# Basic First Aid for Snow-Damaged Trees

## NDSU-North Dakota Forest Service

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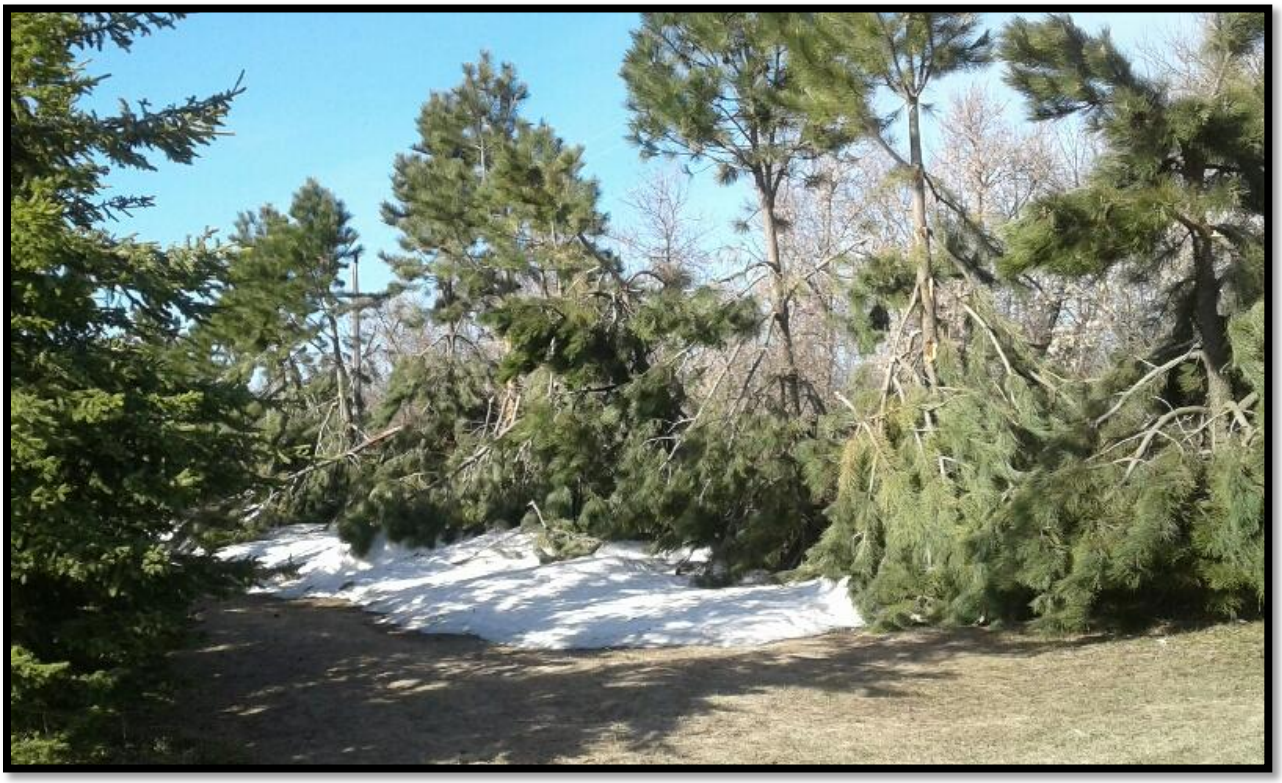

*Source: NDSU-North Dakota Forest Service*

*Heavy snow loads broke damaged the lower branches in the ponderosa pine row of this windbreak during the winter of 2016-2017.*

Heavy snows have melted, exposing a lot of the damage they did to North Dakota's trees this winter. The snow bent and broke trees and branches as it fell and then as it accumulated in a broad swath across the state. Many trees, especially pines, now suffer from limb breakage that happened below the snow line. Trees are valuable and resilient, and many will recover if their owners are patient and give them proper care.

**First aid for trees with broken lower branches**

Branches that broke below the snow line should be properly pruned from the tree. Use a sharp lopper or pruning saw for the best results, and start by cutting the branch off and temporarily leaving a stub of about 6 inches long. This allows room to work so that the final pruning cut can be made without tearing the bark on the tree. If branches are about 2 inches or larger, use your pruning saw to make a shallow cut on the bottom side of the branch about 5 inches out from the tree. Then saw the branch from the top about 6 inches from the tree. The place where the branch connects to the tree is a thickened area called the branch collar. The final cut should be as close to the branch collar as possible without damaging the branch collar. Avoid the temptation to apply pruning dressings or paints.

