Chapter 6. Field Trip to Sandia Mountains.

Outline of activities:

1. Travel to Sandia Mountains
2. Collect forest community data along elevational gradient
3. Look for birds, wildlife, flowers, etc. along the way
4. Have snacks at crest house
5. Head home

What you should get out of this trip:

You should get a sense of what an ecological gradient looks like and be able to recognize the ecological conditions that lead to vegetation formations on the landscape. You should begin to see how data is collected in the field, from identification of species to working technically with others. You should see that organisms are not evenly spread around the landscape and that topography, vegetation, water, and weather influence the movement and occurrence of organisms.

Handouts:

1. Identification key of tree species

Field Trip Schedule:

- 07:00 – meet at Castetter Hall at to organize and load up
- 07:15 – leave promptly
- 08:00 – arrive at stop 1 (elevation 6,560 feet)
- 09:30 – arrive at stop 2 (elevation 7,340 feet)
- 10:45 – arrive at stop 3 (elevation 8,400 feet)
- 12:00 – stop for lunch
- 12:30 – arrive at stop 4 (elevation 10,000 feet)
- 13:30 – arrive at stop 5 (elevation 10,560 feet)
- 14:15 – arrive at crest
- 15:00 – head home

Introduction

Along the eastern edge of the Rio Grande Valley run a series of north-south trending mountain ranges. Most of these mountains were formed when the area uplifted 29 million years ago and a fault caused the valley on the west to drop down, leaving the mountains on the east jutting far above the fallen western blocks. One of these ranges, the Sandia Mountains near Albuquerque, still rises nearly ~1800 meters (~6,000 feet) above the valley floor.

The physical environment changes from the valley bottom to the top of the mountains. Temperatures drop, wind speeds increase, and the amount of precipitation increases. The plant and animal communities change as well, from desert grasslands and shrublands in the valley through woodlands, to in the highest places alpine meadows.

During the field trip we will drive from Albuquerque to the Sandia Crest. It is about a 1.5-hour drive total. We will head east on I-40 to the Tijeras exit, head north on Hwy 14 until we come to the intersection with the crest road. We will go west up the crest road, stopping at various locations.

During the drive we will observe the geology, vegetation, landscape structure, and urban development of the Sandia/Manzanita area. We are going from a urban area, through suburban sprawl and rural communities, and we are going to see how the landscape varies along the way. We want to notice at least the following things:

1. The gradual addition and loss of plant species, particularly grasses, junipers, shrubs, and taller trees.
2. Differences in vegetation type on north versus south and east versus west slopes.
3. How vegetation is different in the riparian areas from the upland areas.
4. How rock outcrops are related to what type of vegetation is growing.

When we reach the forest boundary, we will stop to collect data at five locations along the road (see **Chapter 7. Energy and Water.** for details). In addition to that data collection, we will be keeping track of bird species we see along the drive and at each stop. You will take notes about the species you see and any observation you think is worth remembering.

During the fall, raptors and songbirds are migrating south for the winter. Because the mountains receive relatively heavy precipitation during the late summer months, the high elevation habitats tend to have lots of bugs to eat when September rolls around. Therefore, many migratory songbirds stop to refuel along the mountain ranges, including the Sandias, as they migrate south for the winter. We may see dozens of different species, including many that do not breed in New Mexico, foraging in the oaks, pines, and aspens along the peak or even on the lower slopes. Many raptors (predatory birds like hawks) also migrate along the mountains. They use the updrafts caused by the wind flowing up the mountain slopes to soar south without spending much energy. Some of these species will prey on the songbirds migrating through the area, others will have few opportunities to eat during their migrations (e.g., Osprey, which is a fish specialist). Therefore, we will see how the topography has a major influence on how the vegetation develops across the landscape, and we will see how mobile animals concentrate where the resources are, as a result, relatively abundant.

What to bring on the trip:

- O binoculars (borrow if you do not have any)
- O field guides
- O field notebook
- O cell phone (optional)
- O pencils and pens
- O camera with batteries (optional)
- O sunglasses
- O daypack
- O water bottle
- O sun hat
- O warm hat
- O jacket
- O rain jacket
- O boots
- O sunscreen
- O first-aid kit
- O bee-pen if you are allergic to bee stings
- O packed lunch
- O thermos of your favorite hot beverage (optional)
- O between-meal snacks (energy bars, sodas, etc.)

