Tiger Salamander *Ambystoma tigrinum* (Green, 1825)

(/media/i5295.jpg)
Ambystoma tigrinum
NYS Department of Environmental Conservation

Class
Amphibia (Amphibians)
Family
Ambystomatidae (Mole Salamanders)

State Protection
Endangered

Listed as Endangered by New York State: in imminent danger of extirpation in New York. For animals, taking, importation, transportation, or possession is prohibited, except under license or permit. For plants, removal or damage without the consent of the landowner is prohibited.

Federal Protection
Not Listed

State Conservation Status Rank

S1S2

Critically Imperiled or Imperiled in New York - Especially or very vulnerable to disappearing from New York due to rarity or other factors; typically 20 or fewer populations or locations in New York, very few individuals, very restricted range, few remaining acres (or miles of stream), and/or steep declines. More information is needed to assign either S1 or S2.

Global Conservation Status Rank

G5

Secure globally - Common in the world; widespread and abundant (but may be rare in some parts of its range).

Contents

1. Summary
2. Conservation and Management
3. Habitat
4. Range
5. Identification Comments
6. Taxonomy
7. Additional Resources
8. About This Guide

Summary

Did you know?

In addition to producing noxious secretions, tiger salamanders are able to use their tails to lash out at predators (Brodie 1977).

State Ranking Justification

All tiger salamanders in New York belong to the subspecies Ambystoma tigrinum tigrinum, a unique coastal plain lineage of tiger salamanders that is declining (Church et al. 2003). In addition to being listed as endangered in New York, the subspecies is listed as endangered in the neighboring urbanized states of New Jersey, Delaware, Virginia and Maryland, and it was extirpated from Pennsylvania in the early 1900s (Hulse et al. 2001). In New York, the tiger salamander's range is confined to Long Island, where the development pressure is intense, resulting in highly fragmented islands of suitable habitat. Among the 124 documented breeding locations representing 48

separate populations on the island, surveyors have failed to find tiger salamanders during recent surveys at over a third, another third have viability rankings of fair or poor, and just 11% are considered to support populations with excellent or good viability. The statewide population has been steadily declining since 1980.

Short-term Trends

The Long Island population of tiger salamanders is one of the most intensively studied animal populations in the state. It has been closely monitored by the NYSDEC with the assistance of independent contractors since the early 1980s, and volumes of data are currently available for approximately 115 known breeding ponds. Over the past several decades of monitoring, surveyors have recorded a sharp decline in the number of observed egg masses and adults at many breeding ponds, and many of the ponds no longer support breeding populations. Among the 124 documented breeding locations representing 48 separate populations on the island, surveyors have failed to find tiger salamanders during recent surveys at over a third of the locations, another third have viability rankings of fair or poor, and just 11% are considered to support populations with excellent or good viability. In addition, the salamanders have become extirpated from heavily developed western Long Island. Numerous theses (e.g., Levy 2001), published articles (e.g., Madison and Farrand 1998), and unpublished reports (e.g., Schlauch 1981; Cryan 1984; Kling 2001; Hoffmann 2003; Titus and Zamudio 2010) have all reached the same conclusion: the Long Island population of tiger salamanders has declined dramatically over the past several decades. The documented decline is due to a multitude of effects directly related to over-development and urbanization (Levy 2001; Lannoo 2005; NYSDEC 2010a; Titus and Zamudio 2010). Over the past 25+ years, several management actions have been implemented at tiger salamander ponds on Long Island including transplanting egg masses, establishing roadway crossings, creating artificial ponds, creating salamander preserves, conducting radio-telemetry studies, designating Class 1 wetlands, and establishing buffer zones (Levy 2001; NYSDEC 2010a). Despite much of the occupied habitat occurring on various federal jurisdictions, none of the above management actions have been successful at halting the precipitous decline of the population at the statewide scale (Corser 2010).

