

# Bobwhite Quail Habitat Evaluation

## NRCS – Texas Biology Job Sheet

Ranch \_\_\_\_\_ Pasture/Range Site \_\_\_\_\_ / \_\_\_\_\_ Waypoints \_\_\_\_\_ Date \_\_\_\_\_

The aspiring quail manager must be able to visually assess the suitability of a given piece of land as quail habitat. The things that must be evaluated include:

**Nesting Cover** - Quail need nesting cover, typically large bunch grass clumps about the size of a basketball or prickly pear colonies at least 3 feet wide (the size of a hula hoop). A minimum of 250 large bunch grass clumps is recommended for ideal nesting cover.

**Woody Cover** - Protective cover of brush and shrubs that are thick enough to conceal quail from raptors and low enough to the ground to give thermal and visual protection, or about 10 feet in diameter and 3 feet high. Brush cover should occur in scattered fashion across the landscape; at the least, you should be able to throw a softball in the air from one suitable brush clump to the next.

**Food** - Habitat that provides a stable and reliable food supply will have a variety of both desirable forbs and grasses that produce seed for quail, most producing brush (sumacs, lotebush, plums, hackberry, etc.) and insects. Remember that plant diversity translates into insect diversity and that insects are the “perfect” quail food (especially for broods). A quail needs about 0.05 lb. of food/ day.

**Water** - Quail do not necessarily need to have access to permanent water, but access is a plus in habitat evaluation.

**Interspersion** – Quail need a “crazy quilt” arrangement of various habitat needs because they don’t have the ability to exploit large distances on the landscape. Everything a quail needs on a daily basis should be within about 25 acres.

Rate each category between 0.0 (Poor) to 1.0 (Excellent)

**Nesting Cover:** What percentage of area supports suitable bunch grass clumps of basketball size, prickly pear in colonies at least three feet across, or other suitable nesting sites? \_\_\_\_\_

**Woody Cover:** What percentage of area is has brush that can provide effective thermal and visual cover for quail? \_\_\_\_\_

Area of cover - 20% to 40% 1.00

Area of cover - 5% to 19% 0.67

Area of cover - Less than 5% or greater than 40% 0.33

**Food:** Evaluate the abundance, variety and availability of desirable forbs and browse and large seeded grasses. (See attached list)

**Abundance & Variety:**

At least 5 species from list are present and available and well distributed across general area. 1.00

At least 5 species from list are present, but distribution and availability may be limited. 0.67

Plants from list are scarce, unavailable or poorly distributed across general area. 0.33

No species beneficial for quail are available in the general area. 0.00 \_\_\_\_\_

**Availability:**

Food is available approximately every 1 square yard1 (1 yd x 1 yd). Insects abundant during summer. 1.00

Food is available at least every 4 square yards (2 yd X 2 yd). Insects common during summer. 0.67

Food is available at least every 16 square yards (4 yd x 4 yd); insects sparse during summer. 0.33

Food is not available every 16 square yards. Insects mostly absent. 0.00 \_\_\_\_\_

**Water:** What percentage of area is within 1/4 mile of permanent water? (minimum score = 0.30) \_\_\_\_\_

**Interspersion –**

a. Can I throw a softball in the air form one brush thicket to another?	Always	1.00 – 0.76	
	Half of the time	0.75 – 0.51	
	One-quarter of the time	0.50 – 0.26	
	Rarely	0.25 – 0.00	_____

b. Is there a diversity of woody plants that provide shade, food and screening cover?			
	At least 7 species visible from this point	1.00	
	At least 5 species visible from this point	0.67	
	At least 3 species visible from this point	0.33	
	No suitable species visible from this point	0.00	_____

**Add each of the category values together and divide the sum by seven to determine a total habitat evaluation value:**

<u>Cover</u>	<u>Food</u>	<u>Interspersion</u>	<u>Evaluation</u>
Nesting	Woody	Abundance	Availability
Water	S/B Throw	Diversity	Value

\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ / 7 = \_\_\_\_\_

*If any of the categories score a "0", the Evaluation Value should be "0"*

**Items to consider when evaluating and troubleshooting quail habitat:**

1. Are desirable forbs present only (or primarily) in protected areas from grazing?
2. Are desirable perennial forbs heavily grazed?
3. Are there more than five species of potential seed-producing plants?
4. Is pasture grazed too short to provide adequate nesting cover?
5. Would additional grass cover *degrade* or *enhance* this site for quail? For quail hunting?
6. Would additional brush management *degrade* or *enhance* this site for quail? For quail hunting?
7. Can brush management be accomplished in a manner to maintain adequate cover?
8. Are artificial structures (e.g., old farm equipment, post piles) present to function as loafing coverts?
9. Is additional water development needed and feasible?
10. Can "water harvesting" be used to enhance habitat quality?

