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Can Medauroidea extradentata (Brunner von Wattenwyl, 1907) and/or Haaniella echinata (Redtenbacher, 1906) (Phasmatodea: Phasmatidae) help us to fight Fallopia japonica ((Houtt.) Ronse Decr., 1988) ?

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Can *Medauroidea extradentata* (Brunner von Wattenwyl, 1907) and/or *Haaniella echinata* (Redtenbacher, 1906) (Phasmatodea: Phasmatidae) help us to fight *Fallopia japonica* ((Houtt.) Ronse Decr., 1988) ?

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Introduction

Japanese knotweed (*Fallopia japonica*), a perennial herb, is one of the main invasive species in Belgium. One of the ways of struggle it, is to find a natural predator, if possible coming from its area of origin. Unfortunately, it seems that none was found. We then wondered if some stick's insect could eradicate it.
M. extradentata, originally from South Vietnam (temperature range: 21-28 °C), is able to feed on a large variety of plants (1-2) but the most commons are brambles and raspberries (*Rubus* spp. (L. 1753)) and hazels (*Corylus maxima* (Mill. 1768)).
H. echinata, coming from Borneo (temperature range: 15-33 °C), eats brambles and hazels.
The both species cannot survive to our winter climate, because it is too cold, could they help us to fight Japanese knotweed, without risk of invasion ?

(Sombreffe, 18.XI.2017 - © G. OLIVE)

Experimental and Results

Preliminary results:

This consists feeding several specimens for three weeks with *F. japonica* and seeing if some specimens survive during this time.

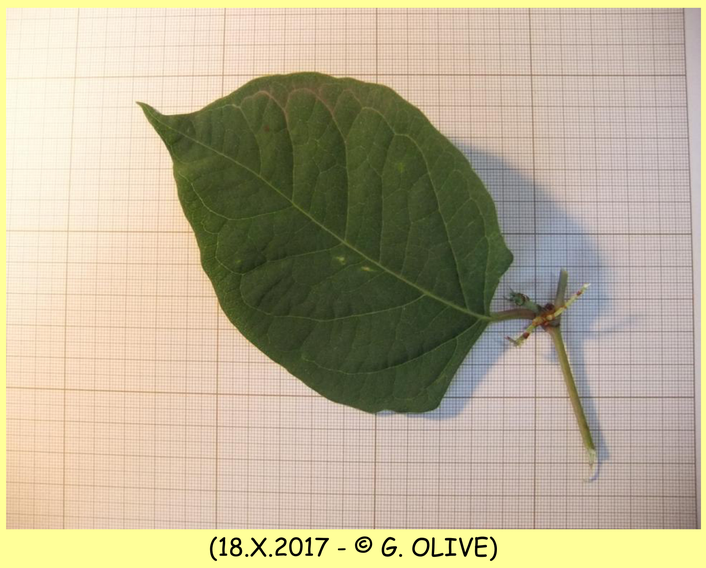
Medauroidea extradentata (5 specimens at second instar)

(17.VI.2017 - © G. OLIVE)

All specimens survive →

(12.VII.2017 - © G. OLIVE)

Haaniella echinata (2 imagines)

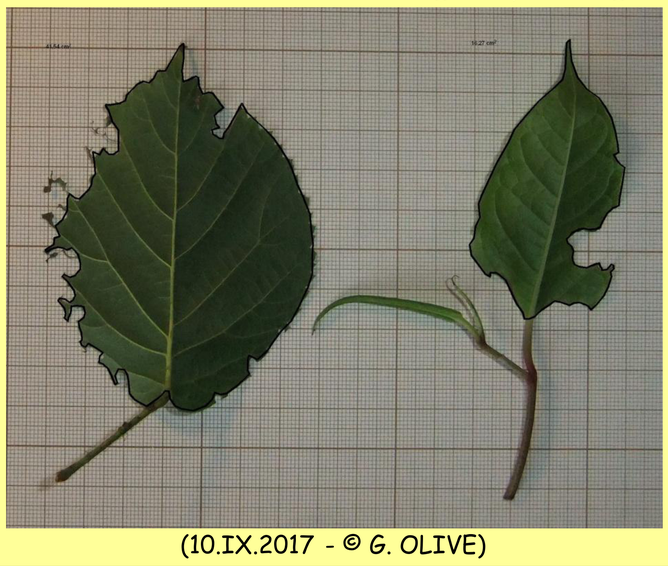

(18.X.2017 - © G. OLIVE)

All specimens survive →

(7.XI.2017 - © G. OLIVE)

Quantification of the surface eaten by *M. extradentata*:

This consists of measuring, using the Mesurim Pro software, the leaf area eaten by two groups, each having 5 specimens at the first instar, one group being fed with bramble while the other eating only Japanese knotweed.


(10.IX.2017 - © G. OLIVE)

Bramble		Japanese knotweed	
Date	Leaf area (cm²)	Leaf area (cm²)	Date
1.IX.2017	44.28	17.50	3.IX.2017
10.IX.2017	41.54	16.27	10.IX.2017
Area eaten by day	**0.30**	**0.18**	Area eaten by day
10.IX.2017	23.55	17.42	10.IX.2017
17.IX.2017	21.82	14.66	17.IX.2017
Area eaten by day	**0.25**	**0.39**	Area eaten by day
Average	**0.275 $cm^2.day^{-1}$**	**0.285 $cm^2.day^{-1}$**	

Conclusion

Both species, *M. extradentata* and *H. echinata*, can survive while eating *F. japonica*. The quantity of Japanese knotweed's leaves eaten by *M. extradentata* is almost the same as the quantity of bramble's leaves eaten. It seems that the quantity eaten by *H. echinata* is bigger, but the development time, from birth to imago, is longer in the latter specie (1 to 2 years) than with the former (6 months). A new specie, *Eurycantha calcarata* (Lucas, 1869), will also be tested.

(1) Olive Gabriel, Zimmer Jean-Yves, Olive Gilles (2016). *Mentha spicata* var. *spicata* (L. 1753) and *Raphanus sativus* var. *sativus* (L. 1753) : survival meal for *Medauroidea extradentata* (Brunner von Wattenwyl 1907) (Phasmatodea: Phasmatidae). *Communications in Agricultural and Applied Biological Sciences* 81 (1), p. 190-193.
(2) Olive Gabriel, Olive Gilles (2017). Essai de nourrissage sur une courte période avec des feuilles de plantes méditerranéennes du phasme *Medauroidea extradentata* (Brunner von Wattenwyl, 1907). *Bulletin S.R.B.E./K.B.V.E.*, 153 (2): 172-174.