
Bay Bank

The Chesapeake's Ecosystem Service Marketplace

Habitats Suitable for Bog Turtles and Associated Species Protocol

This guidance is intended to provide landowners and project developers with a clear understanding of what constitutes a project protecting key habitats suitable for bog turtles and other associated species in Bay Bank's voluntary habitat market and how individual projects will be evaluated by credit purchasers. Habitat characteristics are based on the requirements of bog turtles as described in their recovery plan. However, projects do not require the actual occurrence of bog turtles, nor do they constitute part of a bog turtle bank approved by the U.S. Fish and Wildlife Service.

The individual project attributes are determined by the landowner and project developer on a case-by-case basis. However, landowners and project developers should carefully consider how any potential project fits into the following criteria to determine the likelihood that a credit purchaser will be interested in the resulting credits. Bay Bank will only evaluate projects from the perspective of eligibility, additionality, and permanence; buyers will evaluate project quality relative to the criteria contained in this management guidance and make independent decisions about which credits to purchase. Landowners who have expressed interest in developing bog turtle habitat credits based on their LandServer evaluation and use of Bay Bank Project Planning Tools may contact credit buyers prior to project development to determine demand and estimated pricing.

Principle 1.0 – Project Eligibility

1. To be eligible for participation in Bay Bank voluntary habitat conservation market for bog turtle habitat, a property must be located in one of the following priority areas:
 - 1.1. If the project site is located in Maryland, it must be in Baltimore, Cecil, Carroll, or Harford counties
 - 1.1.1. Within these counties, the project area shall be designated as one of the following habitat types by the State Wildlife Action Plan: *Forested Seepage Wetlands*, *Bog and Fen Wetland Complexes*, *Non-tidal Shrub Wetlands*, or *Non-tidal Emergent Wetlands*.
 - 1.1.2. Landowners may determine if their property likely contains one of these SWAP habitat types by obtaining a property report from LandServer (www.landserver.org)
 - 1.2. If the project site is located in Delaware, it must be in New Castle County
 - 1.2.1. Within New Castle County, the project area shall be designated as one of the following habitat types by the State Wildlife Action Plan: *Non-forested Wetlands* or *Piedmont Stream Valley Wetlands*.
 - 1.2.2. Landowners may determine if their property likely contains one of these SWAP habitat types by obtaining a property report from LandServer (www.landserver.org)
 - 1.3. If the project site is located in Pennsylvania, it must be in Adams, Berks, Bucks, Chester, Cumberland, Delaware, Franklin, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, or York Counties
 - 1.3.1. Within these counties, the project area shall be designated as one of the following habitat types by the State Wildlife Action Plan: *Emergent Wetlands*

- 1.3.2. Landowners may determine if their property likely contains one of these SWAP habitat types by obtaining a property report from LandServer (www.landserver.org)

Principle 2.0 – Project Evaluation

Projects will be evaluated for funding by participating organizations according to the following criteria. Management strategies, habitat characteristics, and project evaluation criteria included here are directly extracted or adapted from the Bog Turtle Northern Population Recovery Plan prepared by Michael Klemens, Ph.D. for the United States Fish and Wildlife Service in 2001.

2. Projects of different size are acceptable. Projects of different sizes must be located in areas defined by 1.1 to 1.3, and contain characteristics described by 2.1.1 and 2.1.2. These sites are then evaluated based on their quality (e.g. land cover), and duration of the project. Credits are awarded for the amount of suitable bog turtle habitat contained in the entire area protected by the project. *This may or may not be the entire extent of a wetland complex on a given parcel (i.e. a landowner need not enroll all areas of ownership as a project, so long as activities on those other parcels will not harm attributes for which project areas are credited).*

2.1. Project Site Characteristics. To be eligible to receive credits, the project must protect a wetland complex that contains bog turtle habitat characteristics described at the time of crediting.

2.1.1. “Bog turtle habitat” refers to habitat classified as one of the SWAP habitat types listed in sections 1.1.1., 1.2.1., and 1.3.1. and containing the following characteristics:

