A review of trapping European buprestids with the goal of developing monitoring tools

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[3]Forest Research Institute, Mátrafüred, Hungary
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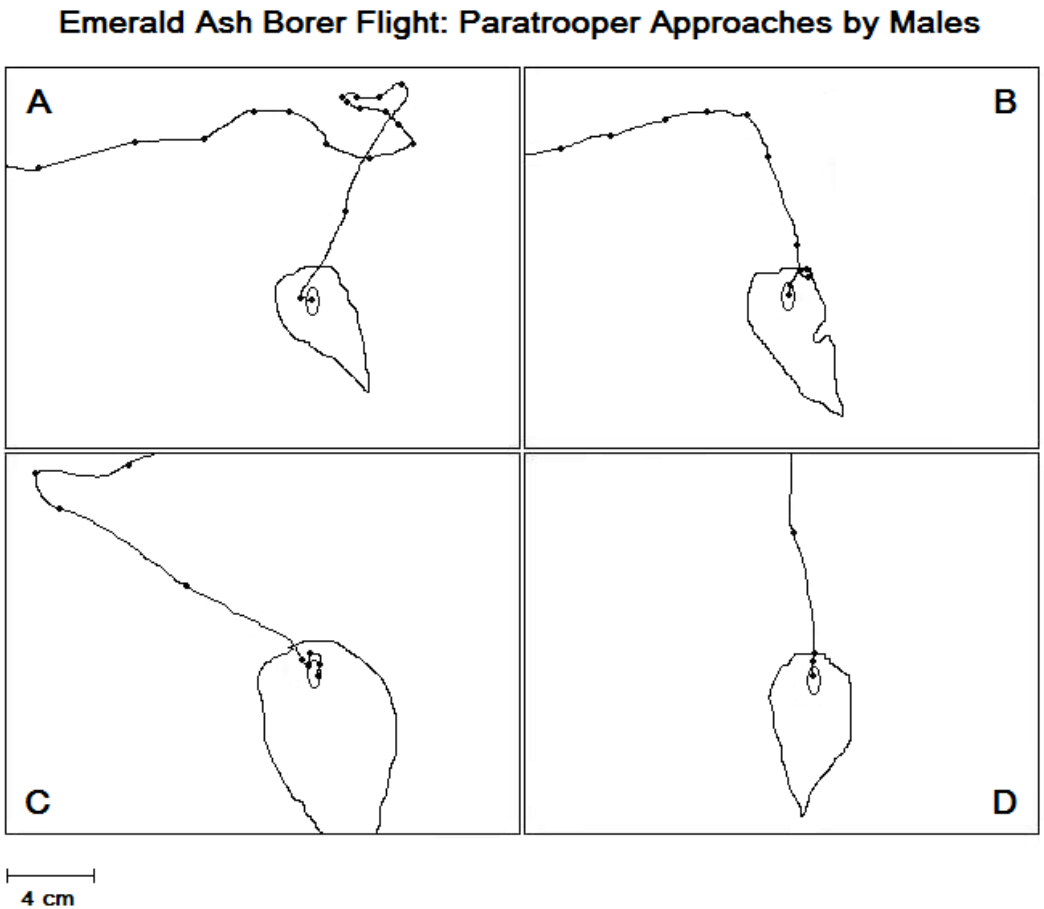
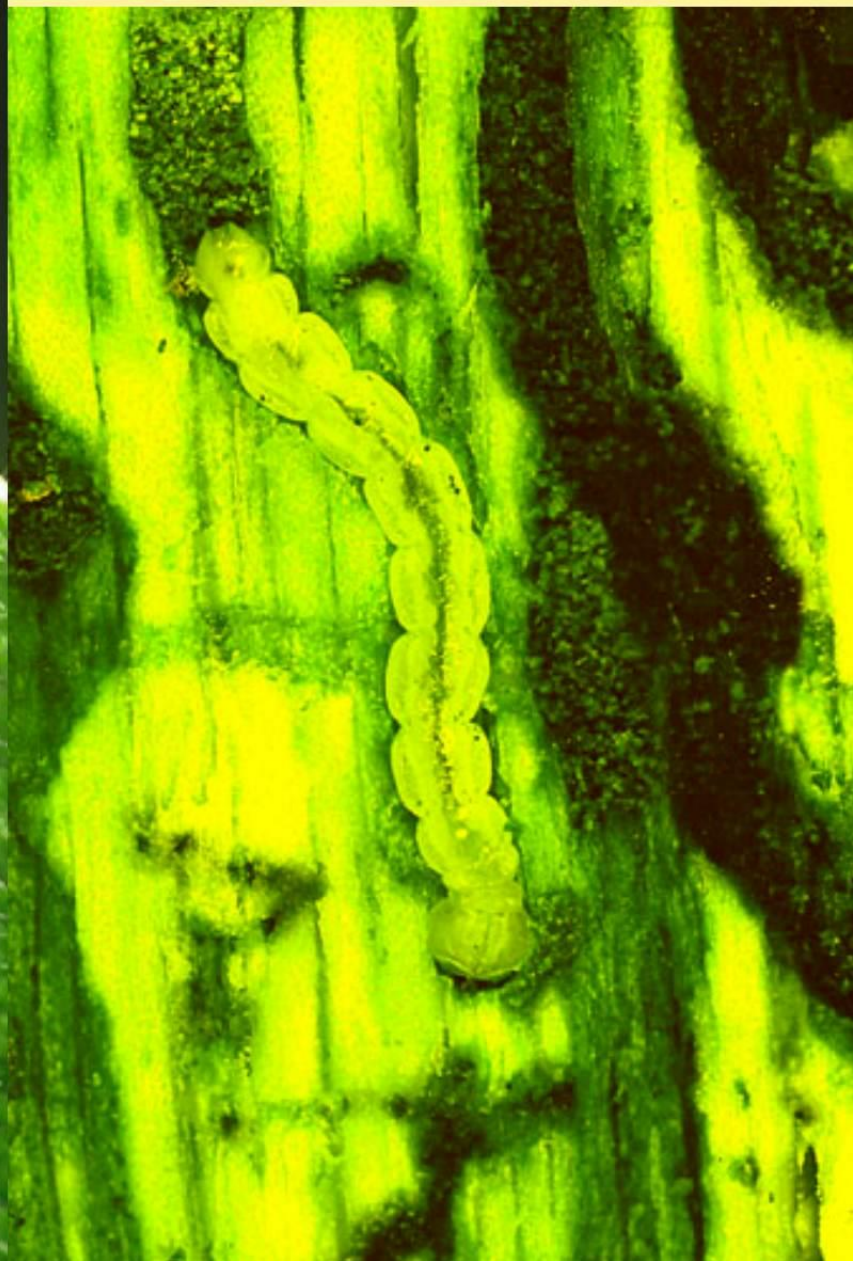
importance of visual mate location



