European Society
for Evolutionary Biology

20 - 25 August 2017
Groningen, the Netherlands

ESEB
XVI Congress

View abstract data

Abstract title	The genome of Drosophila subpulchrella and the importance of sister-species comparison in agricultural pest science
Author	Omar Rota-Stabelli, Fondazione Edmund Mach, San Michele all Adige, Italy (Presenting author)
Co-author(s)	Ometto, Fondazione Edmund Mach, San Michele all Adige, Italy Crava, Fondazione Edmund Mach, San Michele all Adige, Italy Turelli, University of California, Davis, United States of America Blaxter, University of Edinburgh, Edinburgh, United Kingdom Anfora, Fondazione Edmund Mach, San Michele all Adige, Italy
Topic	34. Applications of evolutionary biology in agriculture and industry

Abstract text

Genomics is often used to clarify the biology of agricultural pests and to define management strategies against them. There is however one crucial aspect often neglected: the comparison between a pest and its closest non-pest sister species. In the absence of a sister species, genome comparisons cannot discriminate characters that are unique to the pest, from those shared with other members of its clade. To highlight the benefit of a sister species comparison, we sequenced a draft genome of *D. subpulchrella*, the closest known non-pest sister species of model fruit pest *D. suzukii*. First, our evolutionary analyses could set the age of speciation of D. suzukii, clarified its paleo-ecological context, and revealed genetic admixtures that should be taken into account when modeling pest population in the field. Second, and probably more importantly, we could polarize various genomic event on the phylogenetic tree, revealing a set of key chemosensory genes that will ease the development of trapping strategies based on lures. Finally, we could disentangle the evolutionary significance of Wolbachia symbionts which may serve as bio-control agents. Our results show that applying a sister species concept to applied research agenda can enhance and speed up the definition of new management strategies.

Back