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# Genome merger and duplication as springboards for plant invasion: lessons from *Spartina*

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## Abstract

During the last centuries, species introductions outside their native range have dramatically increased and have accelerated ecological changes, native species threat, but also biological diversification through rapid expansion of introduced plants, interspecific hybridization with natives and allopolyploid speciation. In evolutionary ecology, the polyploid grass genus *Spartina* provides one of the most fascinating examples with this respect, and it well-illustrates the multifaceted challenges of invasive population management. *Spartina* contains several species that have become highly successful invaders of intertidal mudflats and saltmarshes where they play an important ecological role as "ecosystem engineers". In Europe, such examples include (i) the cryptic introduction of the East-American tetraploid *S. patens* (which has until recently been considered as a Mediterranean endemic under the name of *S. versicolor*), (ii) introduction of the South-American heptaploid *S. densiflora* to the south-west coasts of the Iberian Peninsula and its subsequent hybridization with the native hexaploid *S. maritima* and (iii) introduction of the East-American hexaploid *S. alterniflora* to western Europe (UK, France, Spain) and its hybridization with *S. maritima* in England and in southwest France. In England, hybrid genome duplication resulted in a highly successful allododecaploid species, *S. anglica* that has now colonized European saltmarshes and is introduced in several continents. *Spartina* represents then an excellent model system to explore at various evolutionary time scales the genomic determinants of species expansion. Hybrid and polyploid genome dynamics, gene expression evolution in stressful conditions will be discussed in the light of their ecological implications

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