22. *Mapping Species Richness*

Description: Students first map their campus (or backyard, park, etc.) to determine where animals occur. Then, they color a map that shows how many species of birds live in different areas of New Mexico, and by overlaying maps containing other information, they learn what factors are important to avian distribution.

Objectives: Students will learn that in the arid Southwest, the highest number of kinds of birds (species richness) live along rivers (i.e., places with water).

Materials:

- Mapping Species Richness map for each student to color
- Mapping Species Richness data sheet for each student
- Colored pencils
- Copies of the following maps: New Mexico Rivers and 1,000-foot (300 meters) Elevation Contours (included in this activity). These could be on clear acetate, to overlay on the students' maps and/or show on an overhead, or students can hold paper copies up to a window to compare. If you have access to other maps, such as the New Mexico highway map, NM vegetation maps, NM geology maps, etc., they may be used as reference.

Phenomenon: Birds are found in different habitats in New Mexico.

Lesson Question:

- *Why does a bird live in one place and not another?*

22. Mapping Species Richness

Grades: 6–12

Time: one class period for mapping outside (Part 1); two class periods, plus homework, for mapping species richness (Part 2)

Subjects: science, math extension

Terms: *biodiversity, community, extirpated, flyway, riparian, species, species diversity, species richness, vagrants*

New Mexico STEM Ready! / Next Generation Science Standards

NGSS DCIs

MS.LS2.A Interdependent Relationships in Ecosystems
MS.LS2.C Ecosystems Dynamics, Functioning & Resilience
MS.ESS3.D Global Climate Change
HS.LS2.A Interdependent Relationships in Ecosystems
HS.LS2.C Ecosystems Dynamics, Functioning & Resilience
HS.LS4.D Biodiversity & Humans
HS.ESS3.D Global Climate Change

NGSS CCCs

Patterns; Cause & Effect: Mechanism & Explanation

NGSS SEPs

Asking Questions & Defining Problems; Developing & Using Models; Analyzing & Interpreting Data; Constructing Explanations & Designing Solutions; Engaging in Argument from Evidence; Obtaining, Evaluating & Communicating Information*
(* indicates extension activity)

Terms

Biodiversity: biological diversity. In considering the ecological condition of an area, biological diversity refers to the variety of organisms present, looking at all levels of classification and genetic variability, and the variety of ecosystems in which the organisms occur.

Community: an association of interacting species inhabiting an area. An example would be a pond community with all the animals and plants that depend on the pond and live in or near the pond.

Flyway: the path taken by birds during their annual migrations. Many birds will take the same route each year, following a river or mountain crest as landmarks for their journey.

Riparian: relating to, living near, or located on the bank of a natural fresh watercourse (stream, river) or waterbody (pond, lake).

Species: a group of organisms, such as one type of bird, that is able to interbreed and produce fertile offspring.

Species diversity: a combination of the number of species in a community (species richness) and the relative abundance of the different species.

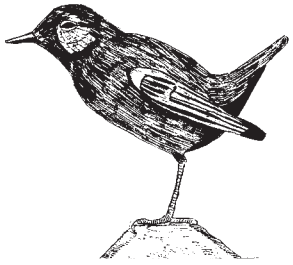
Species richness: the number of species in a community or location. This contrasts with the abundance or numbers of individuals. Species richness is simply a measure of the number of types of organisms present without regard to the number of individuals. Thus, a site with 10 different types of birds present has a higher richness than a site with five species present, even if the latter site has 100 individuals and the first site has 50 individuals. Caution: Be aware that identical richness numbers don't mean that the same species of birds occur at different sites with the same species richness value.

Background:

Scientists in many fields use color to look for patterns, particularly in combination with maps of various types of information; these serve as models of real-life conditions. For example, geologists create colorful maps of where different types of rocks are found and then study the patterns that appear in order to understand the geology of an area. The maps represent 2-dimensional models of the distribution of rock types. In this activity, students illustrate the number of **species** of birds found in different areas of the state by coloring a map in a "color-by-number" style. These maps serve as models of species richness across the state. Students

compare their species richness maps to maps with other types of information, such as vegetation type, geology, aquatic features or elevation, to look for patterns in species distribution and suggest possible causation.

When scientists and resource managers prioritize which natural places on Earth to preserve, one factor they are particularly interested in is the number of species of organisms present at a given site. Biological diversity, or **biodiversity**, includes both species richness and the relative abundance of each species. In general, sites with more species are said to have higher biodiversity. Although sites with fewer species can also be ecologically quite important, sites that support more species are especially valuable and these are typically targeted for conservation. It is essential to understand what ecological factors promote this higher diversity in order to protect the species living there. Habitats that have been greatly reduced in extent and are now rare are also important conservation priorities, since they often support species found nowhere else.


American Dipper

Animals live throughout New Mexico, but if you look specifically where those animals live, far more kinds are found along streams, rivers and lakes than in drier uplands. In New Mexico, less than 1% of the state supports **riparian** habitat, but large numbers of vertebrate animal species depend on those riparian areas for at least part of their lives.[1] For example, deer will wander far and wide, but they must come to water to drink regularly. This is particularly noticeable with species of birds. More species of birds are found in riparian habitats than in all other vegetation types combined.

