

# PENNSYLVANIA FISH & BOAT COMMISSION

Division of Environmental Services

450 Robinson Lane

Bellefonte, PA 16823-9620

## Timber Rattlesnake Habitat Assessment Guidelines

(revised 5/27/2014)

### Timber Rattlesnake Natural History

#### **Description**

The timber rattlesnake (*Crotalus horridus*) is a large, heavy bodied snake of the pit viper family (Viperidae). Timber rattlesnakes have transverse “V” shaped or chevron-like dark bands on a gray, yellow, black, or brown body color. The tail is completely black with a rattle. The head is large, flat, and triangular, with two thermal-sensitive pits situated between the eyes and the nostrils. The head color of the timber rattlesnake distinguishes two distinct color phases – the dark phase has a completely black head with, generally, black eyes, and the light phase has a yellowish tan to brown head and yellow eyes. The pupils of the eyes are elliptical in shape. The dorsal scales on the timber rattlesnake are strongly keeled, giving it a “rough” appearance. The ventral (underside) of the light phase is yellowish to creamy colored while the dark phase is white with small, dark stipple-like markings. Male and female timber rattlesnakes differ in size and subcaudal scale count. Adult males are usually larger than females (average size of males 42“ snout-vent length, compared to 36“ for females), and have longer tails (21 or more subcaudal scales between the venter and the rattle).

#### **Life History**

Timber rattlesnakes inhabit the forested, mountainous regions of Pennsylvania. Their active season is mid-April through mid-October. They prefer upland forested areas where they forage for small mammals (e.g., mice, and chipmunks). Talus and/or scree slopes, rocky ledges, outcrops, and boulder fields generally with southerly exposures contain the entrances to over-wintering dens. Dens usually have rocky crevices, or other features that provide access to ancestral underground chambers to which the snakes return yearly for hibernation. These sites generally have rocky habitat containing a semi-open canopy close by that is used by gravid females for gestation. Timber rattlesnakes begin emerging (egress) from their dens in mid to late April. Adult males may travel up to 3 to 5 miles away from the den before returning in the fall, unlike non-gravid females, which move approximately 1 to 3 miles from the den, and gravid females, which stay close to the den (100-400m). Timber rattlesnakes begin traveling towards their den sites in September and enter their dens (ingress) for winter dormancy in late September through October.

Rattlesnakes are ambush predators. They identify rodent trails on the forest floor via scent detected with their tongues. They sit and wait for a rodent to pass by on an already established trail before striking them with a venomous bite. After swallowing its prey whole, the timber rattlesnake seeks solar heat exposure to aid digestion of meals by moving to various, usually open, areas to bask.

Females reach reproductive maturity when 7 to 9 years old, as compared to males, which reach reproductive maturity at approximately 5 to 7 years of age. Timber rattlesnakes mate in late summer to early fall (July to mid-September) in Pennsylvania. The young are born live, the following year, in late summer (late August into September) with an average litter size of 5 to 9. Individual females reproduce at intervals of approximately 3 to 5 years. Since the gravid female infrequently feeds during the summer preceding birth of her offspring, the intervening years are necessary for building sufficient body fat to sustain her through gestation and then hibernation. So despite a life-span of up to 30 years, a female may only have 4 to 7 reproductive attempts during her lifetime.

There appears to be high juvenile mortality, since many young timber rattlesnakes fall prey to a variety of natural predators (e.g., birds of prey, carnivorous mammals). Adult timber rattlesnakes have few natural enemies except humans, whose activities have the greatest direct (e.g., road-kill, illegal/wanton killing) and indirect (e.g., habitat loss) impacts to the timber rattlesnake population.

#### **Distribution**

The current range of the timber rattlesnake encompasses 31 states from Vermont and New Hampshire south to northern Florida, west to eastern Texas and then north through eastern Oklahoma, Kansas, and Nebraska, through Iowa into

southeastern Minnesota. From southwestern Wisconsin the range retreats south, away from the Great Lakes, through western and southern Illinois and southern Indiana and Ohio.

In Pennsylvania the Allegheny Plateau and the Appalachians are encountered and the range goes north through New York back to southern Vermont and New Hampshire. Prior to European settlement, the range of the timber rattlesnake is thought to have spanned most of Pennsylvania. The current range of the timber rattlesnake is restricted to the more rugged, least accessible, and less populated regions of the Commonwealth. Today, timber rattlesnakes occur in forested, mountainous regions that encompass mainly the central and northeast region of Pennsylvania (e.g., Ridge and Valley Province, Laurel Highlands, Allegheny Plateau, and the Pocono Plateau).

