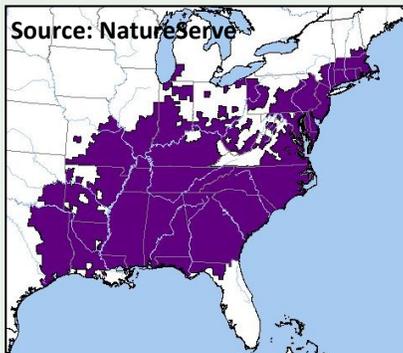


Marbled Salamanders and the Department of Defense

The Marbled Salamander (*Ambystoma opacum*) is one of the more commonly found mole salamanders on military installations. The Latin word *opacum* means “shaded, dark, obscure or dim” and refers to the adult dorsal color pattern.

Description: Adults are typically 3.5 to 4.3 in (9 to 10.7 cm) in total length. Individuals are stout, medium-sized salamanders with vertical grooves on each side of the torso and small eyes. They have a black head, back, and tail overlain with white or light gray crossbands on the males and females, respectively. Metamorphs (aquatic larvae that have recently morphed into terrestrial adults) are brown to black with light flecks that transition to adult patterns after 1-2 months.

Range: Marbled Salamanders occur throughout much of the eastern U.S., from Massachusetts and southern Vermont to northern Florida and the Gulf Coast, westward to Missouri, Oklahoma, and Texas. It is absent from most of the Appalachian Mountains.



Habitat: Preferred habitats include mature deciduous forests with vernal pools (dry until filling with rainwater) and bottomland deciduous forests in or adjoining floodplains. When not underground, Marbled Salamanders can be found under woody and other debris on the forest floor. This species may also be found in sand and gravelly areas along ridges and hillsides, which are drier habitats than other mole salamanders generally occupy.

Behavior: Adult Marbled Salamanders begin migrating to seasonally ephemeral, fish-free habitats in late summer and fall, where breeding occurs in October and November. Females lay 50-200 eggs under forest floor debris within vernal pools and other habitats that will eventually fill with rain and/or floodwaters (generally late fall to early spring). Eggs hatch in 90-120 days; however, embryos develop to the hatching stage within 9-15 days after the eggs are laid in preparation for seasonal flooding. Larvae will complete metamorphosis approximately 3 months (March-April) after hatching. Larval Marbled Salamanders are voracious consumers of other salamander larvae (both of their own and different species). However, little is known about the diet of adults, but it is assumed that they feed on a wide variety of forest floor invertebrates, including larval and adult insects, slugs, snails, earthworms, and centipedes. They may attain a life-span of 11-12 years or more.

Military Interactions: A common salamander species that is confirmed present on approximately 60 military properties. They are most commonly encountered during their fall breeding period on rainy nights.

Conservation Status: The Marbled Salamander is not federally-listed. It is, however, state-endangered in Michigan and New Hampshire, and state-threatened in Massachusetts. NatureServe lists this species as G5–Secure, and the IUCN ranks it as Least Concern.

Threats/Planning Considerations: Fragmentation/deforestation of bottomland forests, loss of vernal pools, disease, and road mortality are all threats to this species. Military natural resource managers should try to maintain forested buffers of several hundred meters around wetland habitats.



Picture by: Mundy Hackett

Occurrence on Military Lands

Confirmed	Potential
Confirmed present on 60 military properties (9 Air Force; 31 Army; 5 Marine Corps; 15 Navy)	Up to an additional 68 military properties (20 Air Force; 27 Army; 1 Marine Corps; 20 Navy)

