# Habitat Cards

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**Preview of main ideas:** Life forms in an ecosystem are interdependent and strongly influenced by the physical environment. Understanding those relationships is necessary if one is to understand how and why ecosystems function. Students can gain better understandings if they are provided the opportunity to experiment with possible relationships.

"Habitat Cards" encourages students to speculate about possible ecological relationships, discuss the possibilities with others, and to conduct research to evaluate their thinking. Students will benefit from visualizing the "big picture" of ecosystems and focusing their efforts on trying to understand the ecosystem as a community and the typical physical conditions in which it exists.

**Connection with the Curriculum:** Geography, biology, and environmental science classes.

**Teaching level:** Grades 7-12.

**Objectives:**
1. Provide students the opportunity to think critically about ecosystems.
2. Practice use of standard reference sources, including atlas, almanac, maps, and National ParksGuides.
3. Provide a high-interest activity to increase student involvement.

**Essential Element:** Physical Systems.

**Standard #8:** The characteristics and spatial distribution of ecosystems on Earth's surface.

**Knowledge Statement:** The distribution and characteristics of ecosystems.

**Skill Set:** Acquiring geographic information.

**Skill:** Systematically locate and gather geographic information from a variety of sources.

**Theme:** Region.

**Materials:**
1. "National Park System Map and Guide." Contact: National Park Service, Office of Public Inquiries, Room 1013, 1849 C Street, NW, Washington, DC 20240. Telephone: 202-208-4747.
2. A set of National Park Service maps and guides for those parks you intend to use in the activity. They are available from the N.P.S. at the above address and phone number.
3. One set of cards for each park to be used in the activity. (see Appendix)
4. Multiple copies of the activity sheet, on which students will record the card identification numbers.
5. Multiple copies of the reference materials students will be permitted to use: atlases, almanacs, and guide books for mammals, birds, and trees. A number of excellent references are available. For example, the following are sources for the identification of birds:

All the Birds of North America: American Conservancy Field Guide by Jack L Griggs.

Birds of North America by Kenn Kaufman, et al.

Birds of North America: A Guide to Field Identification (Golden Field Guide Series) by Chandler S. Robbins, et al.

National Geographic Field Guide to the Birds of North America: Revised and Updated by Jon L. Dunn.

The Sibley Guide to Birds by David Allen Sibley.

Peterson Field Guides by Roger Tory Peterson.

Many more are available for birds; others are available for other life forms and other topics. The teacher should take inventory of the sources that may be available in the school and public libraries, other classrooms, and in students' homes.

6. Internet access, if desired.

**Preparation for the Activity:**

*Appendix A contains categorized information for the student activity. Each column of items is lettered A-H, and each item in that column describes something about the same national park (see "Habitat Activity Form" for an explanation of each lettered item). The 10 columns therefore describe 10 national parks. It is essential that the teacher have a key for each park to quickly judge student work.

* Photocopy the three "Appendix" pages. Save the original for reference or to replace cards that might be lost or damaged during the activity.

* Randomly number the 80 lettered items, then construct a key of all the parks so that you can quickly grade any "Student Activity Form."

* Cut the 80 items apart and glue them onto 3x5" note cards.

* Prepare 10 stacks of seven cards each and put a rubber band around them. Each stack should contain a randomly selected set but must contain one card each lettered "B," "C," "D," "E," "F," "G," and "H." The "A" cards, on which are shown the absolute locations for the parks, will be distributed to teams to start the activity.

*Post the National Parks Map in an accessible place (blackboard or bulletin board) and indicate the 10 national parks that will be involved in the student activity.

*Make enough copies of the "Student Activity Form" to supply each team/participant.

*Assemble reference materials which students will be permitted to use: atlases, almanacs, National Park Maps and Guides, reference books to identify birds, trees, and mammals, and others that are appropriate. Centralize the collection on a table at the front or center of the room. Decide whether the Internet is applicable to the activity in your classroom and make the necessary arrangements.

**Introducing the Lesson**.

Explain that the activity is designed to practice those concepts students have learned about ecosystems. Encourage students to think about how the elements of a particular ecosystem fit together as they search for the cards which will complete a set about that ecosystem. Arrange students in teams of two or three students, distribute to each team a "Habitat Activity Form," and read the activity instructions aloud while students follow along silently. Point out the locations of the following items:

* National Parks Map and Guide (posted on the blackboard or bulletin board, indicating which national parks will be involved in the activity);

* reference materials to be used for research;

* the packets of cards.

