

Working Lands for Wildlife Bog Turtle Wildlife Habitat Evaluation Guide

This Wildlife Habitat Evaluation Guide (WHEG) is based on the nesting and hibernation habitat requirements of the bog turtle (*Glyptemys mühlenbergii*). It is accepted that managing for this species benefits many other wetland dependent species (e.g., Baltimore checkerspot, sedge wren, least bittern, and Canada burnet). This model can be applied to all ecological sites with the potential to support spring-fed emergent wetland habitat suitable for bog turtles, and have the potential to be or are currently occupied by bog turtles.

The bog turtle requires spring fed emergent wetlands to complete its life cycle, including reproduction and annual hibernation. Active and recently abandoned grazed, spring-fed wetlands containing saturated (but not ponded) soils and located on working lands are an ideal habitat. Bog turtles hibernate below ground in emergent, scrub-shrub, or forested spring-fed wetlands. (NOTE: Bog turtles may also hibernate in areas not identified in this evaluation.¹)

Bog turtles nest within their core wetland habitat on hummocks elevated above the water line or saturated surface. The most common form of nesting hummock are sedges that grow in the form of a 'pedestal' or 'tussock.' The cores of the sedge tussocks contain a combination of organic matter (e.g., humus, moss) and soil in which the bog turtles deposit eggs. Other hummocky substrates that bog turtles will use for nesting include mounds of Sphagnum moss, rotted tree stumps, and elevated areas of soil.

Instructions: The evaluation is conducted on the entire wetland, except if core habitat is specified in the factor. Choose the best choice for “Before” and “After,” and interpolate values if necessary. Factor number 1 (i.e., Core habitat - saturated soils) must be used in all evaluations because it is a critical habitat component. The “Before” scores represent the habitat in a benchmark state without improvements, and are for the current year (previous 12 months) unless otherwise stated. The “After” scores are predictive scores of when the conservation plan or practice has been fully implemented and is functioning as expected, which will vary in time. If a factor is unknown, mark it with “unknown” and provide a brief explanation. Do not count unknown factors in the calculation of the total score. In order to achieve quality criteria on a 0-1 scale the “After” score must be 0.75 or greater. Note if the site potential is below the 1.0 level. Attach a conservation plan map showing the core habitat and wetland boundary.

Owner/Operator:	Field Office:	
County:	Ecological Site:	
NRCS Planner:	Acres:	Field(s):
NRCS Soil Con:	Evaluation Period:	Date:
Non-NRCS Biologist/NRCS Biologist:	Location:	
Notes:		

¹ Bog turtles depend on oxygenated water during hibernation. This is usually provided by flowing (oxygenated) water. Hibernation areas needs to be deep enough and/or associated with vegetation which will provide protection from predators. Hibernation areas also need to be deep (thick) enough that bog turtles can go deeper in periods of low flow or low groundwater table, and/or when freezing conditions penetrate shallower areas.

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FACTOR	Values	Before Score	Recommended Conservation Practices	After Score	Post-Implementation Monitoring Score ²
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1) Core habitat – Saturated soils (mucky or mineral soils) with “super saturated” layer at least 6 in. thick

NOTE: Score of ‘0’ makes overall Score ‘0’

a) 50% or more of the soils in wetland area(s)	1.0				
b) 30-49%	0.75				
c) 10-29%	0.5				
d) Less than 10%	0.25				
e) None	0				

2) Signs of disturbance to natural wetland hydrology including ‘flashy’ storm-water/flooding systems, drainage ditches, tile drainage, berms, roads, and/or culverts

a) None	1.0				
b) Slight degradation (<10% of site)	0.75				
c) Minor to moderate degradation (10-49% of site)	0.5				
d) Significant degradation (50-89% of site)	0.25				
e) 90% or more of site degraded	0				

3) Signs of disturbance to wetland vegetation

a) Light to moderate grazing or mowing per BO ³	1.0				
b) No grazing or mowing	0.75				
c) Over grazing (vegetation grazed below 6 in.)	0.25				
d) Mowing outside dates allowed by the BO ³	0				

4) Signs of disturbance due to ponding and/or sedimentation

a) None	1.0				
b) Less than 25% of wetland area affected by ponding and/or sedimentation	0.75				
c) 25-49%	0.5				
d) 50-74%	0.25				
e) 75% or more	0.0				

5) Flowing springs present (surface water)

a) Flowing water visible, water appears oxygenated ⁴	1.0				
b) Still or very slow water movement, water appears oxygenated ⁴	0.5				
c) Still or very slow water movement, and may not be oxygenated ⁴	0.25				
d) None	0				

² Post Implementation Monitoring Score – This column may be utilized for post implementation monitoring by partner agencies or other entities and is not required to be completed by NRCS personnel unless otherwise specified.