**Based on the evaluation, what appears to be the weak link(s) in quail habitat?**

Water                      Protective Cover                      Nesting Cover                      Food

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Based on this evaluation, the overall habitat rating is (circle one):**

Excellent                      Good                      Fair                      Poor  
(0.75 – 1.00)                      (0.74 – 0.50)                      (0.49 – 0.25)                      (0.24 – 0.01)

**As a quail hunter, based on your experiences, how would you rate this site on a scale of "0.00" (pitiful) to "1.00" (perfect)? \_\_\_\_\_**

**What management actions would you recommend to improve this site? (Check all that apply)**

- Selective Brush Control
- Prickly Pear Control
- Rest from Livestock Grazing
- Prescribed Burn
- Water Development
- Water Harvesting
- Discing or Other Mechanical Soil Disturbance
- Heavier Livestock Grazing
- Food Plots
- Feeders
- Construct Artificial Loafing Coverts
- Other (explain) \_\_\_\_\_

# Bobwhite Quail Habitat Evaluation: Rolling Plains & Cross Timbers

## Quail Food Plants of the Rolling Plains & Cross Timbers

## Nesting & Protective Cover Plants

Perennial Forbs	Annual Forbs	Woody Plants
Buffalo gourd	American basketflower	Algerita
Bundleflower spp.	Annual Broomweed	Bumelia or Chittam
Bush sunflower	Annual sunflower	Carolina snailseed
Butterfly pea	Annual crotons	Catclaw acacia
Catclaw sensitivebriar	Bladderpod	Catclaw mimosa
Copperleaf	Buffalobur	Coralberry
Dayflower	Carelessweed or Pigweed	Dogwood spp.
Dotted gayfeather	Carolina geranium	Elbowbush
Dutchman's britches	Clammyweed	Elderberry
Engelmann's daisy	Cowpen daisy	Ephedra
Evolvulus	Croton or Doveweed	Hackberry
Globemallow	Curlycup gumweed	Honeysuckle spp.
Ground cherry	Eryngo	Inland ceanothus
Hoary milkpea	Filaree spp.	Lotebush
Indian mallow	Flax	Mesquite
Indian rushpea	Giant ragweed	Oaks
Knotweed leafflower	Kochia	Possumhaw
Lespedeza spp.	Lambsquarters	Prickly pear
Low menodora	Nuttall milkvetch	Pricklyash
Low wild mercury	Partridge pea	Roemer acacia
Maximiliansunflower	Pigweed	Rusty blackhaw
Morning glory	Pink smartweed	Southern dewberry
Noseburn	Plantains	Sumacs
Orange flameflower	Pokeberry	Tasajillo
Penstemon spp.	Prairie sunflower	Texas hogplum
Perennial broomweed	Pricklypoppy	Wolfberry
Perennial crotons	Prostrate spurge	
Perennial spurge	Russian thistle or Tumbleweed	
Pigeon-berry	Saw-leaf daisy	
Prairie acacia	Smartweed	
Puccoon	Snow-on-the-mountain/prairie	
Queens delight	Spectaclepod	
Sand lily	Toothed spurge	
Scullcap spp.	Vetch	
Sida spp.	White rosinweed	
Silverleaf nightshade	Wild mercury	
Spiderwort	Wildbean (Quail pea)	
Tall-bread scurfpea		
Texas bindweed		
Texas bullnettle		
Texas nightshade		
Texas snoutbean		
Trailing wildbean		
Virginia tephrosia		
Western indigo		
Western ragweed		
Yellow neptunia		
Yellow woodsorrell		
	<b>Cultivated Crops</b>	
	Browntop millet	
	Cowpeas	
	German/Foxtail millet	
	Pearl millet	
	Proso millet	
	Sesame	
	Sorghums	
	Sunflower	
	Wheat	
		<b>Grasses</b>
		Blue panicum
		Bristlegrass spp.
		Fringed signalgrass
		Hall's panicum
		Hurrah grass
		Johnsongrass
		Kleingrass
		Paspalum spp.
		Purpletop tridens
		Sand dropseed
		Sorghum alnum
		Switchgrass
		Texas cupgrass
		Texas panicum
		Vine mesquite

### Grasses

Alkali sacaton  
 Broadleaf woodoats  
 Kleingrass  
 Little bluestem  
 Meadow dropseed  
 Plains bristlegrass  
 Purple threearn  
 Sideoats grama  
 Silver bluestem  
 Slim tridens  
 Switchgrass  
 Texas wintergrass  
 Tobosa  
 Weeping lovegrass  
 White tridens  
 Wildrye

