

1 **Habitat, dispersal and distribution of the rare plant *Triosteum aurantiacum***
2 **var. *aurantiacum* (Bickn.) in northern Nova Scotia, Canada**

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7 **Abstract**

8 Three river valleys in Antigonish County, northern Nova Scotia, Canada, support populations of
9 the rare herbaceous plant *Triosteum aurantiacum* subsp. *aurantiacum*. We repeated a 2006
10 survey of these habitats in 2105 to see how the population had changed over a decade and to
11 learn more about why the plant remains rare. Our survey supports the previous observations that
12 *T. aurantiacum* grows largely in the understorey of hardwood and mixedwood stands, on bare
13 ground within and near river flood plains, often in association with *Fraxinus americana* (L.).
14 However, predictive maps based on GIS modelling led to the discovery of new sub-populations
15 of *T. aurantiacum* along the three original rivers, a widely dispersed population along previously
16 unsurveyed Rights River, and a stand in mature hardwood forest which supported a high density
17 of plants. *T. aurantiacum* populations along West and South rivers may be expanding, while that
18 along Pomquet River appears to be declining. Continuing succession of the floodplain forest
19 may be changing the availability of microsites preferred by *T. aurantiacum*.

20 Measurements of photosynthetic capacity using PAM fluorometry showed significant
21 levels of stress on *T. aurantiacum* growing in full sunlight. Levels of stress did not consistently
22 differ between floodplain and upland sites, or when comparing river valleys. Late-autumn
23 observations of *T. aurantiacum* suggest that white-tail deer *Odocoileus virginianus*
24 (Zimmerman) may be the primary long-range seed disperser. Birds were not observed eating
25 *T. aurantiacum* berries. Habitat maps suggest that potential habitat for *T. aurantiacum* is
26 disjunct, and requires long-range seed dispersal to colonize. The absence of *T. aurantiacum* from
27 apparently prime habitat (Brierly Brook floodplain), may be due to limitation on the dispersers.