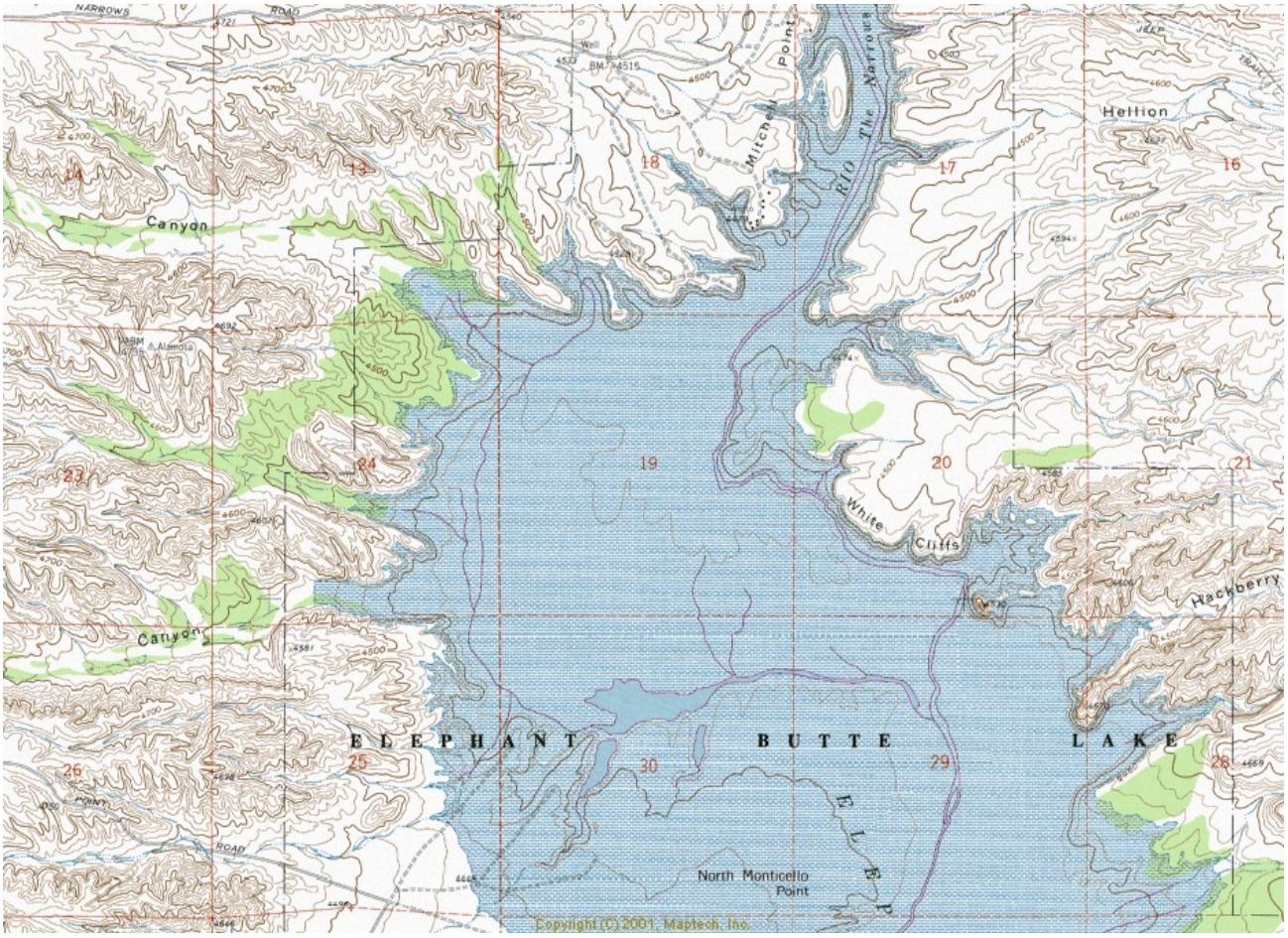

Figure 6.1. An example of a topographic map. This segment of map shows Elephant Butte Lake in southern New Mexico. Contour lines on the map show paths of constant elevation. Straight lines indicate simple slopes, but convoluted pathways indicate complex terrain. When contour lines are close together, slopes are steep, and when they are far apart, slopes are shallow. An easy way to imagine how this works is to think of the shore of a lake. Notice how the water of the lake parallels closely contour lines of the upland areas – the lakeshore is at a constant elevation.