This activity is designed to demonstrate the importance of the bosque ecosystem to birds in New Mexico. A 1984 study of animal life along the Middle Rio Grande Valley reported 277 species of birds sighted during two years; this was over 60% of the total number of birds known from the state at that time.[2] Data compiled in 2021 include 367 species of birds found in riparian habitat along the Middle Rio Grande, which includes **vagrants** (species outside their normal range) and rare sightings.[3] The total number of species reported in the state in 2021 stands at 546,[4] also including vagrants and rare sightings, meaning about 67% of bird species have been recorded in riparian habitat. The larger number of bird species recorded for the state reflects, in part, an increased sample effort as more people are observing birds and submitting their species lists as part of citizen science projects. Although some species, such as the Whooping Crane, have been **extirpated** (gone extinct locally, though they still exist elsewhere) from the state, other species, such as the Eurasian Collared Dove, have extended their ranges into the state. Rare sightings may reflect one or two individuals that were out of their normal range.

The persistence of riparian habitat as the planet warms is uncertain, which poses a great threat to species of birds and other animals that depend on it. Climate change increases the chance for worsening drought in the Southwest; droughts here are expected to get more frequent, more intense and last longer. Sites that support riparian vegetation now may not do so in future. This will severely limit

habitat vital to these riparian-dependent species. As your students work through this activity, have them think about the effects of decreasing water in this arid state, and what that will mean for riparian vegetation and riparian-dependent birds.

Note that the data used in this activity are from around the year 2000, when 324 birds were routinely seen somewhere in the state. Birds that appear irregularly or infrequently were not considered as they are not a substantial part of the ecological community. The numbers in the chart are extrapolated from actual records compiled by the U.S. Geological Survey's GAP Analysis Project and simplified in some cases to easily demonstrate ideas to students. One or two sites are used to illustrate larger regions. For each site we have grouped the total numbers of bird species that can be seen in the area if observed regularly throughout the year. Some birds may live there in the winter and migrate in the spring; some may only be seen in the spring or fall migration; some will nest in that area; still others will live in one spot all year long.

Procedure:

- Mapping the Campus (or your backyard, park or other nearby area)
  - Introduce the activity with the questions: *Where have you seen animals in New Mexico?* and *Where do you think most animals occur in the state?*
  - Ask students why they think animals occur in the places that they do.
  - Now bring the discussion closer to home: *Where do animals occur on our campus? (or in your backyard or neighborhood?) Why do you think they occur where they do?* Let's map the campus to figure this out!
  - Make a map of your campus (or backyard, park, or part of your neighborhood). This can be as simple or complex as you choose, but at minimum indicate areas with pavement, buildings, water sources, grass, bushes, trees, or other types of vegetation as appropriate. Make note of any bird feeders or other sources of food.
    - Using this map as a base, go out and look for animals and then mark where they are observed. You can choose to focus on birds only (as the latter part of this activity does) or all animals, including arthropods.
    - *Looking at the map showing where you observed animals, do you see any patterns of where animals occur? What factors do you think affect the distribution of different species? What do animals need to survive?* **(Patterns; Cause & Effect: Mechanism & Prediction)**

- Mapping Bird Species Richness
  - Now, focus on birds with the question: *Where do birds in New Mexico live?* Start with students' experiences: *Where have you seen birds?* Think about different places the students have been while out doing different activities, such as walking, hiking, camping, picnicking, hunting, riding bikes, or even driving around town. *What types of birds have you seen?*
  - Then consider: *What factors affect bird distribution? Why do you see some kinds of birds in some places but not in other places?* Note that different species have different requirements.

- Have students brainstorm possible factors affecting distribution (for example, presence of tall trees, soil type, elevation, water) and develop hypotheses based on their favorite suggested answers; write them down. Think about testing these hypotheses: *How would we find out?* Record expectations, predictions, interests, and connections. **(Asking Questions & Defining Problems)**
- Next, present the following scenario: Biologists have studied birds all over the state and recorded the numbers of birds and the numbers of species of birds, in many different habitats and areas in the state. Your task is to use these data on the numbers of species of birds to determine which areas in the state are most important to birds. To do this, you will make a map of species richness. Start by looking at the locations and number of species found at each location and then color that area of the state according to the color assigned to that number.

