

## HABITATS AND CHIPMUNK SPECIES

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3       There are eight chipmunk species in the Sierra Nevada mountain range, and most  
4 of them look pretty much alike. But eight different species of chipmunks scurrying  
5 around a picnic area will not be found. Nowhere in the Sierra do all eight species occur  
6 together. Each species tends strongly to occupy a specific habitat type, within an  
7 elevational range, and the overlap among them is minimal.

8       The eight chipmunk species of the Sierra Nevada represent but a few of the 15  
9 species found in eastern North America makes do with but one species: the Eastern  
10 chipmunk. Why are there so many very similar chipmunks in the West? The presence of  
11 tall mountains interspersed with vast areas of arid desert and grassland makes the West  
12 ecologically far different from the East. The West affords much more opportunity for  
13 chipmunk populations to become geographically isolated from one another, a condition  
14 of species formation. Also, there are more extremes in western habitats. In the Sierra  
15 Nevada, high elevations are close to low elevations, at least in terms of mileage, but  
16 ecologically they are very different.

17       Most ecologists believe that ancient populations of chipmunks diverged  
18 genetically when isolated from one another by mountains and unfavorable ecological  
19 habitat. These scattered populations first evolved into races – adapted to the local  
20 ecological conditions – and them into species, reproductively isolated from one another.  
21 This period of evolution was relatively recent, as evidenced by the similar appearance  
22 of all the western chipmunk species.

23       Ecologists have studied the four chipmunk species that occur on the eastern  
24 slope of the Sierra and have learned just how these species interact while remaining  
25 separate, each occupying its own elevational zone. The sagebrush chipmunk is found at  
26 lowest elevation, among the sagebrush. The yellow pine chipmunk is common in low to  
27 mid-elevations and open conifer forests, including piñon and ponderosa and Jeffrey pine  
28 forest. The lodgepole chipmunk is found in higher elevations, among the lodgepoles,  
29 firs, and high-elevation pines. The alpine chipmunk is higher still, venturing among the  
30 talus slopes, alpine meadows, and high-elevation pines and junipers. Obviously, the  
31 ranges of each species overlap. Why don't sagebrush chipmunks move into pine zones?  
32 Why don't alpine chipmunks move to lower elevations and share the conifer forests with  
33 lodgepole chipmunks?

34       The answer, in one word, is aggression. Chipmunk species actively defend their  
35 ecological zones from encroachment by neighboring species. The yellow pine chipmunk  
36 is more aggressive than the sagebrush chipmunk, possibly because it is a bit larger. It  
37 successfully bullies its smaller evolutionary cousin, excluding it from the pine forests.  
38 Experiments have shown the sagebrush chipmunk is physiologically able to live  
39 anywhere in the Sierra Nevada, from high alpine zones to the desert. The little creature  
40 is apparently restricted to the desert not because it is specialized to live only there but  
41 because that is the only habitat where none of the other chipmunk species can live. The  
42 fact that sagebrush chipmunks tolerate very warm temperatures makes them, and only  
43 them, able to live where they do. The sagebrush chipmunk essentially occupies its  
44 habitat by default. In one study, ecologists established that yellow pine chipmunks  
45 actively exclude sagebrush chipmunks from pine forests; the ecologists simply trapped  
46 all the yellow pine chipmunks in a section of forest and moved them out. Sagebrush

47 chipmunks immediately moved in, but yellow pine chipmunks did not enter sagebrush  
48 desert when sagebrush chipmunks were removed.

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

**Answer the following questions.**

1. Why does the author mention a “picnic area” in paragraph 1, line 5?
  - a. To identify the site where a variety of different species of chipmunks can be seen.
  - b. To emphasize the idea that all species of chipmunk have a similar appearance.
  - c. To support the point that each species of chipmunk inhabits a distinct location.
  - d. To provide an example of a location to which chipmunks are likely to scurry for food.
  
2. The phrase “interspersed with” (in line 11) the passage is closest in meaning to:
  - a. Covered by
  - b. Distributed among
  - c. Positioned above
  - d. Evolved from
  
3. In paragraph 2, the author indicates that a large variety of chipmunk species exist in western North America because of:
  - a. The ecological variety and extremes of the West that caused chipmunks to become geographically isolated.
  - b. A large migration of chipmunks from eastern North America in an earlier period.
  - c. The inability of chipmunks to adapt to the higher mountainous regions of eastern North America.
  - d. The absence of human populations that discouraged species formation among chipmunks in the East.
  
4. The word “diverged” (line 17) in the passage is closest in meaning to:
  - a. declined
  - b. competed
  - c. separated
  - d. progressed
  
5. The phrase “one from another” (line 20) in the passage refers to
  - a. Species
  - b. Populations
  - c. Races
  - d. Ecological conditions
  
6. Where does paragraph 4 indicate that the yellow pine chipmunk can be found in relationship to the other species of the eastern slope of the Sierra?
  - a. Below the sagebrush chipmunk
  - b. Below the lodgepole chipmunk
  - c. Above the alpine chipmunk
  - d. At the same elevation as the sagebrush chipmunk

7. Which of the sentences below best expresses the essential information in the sentence in paragraph 4 “*Ecologists have studied the four chipmunk species that occur on the eastern slope of the Sierra and have learned just how these species interact while remaining separate, each occupying its own elevational zone.*”? Incorrect choices change the meaning in important ways or leave out essential information.
- Ecologists studied how the geographic characteristics of the eastern slope of the Sierra influenced the social development of chipmunks.
  - Ecologists discovered that chipmunks of the eastern slope of the Sierra invade and occupy higher elevational zones when threatened by another species.
  - Ecologists learned exactly how chipmunk species separated from each other on the eastern slope of the Sierra relate to one another.
  - Ecologists studied how individual chipmunks of the eastern slope of the Sierra avoid interacting with others of their species.
8. The word “encroachment” in the passage in line 35 is closest in meaning to:
- Complete destruction
  - Excessive development
  - Substitution
  - Gradual invasion
9. Paragraph 5 mentions all the following as true of the relationship of sagebrush chipmunks to their habitats EXCEPT:
- Sagebrush chipmunks are able to survive in any habitat of the Sierra Nevada.
  - Sagebrush chipmunks spend the warm season at the higher elevations of the alpine zone.
  - Sagebrush chipmunks occupy their habitat because of the absence of competition from other chipmunks.
  - Sagebrush chipmunks are better able to survive in hot temperatures than other species of chipmunks.
10. Which of the following statements is supported by the results of the experiment described at the end of paragraph 5?
- It was more difficult to remove sagebrush chipmunks from their habitat than it was to remove yellow pine chipmunks from theirs.
  - Yellow pine chipmunks and sagebrush chipmunks require the same environmental conditions in their habitats.
  - The habitat of the yellow pine chipmunk is a desirable one to other species, but the habitat of the sagebrush chipmunk is not.
  - The temperature of the habitat is not an important factor to either the yellow pine chipmunk or the sagebrush chipmunk.