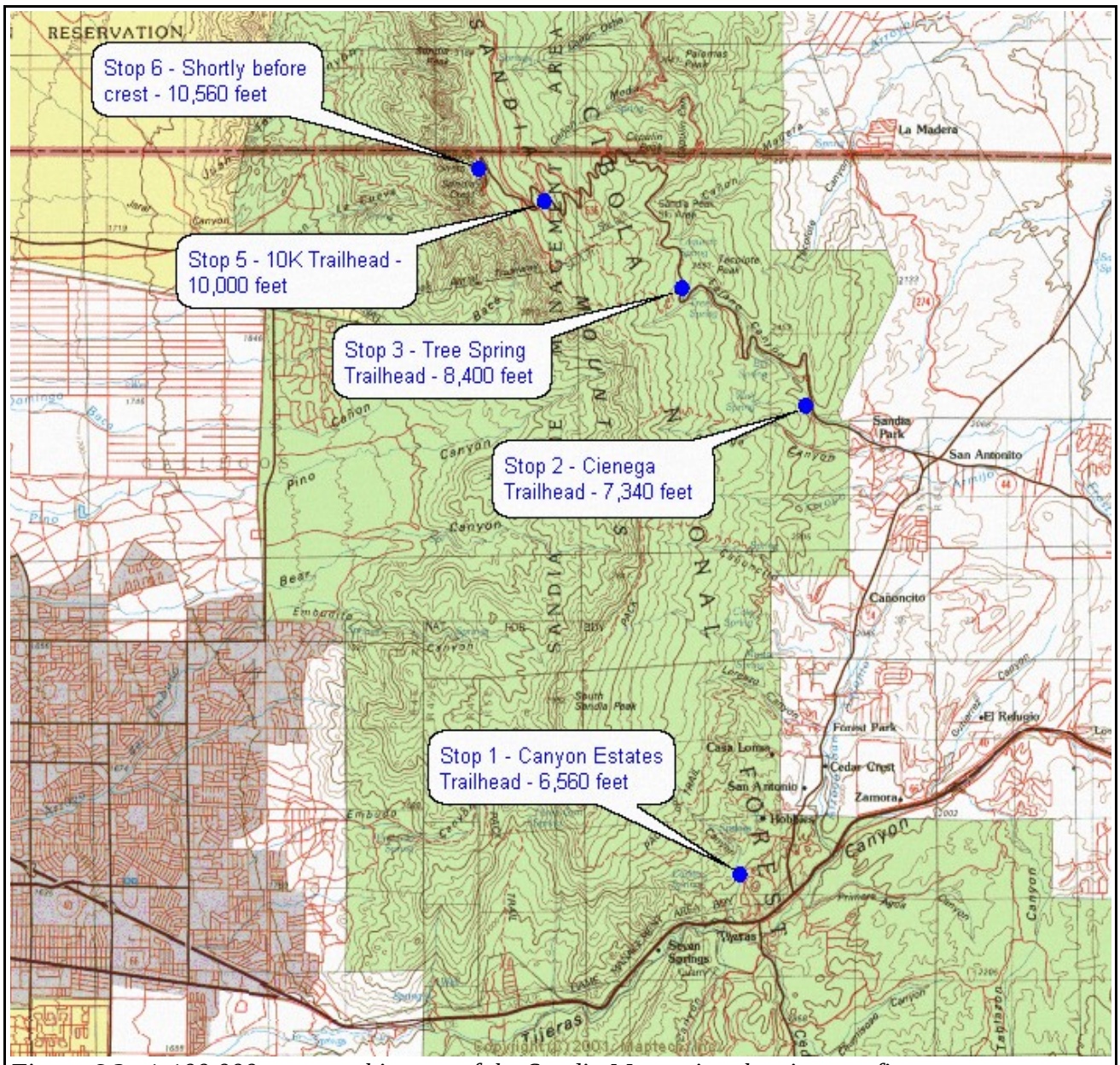

Figure 6.2. 1:100,000 topographic map of the Sandia Mountains showing our five transect locations and the elevation.