Belted Kingfisher

  - Give the students the Mapping Species Richness data sheet and map showing statewide locations and the number of bird species found at each location.
  - Instruct students to match locations on the map to the number of birds found.
  - Students assign a color to each of the categories in the map key. We recommend that a bright red or orange be used for the highest number of species. Official maps go through the color spectrum with blue for the fewest species, grading to green, yellow, orange and then red as the highest category (i.e., the largest number of species).
  - Have students color the Mapping Species Richness map. Remind students that numbers for the regions are extrapolated from data from one or a couple of sites within each region. Therefore, students may find more than one site within a given region that they are coloring.
  - When the students have finished their maps, have them compare their species richness maps to maps of other types of information (geology, vegetation, soil type, etc.), based on initial predictions about what factors influence bird distribution. Let students consider a variety of possible factors. [Information regarding online maps is in the *Extension* section below.]
  - Then go back to the original question: *Where do most species of birds in New Mexico live? What other questions could we ask from these data?*
  - Assist them in comparing their species richness maps to maps with other information and ask: *How does the species richness of birds relate to this?*
  - For example, overlay the elevation contour map (provided). Ask students if there is a relationship between elevation and

numbers of birds (NOTE: There is not a strong relationship with elevation; this map is provided as a possible factor for the sake of comparison.) *What other ideas do students have?*

- Finally, overlay the Rivers of New Mexico map (provided). *Is there a relationship between the location of rivers and species richness?* Students should see a strong correlation between the location of rivers and the number of species of birds in an area. **(Developing & Using Models; Analyzing & Interpreting Data)**

Discussion (after maps are colored)

The main theme: *Where is the highest diversity of bird species?*

Overlay the Rivers of New Mexico map. Students should be able to see that the rivers/riparian areas have a very high species richness, therefore many different kinds of birds.

Where are the rivers on this map?

Is there a relationship between rivers and the bird species richness? Why? What is different about river systems compared to areas of the state where there are no rivers? **(Patterns; Cause & Effect: Mechanism & Prediction)**

There is more water, but what else is there? When you look at the bosque compared to the dry areas adjacent to the floodplain, how is the floodplain different? There are tall trees, a greater density of plants, and larger plants. With taller plants, for example, there are more nest sites for birds (canopy and cavity nesters). More insects live on the large trees and over water, so insect eaters find more food there; more insect eaters mean more predators to eat them, etc.

What other factors influence bird distribution?

What are the most important things to determine why birds occur where they are?

What are the things all animals need to survive?

Where are you safe from predators?

Animals need habitat: food, water, shelter, and space in the proper arrangement. Water is extremely important in the dry Southwest. Water is a limiting resource. Many species occur only where there is a reliable water source. This is particularly important during the breeding season.

How does access to water affect the distribution of birds in New Mexico? **(MS.LS2.A; HS.LS2.A)**

Look at the species richness map. *Which sites contain the fewest species? Can we look at other maps to see why so few species live there?* Some types of areas have very few species; these include lava flow areas such as El Malpais and desert areas such as Chaco Canyon in the Great Basin Desert.

Look at Sites 2 and 4, which appear to have the same number of species. *Do they have the same species?* Look at the habitats. These are very different environments; even though they may have similar numbers of bird species, the actual types of birds will be very different.

Where do we find sandhill cranes in New Mexico? Why are they there? Why are they in this corridor? Talk about migration **flyways**: many birds will follow rivers in their migration. Others, such as hawks, fly along mountain ridges as landmarks for their journey. Sandhill Cranes fly from the northern U.S. and Canada to winter in a warmer place, including New Mexico. They are abundant in the Middle Rio Grande Valley in winter because there is food, water and safe places to roost. (See the "Crane Migration" activity for additional information.)

What does the number of species in an area say about the health of the local environment? In general, a large number of species indicates a healthy habitat and a high biodiversity. But be careful: even though there are few bird species at El Malpais, the plants and animals that live there have important adaptations that allow them to survive in the unique lava flow environment. Also, introduced / exotic species will increase the species richness but not necessarily the biological diversity / health of the environment. **(MS.LS2.C; HS.LS4.D)**

What happens when a habitat changes? New Mexico is experiencing increased drought due in part to climate change. Conditions are likely to get hotter and drier, with warmer winters and less snowpack and ultimately decreased stream flows. *How will this affect the bird species that rely on riparian habitats?* Riparian habitat in New Mexico supports several Species of Greatest Conservation Need (SGCN), including the Bald Eagle, Yellow-billed Cuckoo, Lucy's Warbler and Southwestern Willow Flycatcher. *What will happen to these species as New Mexico gets drier? In what ways can humans mitigate these changing conditions?* **(MS.LS2.C; MS.ESS3.D; HS.LS2.C; HS.LS4.D; HS.ESS3.D)**

Assessment:

- Students can write a statement of conclusion regarding their original hypothesis and indicating the results of testing that hypothesis. If the available data did not address their hypothesis, have them state this. Then have them summarize the results of doing this activity.
- Write a Claim, Evidence, Reasoning statement that:
  - Explains the importance of riparian habitat for birds in New Mexico.

Bushtit collecting nesting material in an ABQ Backyard Refuge
Photograph by Laurel Ladwig

- Explains the effect that climate change will have on bird populations that depend on riparian habitats.
- Suggests solutions to mitigate climate change effects on riparian systems and bird populations. **(Constructing Explanations & Designing Solutions; Engaging in Argument from Evidence)**

Suggested Adaptations:

- You are a "birder" (you watch birds) and want to see wintering geese.
  - Where would you go? What about this area makes it a good place to see geese?
  - Why would you go to rivers to find ducks?
- Many birds migrate, but not all; compare birds that migrate and those that do not. *Why do some migrate and some don't?*

Extensions:

Students can research individual species of birds, including where they occur and which habitats they live in. *What kinds of birds live in particular areas on their maps?* There is a list of birds of the Middle Rio Grande in Appendix F. Share these species accounts with the class or with families.

