

Activity III: Interpreting Wildlife Habitat from Aerial Photographs

Objective

Juniors will improve their map reading skills by identifying features commonly found on an aerial photograph. They will also judge the quality of an area of land from aerial photographs for wildlife species.

Overview

The contestant is given 10 map features to identify from aerial photographs. The contestants also select one of two aerial photographs representing the best habitat for 10 wildlife species. More than one set of aerial photos may be used in this event.

Contestant Rules

1. Contestants will complete the scorecard individually. This is not a team event.
2. Only wildlife species in the announced region will be used in this activity.
3. Contestants can use the following equipment only: pencil and clipboard, scorecard (provided).
4. Contestants will be given 30 minutes to complete this activity.
5. This event is worth 20 points.

Identifying map features is worth 10 points, or one point apiece for correctly identifying 10 map features. Map features may include roadways, pine trees, deciduous (hardwood) trees, rivers, ponds, streams, creeks, mountains, valleys, grasslands, row crop fields, rice fields, ballparks, buildings, latitude/longitude, scale and time/date of photograph.

Ranking the two photographs is worth 10 points, or one point apiece for each wildlife species. The contestant is given a list of no more than 10 wildlife species. The contestant must identify which of two aerial photos represents the best habitat for each wildlife species. More than one set of aerial photographs may be used in this event.

Interpreting Aerial Photographs

Learning to interpret aerial photos allows participants to view areas of the state where they may not have a chance to visit personally. From topographic maps, aerial photos and satellite images they can see land forms, get an idea of the amounts and kinds of cover available, and see the availability of water. Looking closer at the maps, photos and images can show the amount and type of edge available, any barriers that might exist, agricultural fields, grassland and forest lands. Use of aerial photos before arriving at a contest site allows participants to ground proof what they have seen on the photos. Programs like Google Earth, TerraServer and Google Maps can be helpful in understanding photos as a useful tool. Additional maps and resources can be found on-line through the Spatial Analysis Laboratory (SAL) at the University of Arkansas – Monticello and the Center for Advanced Spatial Technologies (CAST) at the University of Arkansas – Fayetteville.

Contestants may be asked to:

- Identify map features from aerial photographs. Map features may include roadways, pine trees, deciduous (hardwood) trees, rivers, ponds, streams, creeks, mountains, valleys, grasslands, row crop fields, rice fields, ballparks, buildings, latitude/longitude, scale and time/date of photograph.
- Rank two aerial photographs in relation to habitat needs for wildlife species in the region.

When looking at aerial photos, imagine how the countryside would look if you were a bird flying over it. If you have flown in an airplane, you know how it looks. The way a bird or pilot sees land is the way it appears on an aerial photograph (except in one dimension). For example, a silo appears round, buildings look like squares or rectangles, woods are rough, and fields are smooth.

When reading aerial photographs, hold them so that shadows of objects fall toward the reader. Otherwise valleys appear as ridges, and vice versa. All objects are small, but you can determine what they are by comparing their size with the size of a known object. Other things that help are tone (shade of gray or color), shape, and shadow. The length of shadow indicates the height of an object. The tone may vary with the seasons of the year, so it is important to recognize the season when aerial photographs were made.

Different types of contest questions can be asked using aerial photos. Contestants may be asked to identify a map feature, such as a creek, power line, deciduous trees, ponds, rivers or residential buildings. Contestants may be asked to rank two, three or four habitats, or identify which habitat is best (or least) suited for a particular species. Contestants may be provided an aerial photo or satellite image with a list of species and asked to select the species which is best suited for the habitat.

Following is a discussion about ranking four aerial photos for several wildlife species. The aerial photos can be found at the end of this section.

Examples for Interpreting Aerial Photographs

Using the two aerial photographs found on the pages towards the end of this chapter, let's learn how to complete this part of the scorecard. NOTE: Although contestants will only need to rank two photographs, understanding how to accurately rank four aerial photographs will help prepare contestants for this portion of the contest. For discussion purposes, show contestants the highest and lowest ranked photographs for each species to illustrate the greatest contrast.

Using American kestrels, the areas would be ranked 2, 3, 4 and 1. These birds prefer large open areas in stages 2 and 3 of plant succession interspersed with areas in stages 4, 5 and 6 of plant succession. Area 2 fits this well. Area 3 also supplies this type of habitat, but has less area in Stage 2 or 3 of plant succession and is rated lower than Area 2. Area 4 has large open areas, but has little interspersed of other plant succession stages and is ranked third. Area 1 does not have any open areas and thus is ranked last.

