



Objectives

Our goal was to identify the ecological attributes of a typical invasive plant species from Europe and to understand to what extent these attributes can be used to predict invasiveness.

Data

We focused on species attributes of European native herbaceous species that have become invasive in North America in comparison with other European plant species in their native European range. 145 invasive species were compared in terms of their preference for light, pH and nitrogen with 5620 non-established European species using Ellenberg’s ranking. The ability for clonal spread, life forms and perrenation were also compared for 121 species invasive in North America with 1744 species native to the United-Kingdom and Ireland using PLANTATT data.



Cardus nutans

Musk thistle is native to Western Europe, arriving the United States in the 1900’s

Results

- Invasives were categorised as species having broad ecological niches (Table 1).
- The ecological niche of invasive European species differs from that of European non-established species (Figure 1).
- Successful invasive species combine several traits (Table 2).

Conclusion

Using worldwide databases, we have shown that invasive European species in North America are generalists, have high preference for nitrogen and prefer neutral soil. A small proportion also spread by root suckering. Our research strongly suggest that environmental change in North America, especially agricultural expansion, disturbance and eutrophication of large areas has made North America more susceptible to plant invasions by generalist species. Increases in nitrogen deposition may have further favoured invasive species.

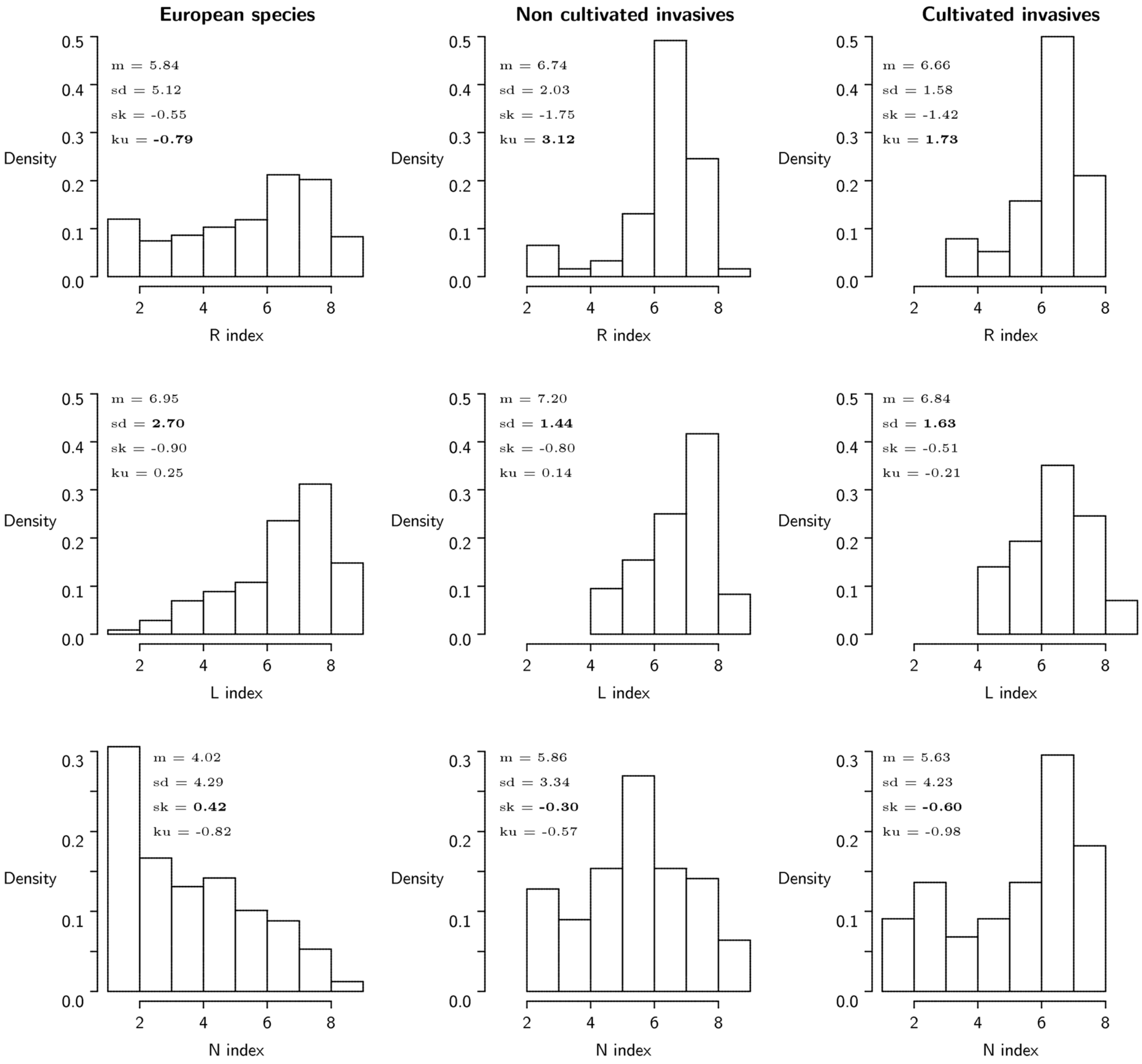


Figure 1: Comparison of European plant species and invasive aliens from Europe in North America density distribution for pH, light and nitrogen ecological gradient

R refers to Ellenberg’s reaction (pH) index, L to the light index and N to the nitrogen index. m refers to the mean, sd to the standard deviation, sk to the skewness and ku to the kurtosis of the distribution and bold number underlined the more noteworthy moment.



Acroptilon repens

Russian Knapweed is native to Eurasia, arriving in North America in the 1800’s.

		European species	Invasive species
Agricultural		2.76	8.96
Broad species	Light	0.57	2.76
	Nitrogen	3.48	14.5
	pH	7.6	31.7
Perennation	Biannual	4.90	16.3
	Perennial	69.7	54.0
Clonal spread	Root	4.30	20.9

Table 1: Comparison of the proportion of the European plant species and European invasives for different ecological attributes

The table focuses on cultivated species and Ellenberg’s (11) broad species for three environmental variables and on some life traits. Values are given in per cent, this table only provide the 9 significant results (test on proportion at 0.05) on the 21 investigated.

0 trait	1 trait	2 traits	3 traits	4 traits
1	144	134	87	4

Table 2: Number of invasive species that have a cumulation of traits



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