Note:
A variety of the Timber Rattlesnake, called the Canebrake, occurs in lower elevation coastal plains and is, on average, slightly larger than the upland form that occurs in the Appalachian Mountains and northeastern United States. It utilizes different foraging habitats, can overwinter in a greater variety of places, can look strikingly different, and behaves differently. Canebrakes are fairly common throughout their range and, while technically the same species; Canebrakes have gone back and forth between being a valid subspecies. At the moment no subspecies are recognized but such a designation would allow for a legal framework to effectively protect the more rare upland snakes separately from Canebrakes where both forms occur. This page discusses the identification, life history, and conservation concerns of the upland and northern form of the Timber Rattlesnake, not the Canebrake.

Species Description

The physical coloration of the Timber Rattlesnake is quite variable throughout the species' range however the basic pattern, dark W-shaped bands across the body on a lighter background, is fairly consistent. The background color varies from yellow to brown to gray and gets darker closer to the tail. The tail itself is usually black and some individuals are almost entirely that color. In more northern populations individuals tend to be darker and are most often yellow or black. The W-shaped bands are usually outlined in a lighter color that can even be seen on the darkest of individuals. Sometimes a light brown line along the spine runs the length of the body though that is a trait more common in the Canebrake. Neonates have the same pattern as adults but usually have a gray body color for the first year after being born.

Timber Rattlesnakes are a large and robust snake, with males typically reaching lengths of up to 1.32 meters and females up to 1.09 meters (Martin et al 2008). While stories are often told of Timber Rattlesnakes exceeding two meters in length these stories are exaggerated and it is unlikely that any individuals exceed 1.5 meters. Hatchlings are generally about 28 cm in total length (Martin et al 2008).

Timber Rattlesnakes have very heavily-keeled scales, a divided anal plate with a single row of ventral scales behind the vent. The rattle, which is held upright when the snakes feel threatened, is a very good way to distinguish the rattlesnakes from certain non-venomous species that can have somewhat similar patterns such as a watersnake or milksnake.
Taxonomy

The species was described by Linnaeus in 1758 and currently no subspecies are recognized. The genus, *Crotalus*, literally means “hollow in the rocks”, after the denning habitat that this species uses. Horridus could mean “horrible”, however another meaning of the word in latin is “bristly” which could refer the snake's extremely rough texture.

Distribution

Timber Rattlesnakes are found primarily in temperate forests throughout the eastern United States. They range from northern Florida to eastern Texas north to Wisconsin and New Hampshire but are absent from Michigan. Historically their range included southeastern Ontario and southern Maine but populations there are believed to have been extirpated.

While the coastal canebrake form of the Timber Rattlesnake can be quite common in the southeastern United States, Timber Rattlesnakes are generally considered uncommon or rare through most of the species range. Even in the southeast where canebrakes occur, the upland Piedmont snakes are much more rare and are broken into smaller fragmented populations.

Habitat

Populations of Timber Rattlesnakes throughout the Appalachian Mountains and connecting ranges to the northeast can only persist where suitable denning habitat is available. Denning areas are typically rocky and are either made up of crevices at the bottom or cliffs or talus slopes below cliffs. In most places den sites are situated on south or west-facing slopes where temperatures tend to be higher. Gravid females require exposed rocky areas where they can maintain body temperatures of about 26.4 degrees C 24 hours a day during reproductive years (Gardner-Santana and Beaupre 2009). Gestation sites are usually at the dens themselves or within 500 meters of the den (Martin 1993) along the top of a ridgeline.

Timber Rattlesnakes exhibit very high rates of den fidelity; colonization of new denning areas is extremely rare and may now also be encumbered by habitat fragmentation with roads, fields, agricultural fields, and development.

Foraging habitat is made up of dry deciduous forests, often with rugged terrain. Forest composition can vary but mast-producing species of tree such as oak, beech, and hickory are important as they provide food for the prey of Timber Rattlesnakes.

Movement and Home Range

Home ranges and movement vary greatly among Timber Rattlesnakes depending on sex, age, and reproductive state. Timber Rattlesnakes leave denning areas in mid-April in southern parts of its range and mid-May at the more northern extremes. Male Timber Rattlesnakes have home ranges of about 90 ha, non-gestating females about 30 ha, and gestating females roughly 8.5 ha (Adams 2005). Males and non-gestating females move between 1.6 to 4 km from the dens each year, with larger individuals and males moving greater distances (Brown 1993). Except gravid females, snakes typically move along a non-overlapping route and complete a
loop ending back at the den at the end of the foraging season (Reinert and Zappalorti 1988).

