

Bear Damage In A Small-pole Stand Of Atlantic White Cedar On Pocosin Lakes Refuge

By Wendy Stanton¹ and Eric Hinesley²



This stand was given by Weyerhaeuser Company through the Governor's Celebration North Carolina Program.



The Bears: A black bear study conducted in 2002-05 by Virginia Tech (Tredick 2005) estimated 3.5 bears per sq mi (1 bear per 74 ha). At that time, this was considered the densest black bear population ever recorded in the literature.



The dense cedar stand provides excellent shelter for the bears.

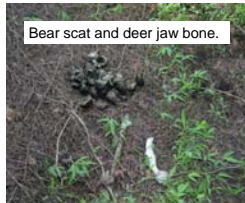
The Planting:

1. AWC rooted cuttings produced by Weyerhaeuser in a greenhouse at Comfort, NC.
2. Planted 03 December 1991.
3. Stocking = 726 trees per acre (1785 trees per ha).
4. Comparison of rooted cuttings grown in 10 in³ (164 cm³) tubes (Ray Leach super cells) and 40 in³ (655 cm³) styro-blocks.

Weed Control:

Arsenal herbicide was applied in May 1992 (band sprayed at 4 oz per acre = 0.28 kg per ha)

The Deer Hunt: The refuge conducts an annual Pungo Lottery Deer Hunt in September and October. A 12-ft deep pit (3.7 m) is dug behind the cedar stand for hunters to deposit deer remains. By the end of October, the pit can easily contain remains of more than 100 harvested deer.



Bear scat and deer jaw bone.

Historical information (Gardner and Summerville 1992):

Site: 12-acre (4.7 ha) portion of an organic loam agricultural field that grew a corn crop in 1991.

Site Preparation:

1. Single-pass V-blade to winnow cornstalks.
2. Bed and fertilize 350 pounds per acre (390 kg per ha) rock phosphate in October 1991.
3. Row spacing = 10 ft (3.0 m).
4. Deer Exclosure: Gallagher high-tension solar powered electric fence, three strands, plus a one-strand outer wire; installed November 1991.



Bears have been observed digging the remains out of the pit and dragging their cache into the stand



Entire rows and/or clusters of trees have had the bark stripped off up to a height of about 5 or 6 ft (1.8 m).



Claw mark on pine

Although we do not know the exact reason for the bears' behavior, it is likely territorial. Bears will frequently use their claws to scratch territorial markings in trees (Tredick 2005). Trees with thicker bark, such as this loblolly pine tree, suffer much less damage than cedars do with their characteristic thinner bark.



Claw mark on cedar

Recent sampling of the damage (April 2009):

Four rows were systematically chosen throughout the stand for a 100% cruise of injury and mortality. Each tree was classified as 1) alive with no injury, 2) dead, 3) missing, or 4) alive with injury (fresh or old) on lower trunk. The percentage of trees in each category was calculated. Stem diameter at a height of 4.5 ft (1.4 m) was measured on a 14 of the largest trees using sliding calipers. Total height was measured on five of the largest trees using a Suunto clinometer.

Future:

The deer pit for the refuge will be moved to another location far away from current and future Atlantic white cedar plantings. Unfortunately it may be too late to save this stand, but we have learned something to apply in the future.

The Damage Results:

Twenty-three percent of the trees were alive with no injury, 29% were missing, and 48% were alive with injury to the lower trunk. Missing and/or injured trees constituted 77% of the stand. Height of the largest trees was 36 to 38 ft (11 to 11.6 m); stem diameter was 8.0 inches (20.3 cm). Over the life of the stand (17 growing seasons), these values represent annual height and diameter increments of about 2.1 ft (0.64 m) and 0.47 in (1.2 cm), respectively, for the largest trees.

Literature Cited:

Gardner, W.E. and K.O. Summerville. 1992. Summary of Atlantic white-cedar tour and meeting, held on March 4-5, 1992 near Plymouth, NC. North Carolina Coop. Ext. Serv., Raleigh. Unpublished memorandum. 21 p.

Tredick, C.E. 2005. Population abundance and genetic structure of black bears in coastal North Carolina and Virginia using noninvasive genetic techniques. M.S. Thesis, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, USA.

Wendy Stanton¹, Refuge Biologist at Pocosin Lakes Refuge; Eric Hinesley², Professor at North Carolina State University.

