#### Water Moccasin/Cottonmouth (Venomous)

Do not occur naturally in most of northern GA and SC; bask on land or on logs and stumps near the water surface; swim with their heads elevated above the water and their bodies riding on the water surface; may vibrate their tails and gape their mouths when threatened; if banded, have bands that are widest on the sides and narrow on top; have triangular heads with elliptical eye pupils and a heat-sensing pit: and have a single row of scales on the underside of their tails.





Adult-dark phase





Adult-banded

Adult-light phase

#### Water Snakes (Non-Venomous)

Occur in aquatic habitats throughout GA and SC; bask in limbs overhanging water; typically swim below the water surface; if banded, have bands that are widest on top and narrow on the sides; have round eye pupils; and have a double row of scales on the underside of their tails.







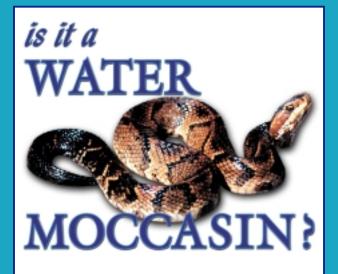
Red-Bellied







Northern Banded



Some people ask this question when they see a snake in the water. Unfortunately, many people assume all snakes in the water are Water Moccasins and kill them "just in case." Along with sharks and bats, snakes are among the most misunderstood and mistreated animals on earth. Yes, some species of snakes, including the Water Moccasin (Agkistrodon piscivorous), also known as the Cottonmouth, are venomous and therefore a potential danger. However, of the 41 snake species native to Georgia and South Carolina, only six are venomous all others are completely harmless. Among the 35 harmless non-venomous snakes, five species of Water Snakes (Nerodia spp.) are often unfortunate victims of mistaken identity—thought to be Water Moccasins. This brochure was developed to highlight the differences between Water Snakes and Water Moccasins with the hope that familiarity with these snakes will prevent further



Non-venomous Water Snakes, such as this Brown Water Snake, may be mistaken for venomous Water Moccasins.

unnecessary killing of non-venomous snakes (which is illegal in Georgia) commonly found in aquatic habitats in Georgia and South Carolina.



Adult Red-Bellied Water Snake

However, this information is not provided to point out which species to kill and which species not to kill. The Water Moccasin's rumored reputation as a vicious snake far exceeds its true character. This is not an aggressive snake that attacks without provocation, and rarely does it strike even when harassed. Venom is a precious commodity that Water Moccasins use for subduing prey and wasting venom on anything that is not "food" may

prevent a snake from catching its next meal. Further, the gaped display of the "cottony" inner-mouth of a Water Moccasin is not an act of aggression, but rather a warning of its toxicity—no different than the rattling behavior

of Rattlesnakes or the bright warning colors of the Coral Snake. Venomous snakes pose very little threat to humans who leave them alone—the vast majority of snakebites result from attempting to capture, harass, or kill them.

# WATER MOCCASINS (COTTONMOUTHS) VS. WATER SNAKES

There are five species of large Water Snakes native to Georgia and South Carolina—Eastern Green Water Snake (Nerodia floridana). Brown Water Snake (Nerodia taxispilota), Red-Bellied Water Snake (Nerodia erythrogaster), Banded Water Snake (Nerodia fasciata), and Northern Water Snake (Nerodia sipedon). Adult

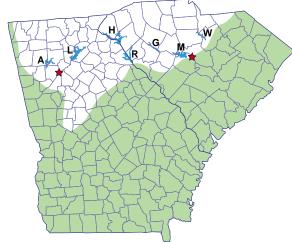


Eastern Green Water Snake.