Long-term Trends

Tiger salamanders appear to have migrated into New Jersey and southeastern New York from Coastal Plain refugia sometime over the past few thousand years, as forests recolonized the formerly glaciated landscape. This coastal lineage has remained isolated from other tiger salamander populations for at least the past 400,000 to one million years (Church et al. 2003). In New York, the salamanders historically occurred in a few isolated populations in the Hudson River Valley in Albany and Rockland counties (Bishop 1941; Stewart and Rossi 1981), as well as most of Long Island including Queens, Brooklyn, and Staten Island (Bishop 1941). Two historic observations of tiger salamanders that were reported from Onondaga County have not been confirmed, and these salamanders were most likely misidentified (Schlauch 1981). The range of the salamanders in New York has definitely contracted, as currently in the state the salamanders are restricted to eastern Nassau County and Suffolk County on Long Island. Although there are relatively few old records that refer to the historic distribution and abundance of tiger salamanders in New York, researchers agree that the number of available tiger salamander breeding ponds in New York has declined significantly and steadily during this century (Kallaji 1992). Glaciers that advanced to Long Island and then retreated likely created over ten thousand kettleholes and depressions on Long Island, most of which contained small ponds that would have provided ideal breeding sites. All vernal pools located in sandy soils on the island probably contained tiger salamander populations before European settlement. However, over the 400-year history of Long Island following European settlement, the vast majority of small ponds and woodland pools were either filled or dredged to make permanent water bodies. In addition, fish were introduced into formerly fishless ponds. In 1984, approximately two thousand small ponds remained on Long Island. Only about five hundred were surrounded by enough undeveloped land and suitably dry soils to support tiger salamander populations. After 1984, the relatively few remaining ponds continued to be threatened with alteration or

destruction as suburban development moved eastward across Suffolk County (Cryan 1984). Due to the great loss in habitat over the past century, researchers agree that a long-term decline in the number of tiger salamanders in the state has occurred (Kallaji 1992). This scenario is not unique to New York, as tiger salamanders have experienced population losses and contractions range-wide (Lannoo 2005).

Conservation and Management

Threats

Tiger salamanders experience many threats due to over-development and urbanization, particularly from activities such as draining and paving. Loss of breeding ponds, critical surrounding upland habitats, and connections between them are the most imminent threats. Loss of contiguous natural habitats causes populations to become isolated (Semlitsch 1998). New home development and road construction fragments habitats and results in groundwater drawdown, causing loss and degradation of breeding ponds. Salamander mortality is significant in areas with busy roads, especially on rainy nights, as salamanders migrate between uplands and breeding ponds (Clevenger et al. 2001). Road curbing and window wells can obstruct salamander dispersal. Breeding ponds also experience water quality reductions due to factors such as contamination, hydrological changes, introduction of predatory fish, introduction of pathogens, spread of invasive plants, and ATV use (Levy 2001; Lannoo 2005; NYSDEC 2005; Gibbs et al. 2007; NYSDEC 2010a; Titus and Zamudio 2010). Additionally, climate change is a potential threat to tiger salamanders on Long Island. The salamanders might be vulnerable to sea level rise, due to their confinement on the island and the existence of barriers inhibiting their dispersal. Collection is also a potential threat.

Conservation Strategies and Management Practices

Currently, biologists are developing a recovery plan for tiger salamanders in New York. Management needs include the restoration of upland and wetland habitats particularly at sites that remain in a natural setting, prohibition of the introduction of fish into breeding ponds, removal of invasive species, and restriction of off-road vehicle use (NYSDEC 2005; Mitchell et al. 2006). Fish may need to be removed from some breeding ponds. The construction of salamander tunnels under roadways that are located between breeding ponds and upland habitats has been successful in several places throughout the country (Gibbs et al. 2007). Salamander tunnels should be constructed in appropriate situations whenever possible. Often this is most feasible when roads are being repaired. New roads should not be constructed between breeding ponds and upland habitats unless it is absolutely necessary. The use of seasonal road signs to alert motorists to watch for salamanders, temporary road closures, or reduced speed limits during salamander migration times may also be beneficial (Mitchell et al. 2006). Management plans should include governmental agencies, the public, and environmental consultants.

Development and Mitigation Considerations

The tiger salamander is listed as an Endangered Species by New York State. In New York, it is illegal to harm, collect, or transport a tiger salamander, or harm critical habitat for the tiger salamander, without a permit issued by the New York State Department of Environmental Conservation (NYSDEC). Proposed projects that may impact tiger salamanders or their habitat must be designed so as to avoid, minimize, or mitigate detrimental impacts. Applicants should work with the appropriate regional NYSDEC office(http://www.dec.ny.gov/about/50230.html) to determine if a permit is required and to plan the project to meet the requirements of any permit(http://www.dec.ny.gov/regs/3932.html).