Gestating females move to birthing sites either at the dens or on top of the ridges near to them and will remain under and near chosen features, commonly referred to as birthing rocks, through the summer until birthing occurs some time in August to September (Gibbons 1972). One to two weeks after birthing, when her young have shed their skins, females will leave their birthing sites to forage before returning to dens and overwintering. After their first shed, neonates exhibit sporadic bursts of movement but appear to follow the scent trails of conspecific snakes to locate the den they will return to every following year (Reinert and Zappalorti 1988, Brown and MacLean 1983).

Diet

Timber Rattlesnakes have specialized heat-sensing pits on the front of their heads that allow them to find warm-blooded prey such as mammals. Rodents including mice, chipmunks, and voles make up a major portion of the Timber Rattlesnake’s diet (Clark 2002). Occasionally other food items are taken such as amphibians and birds (Clark 2002). Prey is injected with a venom made up of both hemotoxins and neurotoxins that immobilize animals and begins to digest them from within. During envenomation snakes imprint on the smell of their targets and use that, as well as the scent of their own venom, to locate their deceased prey.

Reproduction

Timber Rattlesnakes are a late-maturing species with males reaching sexual maturity between 4 and 6 years of age (Aldridge and Brown 1995) and females at between 9 and 10 years (Brown 1991) in northern populations. As with other species of snake, reproductive maturity is influenced more by size than actual age with females becoming mature at about 91 cm in snout-vent length and weighing just over 600 grams (Brown 1991). Because of short active periods and the high costs of reproduction, females reproduce every three to four years (Brown 1991) in northern populations with females occasionally reproducing every two years farther south (Martin 1993). Between 4 and 14 young are usually produced by females during reproductive years with larger females being the most fecund.

Gestating females spend the summer at birthing sites either near the dens or on ridges above them where they can maintain a constant body temperature of about 26.4 C (Gardner-Santana and Beaupre 2009). Females will not eat during this time. After birthing, a female will stay with her young until they shed their skin for the first time at least a week later at which point she will head to foraging habitat to feed before returning to her den. Young will then follow pheromone trails of adults back to the den and may forage along the way. Timber Rattlesnakes can live to be about 25 years old though individuals have been observed up to 30 (Aldridge and Brown 1995).

Conservation Concerns

As a long-lived species with a high age at maturity and low annual fecundity, survival of adults, especially females, is key to population viability. Habitat fragmentation by roads has resulted in many snakes being killed by traffic, often intentionally. Because older and larger snakes tend to disperse farther from the dens every year it is those larger individuals, who are most important to rattlesnake populations, that are most likely to encounter roads. In some areas Timber Rattlesnake dens have been isolated entirely from larger populations by roads, fields and developments that they have begun to differentiate genetically (Clark et al 2009).
Persecution by humans is a major threat to the species and until the 1970s, many northeastern states paid a bounty for any killed rattlesnake (Furman 2007). In most of these states the species is now protected but because bounty hunters were able to find gestating females more easily than any other snakes and because large numbers of snakes could be harvested at dens, the bounty effectively reduced populations to low levels in many places and possibly wiped out denning colonies. Despite the legal protections afforded to the species in the northeast now, intentional killing of snakes is still a common practice. In the southeast, while no bounty is paid for the killing of Timber Rattlesnakes, the species is not protected and killing of the species is legal.

While bites from Timber Rattlesnakes can harm people, such bites are extremely rare and usually are the result of a person harassing or attempting to kill the snake. When a Timber Rattlesnake is encountered in the wild the safest thing to do is to leave it alone and walk around it. The snake will not defend itself unless provoked. In the event of a bite one should remain calm and seek emergency help. Deaths from Timber Rattlesnake bites are almost unheard of and if medical help is sought out quickly it is possible to avoid permanent tissue damage. If a Timber Rattlesnake is seen on your property and you feel uncomfortable having it in close proximity to your house, rather than kill it you should contact your state department of natural resources or fish and wildlife. Many states have removal programs and people in those departments should know who the best person to contact is.

Literature Cited


