

Towards a Noahs Ark for native ladybirds in Belgium?

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Methodology

- Large-scale field survey with volunteers (Adriaens et al. 2003, 2008)
- Detailed monitoring (2003, 2005, 2008) of ladybird assemblages on 18 (sub)urban sites in Brussels on pine, lime and maple (San Martin et al., in prep.)

Conclusions

- In five years *H. axyridis* has invaded all kinds of man-made and semi-natural habitats in Belgium and has become as common as *C. septempunctata* (occurrence in 83% of sampled squares)
- The species shows a high degree of niche overlap with native species, especially with generalist and tree dwelling coccinellids in Belgium (~ 50% of the macroladybird fauna)
- The increase in *H. axyridis* population coincides with dramatic decline in some native species e.g. *Adalia bipunctata*
- This decline is detectable on a large scale as well as with detailed monitoring of ladybird assemblages
- Mechanism for displacement of native species is possibly IGP since decline appears in species with high degree of niche overlap

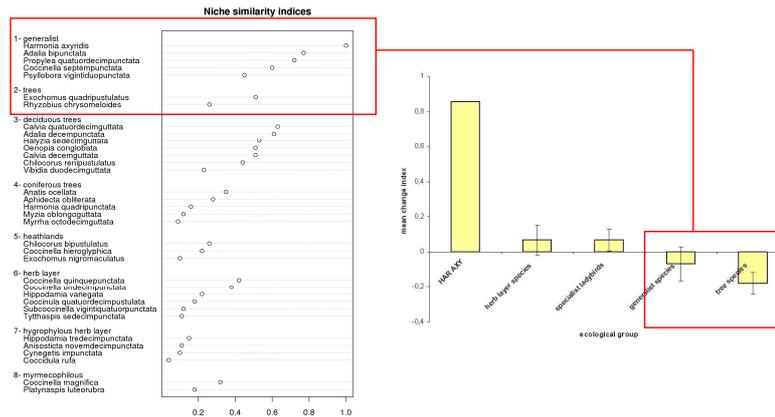
Future prospects

- Look for international cooperation to see whether changes in native community structure in Belgium are consistent throughout Europe
- Relate trends in native ladybirds to their ecology and determine profile of native species sensitive to invasion by a potential intraguild alien predator

Results

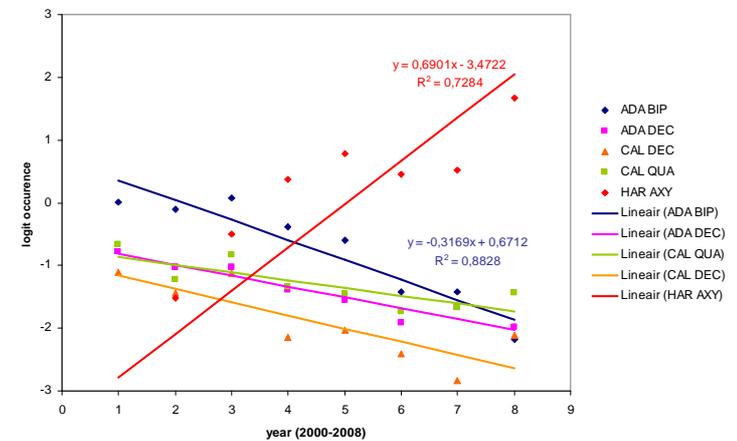
Plant use similarity index
0 = no resources shared
1 = all resources shared in the same proportion

Mean change index
mean of residuals to 1:1 line of no change per group



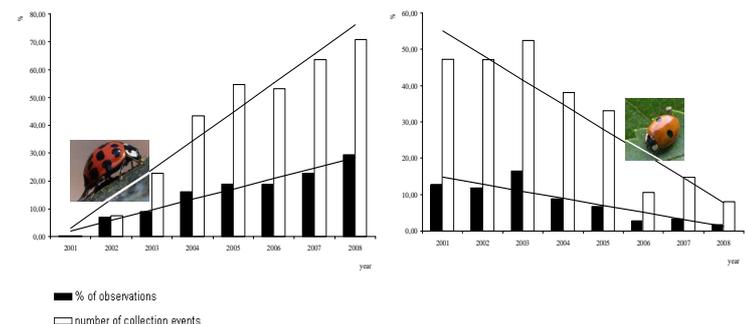
Proportional occurrence

[number of grid cells with species x in year y] / [number of sampled squares year y]



Where has *Adalia bipunctata* gone?

On a national scale: absolute decrease of 40% in collection events with ADA BIP in less than 10 years, relative decrease of 80%



References

- Adriaens, T., Branquart, E. and Maes, D. (2003). The multicoloured Asian ladybird *Harmonia axyridis* Pallas (Coleoptera: Coccinellidae), a threat for native aphid predators in Belgium? *Belg J Zool* 133(2): 195-196
- Adriaens, T., San Martin y Gomez, G. and Maes, D. (2008). Invasion history, habitat preferences and phenology of the invasive ladybird *Harmonia axyridis* in Belgium. *BioControl* 53: 69-88
- Adriaens, T., San Martin y Gomez, G., Branquart, E. and Maes, D. (2009). Harlequin wipes out native generalist and tree dwelling ladybirds in Belgium. *Proceedings Science Facing Aliens conference*, Brussels, may 11th 2009.

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