swallow colony. The egg was laid between 7 and 9 June and represented one of the last three eggs deposited in a clutch of six by an adult female. The egg measured 13.1 × 9.2 mm compared to 17.7 × 14.3 mm for a randomly chosen normal one in the clutch. Sixteen other Tree Swallow eggs of five clutches on the same area averaged 18.7 × 13.2 mm, the smallest ones being 17.7 mm long and 12.6 mm wide. The egg did not hatch but on 23 June the rest of the clutch produced five young that all fledged on 12 July.

This unusually small egg represents the only one of its kind that I have found in examining 570 Tree Swallow eggs (119 clutches) in recent years. In addition, there is no mention of eggs of unusual size in 234 Tree Swallow clutches (1195 eggs) reported in the Maritimes Nest Records Scheme. Bent (1942) does not refer to dwarf eggs for any of the swallow species.

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**Editor's note:** The occurrence of dwarf eggs is probably not as rare as some authors have considered it to be. Probably, however, aberrant eggs are noted mainly by persons examining large numbers of eggs. As *The Canadian Field-Naturalist* does not wish to be inundated with these reports nor does it wish to clutter the literature with many individual reports, we suggest that similar data should be filed with nest records schemes. Thus when a comprehensive publication is planned, the data can be compiled both from nest records files—and we urge nest records schemes to keep such records on file—and from museum collections of eggs.

# Twig Abscission in Maples (Section *Rubra: Acer rubrum* and *A. saccharinum*) as a Defence Reaction against Water Stress

Twig and branch abscission is well known in various trees, notably poplars (*Populus*) and oaks (*Quercus*). Until recently I have seen no discussion of its occurrence in maples (*Acer*). It is briefly mentioned for *Acer rubrum* and *A. saccharinum* by W. F. Millington and W. R. Chaney (1973. *In* Shedding of plant parts. *Edited by* T. T. Kozlowski. Academic Press, New York) and stated to be unusual in occurring during spring and early summer; but they do not mention the circumstances of its occurrence. I here present evidence that it counteracts water deficiency, which might otherwise induce severe leaf scorch.

Each spring from 1942 to 1949 a young red maple (*A. rubrum*) (ca. 20 cm diameter at breast height), growing close to a street intersection in front of my home at Ottawa, shed twigs so abundantly as to interfere with mowing the lawn. A 1-year count of raked up twigs between 2 cm and 28 cm long, exceeded 1200, but doubtless excluded many small ones that remained unobserved in the grass. The period of shedding ranged generally from soon after bud-break to early June, but was usually most abundant in mid- to late May approximately when the leaves became fully expanded. Actual abscission may appreciably precede twig fall in windless weather, but this aspect was not studied.

Frequent observations, in the same period, of red maples growing in parks and gardens without adjacent paved areas showed at most only slight abscission. A red maple in front of the house to which I moved in 1949 generally shed few twigs despite proximity to the sidewalk, perhaps because the lawn, on the north side of the house, was heavily shaded and the soil was a heavy clay loam that seldom dried out seriously. But in the year after I regraded the lawn and replaced the front path, inevitably cutting many roots, abscission was moderately heavy.

In 1974 and 1975 I had under observation a garden with four large silver maples (*A. saccharinum*): two in front of the house, each bordered on three sides by a paved driveway, a wide concrete path, and paved street and sidewalk; and two behind the house, far from any paved surfaces. In 1974 the weather from late April through May at Ottawa was cool and