Brown thrashers would prefer the areas in the order 3, 2, 1, 4. Thrashers prefer dense shrub thickets. Area 3 supplies the greatest amount of this type of habitat. Area 2 has more area in Stage 4 of plant succession than either Area 1 or 4. Areas 1 and 4 are difficult to judge. In this instance, we would assume there is more shrub cover associated with the woodland area in Area 1 than what is shown in Area 4.

Bluebirds would prefer the areas in the order 4, 2, 3, 1. They like to nest in tree cavities adjacent to open fields and prefer open fields for feeding.

Doves also would prefer the areas in the order 4, 2, 3, 1. Since doves prefer open fields for feeding, this rating order is based on the amount of open fields available.

For cottontails, the area should be rated 2, 3, 4, 1. Area 2 is preferred because it has nearly the proper ratios of habitat components for rabbits (one-third grassland, one-third cropland, and one-third shrub cover), and they are well interspersed (mixed together). Area 3 doesn't have enough grass or cropland and too much cover, but it has more habitat variety than Area 4. Area 4 is lacking interspersed but has more habitat diversity (different kinds of habitat) than Area 1.

These areas would be rated 1, 3, 2, 4 for gray squirrels, hairy woodpeckers, and ovenbirds. This is based simply on the amount of stage 5 and 6 deciduous woodland available.

For bobwhite quail, the areas would be ranked 2, 3, 4, 1 – the same as for rabbits. The reasons are similar in this case. However, in some judging instances, areas may be rated differently for quail than for rabbits. For example, quail do not need quite as much shrub cover as rabbits.

Raccoons would prefer the areas in order 3, 4, 2, 1. Areas 3 and 4 both have streams that attract raccoons. Area 3 is ranked ahead of 4, since it has more shrubs and trees along the stream. Area 2 is ranked ahead of Area 1 because of the interspersed areas in different successional stages.

For ruffed grouse, the areas would be ranked 3, 1, 2, 4. Ruffed grouse need successional Stages 4, 5, and 6 interspersed together. Area 3 supplies the greatest amount of this type of habitat. Area 1 lacks interspersed, but has more stage 5 and 6 vegetation than either 2 or 4. Area 2 is ranked ahead of Area 4 because of the amount of stage 4, 5, and 6 vegetation.

For turkeys, the areas would be listed 3, 2, 1, 4. According to the *Wildlife Species* section, turkeys need one-fourth to one-half of their range open, and one-half to three-fourths mature woodland. Area 3 is preferred because it has roughly one-half the area in mature woodlands, and nearly one-fourth the area is open. Area 2 is second, as it has both open areas and mature woodland. However, it does not meet the mature woodland requirement as well as Area 3. Area 1 is ranked third because it has more timber than Area 4 and more cover in general. Due to the absence of woodland, it is doubtful if Area 4 could support a turkey population.

For deer the area would be rated 3, 2, 1, 4. Deer prefer woodland areas interspersed with areas in various stages of succession. Area 3 fits this well; it includes 3 stages. Area 3 is ranked ahead of 2, since it has more successional stages and interspersed of the various stages. Area 2 is selected over Area 1 because of the variety of succession it offers. Area 4 is too open, so Area 1 is picked third and 4 last.

Wood ducks would prefer the order 3, 4, 1, 2. Area 3 has ponds and better cover along its streams than Area 4. Because Areas 1 and 2 have no ponds or streams, there is no difference between them; therefore, a minimum cut of 1 will be used.

Bass and bluegill would prefer the areas in the order 3, 4, 1, 2. Only Area 3 has ponds. Areas 3 and 4 have streams, so they are preferred over Areas 1 and 2.

