compare the patterns of their movements.