While guidelines and recommendations for specific project sites or activities, or requirements for a specific project

to be approved by NYSDEC or by a municipality, cannot be provided here, there are some general approaches to consider. The guidelines described here are based on the best available science as of this writing, and therefore must be viewed as best attempts to provide useful recommendations. Such guidelines must be tailored to meet specific local conservation needs and the particular circumstances of the site.

As discussed in the Conservation Overview section above, research indicates that the protection of a zone with woodland habitat that extends 164 m (538 ft) from a pond edge is important for the persistence of the tiger salamander population in that pond. Based on this research, NYSDEC has developed, in the context of reviewing and approving development projects, Guidance for Land Cover Set Asides for Conservation of the Eastern Tiger Salamander and Suggested Methods to Avoid, Minimize, and Mitigate Impacts(http://acris.cs.rpi.edu/pdf/Tiger_Salamander_Guidance_2010a.PDF).

NYSDEC recommends that projects within 1,000 feet of known tiger salamander breeding ponds follow the following two guidelines. These guidelines ensure that developers are in compliance with the law and are minimizing negative impacts to tiger salamanders. First, preserve 100% of the existing upland forest habitat within 535 feet of the breeding pond; and second, preserve "a minimum of 50% of the adjacent upland area within 1,000 feet of breeding ponds in contiguous blocks of suitable habitat, while allowing for the preservation of wooded corridors which provide connections to adjacent tiger salamander upland habitats" (NYSDEC 2010b). Preserved areas should include as much oak-pine woodland as possible (the preferred habitat of the tiger salamander), and development should occur on existing disturbed areas whenever possible. Preserved areas typically should not be disturbed by activities such as grading, excavating, or clearing (NYSDEC 2010b).

In addition, NYSDEC requires that other actions be taken, as appropriate, when projects that may impact tiger salamanders are conducted. NYSDEC's guidance includes requirements regarding culverts under roadways, curbing, pools, created ponds, and window wells within 1,000 feet of salamander ponds; lighting, wells, and pesticides (including for mosquito control) in the vicinity of breeding ponds; and drainage into and management of the preserved upland areas (NYSDEC 2010b). For example, at least one culvert suitable for the passage of migrating tiger salamanders must be placed under the roadway for every 100 feet of new roadway within 1,000 feet of known breeding ponds.

Specific management recommendations for amphibian habitats can also be found in Best Development Practices: Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States(http://www.nae.usace.army.mil/reg/Links/BestDevelopmentPractices-ConservingPool-breedingAmph.pdf) (Calhoun and Klemens, 2002). The authors recommend maintaining undeveloped forest habitat throughout the 100-foot area around a breeding pond, and maintaining or restoring at least 75% of the area between 100 and 750 feet from a pond in contiguous (unfragmented) forest with undisturbed ground cover. The information sheet VP Directional Buffer Guidance(http://www.nae.usace.army.mil/reg/Permits/VPDirectionalBufferGuidance.pdf) (Calhoun 2010) recommends the use of "directional buffers" as an alternative to circular buffers around a pond, at those sites where the most suitable upland habitat is not evenly distributed around the pond, and is especially helpful for clusters of breeding ponds. This more flexible approach often can reduce the amount of land potentially requiring protection from that of circular habitat models, and can be better tailored to individual landowner needs.

One potential mitigation method that might be considered in some situations to allow for both land development and the preservation of viable tiger salamander populations is translocation. There has been interest in the possibility of moving salamanders from areas likely to be impacted by development activities to protected areas (Madison and Titus 2009). There are concerns about this practice, however. Previous studies have shown that some species of amphibians and reptiles make unusual movements and experience unusual *levels of mortality* after they have been moved, and moving animals may negatively impact the animals themselves as well as resident animals in the area in which they are released (Titus 2007). One study on Long Island found that

translocated tiger salamander adults emigrating from their new breeding pond moved towards their original wetland or made unusually long movements relative to resident salamanders (Madison and Farrand 1998), indicating that translocation might not be advisable as a mitigation option. Madison and Titus (2009) moved metamorph tiger salamanders on Long Island from two ponds to new ponds. In most cases, translocated individuals seemed to move to appropriate upland habitat rather than heading toward their original home ponds. However, individuals translocated to one of the ponds moved farther from the pond and for a longer total distance than the resident individuals. Despite some indications that they were possibly disoriented, within wooded areas they seemed to select similar microhabitats as residents and detect suitable refugia. However, since translocated individuals suffer high rates of mortality, further research and analysis is needed to better understand the ways in which translocation might be used successfully as a mitigation tool (Titus, pers. comm.)