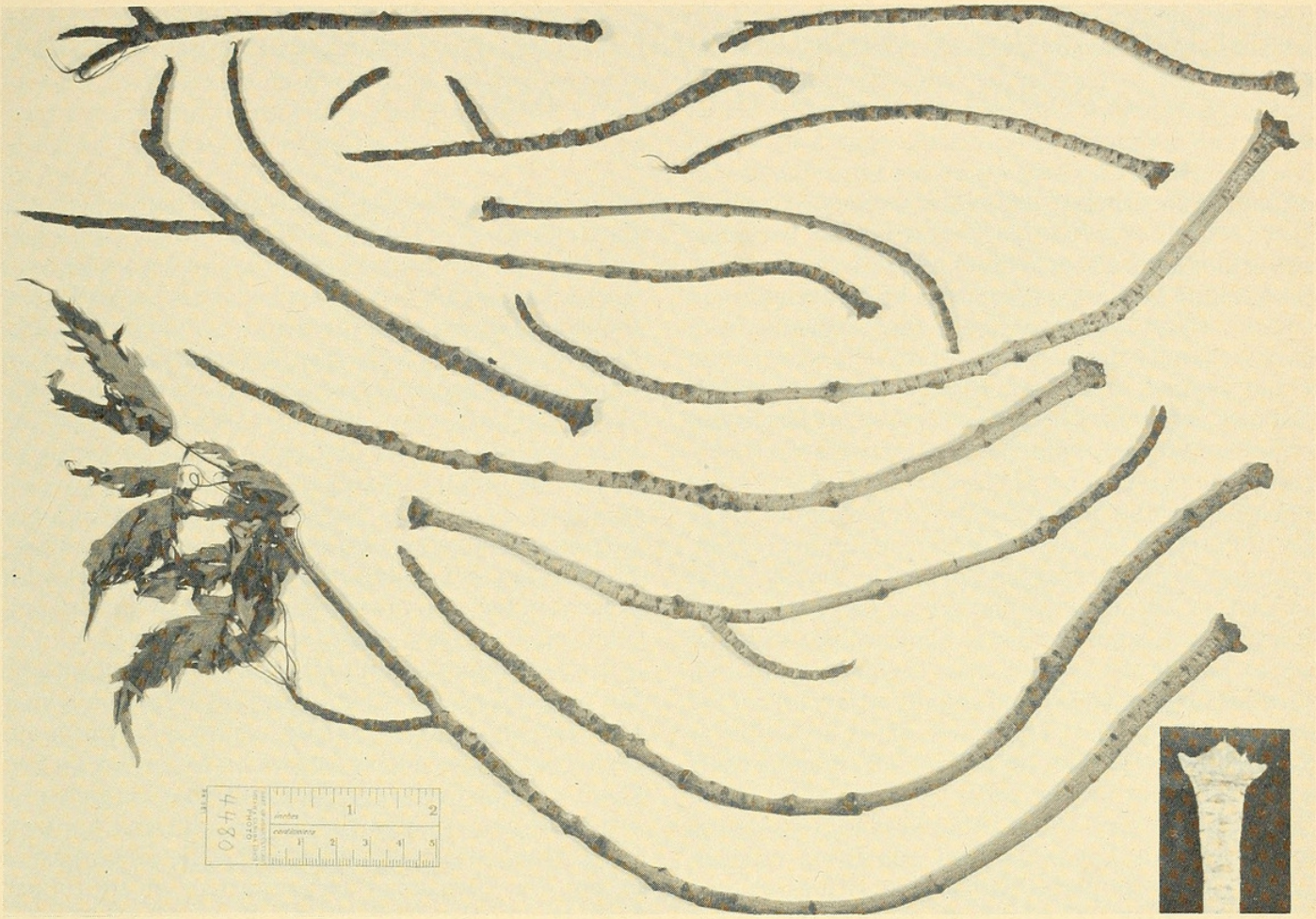

FIGURE 1. Selection of abscissed twigs of *Acer saccharinum*, collected from trees adjoining pavement, Ottawa, Ontario, 31 May 1975 (*Savile 5141*); photographed by Ken W. Spicer. Inset: detail of twig base; photographed by Modra Kaufert.

abnormally wet; and no twig abscission was noticed in any of these trees. In 1975 the weather was exceptionally warm and dry from late April to late May. Again no significant abscission occurred in the trees behind the house; but the trees in front of the house shed many twigs up to at least 35 cm long, mainly in the last half of May.

Figure 1 shows that the twigs of *Acer saccharinum* are cut off by a typical conical corky abscission layer, such as Millington and Chaney (*loc. cit.*) illustrate for *Populus* and *Quercus*. Abscissed twigs of *A. rubrum* are generally somewhat smaller but otherwise identical in form.

Water supply to the twigs seems generally to be cut off before the buds burst; but, as the lowest twig in Figure 1 shows, the vessels may remain intact until just before the twig falls, allowing partial expansion of the leaves.

*Acer rubrum* ranges in habitat from swamps and lake shores to arid south-facing rocky hillsides. Twig abscission in this species seems to be an adaptive device, whereby shedding of a proportion of twigs saves the tree from developing an interveinal scorch of all its leaves, such as is often seen in sugar maple (*A. saccharum*) under conditions of stress. *Acer saccharinum*, which is closely related to *A. rubrum*, grows most commonly on moist bottom land exposed to prolonged spring flooding. E. Jorgensen suggests that this flooding causes a physiological drought and twig abscission. The abscission habit is perhaps general in section *Rubra* Pax. and may indicate an ancestral species that evolved under conditions of frequent water stress.

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