³ U.S. Fish and Wildlife Service, *Biological Opinion: Effects of the Implementation of Habitat Restoration Practices by the Natural Resources Conservation Service on the Northern Population of the Bog Turtle*, September 21, 2010.

⁴ Evidence of oxygenation in surface water includes clear or tea-colored water, a lack of algal masses, and amphibian egg masses. Ignore ‘scum’ of iron bacteria if present (this may not reflect low oxygen levels).

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FACTOR	Values	Before Score	Recommended Conservation Practices	After Score	Post-Implementation Monitoring Score ²
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6) Dominant wetland vegetation within core habitat (greatest coverage by types of plants listed)

a) Sedges, rushes, bulrushes, and wetland forbs	1.0				
b) Skunk cabbage and native wetland grasses	0.75				
c) Native wetland shrubs	0.25				
d) Noxious and/or invasive species	0				

7) Canopy of noxious and/or invasive species, including multi-flora rose, purple loosestrife, phragmites, reed canarygrass, and cattail

a) Less than 10%	1.0				
b) 10-24%	0.75				
c) 25-49%	0.5				
d) 50-74%	0.25				
e) 75% or more	0				

8) Canopy of woody vegetation in core habitat areas or areas with potential to be core habitat (usually in areas of saturated soils as referenced in factor 1)

a) Less than 20%	1.0				
b) 20-49%	0.75				
c) 50-75%	0.5				
a) 75% or more	0.0				

9) Stable vegetated upland buffer of at least 100 ft. width

a) 90% or more of wetland perimeter has buffer	1.0				
b) 50-89%	0.75				
c) 25-49%	0.5				
b) Less than 25%	0.0				

10) If stream present, stream bank quality adjacent to and within 100 ft. upstream and downstream of wetland

a) 90% or more of length is well vegetated and stable	1.0				
b) 75-89%	0.75				
c) 50-74%	0.5				
d) 25-49%	0.25				
e) Less than 25%	0.0				

	BEFORE	AFTER
HABITAT EVALUATION TOTALS		
NUMBER OF FACTORS CONSIDERED		
FINAL SCORES (Before and after totals each divided by the number of factors considered) The final AFTER score must be at least 0.75 to meet minimum requirements for WLFW		
PLANNED IMPROVEMENT (After Total – Before Total)		

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<p>Factor(s)</p>	<p style="text-align: center;">Conservation Practices for Resource Concerns⁵ <i>Projects rating 0.5 or less, consider the following conservation practices</i></p> <p>The following practices have been reviewed by the USFWS and NRCS for Bog Turtle Habitat Management funded through the WLFW.</p>
<p>1, 2, 4, 5 Restoration or rehabilitation of hydrology</p>	<p>Aquatic Organism Passage (396) - Modification or removal of barriers that restrict or impede movement of aquatic organisms.</p> <p>Brush management (314) - The management or removal of woody (non-herbaceous or succulent) plants including those that are invasive and noxious.</p> <p>Grade Stabilization Structure (410) - A structure used to control the grade and head cutting in natural or artificial channels.</p> <p>Prescribed Grazing (528) - Managing the harvest of vegetation with grazing and/or browsing animals.</p> <p>Restoration and Management of Rare or Declining Habitats (643): Return terrestrial ecosystems to their original or usable and functioning condition and/or improve biodiversity by providing and maintaining habitat for fish and wildlife species associated with the ecosystem.</p> <p>Streambank and Shoreline Protection (580) - Treatment(s) used to stabilize and protect banks of streams or constructed channels, and shorelines of lakes, reservoirs, or estuaries.</p> <p>Stream Habitat Improvement and Management (395) - Maintain, improve or restore physical, chemical and biological functions of a stream, and its associated riparian zone, necessary for meeting the life history requirements of desired aquatic species.</p> <p>Structure for Water Control (587) - A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation or measures water.</p> <p>Wetland Restoration (657) - The return of a wetland and its functions to a close approximation of its original condition as it existed prior to disturbance on a former or degraded wetland site.</p>
<p>3, 4, 5, 9, 10 Habitat protection from degradation</p>	<p>Access Control (472) – The temporary or permanent exclusion of animals, people, vehicles, and/or equipment from an area.</p> <p>Conservation Cover (327) - Establishing and maintaining permanent vegetative cover</p> <p>Fence (382) - A constructed barrier to animals or people.</p> <p>Filter Strip (393) - A strip or area of herbaceous vegetation that removes contaminants from overland flow.</p> <p>Grade Stabilization Structure (410) - A structure used to control the grade and head cutting in natural or artificial channels.</p> <p>Livestock Pipeline (516) - A pipeline and appurtenances installed to convey water for livestock or wildlife.</p> <p>Prescribed Grazing (528) - Managing the harvest of vegetation with grazing and/or browsing animals.</p>

