**Population genetics of the blueberry gall midge *Dasineura oxycoccana* (Diptera: Cecidomyiidae) on blueberry and cranberry, with testing the invasion scenarios**

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**Supplementary material 1: Figs. S1-S4**



**Fig. S1.** The simulated DIYABC historical scenarios by analysis#1. Three analysis scenarios to identify ancestral groups and to determine the divergence order of each group. Each branch’s color represents a specific group, red: BBGA, BGM group from blueberry in Georgia, green: BBNJ, BGM group from blueberry in New Jersey, blue: CR, pooled CTW group from cranberry. Information of each scenario is explained in the main text



**Fig. S2.** The simulated DIYABC historical scenarios by analysis#2. Three analysis scenarios to identify ancestral groups and to determine the divergence order of each group. Each branch’s color represents a specific group, blue: SCNJ, one source blueberry-associated group, green: INVA, invasive blueberry-associated group A, red: INVB, invasive blueberry-associated group B. Information of each scenario is explained in the main text

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**Fig. S3.** Principal Coordinates Analysis (PCoA) plotted by microsatellite data from 31 populations of *Dasineura oxycoccana* from cranberry and blueberry by GENALEX. The X-axis is coordinate 1 ranging from -0.80 to 1.20 and the Y-axis coordinate 2 from -0.80 to 0.80. Red circle means cranberry population, while blue blueberry one.

**(a)**

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**(b)**

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**Fig. S4.** Results of STRUCTURE Harvester (approximate numbers). (a) Graph for the absolute value of the second order rate of change of the likelihood distribution (mean) calculated with the number of clusters (*K*) for observation of population group of *Bactrocera dorsalis*, demonstrated by the STRUCTURE Harvester (Earl 2012). Delta *K* values calculated by Evanno et al. (2005) method detecting *K* = 2 groups. (b) Mean of probabilities lnP(*K*) and their standard deviation of the posterior probability