

# **The Maryland Puritan Tiger Beetle Habitat Conservation Program**



**Maryland Department of Natural Resources  
Annapolis, MD 21401**

**October 2011**

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A person who proposes to conduct an activity that will result in the incidental taking of the State-endangered and federally-threatened Puritan tiger beetle (PTB) may mitigate the impact of this activity by contributing funds to the Department's PTB habitat conservation program. Other options to mitigate for the incidental taking may be considered and approved, as noted in the Background section, below.

The following guidelines apply if the landowner wishes to use the mitigation option of participating in the Department of Natural Resources' Puritan tiger beetle habitat conservation program.

### **Background**

Maryland law provides, "A person shall obtain a permit from the Department before the person may conduct any activity that will result in the incidental taking of Puritan tiger beetles." As a condition for receiving a permit, the applicant is required to mitigate impact to the PTB habitat, as follows:

- (1) Mitigation shall be employed whenever the habitat alteration will render a significant portion of the site unsuitable for Puritan tiger beetles in either their adult or larval life forms.
- (2) Mitigation shall occur at not less than a 1:1 ratio.

Mitigation measures may include: (a) permanent protection of other property having PTB habitat or (b) restoration or protection of PTB habitat by participating financially in the Department's Puritan tiger beetle habitat conservation program.

The purpose of the Department's PTB habitat conservation program (HCP) is to mitigate the impact of a "take" by acquiring or restoring habitat for permanent protection of the PTB. To fund the acquisition of PTB habitat, the Department has established the PTB HCP Fund "(the Fund)". A landowner, a group of landowners, or a community (collectively, "landowner"), may participate in the Department's HCP by making payment to the Fund. The amount of payment depends on the mitigation debt of the proposed shoreline or cliff alteration project as determined by the federal Fish and Wildlife Service (FWS) project review process and protection of equivalent habitat. A landowner initiates this

process by contacting FWS. For contact information, go to:  
<http://www.fws.gov/chesapeakebay/PTB>.

The review process and description of the calculation of equivalent habitat follows. Little Cove Point is used as an example for illustrative purposes.

### **The FWS Project Review Process**

There are ten subpopulations of PTB habitat located along the 23-mile shoreline in Calvert County and eight subpopulations comprising the Sassafras River population. Each subpopulation has a carrying capacity, or “K” which is the ability of the habitat to produce and sustain PTB. An incidental take of PTB habitat impacts the carrying capacity, or K, of the applicable subpopulation. For the purposes of this Program, K is defined as the average total number of PTB occurring at a site or transect over the 5 year period of 2005 through 2009 as observed during annual surveys. A land parcel that contains part of the subpopulation has a percentage of the total carrying capacity, expressed as a percentage of the overall carrying capacity of the subpopulation.

The Program uses five years of data, 2005-2009, as a reasonable sample (the life cycle of the beetle is two years) that provides predictability for project applicants. DNR and FWS will update the PVA every 4-5 years and recalculate the carrying capacities at that time.

*There are 62 parcels at Little Cove Point with PTB habitat. The carrying capacity of these parcels ranges from .05% to 6.8% of the total carrying capacity of the subpopulation.*

During the project review process, FWS will calculate the project’s impact on PTB and discuss ways to reduce this impact. FWS will also calculate the amount of payment to the Fund in accordance with the formula described below should the landowner elect to use this mitigation option.

### **Protection of Equivalent Habitat**

The amount of payment to the Fund is calculated using the following three factors: (a) the area required to conserve the subpopulation, (b) the cost of protecting this area through a conservation easement, and (c) the cost of protecting habitat equivalent to the habitat impacted. The fair market value of an easement is determined using an appropriate estimate, as described below.

A. The Area Required to Conserve the Subpopulation

A PTB subpopulation is permanently protected if a conservation easement prevents any landowner with property in the subpopulation from disturbing the beach or cliff face and precludes the construction of shore erosion control structures. Under accepted standards, the period of protection for an HCP is 100 years. Because the Calvert Cliffs erode at an average rate of 2 feet/year, to protect PTB habitat for 100 years requires a minimum 200 foot buffer as measured from the top of the cliff landward. Thus, the area of the buffer is the length of shoreline of the subpopulation x 200 feet. The length of shoreline consists of sites having PTB habitat during the applicable five-year period.

*Little Cove Point in Calvert County has a subpopulation of PTB. The length of shoreline of the sites supporting the subpopulation is 10,167 feet. Multiplied by 200 feet, the area of easement protection would be 46.68 acres for this subpopulation.*

B. The Cost of Protecting the Area

A conservation easement for tiger beetle habitat is a restriction on property that prevents development within the 200 feet buffer and shore erosion control. The cost of acquiring a conservation easement is calculated using the federal Wetland Reserve Program's Geographic Rate Caps for Cropland (WRP-GRC). This is the methodology employed by the USFWS for estimating the cost of purchasing a conservation easement to protect federally threatened or endangered species. Cropland values are used because they are closer to residential lot values than woodland.

*Using WRP-GRC values, the per-acre cost to acquire a conservation easement on the subpopulation in Little Cove Point is \$6,025. Multiplying 46.68 acres by \$6,025 = \$281,247, which is the cost of acquiring a conservation easement on the entire subpopulation.*

C. The Cost of Permanently Protecting Equivalent Habitat

The cost of protecting equivalent habitat is calculated by multiplying the percentage of PTB carrying capacity impacted by the incidental take by the cost of protecting the entire subpopulation. In this way, a landowner who impacts more PTB habitat will contribute more to the HCP than a landowner who impacts less PTB habitat.

*A Little Cove Point landowner wishes to construct a cliff stabilization project that will result in the incidental take of 3% PTB carrying capacity. Multiplying 3% x \$281,247 = \$8,437. This is the amount of landowner payment to the Fund.*

### **The Puritan Tiger Beetle HCP Formula**

The formula for calculating payments for PTB habitat impacts for any of the Calvert Cliffs subpopulations is as follows:

Determine the percentage of PTB carrying capacity (K) impacted by the incidental take, referred to as the mitigation debt;

Calculate the area of conservation for the subpopulation by determining the length of the shoreline of parcels having PTB habitat and multiply this length by 200 feet, referred to as the PTB conservation area;

Determine the cost of acquiring a conservation easement to protect the PTB conservation area;

Multiply the percentage of K by the cost of protecting the PTB conservation area. This is the amount of payment to the PTB HCP.

### **Uses of the PTB HCP Fund**

The Department of Natural Resources will use this fund exclusively for the acquisition or restoration of PTB habitat from willing sellers or other recovery measures deemed necessary to ensure the continued existence of the species. Acquisition may include the purchase of conservation easements or fee simple acquisition of PTB habitat. Restoration of habitat may include vegetation control along occupied cliff faces or of degraded habitat within a subpopulation. Restoration of habitat may also include beach replenishment along beaches within a subpopulation that do not have adequate foraging habitat. Additional DNR funds may be used in conjunction with the PTB HCP Fund to assist with the conservation of the Puritan tiger beetle.

**DNR Contact:**

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