- 2.1.1.1. Generally, seepage or spring-fed emergent wetlands associated with streams or springs with shallow surface water or saturated soils present year-round, although in summer the wet areas may be restricted to near the spring head
- 2.1.1.2. Contain a mosaic of habitat types including open-canopy, herbaceous sedge meadows and fens bordered by more thickly vegetated and wooded areas
- 2.1.1.3. Contain a substrate of soft mud (specific soil type(s) is not specified) and interspersed wet and dry pockets; in some cases the substrate may also consist of scattered pockets of peat at least six inches deep
- 2.1.1.4. Dominant vegetation of low grasses and sedges (emergent wetland), often with a scrub-shrub wetland component. *Comment: vegetation includes tussock sedge, soft rush, rice cut grass, sensitive fern, tearthumbs, jewelweeds, arrowheads, skunk cabbage, panic grasses, other sedges, spike rushes, grass-of-Parnassus, shrubby cinquefoil, sweet-flag, and in disturbed sites, reed canary grass or purple loosestrife. Common scrub-shrub species include alder, red maple, willow, tamarack, and in disturbed sites, multiflora rose.*
- 2.1.1.5. A part of a linear system of wetlands that provides for habitat connectivity
- 2.1.1.6. Some mechanism, such as fire, beaver activity, or light grazing must be in place or included in the management plan for the site to maintain early successional, open-canopy habitat within the wetland complex
- 2.1.1.7. While each of these components is necessary in a given wetland, they may be distributed across the entirety of the wetland in a habitat mosaic

2.1.2. Appurtenant Lands: The land area extending 300 feet from the edge of, but not within, the wetland habitat defined in 2.1.1.1.-2.1.1.5., must be included in a project, and receives credits at the same rate as the calculated credit density of the wetland

habitat. This appurtenant land acts as a filter and buffer for the wetland and protects against harm to the wetland from adjacent uses. Appurtenant lands extending beyond the 300 foot wetland buffer area shall be eligible to generate credits, provided the land meets the following requirements:

- 2.1.2.1. The appurtenant land included in the project serves as a habitat corridor between the protected wetland and another wetland known to have bog turtle populations or habitat characteristics
- 2.1.2.2. The habitat corridor must follow the course of the stream/wetland corridor connecting the protected wetland with the adjacent wetland containing bog turtle populations or habitat characteristics
- 2.1.2.3. No major impediments to turtle movements exist between the protected wetland and the adjacent wetland containing bog turtle populations or habitat characteristics. *Major impediments are defined as: A condition that significantly reduces the chance of a turtle successfully moving between wetland sites. Examples include: steeply graded, rocky streams; multiple-lane paved roads; two-lane paved roads crossing wetland at grade with moderate to heavy traffic, during peak hours (an average of 1 car per minute or greater between 8AM and 5PM); large rivers (order 3 or higher); large impoundments and reservoirs, especially if bare-edged or surrounded by inhospitable habitat.*
- 2.1.2.4. If the adjacent wetland containing bog turtle populations or habitat characteristics is located on a property not owned by the owner of the property containing the project, the appurtenant land included in the project as a habitat corridor must extend to the property boundary of the property containing the protected wetland
- 2.1.2.5. If the adjacent wetland containing bog turtle populations or habitat characteristics and the protected wetland are in common ownership, the appurtenant lands included in the project as a habitat corridor must extend to the edge of the 300 foot buffer surrounding the adjacent wetland
- 2.1.2.6. Appurtenant lands meeting the conditions of this section shall be independently evaluated using the same credit density criteria as the wetland project area

2.2. Project Site Quality - sites that meet the basic habitat criteria described in Sections 2.1.1 and 2.1.2 will be further evaluated for project quality based on the criteria described in this section. Points awarded for different levels of quality will affect the “density” of credits, reported as credits/acre and aggregated as the total number of credits for a project. Projects can range between 100 and 3.75 credits/acre for projects in eligible areas. The total points earned represent attributes that will be documented and maintained according to a habitat management plan for the project. The final credit density score equals the base number of credits per acre prior to modification for contract length (see 2.3).

2.2.1. Site Size/Fragmentation:

- 2.2.1.1. 40 Points: Interconnected wetland system, with other occurrences reported (recent or historical) within the drainage basin
- 2.2.1.2. 30 Points: Interconnected wetland system, no other occurrences reported (recent or historical) within the drainage basin
- 2.2.1.3. 20 Points: Disconnected and/or isolated by fragmentation, large (greater than 5 acres)
- 2.2.1.4. 10 Points: Disconnected and/or isolated by fragmentation, small (2-5 acres)

2.2.1.5. 0 Points: Disconnected and/or isolated by fragmentation, very small (less than 2 acres)

2.2.2. Invasive Plants and Successional Species (*% cover of invasives: purple loosestrife, giant reed, multiflora rose, reed canary grass, mint, watercress, dog fennel or successional species: red maples and alders*):

2.2.2.1. 20 Points: Insignificant (less than 25%)

2.2.2.2. 15 Points: Light (25% coverage)

2.2.2.3. 10 Points: Moderate (50% coverage)

2.2.2.4. 5 Points: Thick (75% coverage)

2.2.2.5. 0 Points: Dominates (essentially a monoculture)

