

Hybridization as a Stimulus for the Evolution of New Weeds and Invasives

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In 1949, Edgar Anderson coined the term “superweed” to describe newly invasive lineages resulting from hybridization between crops and their wild relatives. During the next half century, the role of hybridization in adaptive evolution was examined by an array of plant biologists from Stebbins to deWet and Harlan to Barrett. In 2000, Kristina Schierenbeck and I published a paper called, “Hybridization as a stimulus for the evolution of invasiveness in plants?”, listing 28 well-documented examples and considering why hybridization might lead to more aggressive lineages. Apparently, it was the right time for such a paper. At the writing of this abstract, the article has been reprinted in three times and has received well over 150 citations. In my talk I will update the 2000 study with several new examples. Also, I will examine some biological commonalities that emerge from this reexamination. The research published since the 2000 paper reveals that (1) the phenomenon is not rare for plants, (2) hybridization can stimulate the evolution of invasiveness in organisms other than plants, but (3) some “classic” examples from plants probably do not involve hybridization as previously suggested. Furthermore, (4) the evolution of invasiveness via hybridization can explain some of the paradoxes of the occurrence of invasiveness. Most importantly, (5) it is now clear and well-accepted that invasiveness can evolve. By hybridizing the fields of plant evolution, plant ecology, and applied plant science, the question “Hybridization as a stimulus for the evolution of invasiveness in plants?” has stimulated a new and growing multidisciplinary field of study.

Relevant references:

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