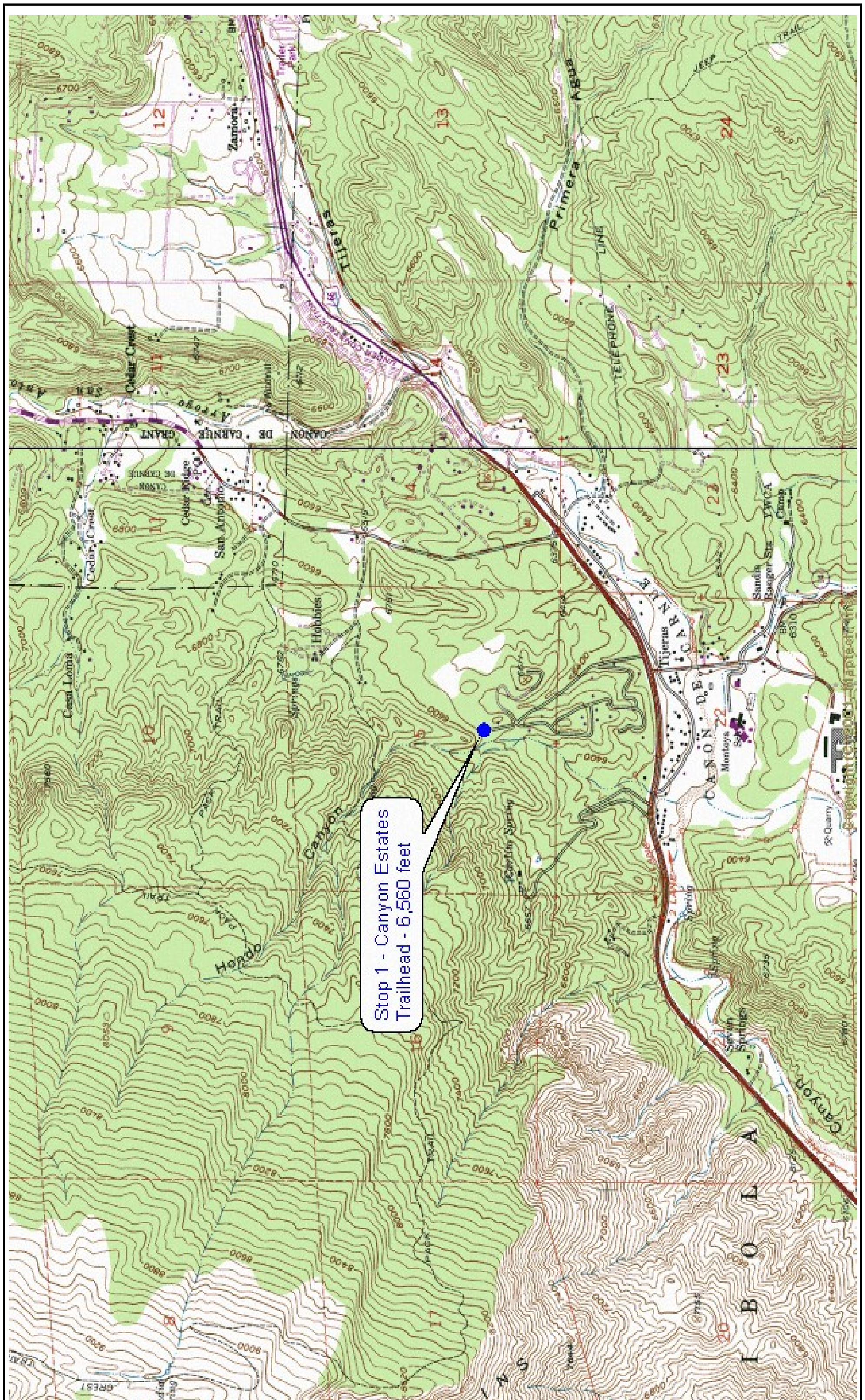

Figure 6.3. Smaller scale segment of a 7.5 minute quadrangle in the area of our first stop.