TERMINAL WEEVIL, \textit{(Pissodes terminalis)}

BACKGROUND
The terminal weevil is an important pest of open growing young pine trees. It can cause considerable deformity to the tree’s main stem. This species is native to North America.

DISTRIBUTION
The terminal weevil ranges from Manitoba to British Columbia and Yukon and south to California.

DESCRIPTION OF LIFE STAGES
Terminal weevil adults are a mottled, reddish-brown colour and are 4 mm to 10 mm in length. As is typical of weevils, they have a long, curved snout. Eggs are pearly white and approximately 1 mm long. The larvae have a yellowish-white body and brown head. They are stout, curved, legless grubs. Mature larvae in the final instar are about 12 mm long. Pupae are white and about the same size as the adults. The long curved snout is visible in the pupal stage.

Terminal weevil adult
Image: Ron Long, Simon Fraser University, Bugwood.org

Terminal weevil larva
Image: Ron Long, Simon Fraser University, Bugwood.org
HOST SPECIES
The major host species are lodgepole and jack pine. Eastern white pine, Engelmann spruce, limber pine, ponderosa pine, shore pine, Sitka spruce, western hemlock, western white pine, white spruce and whitebark pine are occasional hosts. In Saskatchewan, jack pine is the major host in the boreal forest and lodgepole pine is the host in Cypress Hills.

LIFE CYCLE
The terminal weevil has one generation per year. Adults spend the winter in the duff layer on the forest floor. They emerge in late May to mid June and maturation feed on the developing main stem leader prior to mating. After mating, females lay their eggs in oviposition punctures at the base of the current year’s leader. One egg is placed in each puncture. Larvae hatch in about two weeks and randomly tunnel in the phloem. After molting to the second instar, larvae feed upwards in the phloem of the current year’s leader until September when they reach third instar. Larvae then enter the pith and molt to the fourth instar and spend the winter. Pupal chambers are constructed in the pith of the terminal shoot. Pupation may occur in fall or the following spring. Adults from these pupae emerge in July and August and feed for several weeks. In late September they move to the forest floor to spend the winter and emerge the following spring. Consequently, there are overlapping generations whereby larval, pupal and adult stages are present at any time of year.

SIGNS, SYMPTOMS AND DAMAGE
The terminal weevil prefers vigorous open growing trees. The first sign of attack in late spring to early summer is the adult feeding punctures at the base of the current year’s leader. There is excessive pitch flow associated with these wounds. The leader becomes stunted and wilted. By mid-summer, it becomes chlorotic (pale yellow-green). The needles on the leader gradually change from yellow-green to red-brown. In late summer to fall, adult emergent holes are visible midway down the current year’s dead leader. Dead stubs on main stems and deformed or
multiple leaders are signs from previous attacks. The terminal weevil kills one year of growth in a single year, not two or three like the white pine weevil. Repeated attacks cause growth loss and produce forked or crooked stems and multi-leader trees that reduce timber quality.

Terminal weevil damage to leader

MANAGEMENT PRESCRIPTIONS
When renewing the forest in weevil-prone areas, mixing pine with spruce, tamarack or fir should be considered to reduce weevil attack. As well, higher density planting can help to lessen the impact. Although labour-intensive, the manual pruning and destruction of infested leaders prior to adult emergence can reduce populations in succeeding years. This process should be carried out for at least three consecutive years, since adult weevils can live for three or more years and re-attack treated stands.

REFERENCES FOR ADDITIONAL INFORMATION
Lodgepole terminal weevil
Natural Resources Canada, Canadian Forest Service

Lodgepole pine terminal weevil management in B.C.
Forest Practices Code - Terminal Weevils Guidebook
http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/weevil/weevil3.htm