Students will benefit from a brief demonstration of the activity's procedures. Using examples of a national park which will not be involved in the students' activity, demonstrate the procedure necessary for collecting an accurate set of cards. Explain that because of the similarities of some cards, it may be necessary to convince prospective trading partners that the trade is beneficial. Such negotiating may necessitate joint research between two or more teams.

**Developing the Lesson.**

Once students are comfortable with procedures necessary for conducting the activity, proceed as follows:
* Distribute to each individual/team an "A" card face down. Announce "start," then stand back!
* Circulate to encourage slow starters.
* Depending on the amount of reference materials you have assembled, it may be necessary to discourage hoarding of references by some students.
*Be prepared to check activity form numbers with your grading key to determine whether a complete set of cards has been assembled. Announce only that the answers are correct or not correct, without reference to specific cards. If incorrect, students will need to reassess the entire list.
*Once a complete set has been assembled and graded, several alternatives are possible:

1. A winner is declared, and the activity is stopped.
2. The activity may be continued until a second (and third, etc) winner can be recognized.

**Concluding the Lesson.**

Discuss with students the interrelationships of life forms in an ecosystem and their relationships to immediate physical features.

- Once the park was identified, how did your team proceed?
- What general knowledge did you have about your park that helped you speculate about what mammals, birds, or trees that might be residents?
- How did your insight into such relationships assist in activity decision-making?
- Which relationships were easiest to understand? Most difficult?

**Extending or Altering the Lesson:**
*Students could be assigned the task of researching information and preparing cards, particularly if they are in an advanced class.
*Additional or alternate parks could be used. Teacher and/or students could make additional sets of cards to use.
*Information other than that shown could be used. Accordingly, sources of information would vary, but they must be available during the activity.
*Greater proficiency can be achieved if the activity is staged again, either the following day or some time in the future. Students should not be permitted to investigate the same park during both sessions.

# Habitat Activity Form

Team members:

_____

_____

_____

The goal of this activity is to collect a set of information cards which deal with the ecosystem of one of several National Parks. Each set consists of eight cards, described below. As you collect cards which fit your particular set, record the number of each card in the appropriate space below. When you think you have collected a complete and accurate set, you may present this sheet to the game referee (teacher). He/she will immediately grade the paper and tell you if it is correct. If it is, you and your team win the contest. If not, you will need to review all information to determine which card (or cards) does not belong, trade it for the card(s) that completes your set, then re-submit the activity form with the new list of cards.

You will first be given an "A" card, on which is recorded the absolute location of a national park. Use an atlas to identify the park, then pick up the stack of cards labeled with your park's name. The seven cards are lettered, each letter designating a category of information. Your task is to collect a set of cards, lettered A – H, which describe your park. (The stacks of cards have been randomly arranged, so it will be necessary to inspect them and trade with other teams to obtain a set). The authority for each category of information (and therefore the best place to conduct research) is shown below.

| CARD | CATEGORY OF INFORMATION | AUTHORITY | CARD NUMBER |
|---|---|---|---|
| **A** | Absolute location | Atlas | _____ |
| **B** | Name of park | Atlas | _____ |
| **C** | Area (in acres) | Almanac | _____ |
| **D** | Mammals | Golden/NP guide & map | _____ |
| **E** | Birds | Golden/NP guide & map | _____ |
| **F** | Trees | Golden/NP guide & map | _____ |
| **G** | Distinctive land features | National Park map | _____ |
| **H** | Distinctive water features | National Park map | _____ |