Aerial Photos

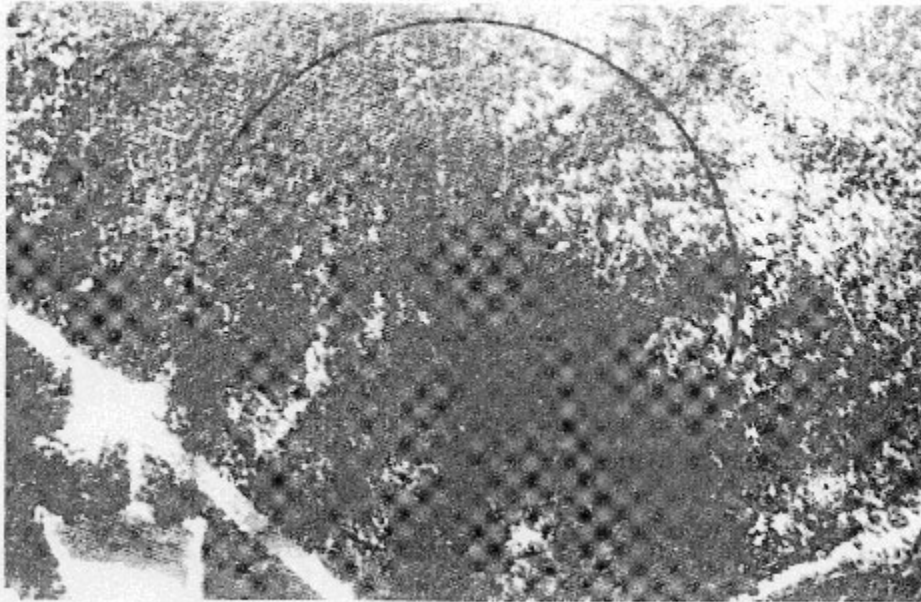


Photo 1 – Area 1

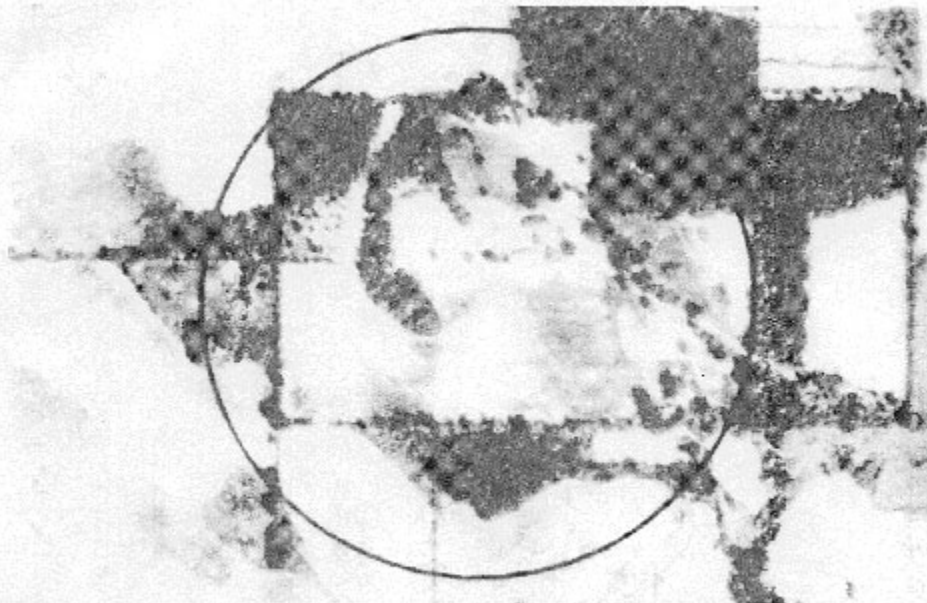


Photo 2 – Area 2

Aerial Photos

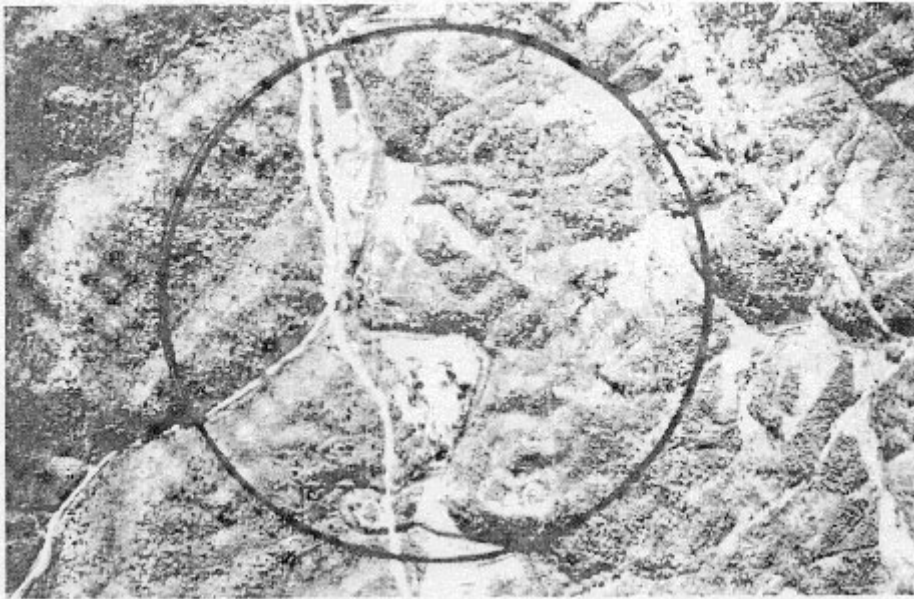


Photo 3 – Area 3

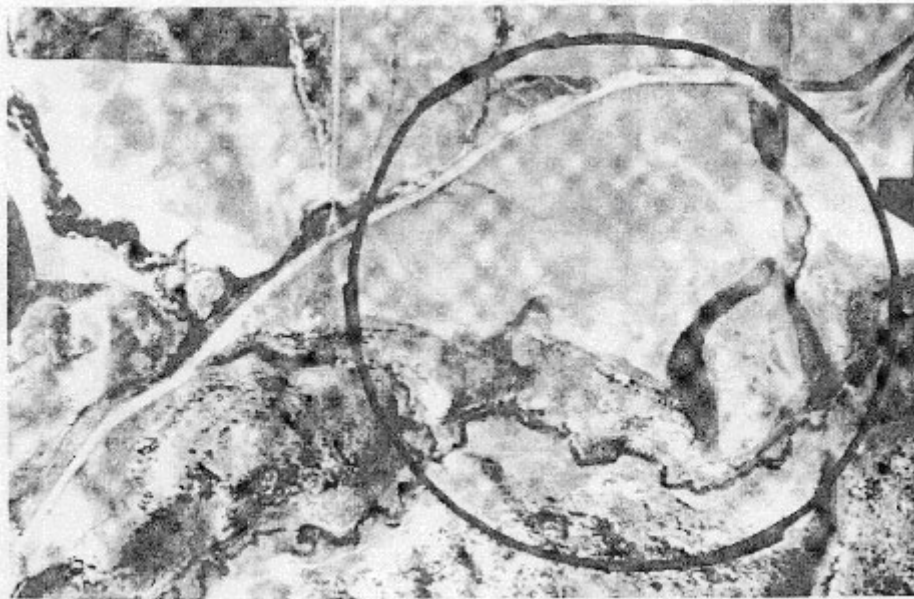


Photo 4 – Area 4

Contestant Name: _____ **SAMPLE** _____

ID Code: _____

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<u>Map Features</u>		<u>Best Habitat (circle one)</u>		
<u>Letter</u>	<u>Feature</u>			
1. _____	A. Small stream	11.	A B	American Kestrel
	B. River			
2. _____	C. Pond or lake	12.	A B	Black Bear
	D. Dirt or gravel road			
3. _____	E. Highway	13.	A B	Coyote
	F. Building			
4. _____	G. Tree(s)	14.	A B	Great Horned Owl
	H. Gravel or sand bar			
5. _____	I. Crop field	15.	A B	Mourning Dove
	J. Pasture (improved)			
6. _____	K. Fence row	16.	A B	Red-eyed Vireo
	L. Bluff			
7. _____	M. Island	17.	A B	Wood Duck
	N. Power line right-of-way			
8. _____		18.	A B	Eastern Cottontail
9. _____		19.	A B	Northern Bobwhite
10. _____		20.	A B	Brown Thrasher

Total Score (20 points): _____

Contestant Name: _____

ID Code: _____

**Activity III:
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JUNIORS**

Map Features

Ranking Photos (*circle one*)

1. _____

1. A B

2. _____

2. A B

3. _____

3. A B

4. _____

4. A B

5. _____

5. A B

6. _____

6. A B

7. _____

7. A B

8. _____

8. A B

9. _____

9. A B

10. _____

10. A B

Activity III Scores

Map features (10 points): _____

Ranking photos (20 points): _____

Total Score: _____