- Have students choose a species of bird that lives in the bosque to research.
  - Write about the habitats that species needs, the food it eats, the type of nest it uses, etc.
  - *Why does it live in the bosque? Are there other places it could/does live?*
  - *Does it migrate?*
  - *Where does it spend the summer and winter?* **(Obtaining, Evaluating & Communicating Information)**

Math Extensions:

This activity uses data from around 2000; at that time at least 324 bird species were routinely recorded in New Mexico and were included in the total species numbers in this activity. That value excluded vagrant species and rare sightings. The current species list for New Mexico contains 546 species, which includes vagrants and rare birds. eBird (https://ebird.org) is an online, citizen science project that collects bird species checklists from people visiting a variety of locations and makes the data available to all through their website. This provides updated species richness data for these locations that can be used to supplement this activity.

- Explain to students that the data provided on the Mapping Species Richness Data Sheet for this activity was gathered during limited field surveys, so it represents a relatively small sample size. Then explain that eBird is a citizen science project that gathers bird checklists from anyone who wants to submit them, based on their observations in the field. The sampling effort is much greater for the eBird data.
- Look up the following five locations on the Mapping Species Richness

Data Sheet: Bosque del Apache NWR, Bitter Lakes Refuge, Las Vegas NWR, Rio Grande Nature Center, Rattlesnake Springs Preserve. Use the species richness values provided on the data sheet to calculate the percent of statewide species found at each site (using 324 as the total species richness of New Mexico).

- Next, have students use eBird to find updated species richness estimates for the same five sites. Note that some sites, such as Bosque del Apache, have more than one entry. Try to find the main location (with the most species) for each site. Calculate the percent of statewide species using the updated values from eBird and a total state species richness of 546. They will find that the percentages increase for each of the locations.
- Now interpret the data and encourage students to discuss what the values mean:
  - *What do the percentage values represent?*
  - *Why do the values change between the two sampling periods?*
  - *Why might eBird species lists include more species?* (Note that you can see sample efforts for each site in the number of checklists used.)
  - These sites include some of the highest bird species richness values for the state. *What is it about these sites that make them so attractive for birds?*

(Patterns; Analyzing & Interpreting Data)

Mapping Extensions:

- Use iNaturalist in Step 1 to document animals on the school grounds. Students can record animal identifications and map their locations.
- Using Google Earth, locate your school yard or other area you mapped. *How does your habitat map compare to the aerial photos?* Next, locate one or more of the sites included on the species richness data sheet. *Can you identify different vegetation types? How useful are the aerial photos for representing the habitat at a given site? Can you use them to estimate the extent of each type of vegetation or habitat at a given location?*

(Developing & Using Models)

Other map sites to try:

New Mexico Department of Game and Fish Environmental Review Tool; look for "Wetland and Riparian Areas" map layer: https://nmert.org/content/map

USGS Map; look at specific species of vertebrates and the habitats where they are found: https://maps.usgs.gov/gap-species/

EPA EnviroAtlas; has interactive maps, student lessons, and ways to look up riparian areas: https://www.epa.gov/enviroatlas

References:

1 Knopf, P.J., R.R, Johnson, T. Rich, and R.C. Szaro. 1988. Conservation of riparian ecosystems in the United States. Wilson Bulletin 100:272-284.

2 Hink, V.C., and R.D. Ohmart. 1984. Middle Rio Grande biological survey. Report submitted to U.S. Army Corps of Engineers, Albuquerque, NM.

3 T. Fetz, personal communication, November 11, 2021

4 Williams, S.O. III. 2021. Checklist of New Mexico Bird Species. New Mexico Ornithological Society, Albuquerque, NM.

NGSS Connections to Mapping Species Richness – Disciplinary Core Ideas

MS.LS2.A Interdependent Relationships in Ecosystems

-Organisms and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors.

-In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction.

-Growth of organisms and population increases are limited by access to resources.

In the arid Southwest, water is a limiting resource. Many species occur only where there is a reliable water source. This is particularly important during the breeding season.

How does access to water affect the distribution of birds in New Mexico? What other factors influence bird distribution?

MS.LS2.C Ecosystem Dynamics, Functioning and Resilience

-Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations.

-Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health.