⁵ Conservation practices not identified above must be approved at the national level prior to use in Working Lands for Wildlife.

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Factor(s)	Conservation Practices for Resource Concerns⁵ <i>Projects rating 0.5 or less, consider the following conservation practices</i>
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<p>3, 4, 5, 9, 10</p> <p>Habitat protection from degradation</p> <p>(Continued)</p>	<p>Pumping Plant (533) - A facility that delivers water at a designed pressure and flow rate. Includes the required pump(s), associated power unit(s), plumbing, appurtenances, and may include on-site fuel or energy source(s), and protective structures.</p> <p>Riparian Forest Buffer (391) - An area predominantly trees and/or shrubs located adjacent to and up-gradient from watercourses or water bodies.</p> <p>Riparian Herbaceous Cover (390) - Grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats.</p> <p>Spring Development (574) - Collection of water from springs or seeps to provide water for a conservation need.</p> <p>Streambank and Shoreline Protection (580) - Treatment(s) used to stabilize and protect banks of streams or constructed channels, and shorelines of lakes, reservoirs, or estuaries.</p> <p>Stream Crossing (578) - A stabilized area or structure constructed across a stream to provide a travel way for people, livestock, equipment, or vehicles.</p> <p>Watering Facility (614) - A permanent or portable device to provide an adequate amount and quality of drinking water for livestock and or wildlife.</p> <p>Water Well (642) - A hole drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply.</p>
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<p>6, 7, 8</p> <p>Improvement of vegetation condition and/or composition, including control of invasive species</p>	<p>Access Control (472) – The temporary or permanent exclusion of animals, people, vehicles, and/or equipment from an area.</p> <p>Brush management (314) - The management or removal of woody (non-herbaceous or succulent) plants including those that are invasive and noxious.</p> <p>Conservation Cover (327) - Establishing and maintaining permanent vegetative cover</p> <p>Fence (382) - A constructed barrier to animals or people.</p> <p>Herbaceous Weed Control (315) - The removal or control of herbaceous weeds including invasive, noxious and prohibited plants.</p> <p>Livestock Pipeline (516) - A pipeline and appurtenances installed to convey water for livestock or wildlife.</p> <p>Prescribed Burning (338) - Controlled fire applied to a predetermined area.</p> <p>Prescribed Grazing (528) - Managing the harvest of vegetation with grazing and/or browsing animals.</p> <p>Pumping Plant (533) - A facility that delivers water at a designed pressure and flow rate. Includes the required pump(s), associated power unit(s), plumbing, appurtenances, and may include on-site fuel or energy source(s), and protective structures.</p> <p>Restoration and Management of Rare or Declining Habitats (643) - Return terrestrial ecosystems to their original or usable and functioning condition and/or improve biodiversity by providing and maintaining habitat for fish and wildlife species associated with the ecosystem.</p>
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Factor(s)	<p align="center">Conservation Practices for Resource Concerns⁵ <i>Projects rating 0.5 or less, consider the following conservation practices</i></p>
<p>6, 7, 8</p> <p>Improvement of vegetation condition and/or composition, including control of invasive species</p> <p>(Continued)</p>	<p>Riparian Herbaceous Cover (390) - Grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats.</p> <p>Spring Development (574) - Collection of water from springs or seeps to provide water for a conservation need.</p> <p>Stream Crossing (578) - A stabilized area or structure constructed across a stream to provide a travel way for people, livestock, equipment, or vehicles.</p> <p>Watering Facility (614) - A permanent or portable device to provide an adequate amount and quality of drinking water for livestock and or wildlife.</p> <p>Water Well (642) - A hole drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply.</p> <p>Wetland Enhancement (659) - The augmentation of wetland functions beyond the original natural conditions on a former, degraded, or naturally functioning wetland site; sometimes at the expense of other functions.</p>