## **Threats and Conservation**

Given the slow maturity, low fecundity, and the many threats posed by the overexploitation of its habitat, the timber rattlesnake is vulnerable to decline. Presently, experts believe that the timber rattlesnake is declining across its range, and in Pennsylvania particularly in the peripheral areas of its range. The decline of the timber rattlesnake is attributed mainly to human activities related to habitat alteration, highways, illegal/wanton killing, and poaching. To date, the timber rattlesnake is protected in over half of the states where it occurs. In Pennsylvania, it is currently listed as a candidate species (an animal that could achieve threatened or endangered status in the future). The timber rattlesnake is legally protected in Pennsylvania and the Pennsylvania Fish and Boat Commission's Natural Diversity Section comments statewide on development projects that have potential to adversely impact timber rattlesnake populations. The Natural Diversity Section is also involved with research projects on monitoring, inventory, and den viability that are being conducted on Pennsylvania timber rattlesnakes.

### **Impact Review: Development Projects and Potential Conflicts with Timber Rattlesnakes**

Many new projects are proposed on lands that are in close proximity to areas that have long been known to harbor timber rattlesnakes. During the environmental review process, the Division of Environmental Services staff may request a timber rattlesnake habitat assessment if: 1) the vicinity of the area that is proposed to be developed is currently or historically known to support timber rattlesnakes and 2) there may be direct impacts to critical habitat for the timber rattlesnake based on the project description. Given the terrain, timber rattlesnakes may be utilizing the project area for denning, reproduction (gestation), basking, and/or foraging. These assessments should be conducted by a PFBC-approved timber rattlesnake surveyor (list enclosed). This list is not an exhaustive list of qualified rattlesnake surveyors in Pennsylvania as there may be qualified surveyors who have not asked to be placed on this list. It is not mandatory that you use someone on this list. Following the assessment, a report documenting the surveyor's findings is submitted to the PFBC for review and comment. This information is pertinent for the staff to provide recommendations for avoiding adverse impacts from the proposed project to the timber rattlesnake population and its habitat. Based on the results of the habitat assessment, a presence/absence survey for the timber rattlesnake may be requested. Not all findings of critical habitat need a follow-up survey to complete the environmental review.

### **Habitat Assessment Guidelines/Methods**

Areas within and at least 300ft around the project area need to be identified that are most likely to support timber rattlesnakes (e.g., talus slopes, scree areas, boulder fields, rocky outcrops, rocky right-of-ways). Although search ranges will vary with project location and size, in general, a search range should include the entire project area (including temporary and permanent impacts) and **a minimum of 300ft from the project boundary**. Results of the habitat assessment, **if needed**, should be recorded on the Timber Rattlesnake Habitat Assessment Form (2-11-10).

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**Division of Environmental Services--Natural Diversity Section**  
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**Timber Rattlesnake Habitat Assessment Form** (revised 02/11/10)

***Project Information***

Project/Property Name: \_\_\_\_\_ SIR# \_\_\_\_\_

Project Type/Description: \_\_\_\_\_

Project Size\* (acreage): \_\_\_\_\_

Applicant/Landowner Name: \_\_\_\_\_

County: \_\_\_\_\_ Quad: \_\_\_\_\_ Township/Municipality: \_\_\_\_\_

\* Attach a copy of topographic map and a site sketch showing survey site and natural features identified.

***Assessment Site Information*** [Areas within and at least 300 feet around the entire project area need to be assessed.]

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Site ID\*\*: \_\_\_\_\_

Latitude: \_\_\_\_\_ N Longitude: \_\_\_\_\_ W

Map Datum Used: \_\_\_\_\_

Assessment Size\*\* (acreage): \_\_\_\_\_

\*\* The surveyor should use his/her judgement on the size of the area that a single assessment encompasses. **Additional assessment forms should be used to accurately describe and evaluate large contiguous areas by utilizing a separate form for separate habitat areas within the project boundaries. Each separate area assessed should be assigned a Site ID name that is referenced to the overall site sketch.**

***Weather Conditions*** (Note: Assessment cannot be conducted in snow cover.)

Air temperature (°F) \_\_\_\_\_ % Cloud Cover \_\_\_\_\_

***Habitat Description***

General description: \_\_\_\_\_

Level of remoteness/nearby disturbance (roads, homes, buildings, utility right-of-ways, etc.):

Topographical description: \_\_\_\_\_

Slope (Degrees) \_\_\_\_\_

Aspect \_\_\_\_\_ (compass orientation, i.e., direction hillside faces)

Ground Cover:

% rocky ground cover: \_\_\_\_\_

% rocky ground cover that receives direct sunlight: \_\_\_\_\_

List size range and shape of rocks (round, flat, etc.): \_\_\_\_\_

Are there rock outcrops or ledges present? \_\_\_\_\_

Are boulder fields, and/or talus/scree slopes present? \_\_\_\_\_

Are flat gestation slabs present? \_\_\_\_\_

