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THE INVASIVE COMMON REED (*PHRAGMITES AUSTRALIS*) ALONG ROADS IN QUEBEC (CANADA): A GENETIC AND BIOGEOGRAPHICAL ANALYSIS

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Abstract

During the last century, common reed (*Phragmites australis*) colonies expanded in marshes of north-eastern North America. This species is highly problematical because it has a strong impact on plant and animal diversity. In the province of Québec (Canada), the spread of common reed coincided with the expansion of the highway network from 1963 to 1984. We hypothesized that highways contributed to the spread of the common reed by creating dispersal corridors and favorable habitats for the growth of the species. To test this hypothesis, in 2003 we mapped the spatial distribution of common reed colonies along all Québec's highways (2800 km). We also sampled 260 populations to determine whether common reed found along highways is native or exotic. Furthermore, in 2004 we mapped the spatial distribution of colonies along secondary roads in three large areas (485-810 km²), more specifically in regions where common reed colonies were particularly abundant. Globally, 24% of roadsides were invaded by common reed. Highest common reed densities were registered near the city of Montréal, in the south-western part of the province. In this region, the common reed formed hedges several kilometres long. The roadsides of secondary roads were also highly invaded, which suggests that the entire road network contributed to the spread of common reed. Genetic analyses indicated that 99% of common reed colonies found along highways were exotic (haplotype M from Eurasia). Only three out of 260 colonies were dominated by a North American genotype. The spread of common reed in Québec probably resulted from the introduction of an exotic genotype in the first part of the 20th century. This genotype likely benefited from the expansion of the highway network to establish new colonies in most regions of southern Québec. The maintenance of the highway network (ditch digging, roadside mowing) also probably contributed to the spread of common reed and to the improvement of growth conditions for the species.

Biographical Sketch: Benjamin Lelong is a biologist and received his masters of environmental biosciences degree at Université Aix-Marseille 3 (France), where he studied the allelopathic potential of *Pinus halepensis* in secondary succession on abandoned agricultural land. He is presently a Ph.D. student and his major research interest is biological invasions.