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|---|---|---|---|
| **A** 25 N, 81 W | **A** 48 N, 93 W | **A** 29 N, 103 W | **A** 49 N, 114 W |
| **B** Everglades | **B** Voyageurs | **B** Big Bend | **B** Glacier |
| **C** 1,507,850 acres | **C** 218,035 acres | **C** 801,163 acres | **C** 1,013,572 acres |
| **D** panther, opossum Manatee, marsh rabbit, white-tailed deer, = black bear | **D** moose, lynx, European hare, gray wolf, wapiti, woodland caribou | **D** armadillo, coati, desert kangaroo rat, collared peccary, black-tailed jackrabbit | **D** lynx, wolverine, grizzly bear, pica, marmot, moose, mtn goat, wapiti |
| **E** roseate spoonbill, brown pelican, white ibis, wood stork, flamingo | **E** common loon, grebe, snowy and boreal owl, Connecticut warbler, least flycatcher | **E** green kingfisher, elf owl, Harris' hawk, roadrunner, Alpomado falcon, cactus wren | **E** boreal owl, black-billed magpie, Clark's nutcracker, gray jay |
| **F** royal palm, strangler fig, slash pine | **F** common prickly ash, black hawthorn, Tamarack, yellow birch | **F** alligator juniper, pinyon pine, soaptree yucca, mesquite | **F** lodgepole pine, Engelmann spruce, western hemlock, western larch |
| **G** gently sloping, mostly level; hammocks (low hills); Cape Sable | **G** glaciated, low relief; margin of Canadian Shield; Kabetogama Peninsula | **G** Chisos Mountains, Santa Elena Canyon | **G** glacial arêtes and hanging valleys; Triple Divide Peak, Logan Pass |
| **H** tropical savanna climate, alternatively flooded and dry; Shark River Slough | **H** 30 glacial lakes; bogs and marshes; 1/3 of park is water-covered; Rainy Lake | **H** Wild & Scenic River; exotic river; Terlingua Creek | **H** glacier-carved lakes; Grinnell Glacier; St. Mary Lake |

| | | | |
|---|---|---|---|
| **A** 38 N, 120 W | **A** 48 N, 124 W | **A** 34 N, 116 W | **A** 35 N, 83 W |
| **B** Yosemite | **B** Olympic | **B** Joshua Tree | **B** Great Smoky Mountains |
| **C** 761,236 acres | **C** 922,651 acres | **C** 792,750 acres | **C** 521,621acres |
| **D** black bear, ringtail, mtn lion, marten, marmot, wapiti, pica | **D** black bear, mtn lion, harbor seal, marten, sea lion, wapiti | **D** kit fox, black-tailed jackrabbit, desert kangaroo rat, desert shrew | **D** black bear, opossum, Eastern chipmunk, red squirrel, woodchuck |
| **E** Clark's nutcracker, yellow-billed magpie, Nuttall's and Lewis' woodpecker | **E** mew gull, auklet, pigeon guillemot, Hammond's fly-catcher | **E** elf owl, cactus wren, Costa's hummingbird, roadrunner, calliope hummingbird | **E** Carolina wren, Eastern mockingbird, redheaded woodpecker, black vulture, wood thrush |
| **F** lodgepole pine, giant Sequoia, digger pine, incense cedar | **F** western hemlock, vine maple, Sitka spruce, lodgepole pine, Sitka alder | **F** pinyon pine, yucca, mesquite, fan palm, smokethorn | **F** sassafras, red spruce, Carolina hemlock, black walnut, cucumber tree, pignut hickory |
| **G** glacial canyon, El Capitan, Half Dome | **G** elevation: sea level to nearly 8,000', glacier capped mtn. peaks Hurricane Hill | **G** Pinto Basin, Little San Bernardino Mtns., Cottonwood Mts. | **G** eroded mtns; Newfound Gap, Sugarland Mtn, Clingman's Dome is highest point (6,643') |
| **H** high snowfall area, Tuolumne River, Vernal Falls | **H** 140+" annual precip., radial drainage pattern, rainforest, Quinault R. | **H** rain shadow; precip. is sparse, unpredictable, and sudden; Lost Palms Oasis | **H** rainforest in highlands; Fontana Lake, Little Pigeon R, Oconaluftee R. |

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|---|---|
| **A** 44 N, 68 W | **A** 44 N, 102 W |
| **B** Acadia | **B** Badlands |
| **C** 46,998 acres | **C** 242,756 acres |
| **D** moose, harbor seal, Eastern chipmunk, hairy-tailed mole, red squirrel | **D** black-footed ferret, prairie dog, swift fox, prairie vole, Richardson ground squirrel |
| **E** snowy and boreal owls, Icelandic gull, great cormorant, great black-backed gull | **E** Swainson's hawk; summer range of lark bunting, burrowing owl, and Sprague's pipit |
| **F** tamarack, yellow birch, red spruce, blueleaf birch | **F** plains cottonwood, lodgepole pine |
| **G** rocky and beach coast; Cadillac Mtn, Little Cranberry Island, Mt. Desert Island | **G** peaks, gullies, buttes; colorful rock strata; Plenty Star Table, Cedar Butte, Stronghold Table |
| **H** marshes; coastal tides; Southwest Harbor, Long Pond | **H** sparse precip (15"/year) supports grasslands; Sage Creek, White R |