Research Needs

Since the early 1980s the NYSDEC has monitored tiger salamander breeding ponds on Long Island, and since the early 1990s the monitoring program has followed standardized protocols. However, a population viability study or trend analysis of the data has not yet been conducted. The standardized monitoring protocol allows for both an analysis of occupancy rates (using the computer program PRESENCE) and trends, as well as extinction/colonization rates. Furthermore, previous egg mass counts at breeding ponds also allow for abundance estimates, as egg mass counts have been used successfully to monitor abundance and document trends in other pond-breeding amphibian populations (Crouch and Paton 2000). A retrospective power analysis could be conducted to determine the magnitude of decline in abundance suffered by this population since monitoring began (see Corser 2001). Additional research needs include 1) determination of past and present genetic connectivity between tiger salamander breeding populations; 2) development of procedures to assess tiger salamander presence in upland areas; 3) determination of the effects of disease, invasive species, and current level of human development on the statewide population; 4) determination of effective management practices on public and private lands; and 5) determination of effective mitigation methods (Titus 2007).

Habitat

Habitat

Pond-breeding salamanders such as tiger salamanders spend the majority of their lives in the terrestrial areas that surround the ponds in which they breed. Tiger salamanders, for example, spend an average of 12 days per year in breeding ponds and the remaining 97% of the year in surrounding terrestrial habitats. Adults are usually found within 250 meters of breeding ponds, but usually much closer (Madison and Farrand 1998). In New York, tiger salamanders are found in pine barrens or woodlands that contain friable soils suitable for burrowing or extensive small mammal burrow systems, and permanent or seasonal ponds (primarily kettleholes) for breeding (Levy 2001; Gibbs et al. 2007; Madison and Titus 2009). The salamanders seem to prefer deciduous (red maple and oak spp.) and mixed pine-deciduous (pitch pine-oak spp.) forests with a blueberry understory. In general, the salamanders take refuge in burrows that are located in areas with a less dense understory relative to surrounding areas and with high dominant deciduous canopy cover (Madison and Titus 2009). The salamanders favor ponds that have at least some surrounding forest but that are open to sunlight (i.e., not under forest canopy) (Gibbs et al. 2007; Madison and Titus 2009). In these more exposed breeding ponds, adults prefer deep, vegetated areas, but in more shaded ponds, adults inhabit non-vegetated areas (Madison and Farrand 1998). The most suitable breeding ponds are usually those without predatory fish. However, in ponds with fish, adults occupy shallower zones (Madison and Farrand 1998). Submerged objects in ponds, such as branches, provide sites for egg mass attachment. If natural ponds are not available, the salamanders will breed in man-made depressions such as farm ponds and stormwater retention basins (Levy 2001; Gibbs et al. 2007).

Associated Ecological Communities

- Coastal plain pond (guide(/coastal-plain-pond/))

  The aquatic community of the permanently flooded portion of a coastal plain pond with seasonally, and annually fluctuating water levels. These are shallow, groundwater-fed ponds that occur in kettle-holes or shallow depressions in the outwash plains south of the terminal moraines of Long Island, and New England. A series of coastal plain ponds are often hydrologically connected, either by groundwater, or sometimes by surface flow in a small coastal plain stream.

- Coastal plain pond shore (guide(/coastal-plain-pond-shore/))

  The gently sloping shore of a coastal plain pond with seasonally and annually fluctuating water levels. Plants growing on the pond shore vary with water levels. In dry years when water levels are low there is often a dense growth of annual sedges, grasses, and herbs. Submerged and floating-leaved aquatic plants, such as fragrant waterlily and pondweeds, may become "stranded" on the exposed shore. In wet years when the water level is high only a few emergents and floating-leaved aquatics may be noticeable. T

- Pitch pine-oak forest (guide(/pitch-pine-oak-forest/))

  A mixed forest that typically occurs on well-drained, sandy soils of glacial outwash plains or moraines; it also occurs on thin, rocky soils of ridgetops. The dominant trees are pitch pine mixed with one or more of the following oaks: scarlet oak, white oak, red oak, or black oak.

- Pitch pine-oak-heath woodland (guide(/pitch-pine-oak-heath-woodland/))

  A pine barrens community that occurs on well-drained, infertile, sandy soils. The structure of this community is intermediate between a shrub-savanna and a woodland. Pitch pine and white oak are the most abundant trees.