The Southwest is becoming hotter and drier due in part to climate change. Warmer winters will mean decreased snow packs and decreased stream flows. This will affect the plant and bird species in riparian habitats, including possibly changing the groups of species that are able to survive in these habitats. *What happens to ecosystems when the environment changes? What happens to the species of animals living there? What impact will this have on riparian habitats, and on animals that depend on these habitats?*

MS.ESS3.D Global Climate Change *Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and the other kinds of knowledge, such as understanding of human behavior, and on applying that knowledge wisely in decisions and activities.*

Riparian habitats are especially vulnerable to drought, which is increasing in the Southwest due to climate change. This activity shows that many bird species are particularly dependent on riparian ecosystems for their survival. *How will increasing temperatures and drought affect birds dependent on riparian habitat?*

HS. LS2.A Interdependent Relationships in Ecosystems *Ecosystems have carrying capacities, which are limits to the number of organisms and populations they can support. These limits result from such factors as the availability of living and non-living resources and from such challenges as predation, competition, and disease.*

In the arid Southwest, water is a limiting resource. Many species occur only where there is a reliable water source. This is particularly important during the breeding season. *How does access to water affect the distribution of birds in New Mexico? What other factors influence bird distribution?*

HS.LS2.C Ecosystem Dynamics, Functioning and Resilience

-A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in condition or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability.

-Moreover, anthropogenic changes (induced by human activity) in the environment—including habitat destruction, pollution, introduction of invasive species, over exploitation, and climate change—can disrupt an ecosystem and threaten the survival of some species.

The Southwest is becoming hotter and drier due in part to climate change. Warmer winters will mean decreased snowpack and decreased stream flows. This will affect the plant and bird species in riparian habitats, including possibly changing the groups of species that are able to survive in these habitats. *What happens to ecosystems when the environment changes? What happens to the species of animals living there? What impact will this have on riparian habitats, and on animals that depend on these habitats?*

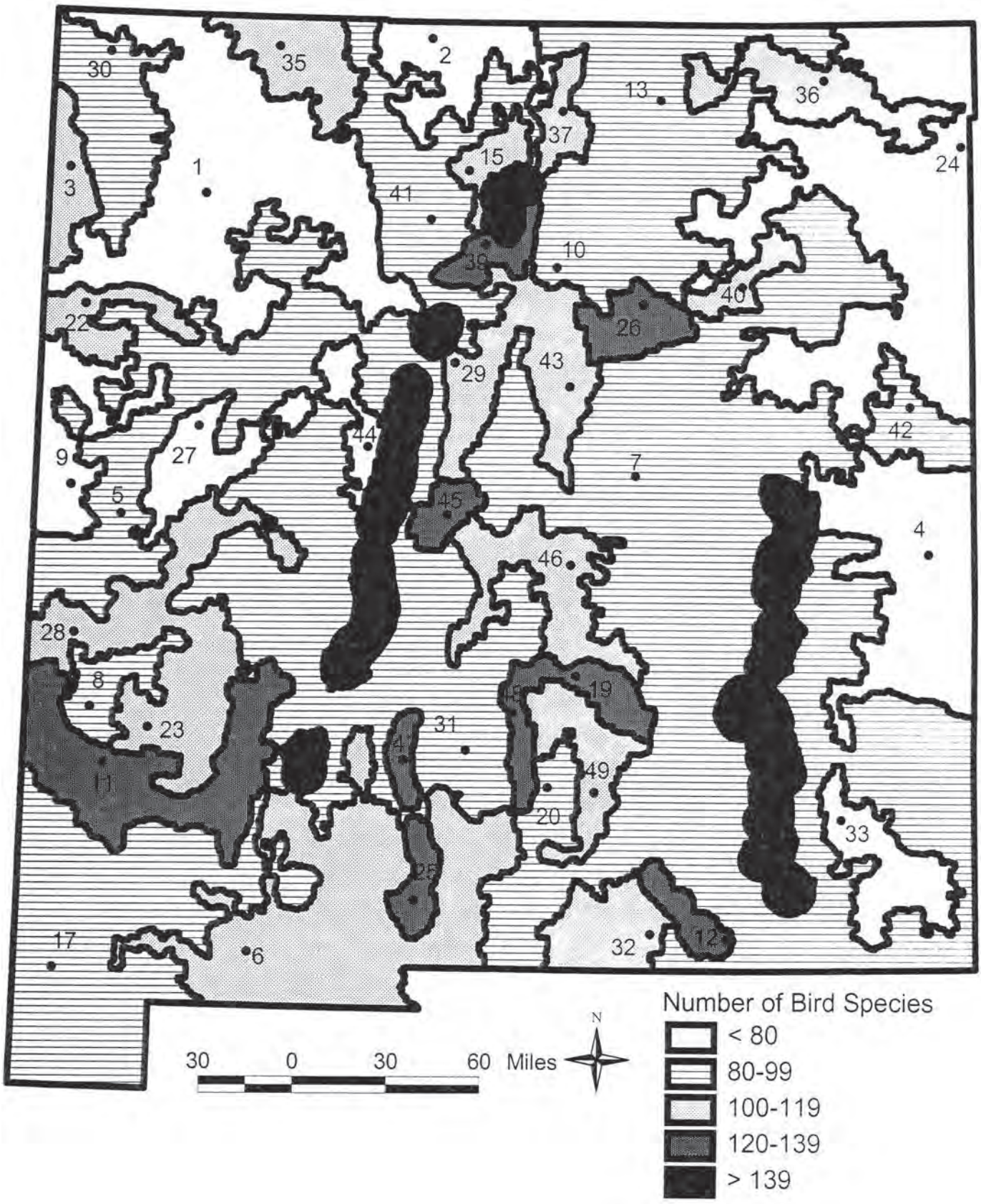
HS.LS4.D Biodiversity and Humans *Humans depend on the living world for the resources and other benefits provided by biodiversity. But human activity is also having adverse impacts on biodiversity through overpopulation, overexploitation, habitat destruction, pollution, introduction of invasive species, and climate change. Thus, sustaining biodiversity so that ecosystem functioning and productivity are maintained is essential to supporting and enhancing life on Earth. Sustaining biodiversity also aids humanity by preserving landscapes of recreational or inspirational value.*

