StyracaceaeCSnowbell family

Halesia carolina L.

Carolina silverbell

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Other common names. opossum-wood, silverbell, snowdrop-tree.

Growth habit, occurrence, and uses. Carolina silverbellC*Halesia carolina* L.Cis a small, deciduous tree found naturally from West Virginia and southern Illinois south to South Carolina, northwestern Florida, and Alabama, with small pockets as far west as Arkansas and Oklahoma (Sargent 1965; Sluder 1990). It has been successfully planted in Massachusetts and California and also to some extent in northern and central Europe. Carolina silverbell was first cultivated in 1756 (Bonner and Mignery 1974). It is highly valued as an ornamental, and its fruits are a source of food for wildlife.

Flowering and fruiting. The perfect, white (sometimes pink), bell-shaped, axillary flowers of Carolina silverbell are borne in fascicles of 1 to 5 in March to May (Brown and Kirkman 1990; Sluder 1990). The species is precocious and seedlings may flower when only a little over 1 m in height (Dirr and Heuser 1987). The fruits, which mature in August and September, are oblong or oblong-ovate, dry, 4-winged, reddish-brown, corky drupes 2.5 to 5 cm long. The ovary is a 4-celled ellipsoid stone, 13 to 16 mm long, usually containing only 1 seed (Bonner and Mignery 1974; Brown and Kirkman 1990; Sluder 1990) (figures 1 and 2). The fruits are persistent on the branches, and dispersal occurs well into the winter.

Collection, extraction, and storage. Carolina silverbell fruits may be collected from the trees in late fall and early winter. De-winging can be done mechanically (Thornhill 1968) and is recommended to reduce bulk and facilitate handling. Complete extraction of stones from the fruits is not necessary. Bonner and Mignery (1974) found about 2,600 to 5,500 de-winged fruits/kg (1,200 to 2,500/lb) using 2 samples. Although no data on long-term storage are available, dry, cold storage of cleaned fruits has been recommended (Chadwick 1935).

Germination tests. The seeds are extremely dormant and they response best to warm stratification followed by cold, stratification. Moist stratification at 13 ˚C for 60 to 120 days, then 60 to 90 days at 1 to 5 ˚C, has worked for seeds from many sources (Bonner and Mignery 1974), although more northern collections may require more than 90 days of cold (Dirr 1977). Other sources, however, seem to need only cold stratification (Chadwick 1935). Stratified seeds can be germinated in flats of sand or sandBpeat mixtures for 60 to 90 days with 30 ˚C day and 20 ˚C night temperatures. Seven samples germinated in this manner averaged 53% germination (Bonner and Mignery 1974). Germination is epigeal (figure 3).

Nursery practice. Because of uncertain response to stratification, the most practical

method of propagation from seed may be to plant in the fall and allow 2 years for full germination (Dirr and Heuser 1987). Stratified seeds should always be used for spring sowing. Some growers in the North have planted seeds in flats of soil and have kept them in a greenhouse during the early winter months. In January, the flats are then moved to an outdoor cold frame for the cold part of the after-ripening treatment. The flats are protected by mulch or by board covers on the coldframes (Bonner and Mignery 1974).

Carolina silverbell can also be propagated by cuttings taken in mid-summer after shoot elongation has ceased but before fall hardening sets in. It is best to treat cuttings with 2,500 or 10,000 ppm indole butyric acid (IBA) solution and place them in peat or perlite under mist. Rooting success at levels of 80 to 100% can be expected (Dirr and Heuser 1987; Sluder 1990). Micropropagation techniques are also under study (Brand and Lineberger 1986).

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Figure 1—*Halesia carolina,* Carolina silverbell: fruit and stone, × 1.

Figure 2—*Halesia carolina,* Carolina silverbell: longitudinal section through 2 embryos of a stone, × 1.5.

Figure 3—*Halesia carolina,* Carolina silverbell: seedling development after 1, 4, 16, and 40 days.