- Vernal pool (guide(/vernal-pool/))

  An aquatic community of one or more intermittently ponded, small, shallow depressions typically within an upland forest. Vernal pools are typically flooded in spring or after a heavy rainfall, but are usually dry during summer. Substrate is typically dense leaf litter over hydric soils. Vernal pools typically occupy a confined basin (i.e., a standing waterbody without a flowing outlet), but may have an intermittent stream flowing out of it during high water. This community includes a diverse group of invertebrates and amphibians that depend upon temporary pools as breeding habitat. These include amphibians, reptiles, crustaceans, mollusks, annelids, and insects.

Range

New York State Distribution

The tiger salamander is currently restricted to scattered populations in eastern Nassau and Suffolk Counties on Long Island. The largest populations are in Suffolk County. The salamanders are found primarily in the kettle-rich central Ronkonkoma moraine in the central Pine Barrens, and in the Peconic watershed with peripheral populations in the outwash plain to the north (NYSDEC 2010a; Cryan 1984). The original Long Island distribution included large sections of Nassau, Queens, and western Suffolk Counties and one location on the South Fork where sandy soils prevail. Most of the populations from these areas, as well as those in Brooklyn, Staten Island, and Queens, were destroyed many decades ago by urbanization. The stronghold is currently in the central sections of the Pine Barrens which stretches from Lake Ronkonkoma to Riverhead in the town of Brookhaven (Cryan 1984; Kling 2001) with a small group of populations in the town of Southampton on the South Fork.

Global Distribution

The tiger salamander (Ambystoma tigrinum ssp.) is the most widely distributed salamander in North America (Petranka 1998), being found throughout much of North America from southern Canada to Puebla, Mexico. Absences are noted from most of the Great Basin, most of the western United States west of the Rocky Mountains, New England, and the Appalachians. However, tiger salamanders have been introduced in many localities west of the Rocky Mountains from near sea level to around 3660 meters in elevation. The most common grouping of subspecies within the tigrinum complex recognizes seven subspecies (Petranka 1998). The current United States range of the subspecies found in New York, the eastern tiger salamander (Ambystoma tigrinum tigrinum), stretches from Long Island, New York, south along the coast into northern Florida, and then north into the Mississippi River Valley. Absences are noted from most of the Appalachian Mountains and the lower Mississippi delta (Conant and Collins 1998; Petranka 1998). A disjunct population also exists in eastern Texas (Conant and Collins 1998). See Church et al. (2003) for a map of the county distribution of the eastern tiger salamander.

Best Places to See

- Tiger salamanders are currently on display at Cold Spring Harbor Fish Hatchery and Aquarium in Cold Spring Harbor, New York (http://www.cshfha.org/) (Nassau County)
- As this species is considered sensitive by the NYSDEC, specific locations are not made public.

Identification Comments

General Description

The tiger salamander is a large, hardy salamander with a long tail with compressed sides, wide head, yellow lower lip, and many irregular yellow or tan blotches on a dark body (Gibbs et al. 2007).

Identifying Characteristics

The tiger salamander is the largest terrestrial salamander in New York. Adults can reach total lengths of more than 12 in. (30 cm), but they are typically 6.0-8.5 in. (15-22 cm) with a snout-to-vent length of 3.5-5.5 in. (9-13 cm) (Gibbs et al. 2007; NatureServe 2009). The salamanders are stocky with 11-14 costal grooves, a broad head, yellow chin, small eyes, and tubercules on the soles of the feet. Colors vary, but individuals of the subspecies of tiger salamander found in New York, the eastern tiger salamander (Ambystoma tigrinum tigrinum), often have a body that is dark brown, almost black, with irregular yellow to olive blotches. Larvae have a broad head, rounded snout, three pairs of large bushy gills, vomerine teeth in a U-shaped pattern, and a broad dorsal fin extending to the axilla region (Petranka 1998; NatureServe 2009). The color of metamorphs resembles that of adults, and

eastern tiger salamanders develop their adult pattern soon after metamorphosis (Bishop 1941). Eggs are 2-3 mm in diameter (Petranka 1998), and the number of eggs per egg mass is variable. On Long Island, one set of nine egg masses had an average of 38 eggs per mass, and another set of 14 egg masses had an average of 52 eggs per mass (Bishop 1941). When egg masses are first laid they are small and firm, averaging approximately 55 x 70 mm, but later they swell and become fragile and loose (Petranka 1998).