2.2.3. Proximal Threats (*e.g. road crossing at grade, housing development, ditching and draining, or equivalent*):

2.2.3.1. 20 Points: All proximal threats more than 660 feet (1/8 mile) from habitat

2.2.3.2. 15 Points: Threat(s) within 660 feet of habitat

2.2.3.3. 10 Points: Threat(s) within 400 feet of habitat

2.2.3.4. 5 Points: Threat(s) within 200 feet of habitat

2.2.3.5. 0 Point: Active pernicious intrusion into the wetland habitat, including ditching, draining, diversion, or construction in the wetland or threat(s) within 50 feet of habitat

2.2.4. General Habitat Conditions (*using aerial photos from LandServer, note the land use within one mile of the project site*):

2.2.4.1. 20 Points: Less than 25% of the land is in agriculture or pasture, with large areas of woods and undeveloped areas

2.2.4.2. 15 Points: Less than 50% of the land is in agriculture or pasture, with large areas of woods and undeveloped areas

2.2.4.3. 10 Points: Rural with some residential, intense land use. Roads run from point to point as opposed to subdivision feeder configuration. Some main roads show heavier development, but the overlying pattern is rural use, with over 50% of the land in fields and agriculture. Small areas of high disturbance may be scattered in this matrix, including factories and quarries.

2.2.4.4. 5 Points: Suburban, fragmented. Roads laid down in characteristic pattern of subdivisions as opposed to roads for travel

2.2.4.5. 0 Point: Urban, fragmented. Dense road networks.

2.3. Project Duration - All projects are subject to a credit adjustment based on the length of the contract through which credits are received. The base contract length is 100 years. Shorter contracts adjust the total credit value as a percentage of the full contract length. Fifty-year contracts are therefore valued at 50% of the full credit density. No contract can be shorter than 15 years.

2.4. Credit Calculation: The credit density of a project is determined by adding the points earned by the project based on Criteria 2.2, multiplied by the project duration percentage relative to the base contract length (Criteria 2.3). Credit density is calculated on a per acre basis. Example credit calculation:

Total Points from Credit Density Calculation: 90

Duration of the Project: Landowner agrees to a 50 year contract (50% of base contract length)

Final Credit Density: 90 points X .5 = 45 credits/acre

Principle 3.0 – Additionality

Bog turtle habitat values offered for sale through the Bay Bank must be *additional* and not already conserved onsite through other transactions or commitments, whether voluntary or mandatory. The additionality of a given project is evaluated according to the following criteria:

- 3.1. Values offered for sale may include priority bog turtle habitat created, restored, or maintained if prior transactions or commitments do not require these activities;
- 3.2. Passive additions onsite: Should additional bog turtle habitat or transactable attributes develop that are not included in the original transaction, but are not the result of actions undertaken for this purpose (e.g. an additional restoration project), the landowner/project developer will not be permitted to sell additional credits.
- 3.3. Active additions onsite: Should additional bog turtle habitat be created as the result of actions undertaken for this purpose, the landowner/project developer shall be permitted to sell additional credits.

Principle 4.0 – Permanence

The purpose of Bay Bank's voluntary bog turtle habitat conservation market is to conserve existing quality bog turtle habitat and expand the range or quality bog turtle habitat in Maryland, Delaware, and Pennsylvania. As a result of this goal, longer contracts, including permanent conservation easements, are given strong preference in the project evaluation criteria established in Principle 2.0. In all cases, projects must have a minimum contract length of 15 years to be eligible to generate and sell credits. Bay Bank provides buyers and sellers with standard contract and conservation easement instruments that meet the following criteria. Project habitat management plans shall be made enforceable by incorporation into the standard contract/conservation easement language.

- 4.1. The contract instrument protects the land area of the project site from degradation and alternative use and whether it is subject to landowner decisions, transfer of deed, foreclosure, or adverse possession;
- 4.2. The contract instrument provides for ecological viability and resilience during the term of the contract and maintained through actions identified in the habitat management plan (see Principle 5.0). Evaluation shall include measures of:
 - 4.2.1. Present and future threats from adjacent land uses;
 - 4.2.2. Vulnerability to adverse effects of climate change; and,
 - 4.2.3. Probability of loss due to disease, pests, and natural disturbance.
- 4.3. The contract instrument contains terms for in-kind replacement of ecosystem values at the expense of the project owner in the following cases:
 - 4.3.1. The project owner violates the terms of the protection agreement resulting in the loss or degradation of protected ecosystem values.
 - 4.3.2. The project owner engages in activities outside of the contractually protected land area that directly results in the degradation of protected ecosystem values.