These branches will not re-sprout on most evergreen trees, and the tree will not fill in where the branches have been removed. If less than one-third of the tree's branches have been lost the tree has an excellent chance of recovery. If half of a tree's branches are lost, the tree will be very stressed. Do not try to balance out the crown by removing undamaged branches now. Follow up by gradually pruning unbalanced trees back into symmetry over the next few years.

Some tree pests are very good at identifying and attacking these stressed trees, so watch for scale insect and for evidence of wood boring insects over the next few growing seasons. Reduce tree stress by making sure the tree roots have adequate water and the soil has proper drainage.

Reduce stress and competition for scarce resources by adding a 3-inch layer of organic mulch, like wood chips, over the tree's root zone. The critical root zone is the area out to the drip line of the tree. Mulch cools the soil, helps keep soil moist, returns organic matter to the soil, and protects the tree from additional damage by lawn equipment.

**First aid for young trees (up to about 15'tall)**

Young trees that are bent may be able to resume their natural shape with no intervention. If a young tree is broken near its base or if more than half of its limbs are broken, it is time to consider removing it and replacing it. Some hardwoods will respond to this by sending forth strong stump sprouts. If this happens, you can thin out the sprouts over the next three years until you have saved the strongest and straightest sprout as the new tree. Most evergreen trees, such as pines, spruce and juniper, do not respond in the same way and will need to be replanted.

If the top central stem of a young tree is broken, prune it back to the next strongest branch, which will then take over as the leader. Leaders can be encouraged to straighten up by tying them in place with a little masking tape or a thin strip of cotton. Wire, plastic and other non-biodegradable materials will girdle the tree and should never be used as a tie on a tree. Plan to remove the material, even if it is biodegradable, the following year.

Prune broken branches back to the limb to which they are attached, or to the trunk if necessary. Make clean and proper cuts with hand tools, not with a chainsaw. Do not leave stubs, and do not treat pruning cuts with any kind of wound dressing or paint. Prune only the damaged branches, leaving as much of the crown intact as possible. Plan to come back over the next few years for corrective pruning as needed.

**First aid for larger trees**

In addition to broken branches, look for splits, broken tops, and broken branches higher in the crown. Remove broken branches as described above. Binding a split usually leads to additional breakage later when the binding girdles the tree, so prune below the split if possible, or contact an arborist for bracing and cabling for valuable trees. Bent trees and branches are under a lot of mechanical stress that may be released as they are cut. Leave the work on larger trees to an arborist who is both trained and insured for such work.

**Preventing snow and ice damage in windbreaks**

Careful selection and planning of tree species, planting site, and planting design are the easiest ways to prevent winter storm damage to trees. Windward trees and shrubs (those closest to the prevailing wind) must tolerate the full force of harsh, winter winds. However, the trees and shrubs behind them must tolerate the snow and ice that is deposited on their stems and branches. 'Red pines,' such as Scotch (Scots') and ponderosa pine, are commonly planted in the second or third row of trees in windbreaks. These trees have strong, rigid branches that withstand wind well, but break easily when weight comes down on top of them. They are also susceptible to Zimmerman pine moth when planted in large plantings of few species. This insect pest bores into the base of branches and weakens the branch where it joins the main trunk. Some 'white pines,' such as Swiss stone, limber, and Korean pine, generally have more flexible branches that can handle heavier snow loads, but often grow slower in ND.

Other options for reducing winter storm damage are: planting deciduous trees in the second and third windbreak rows, to help distribute snow; planting shrubs with more open canopies in the first row, to let more wind and snow under the canopies of the trees behind it; and, planting a dense shrub or tree row approximately 50ft in front of the rest of the windbreak rows, to catch more snow farther from the rest of the trees. The area between the snow trap row and main windbreak can be cropped, hayed, or planted to a pollinator or habitat mix.

For more information on treating, and preventing damage to trees, contact your local NDSU Extension Service office, or the authors at:

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*This young windbreak of ponderosa pine and CO blue spruce was beautiful during the summer, but the third pine row was severely damaged and the spruce row was crushed by heavy snow loads. A snow trap row or different species selection could have reduced the damage.*