Behavior

Adult tiger salamanders spend most of their lives underground in small mammal burrows or burrows that they themselves have dug. They are strong diggers, having robust bodies and hardened toe-tips (Gibbs et al. 2007). Typically they dig their own burrows for short-term refuges and use burrows of small mammals for longer-term refuges. They seem to suffer high predation from shrews while in these burrows (Madison and Farrand 1998). Individuals tend to occupy small upland areas and often stay within the same 32-107 sq. ft. (3-10 sq. m) area for months at a time (Gibbs et al. 2007). During a short-term (up to one year) radio telemetry study of 27 adult tiger salamanders from four ponds on Long Island, Madison and Farrand (1998) found that individuals remained in their preferred burrow system for an average of 83 days before moving to another burrow system. The average distance traveled from a pond was 60 m, and the maximum distance traveled from a pond was 286 m. Although some salamanders did not move far, others made major movements in spring and/or fall, indicating they are highly adaptive and can make major movements across the landscape as needed. However, during a more recent, in-depth, and longer-term (2004-2008) drift-fence/pitfall trapping and telemetry study of 66 adults and 64 metamorphs from three ponds on Long Island, Madison and Titus (2009) found greater movement of both adults and metamorphs than the smaller past study. Average metamorph distances from the three ponds were 55 m, 44 m, and 122 m, respectively. The differences were thought to be due to the different distances to suitable habitat at the ponds. Average adult distances from the three ponds, pooled together by gender, were 105 m (females) and 49 m (males). Females moved significantly farther from ponds than males. Although the salamanders can make overland movements between burrows at any time throughout the year, usually during a rain event (Bishop 1941; Petranka 1998), typically they are only seen when they are migrating to and from breeding ponds. The salamanders breed earlier in the spring than most other amphibians in the state, often leaving their burrows and migrating to breeding ponds as soon as pond edges are free of ice (Gibbs et al. 2007) between late January and mid-March. However, in recent years migrations have started as soon as late November (Madison and Titus 2009). The salamanders most often migrate at night, during a rain. Once in a breeding pond, they seem to migrate to clear areas to search for mates (Madison 1998) and later attach their egg masses to twigs, stems, and other vegetation more than 1 foot below the surface of breeding ponds (Gibbs et al. 2007). In New Jersey, the salamanders regularly breed during the January thaw. They lay their eggs in the deepest areas of ponds in order to avoid freezing, and the breeding period can last up to 60 days because cold spells inhibit the mating activity of adults (Hassinger et al. 1970). Adults occupy shallow areas near pond edges before they emerge and enter upland burrows again (Madison 1998). Eggs hatch in 3-6 weeks, and larvae grow to a relatively large size (more than 3 in. [7.6 cm]) before they metamorphose late in the summer (Gibbs et al. 2007). In New York, metamorphs usually emerge from ponds between late June and early September during rainy weather, with most emerging in July. It is unknown whether they disperse to new ponds or stay near their natal ponds until they have reached maturity (Titus 2007). They do not return to ponds to breed until they become mature at approximately two years of age (Petranka 1998).

Diet

Adults eat mostly earthworms and arthropods, but they will also eat any small animal they can capture and swallow such as frogs and other salamanders. Larvae initially eat small crustaceans and insects. As they grow, they eat larger insects, aquatic invertebrates, frog tadpoles, and the larvae of other salamanders (Bishop 1941; Gibbs et al. 2007).

Best Time to See

Adult tiger salamanders spend most of their lives underground. There is an increased chance of observing adults at night during the breeding season, which, in New York, can begin as soon as late November (Madison and Titus 2009), sometimes begins during the January thaw, but usually occurs in February and March, especially during periods of rain. Eggs hatch in approximately 4 weeks. Larvae can be found in ponds until late July or early August when they emerge from ponds and begin their fossorial existence (NYSDEC 2010a).

Active Reproducing

The time of year you would expect to find Tiger Salamander active and reproducing in New York.

Similar Species

- Spotted Salamander (*Ambystoma maculatum*)

  Spotted salamanders often have two parallel rows of distinctive yellow to orange (in New York, usually yellow) spots running down the dorsum, while tiger salamanders are irregularly marked with yellow to olive blotches and have a yellow chin.

- Marbled Salamander (*Ambystoma opacum*)

  Marbled salamanders have white or gray crossbands running from head to tail on a black body, while tiger salamanders are marked with yellow to olive blotches and have a yellow chin.

Tiger Salamander Images