

Description of Additional Supplementary Files

Supplementary Data 1

Description: Sex-associated positions of *S. exigua* when mapping to *S. exigua* and *S. purpurea* reference genome using genome-wide association study.

Supplementary Data 2

Description: Contigs assembled to Chromosome 15 in *S. exigua* male (#SE967M) with Hi-C interacting map. "fragment_#" refers to a contig with a substantial portion of the Nanopore assembly

Supplementary Data 3

Description: Colinearity between Contig 511 of *S. exigua* and Chr15Z of *S. purpurea*.

Supplementary Data 4

Description: Shared ancestry among Y, Z, and W implied by similarities on sex-associated alleles.

Supplementary Data 5

Description: BLASTn output of *P. trichocarpa* RR17 sequence aligned to *S. purpurea* genome and *S. exigua* genome.

Supplementary Data 6

Description: Positions of RR17 partial duplicates between *S. exigua* and *S. purpurea*