### Woody Plants

Algerita  
 Bumelia or chittam  
 Catclaw acacia  
 Elbowbush  
 Flameleaf sumac  
 Fourwing saltbush  
 Greenbriar  
 Hackberry  
 Hogplum  
 Juniper  
 Littleleaf sumac  
 Lotebush  
 Mesquite  
 Mexican buckeye  
 Oaks  
 Prickly pear  
 Pricklyash  
 Roemer acacia  
 Sand sagebrush  
 Skunkbush sumac  
 Southern dewberry  
 Tasajillo  
 Western soapberry  
 Wild plum  
 Wolfberry  
 Yucca (densegrowth)

## Instructions for completing the Bobwhite Quail Habitat Evaluation

**Nesting Cover:** Defined as large clumps of perennial bunch grasses (picture a large clump of little bluestem) containing residual clumps of grass left ungrazed or lightly grazed from the previous year, those being about the size of a basketball are considered large enough to be nesting cover. Thinner clumps of bunch grasses, such as tridens species, can still be considered as nesting cover if two to three close growing clumps would substitute for one large equivalent clump of little bluestem. If prickly pear is commonly found across the evaluation area, look for pear that is “multi-story (multi-pad) tall”. The pear should be as large in diameter as a hula hoop, or a minimum of three feet across, and tall enough to be of density to prevent predators from reaching the quail nest. This can be determined by observing average distances in feet between the large bunch grass clumps. Basketball size clumps with 250 clumps per acre being minimum for adequate nesting cover with 500-1000 per acre near ideal density.

250 clumps per acre = one clump every 13 feet.

500 clumps per acre = one clump every 9 feet.

1000 clumps per acre = one clump every 7 feet. More nesting sites makes it harder on nest raiding predators. If bunchgrass clumps are lacking, quail will nest in dense prickly pear, low growing yucca and other spiny plants.

**Woody Cover:** Quail need appropriate types of protective woody cover to provide thermal and visual cover from predators. Low growing multi-stemmed woody plants provide this cover as opposed to upright, single trunked trees. Quail use this cover during the mid-day period to hide from predators. The low growing woody cover should be dense enough to prevent avian predators from seeing the quail but open near the ground so terrestrial predators can be seen approaching. Lotebush, sumacs and wolfberry are examples of desirable woody cover. Prickly pear should be considered as woody cover when evaluating a site. Low woody cover in 20% - 40% density will provide adequate amounts of protective cover (within a softball throw from one clump to the next, without throwing back at previous clumps).

**Food Abundance and Variety:** Evaluate approximately the area of one acre within the eco site you are now working. Walk around and use a highlighter to mark each food plant observed by circling or highlighting the plant on the attached food checklist (from those plants in the first three columns of the quail form, far right column is cover plants only). Choose the answer based on food plant observations and how well the plants are distributed.

**Availability:** Use a transect where you walk 5 steps or 10 steps (in large eco sites), stop, spread your feet approximately one yard and evaluate the one yard area in front of your two feet. If any of the food plants you highlighted show up in the square yard, put a tick mark to the right of the line – Food is available approximately every 1 square yard (1 yd X 1 yd). Insects abundant during summer. Take the same number of steps again, spread feet and evaluate the imaginary square yard in front of you, put a tick mark again if any one food item is present and continue on. Only one food item per square yard is required, not all that you observed. If you find a square yard that does not have any food you have to expand the plot to 4 square yards being 2 yds X 2 yds and again look for food. If you find food put a tick mark out beside the every – Food available at least every 4 square yards line. Continue on for at least 10 plots. It is important to be consistent in how the transect is walked. We begin walking using your left foot, stopping on the 5<sup>th</sup> or 10<sup>th</sup> step, anchoring the left foot and always spreading the feet to the right to get the 1 yard wide distance. So if you have to expand the plot to 2 X 2 or larger, always expand it to the right. Being consistent is not hard once you understand the why of doing it this way. Then after at least 10 square yard or larger plots being evaluated, add up the tick marks on each line and the most marks gives the answer.

**Water:** Free water is beneficial during hot dry summers but is normally not a limiting factor for bobwhites.

**Interspersion: Part a:** Spacing of the low woody clumps is a very important part of the habitat evaluation. Within the acre you are evaluating, how often can you throw a softball from one adequately sized woody clump to the next? Remember that you cannot use previously thrown to clumps since the predator could still be near that area.

**Part b:** How many woody plants that can provide shade, food and screening cover can you see within the evaluation acre? Prickly pear can be counted as a woody plant.

**Summary:** Add each of the category values together and divide the sum by seven to determine a total habitat evaluation value. Retain this form to compare to the post treatment evaluation.