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Summary of Effects for NRCS Conservation Practices Considered under Bog Turtle WLFW⁶

NRCS Conservation Practice	Addressed by Biological Opinion (BO) ⁷ or analyzed in addendum?	Effects Determination ⁸ LAA – Likely to adversely affect NLAA – Not likely to adversely affect
Access Control (472)	If using a fence, this practice is covered under the biological opinion.	NRCS will confer with Service field office for a site-specific effects evaluation if using something other than a fence
Brush Management (314)	Yes	LAA
Conservation Cover (327)	Not addressed in BO but analyzed in addendum	LAA
Fence (382)	Yes (includes maintenance of fence via spraying)	LAA
Filter Strip (393)	Yes	NLAA in upland more than 300 feet from a bog turtle wetland OR within 300 feet of a bog turtle wetland when installed or maintained between Nov 1 and Mar 31 when daytime air temperature is less than 50°F. NRCS will confer with Service field office for a site-specific effects evaluation if installing and maintaining a filter strip within 300 feet of a bog turtle wetland from April 1 through October 31 when daytime air temperature is above 50°F
Grade Stabilization (410)	No	NRCS will confer with Service field office for a site-specific effects evaluation
Herbaceous Weed Control (315)	Yes, except for treatment of reed canary grass	LAA – specific to certain herbicides Confer with Service field office for a site-specific effects evaluation for each project that is undertaking control of reed canary grass
Livestock Pipeline (516)	No	NRCS will confer with Service field office for a site-specific effects evaluation
Prescribed Burning (338)	Yes	NLAA with time of year restrictions
Prescribed Grazing (528)	Yes for maintenance grazing Yes for restoration grazing using sheep and goats per BO	NLAA for maintenance grazing per BO LAA for restoration grazing using sheep and goats per BO
Pumping Plant (533)	No	NRCS will confer with Service field office for a site-specific effects evaluation
Riparian Forest Buffer (391)	Not addressed in BO but analyzed in addendum	NLAA when installed more than 300 feet from bog turtle habitat

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NRCS Conservation Practice	Addressed by Biological Opinion (BO) ⁷ or analyzed in addendum?	Effects Determination ⁸ LAA – Likely to adversely affect NLAA – Not likely to adversely affect
Riparian Herbaceous Cover (390)	Not addressed in BO but analyzed in addendum	NLAA when installed more than 300 feet from a bog turtle wetland NLAA when installed within 300 feet of a bog turtle wetland AND planted without machinery OR planted between November 1 and March 31
Spring Development (574)	No	NRCS will confer with Service field office for a site-specific effects evaluation
Stream Crossing (578)	Yes, only if implemented outside a bog turtle wetland	NLAA if outside a bog turtle wetland If within wetland, NRCS will confer with Service field office for a site specific effects evaluation.
Streambank and Shoreline Protection (580)	No	NRCS will confer with Service field office for a site-specific effects evaluation
Stream Habitat Improvement and Management (395)	No	NRCS will confer with Service field office for a site-specific effects evaluation
Structure for Water Control (587)	No	NRCS will confer with Service field office for a site-specific effects evaluation
Water Well (642)	No	NRCS will confer with Service field office for a site-specific effects evaluation
Watering Facility (614)	No	NRCS will confer with Service field office for a site-specific effects evaluation
Wetland Enhancement (659)	Yes, but only effects of restoring native vegetation; hydrology restoration through other methods not addressed	LAA for vegetation restoration NRCS will confer with Service field office for a site-specific effects evaluation for implementing hydrology restoration, other than planting native vegetation
Wetland Restoration (657)	Yes, but only effects of restoring native vegetation; hydrology restoration through other methods not addressed	LAA for vegetation restoration NRCS will confer with Service field office for a site-specific effects evaluation for implementing hydrology restoration, other than planting native vegetation

⁶ The effects assessment for conservation practices not already included in the biological opinion applies to WLFW only.

⁷ U.S. Fish and Wildlife Service, *Biological Opinion: Effects of the Implementation of Habitat Restoration Practices by the Natural Resources Conservation Service on the Northern Population of the Bog Turtle*, September 21, 2010.

⁸ NLAA practices are not expected to result in “take,” but may require specific conservation measures to avoid adverse effects on bog turtles; LAA practices may be implemented when specific conservation measures are followed. See BO or BO addendum for WLFW for specific measures.