The Southwest is becoming hotter and drier. Decreased stream flows, lowered groundwater levels and increased wildfires all impact riparian vegetation, as does direct habitat destruction by humans. *How will decreases in the extent of riparian vegetation impact bird populations? How might humans mitigate these changes?*

HS.ESS3.D Global Climate Change *Though the magnitude of human impacts are greater than they have ever been, so too are human abilities to model, predict, and manage current and future impacts.*

Riparian habitats are especially vulnerable to drought, which is increasing in the Southwest due to climate change. This activity shows that many bird species are particularly dependent on riparian ecosystems for their survival. *How can humans decrease impacts of climate change on riparian systems? In what ways will those improvements benefit local bird populations? What will happen to these species as New Mexico gets drier? In what ways can humans mitigate these changing conditions?*

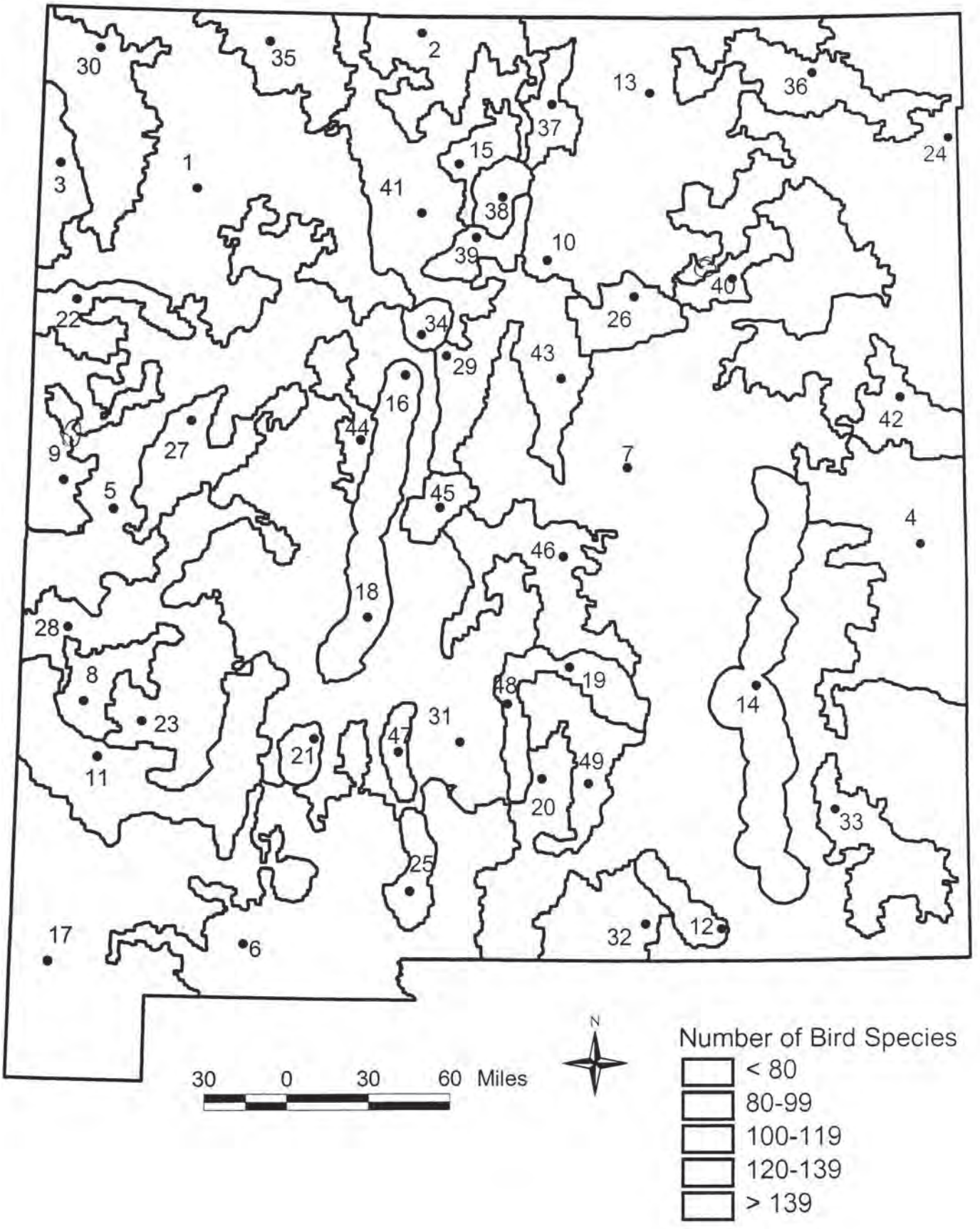
Teacher Key: Bird Richness



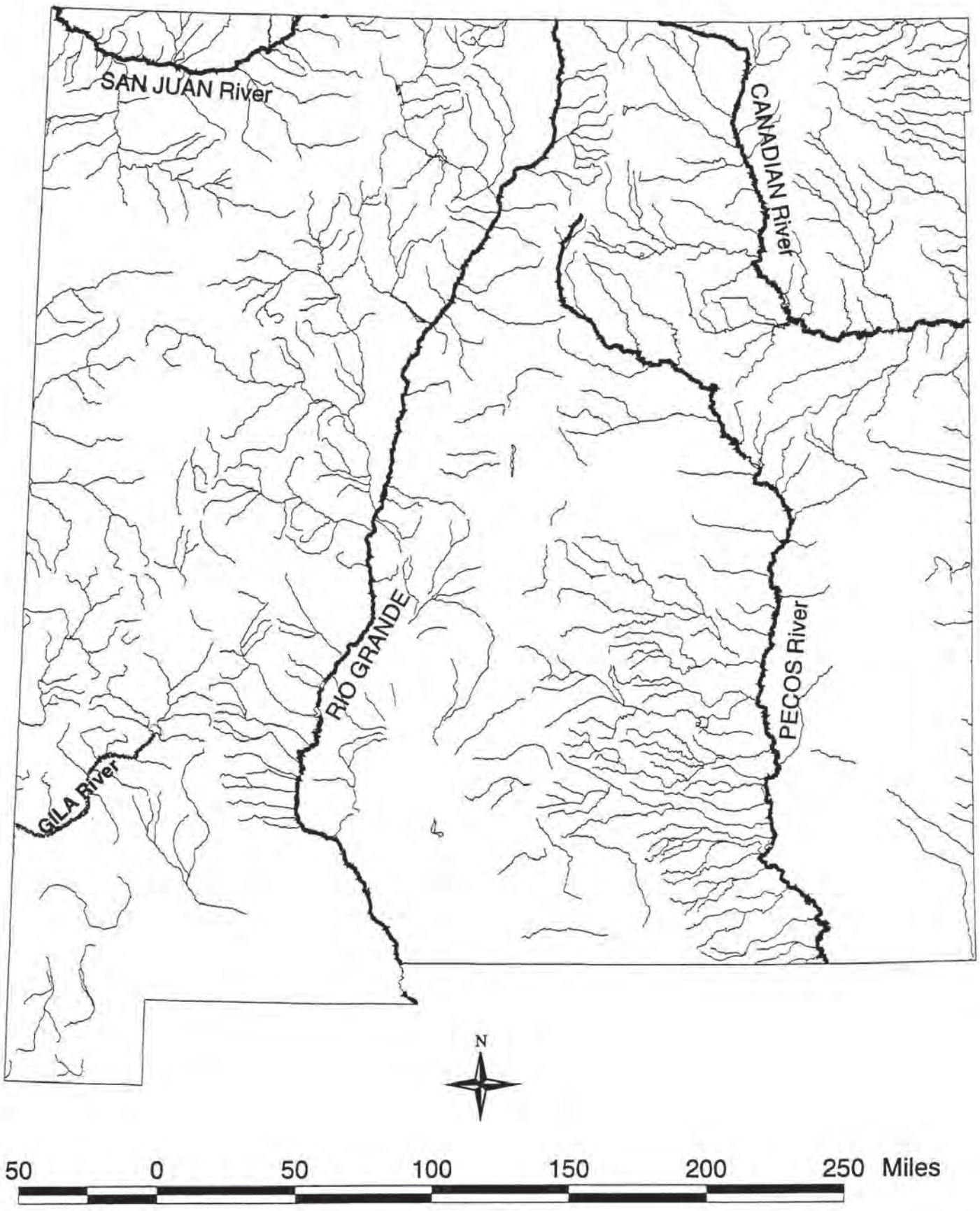
Mapping Species Richness Data Sheet

Site #	Name	Species Richness
1	San Juan Basin	43
2	Chama	65
3	Chuska Mountains	113
4	Portales	53
5	Quemado	94
6	Rock Hound State Park	103
7	Vaughn	92
8	Whitewater Baldy	86
9	Zuni Salt Lake	55
10	Randall Davey Audubon Center	94
11	Gila Riparian Preserve	124
12	Rattlesnake Springs Preserve	121
13	Philmont Scout Ranch	82
14	Bitter Lakes Refuge	159
15	Abiquiu	115
16	Rio Grande Nature Center State Park	143
17	Animas	98
18	Bosque del Apache National Wildlife Refuge	169
19	Capitan	133