- 4.4. The project owner shall not be liable for degradation of protected ecosystem values in cases where the degradation is not the result of a willful act by the project owner, e.g. wildfire, drought, hurricanes, or other acts of God (i.e. “unintentional reversals.”) However, the project area remains under contract for the duration of the contract instrument and the credit purchaser is granted the right to restore the ecosystem values at its expense. The landowner may also restore ecosystem values in coordination with the credit purchaser.
- 4.5. The contractual instrument for the project is required for bank establishment and must be in place before any credits may be transacted. Once the agreement is executed, it shall remain in place for the duration of the contract period stated in the agreement, regardless of the rate at which credits sell or credit price.
- 4.6. The contractual instrument must be held by a Bay Bank approved conservation partner (for criteria, see Principle 6.0). A list of approved conservation partners is provided to landowners and their technical service providers during the bank development process. The decision to accept a project contract for a Bay Bank bog turtle habitat bank is at the sole discretion of the approved conservation partner.

Principle 5.0 – Planning, Monitoring, and Maintenance

Projects are guided by a ‘habitat plan’ documenting the strategy for generating and protecting the bog turtle habitat offered for sale and a monitoring plan that establishes benchmarks of performance and informs any shifts in strategy required to preserve these values.

- 5.1. A “habitat plan” is in place for the long-term maintenance and conservation of the bog turtle habitat for sale, including:
 - 5.1.1. Provisions to ensure replacement of habitat in the event of project failure. “Project reversals” may be handled through actual replacement of habitat or “insurance” by discounting the value of credits adequate to ensure the project can be replaced by funds placed into a stewardship endowment by the purchaser of the credits;
 - 5.1.2. Clear description of roles and liabilities of the project owner (landowner selling credits) and the credit purchaser detailing who is responsible for maintaining specific ecological values. The specific ecological values protected by individual contracts will vary, but will include the core bog turtle habitat characteristics described above in Principle 2.0;
 - 5.1.3. Credible strategy to carry out roles and responsibilities, which includes financial capacity and technical resources. Protection agreements shall provide for establishment financial capacity to carry out maintenance and monitoring at the time credits are transacted. This capacity may be in the form of a legal commitment of the credit purchaser to maintain the habitat, a stewardship endowment funded by the credit purchaser or out of the value of the credits, or a bond posted by the credit purchaser or project owner;
 - 5.1.4. Clearly established indicators and supporting measures (see monitoring plan) that will be tracked and used to understand how values are changing. At minimum, the values that must be tracked by these indicators and supporting measures are the habitat characteristics described in Principle 2.0;
 - 5.1.5. Clear timeline for project oversight. The habitat plan must explicitly detail a schedule for project monitoring. If monitoring will take place on anything except for a yearly basis, provide detailed justification of why yearly monitoring is not needed or

impractical and how the proposed alternative plan will ensure maintenance of bog turtle habitat values;

- 5.2. A “habitat monitoring plan” is in place to ensure that all parties understand how and to what extent bog turtle habitat values are being maintained. The “monitoring plan” shall include:
- 5.2.1. A description of the bog turtle habitat values to be maintained by the project with specific reference to the habitat characteristics detailed in Principle 2 and a strategy to track changes to these habitat values;
 - 5.2.2. Clear indicators to assess how bog turtle habitat values have changed;
 - 5.2.3. Clear description of the habitat thresholds that can be evaluated through the monitoring plan and how reaching clearly defined thresholds indicating decline of the quality of bog turtle habitat as a result of changes in conditions within the project area trigger different management strategies and enforcement procedures if a violation has occurred.

Principle 6.0 – Buyer and Seller Eligibility

Status and history of the landowner, project developer, and other parties bearing liability in the transaction should support future commitments, including but not limited to:

- 6.1. Buyer Eligibility (Bay Bank Conservation Partner)
 - 6.1.1. Demonstrated capacity of the project developer to manage restoration projects, handle financial transactions competently and transparently, and demonstrate long-term fiscal viability.
 - 6.1.2. Bay Bank or its representative will periodically monitor projects/credits purchased and administered by Bay Bank Conservation Partners to ensure ongoing compliance with the bog turtle contract instrument requirements, as described in Principle 4.0, and the project habitat management and monitoring plans.
- 6.2. Seller (Property Owner) Eligibility
 - 6.2.1. Ownership status of property is secure. If there are liens on the property where the project is located, e.g. a mortgage, the owner of the lien must agree to subordinate their interest in the land to the conservation easement or other instrument protecting the bog turtle habitat bank and submit documentation to Bay Bank to such effect.
 - 6.2.2. Formal agreement ensures property owner/manager will cooperate with scientists and other partners to develop and refine measurements of the bog turtle habitat and related upland areas present on the property

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