

RECENT PUBLICATIONS



Journal Articles

Beardmore, T., Loo, J.A., McAfee, B., Malouin, C., and Simpson, J.D. 2006. A survey of tree species of concern in Canada: the role for genetic conservation. *The Forestry Chronicle* **82**: 351–363.

A survey was conducted in 2003 to identify Canadian native tree species (woody perennials ≥ 10 m tall) that may be in need of genetic conservation. Thirty expert respondents from various agencies in provinces and territories graded the tree species in their respective geographical regions based on nine criteria that describe potential reasons for conservation (e.g., rarity, decreasing range or frequency, preferred habitat in high demand, uncertain viable seed source) and then provided a rating that identifies the type of conservation that may be required (species is in good shape, insufficient knowledge for a designation, *in situ* or *ex situ* conservation measures are required). Either *in situ* or *ex situ* conservation was recommended for 52% of Canada's native tree species, and 8% required more information before a rating could be made. The results of the survey will be used to identify genetic conservation priorities for tree species in Canada.

Gray, D.R., and MacKinnon, W.E. 2006. Outbreak patterns of the spruce budworm and their impacts in Canada. *The Forestry Chronicle* **82**: 550–561.

Historical records (1941–1998) of spruce budworm defoliation in Canada were analyzed to estimate variability in the spatial and temporal patterns of defoliation, and to determine 27 representative patterns that adequately describe the spatial and temporal variability in defoliation. Spatially referenced estimates of growth loss and mortality resulting from an outbreak of spruce budworm were obtained by subjecting a national forest inventory to the spatially defined representative patterns of defoliation. The use of these estimates in determining the status of Canada's forests as a carbon source or sink is discussed.

Johns, R., Ostaff, D.P., and Quiring, D.T. 2006. Relationships between yellowheaded spruce sawfly, *Pikonema alaskensis*, density and defoliation on juvenile black spruce. *Forest Ecology and Management* **228**: 51–60.

Manipulative field experiments and field surveys were carried out to evaluate the relationship between the density of yellowheaded spruce sawfly, *Pikonema alaskensis* (Roh.), and resultant defoliation on young open-grown black spruce, *Picea mariana* (Mill.) B.S.P., in central Newfoundland. In sleeve-cage experiments, the number of early and late-instar larvae per current-year shoot explained greater than 73 and 69%, respectively, of variation in mid-crown branch defoliation and 34–75% of variation in leader defoliation. In field surveys, densities of eggs, mid- and late-instar larvae in whorls 2 and 4 explained greater than 34, 46, and 75% of variation, respectively, of defoliation in leaders and in whorls 1 and 2 of black spruce. Estimates of adult female and male abundance obtained from sticky traps explained 66 and 40% of variations, respectively, in defoliation among trees within stands and almost 90% of variations in defoliation among stands. Relationships were slightly improved by incorporating previous defoliation into analyses as a covariate. Our results indicate that density–defoliation relationships for all stages of *P. alaskensis* on black spruce are robust and suitable for incorporation into a management program for this pest.

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Moreau, G., Eveleigh, E.S., Lucarotti, C.J., and Quiring, D.T. 2006. Ecosystem alteration modifies the relative strengths of bottom-up and top-down forces in a herbivore population. *Journal of Animal Ecology* **75**: 853–861.

1. Ecosystem alterations can affect the abundance, distribution, and diversity of plants and animals, and thus potentially change the relative strength of bottom-up (the plant resource) and top-down (natural enemies) trophic forces acting on herbivore populations.
2. The hypothesis that alterations of the forest ecosystem associated with precommercial thinning have contributed to the increased severity of outbreaks of *Neodiprion abietis* (Harris), a sawfly defoliator, through the reduction of trophic forces acting on *N. abietis* larvae, was tested using exclusion techniques.
3. The relative contributions to *N. abietis* larval mortality of bottom-up and top-down forces both increased with increasing levels of defoliation and were both reduced by thinning. The reduction of bottom-up and top-down forces caused a 58% mean increase in *N. abietis* larval survival in thinned compared with untreated stands, which is less than would be expected by the sum of the effects of thinning on each source of mortality. Evidence indicates that the partly compensatory, partly additive nature of the mortality associated with the trophic forces in the system under study is responsible for this discrepancy.
4. To our knowledge, this is the first study to show the impact of ecosystem alterations on the balance between bottom-up and top-down forces acting on an eruptive herbivore population along a gradient of host-plant defoliation, and how this can lead to increased outbreak severity. It is stressed that accurate estimates of the relative contributions of bottom-up and top-down forces to mortality cannot be obtained if the additive or compensatory nature of the mortality associated with these trophic forces is overlooked.

Park, Y.S., Lelu-Walter, M.A., Harvengt, L., Trontin, J.F., MacEacheron, I., Klimaszewska, K., and Bonga, J.M. 2006. Initiation of somatic embryogenesis in *Pinus banksiana*, *P. strobus*, *P. pinaster*, and *P. sylvestris* at three laboratories in Canada and France. *Plant Cell, Tissue and Organ Culture* **86**: 87–101.