Water Snakes and Water Moccasins may be very similar in appearance—both are both large, heavy-bodied species with rough scales and relatively dull coloration. However, the following characteristics of behavior and appearance should assist anyone interested in differentiating between the two:

# Range and habitat...

The first step in discerning "Is it a Water Moccasin?" should be to refer to the distribution map that illustrates the range of the Water Moccasin. Collectively, Water Snakes can be found in every county of Georgia and South Carolina, unlike the Water Moccasin, which does not naturally occur in most of the northern half of either



Range (in green) of the Water Moccasin (Cottonmouth) in Georgia and South Carolina. State capitals are indicated by red stars; major reservoirs outside of the Water Moccasin's range are as follows: A-Lake Allatoona: L-Lake Lanier: H-Lake Hartwell: R-Lake Russell: G-Lake Greenwood; M-Lake Murray; W-Wateree Lake.

state. However, since distributions are not static and snakes may be moved around intentionally or accidentally, physical features and behaviors of questionable snakes should also be examined. Although it is difficult to summarize the habitat preferences of these two snakes, in general Water Moccasins do not prefer large, open reservoirs, whereas some Water Snakes do. Water Moccasins tend to inhabit slow-moving streams, swamps, and backwaters.

# Basking behavior...

Stories of Water Moccasins falling from high overhanging limbs into boats are most likely based on misidentifications. Water Moccasins typically bask on land, stumps, or logs near the water surface, and only occasionally climb to low limbs when access is afforded by vines or a gradually sloping branch. Water Snakes are very agile climbers and spend a great deal of time basking on the limbs of shrubs and trees overhanging the water.



Water Moccasins (left) rarely climb, whereas Water Snakes, like this Banded Water Snake (bottom), typically bask on limbs that hang over water.



# Swimming behavior...

When disturbed, Water Moccasins either hold their ground or swim away; when swimming, their heads are usually elevated above the water and their bodies appear overly buoyant, riding on, or nearly on, the water surface. Water Snakes, on the other hand, do not swim high on the water, their heads are not elevated, and they more typically swim below the surface. When Water Snakes



A juvenile Water Moccasin swimming. Also illustrated is the typical "hourglass" banding pattern.

are disturbed, they almost always flee by diving beneath the water.

# Head positioning and mouth-gaping behavior...

Water Moccasins typically keep their heads cocked at an approximately 45° angle, and when threatened will gape their mouth revealing the whitish inner lining. Although Water Snakes do not display either of these behaviors they, too, have whitish coloration in the mouth lining. Therefore, dead Water Moccasins cannot be positively identified based solely on the color of their inner-mouth

lining (Caution: Venom may remain fully toxic even in dead snakes. It is best to leave dead snakes of uncertain identification alone).





Mouth-gape warning behavior (top right) and head angle typical of Water Moccasins.

# Tail vibration...

In addition to mouth-gaping, Water Moccasins will often rapidly vibrate their tail when agitated or threatened. Although several other non-venomous snakes also exhibit this behavior (Black Racers, for example), Water Snakes do not.



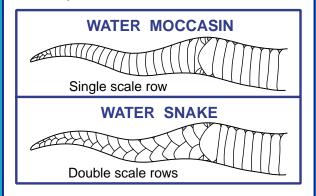
Water Snakes, like this Northern Water Snake, have bands that are widest on top, whereas Water Moccasins have bands that are widest on the sides.

#### Pattern...

The two most common Water Snakes in Georgia and South Carolina, Banded and Northern, have bands that are widest on top. Juvenile and patterned adult Water Moccasins have "hollow" bands that are widest on the sides and appear to be "hourglass shaped."

#### Underside of tail...

Water Moccasins have a single row of scales (similar to the belly scales) on the underside of their tail, while a double row of scales is present on Water Snakes (Caution: If uncertain as to species, scale characteristics should only be examined on dead snakes and shed skins).

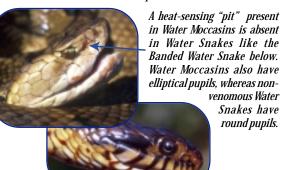


# Head shape and features...

The shape of the head is not a reliable way to differentiate these species since Water Snakes can flare out their head when they feel threatened, making it look triangular. However, the elliptical shape of the pupil (round in Water Snakes) and the presence of a pit between the eye and nostril (absent in Water Snakes) are reliable characteristics of Water Moccasins.



A Northern Water Snake in a threat posture, with the head flared.



# For additional information on snakes please contact: Georgia Department of Natural Resources

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This document was a joint production of the Georgia Department of Natural Resources Nongame-Endangered Wildlife Program and the Savannah River Ecology Laboratory. Text by John Jensen (GADNR); Photos by David E. Scott (SREL) and John Jensen (GADNR); Layout and design by Laura L. Janecek (SREL).

