File S1: Details on the experimental design used to generate spruce budworm families for the linkage map.

Sampling

Parents were derived from 4^{th}-6^{th} instar larvae of *Choristoneura fumiferana* collected in 2013 from two Canadian populations in Alberta (AB; north of Conklin, 55.6985 N, -111.0841 W) and Quebec (QC; Gaspésie region, 48.4675 N, -68.1946 W). Larvae were shipped to the Laurentian Forestry Centre (Quebec City, Canada) and reared to the adult stage.

F_1 families

To obtain the F_1 families, a total of 67 crosses were attempted, as follows:

QC male x QC female: 20 crosses (12 successful)

QC male x AB female: 27 crosses (13 successful)

AB male x QC female: 12 crosses (9 successful)

AB male x AB female: 8 crosses (5 successful)

Of these crosses, 39 were successful in producing progeny that survive to adult (reproductive) stage. The number of adult moths obtained per cross varied between 1 and 21. This F_1 generation was reared to the adult stage using rearing conditions to eliminate the diapause (see Materials and Methods section).

F_2 families

The F_2 progeny were based on 86 backcrosses according to the following design:

ABmQCf (m) x AB (f): 16 crosses (6 successful)

ABmQCf (f) x AB (m): 17 crosses (3 successful)

QCmABf (m) x QC (f): 26 crosses (8 successful)

QCmABf (f) x QC (m): 27 crosses (7 successful)

Explanation of notation: for example, QCmABf (m) X QC (f) = a male from F_1, resulting from a cross between a male from Quebec (QC) and a female from Alberta (AB), was crossed with a female from F_1, resulting from a cross between a female and a male both from Quebec (QC).

Backcross progeny were reared using standard conditions, i.e. with larvae undergoing diapause, to maximize rearing success. We successfully generated 24 F_2 families. The number of adult progeny per family varied between 2 and 47, but only 4 families (17%) had $\geq$ 19 individuals, while 11 families (50%) had $\leq$ 10 individuals. We selected the four largest unrelated F_2 families available to build the linkage map.