During 2002–2004, three laboratories in Canada and France collaborated to improve initiation of somatic embryogenesis (SE) in jack pine (*Pinus banksiana* Lamb.), eastern white pine (*P. strobus* L.), maritime pine (*P. pinaster* Ait.), and Scots pine (*P. sylvestris* L.), giving particular attention to the effects of (1) N-(2-chloro-4-pyridyl)-N'-phenylurea (CPPU) versus various concentrations of 2,4-dichlorophenoxyacetic acid (2,4-D) and benzyladenine (BA), (2) differences in basal nutrient media, i.e., macro- and microelements, and (3) gelling agent concentration. The work was carried out separately at each laboratory, but the details of media compositions were shared and tested on their respective species. Results indicate that the developmental stage of the zygotic embryo (ZE) and genotype effects had a large influence on SE initiation, and that genetic effects were consistent over time. Different species responded differently to PGR types and concentration, basal nutrient media, trace elements, and their combinations. Currently, our best initiation rates based on a selected group of genotypes, optimal development stage of ZE, and medium are 3.9% for jack pine, 54.6% for eastern white pine, 76.2% for maritime pine, and 19.7% for Scots pine.

Parsons, R., and Simpson, C.M. 2006. Training the next generation of aboriginal youth. *The Forestry Chronicle* **82**: 306.

Sweeney, J., Gutowski, J.M., Price, J., and de Groot, P. 2006. Effect of semiochemical release rate, killing agent, and trap design on detection of *Tetropium fuscum* (F.) and other longhorn beetles (Coleoptera: Cerambycidae). *Ecological Entomology* **35**: 645–654.

Release rates of a blend of monoterpenes (spruce blend) and ethanol significantly affected mean trap catch of *Tetropium fuscum* (F.), *Tetropium castaneum* L., and *Tetropium cinnamopterum* Kirby. Addition of an ethanol lure to traps baited with the spruce blend lure was necessary to attract *T. castaneum* and *T. cinnamopterum* and significantly increased attraction of *T. fuscum*. The combination of spruce blend and ethanol at high release rates had the highest mean catch of *Tetropium* spp. and was the only lure treatment that resulted in capture of *T. fuscum* and *T. castaneum* (in Poland) in every test block, suggesting it would be the best for detection surveys among the lures tested. The effect of trap design on mean catch of *T. fuscum* was inconsistent. In one experiment, the larger collapsible cross-vane Colossus trap caught about twice as many beetles as the IPM-Intercept trap, but in

two other experiments, mean catch did not differ significantly. Type of killing agent in the collecting bucket significantly affected mean catch of *T. fuscum*. Traps with liquid killing agent (50/50 mixture of propylene glycol and de-ionized water plus 0.5 mL/liter of Kodak Photo-Flo 200 and 12.5 mg/liter of Bitrex) in the collecting bucket caught more beetles than traps with an insecticidal (dichlorvos) strip. Although any of cross-vane traps tested seem suitable for trapping several cerambycid species, the Colossus trap with liquid killing agent is recommended for use as a detection tool for *T. fuscum* because it caught similar or greater numbers than the other trap types.

Teitelbaum, S., Beckley, T., and Nadeau, S. 2006. A national portrait of community forestry on public land in Canada. *The Forestry Chronicle* **82**: 416–428.

Despite the interest community forestry generates, there is little published literature on the array of initiatives currently taking place across Canada. This paper presents the results of a nationwide survey of community forestry initiatives on public land. The survey focused on basic characteristics such as objectives, organizational structures, and tenure types. The research revealed that there are over one hundred community forest initiatives currently taking place on public land, mainly in Ontario, Quebec, and British Columbia. Most of them are run through local government organizations. Approximately 60% operate on Crown land, while the remaining 40% operate on land owned fee simple by local governments. The median landbase is 4200 ha. The average age of community forests is 10 years.

Proceedings Articles

Brissette, J.C., and Swift, D.E. 2006. Natural regeneration with shelterwood silviculture in the Acadian Forest Region. Page 134 in S.J. Colombo (Comp.). *The Thin Green Line: a Symposium on the State-of-the-Art in Reforestation*. Ont. For. Res. Inst. Forest Research Information Paper 160. (Abstract.)

Cheatley, E.G., Bourque, C.P.-A., Meng, F.-R., Journeay, W.C., and Swift, D.E. 2006. Regeneration response on different microsites following site preparation and direct aerial seeding in southwestern Nova Scotia. Page 5 in Proc. Bowater Mersey Woodlands Forestry Research Seminar, 22 March 2006, Brooklyn, NS.

Lucarotti, C.J. 2006. Sawfly nucleopolyhedrovirus functional genomics. Pages 49–52 in A.-C. Bonfils and I. Gamache, editors. *Genomics for future forests. First Canadian Forest Genomics Symposium*. NRCan, CFS-HQ, Ottawa, ON.