20	Cloudcroft	82
21	Elephant Butte Reservoir	145
22	Gallup	103
23	Gila Cliff Dwellings National Monument	112
24	Kiowa National Grassland	52
25	Organ Mountains	125
26	Las Vegas National Wildlife Refuge	120
27	El Malpais	14
28	Reserve	117
29	Sandia Crest	106
30	Shiprock	84
31	White Sands National Monument	92
32	Crow Flats	102
33	Loco Hills	72
34	Santa Ana Pueblo	157
35	Navajo Lake State Park	114
36	Capulin	101
37	Arroyo Hondo	118
38	Alcalde	152
39	White Rock	123
40	Cañon Largo	116
41	Fenton Lake	86
42	The Caprock	92
43	Clines Corners	110
44	Rio Puerco	78
45	Mountainair	124
46	Corona	114
47	San Andres Mountains	134
48	Three Rivers Petroglyphs	126
49	Mayhill	118

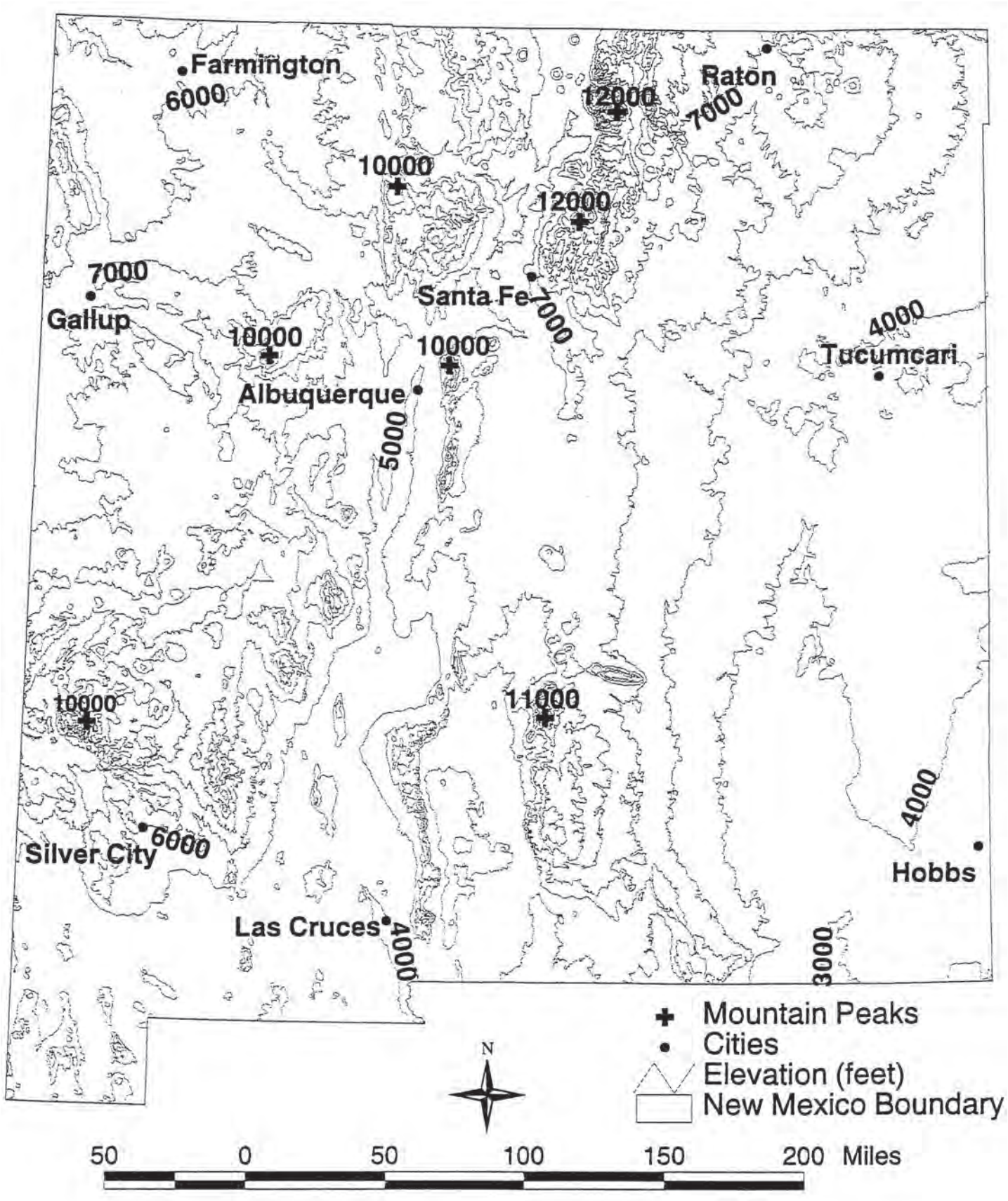
Bird Richness



New Mexico Rivers



1,000-foot Elevation Contours



(1000 feet = 300 meters; 100 miles = 161 kilometers)