Lelito et al., 2007
J. Insect Behav.

USA

Agrilus biguttatus
(Coleoptera: Buprestidae)



Europe

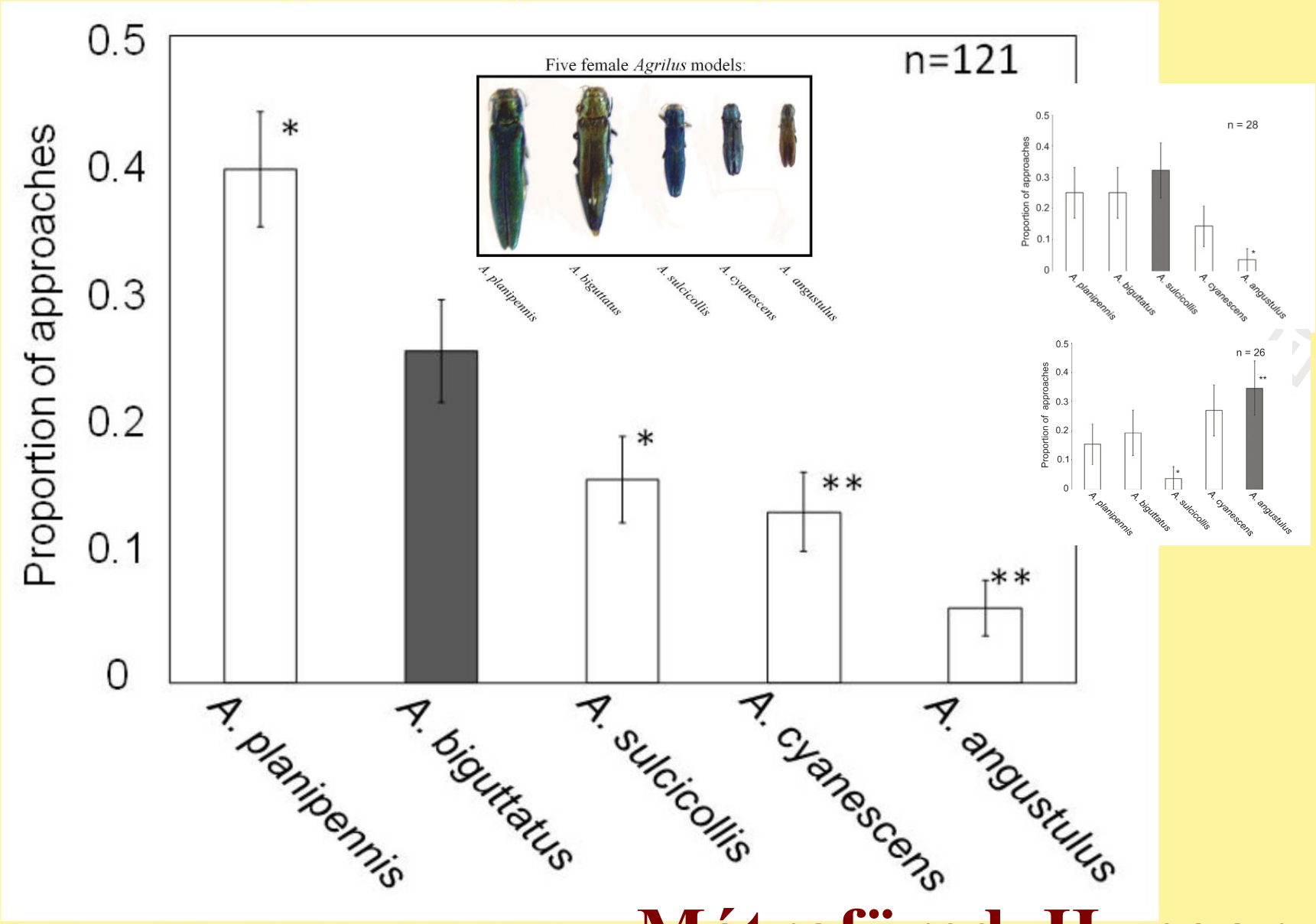
Forrás: www

cross-species attraction

Domingue et al., 2011 Entomol. Exp. Appl

Mátrafüred, Hungary

cross-species attraction



Domingue et al., 2011 Entomol. Exp. Appl

Mátrafüred, Hungary

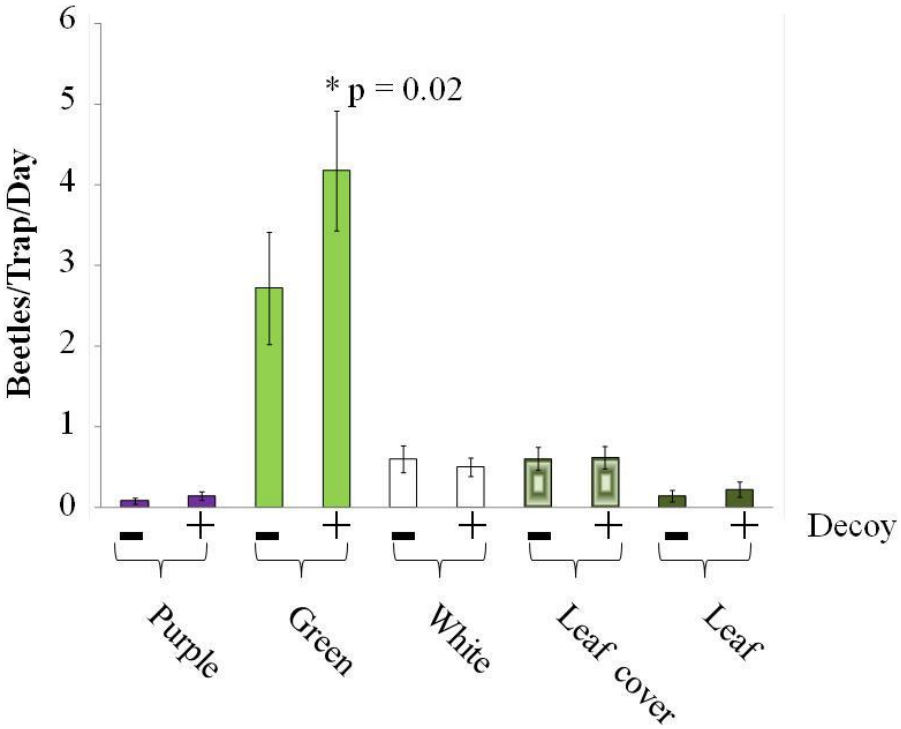
decoys and background color/pattern

Domingue et al., 2013 Entomol. Exp. Appl

A. angustulus
A. sulcicollis
A. obscuricollis
A. laticornis
A. graminis
A. biguttatus

Domingue et al., 2013
Entomol. Exp. Appl.

Visual Experiment: All *Agrilus*

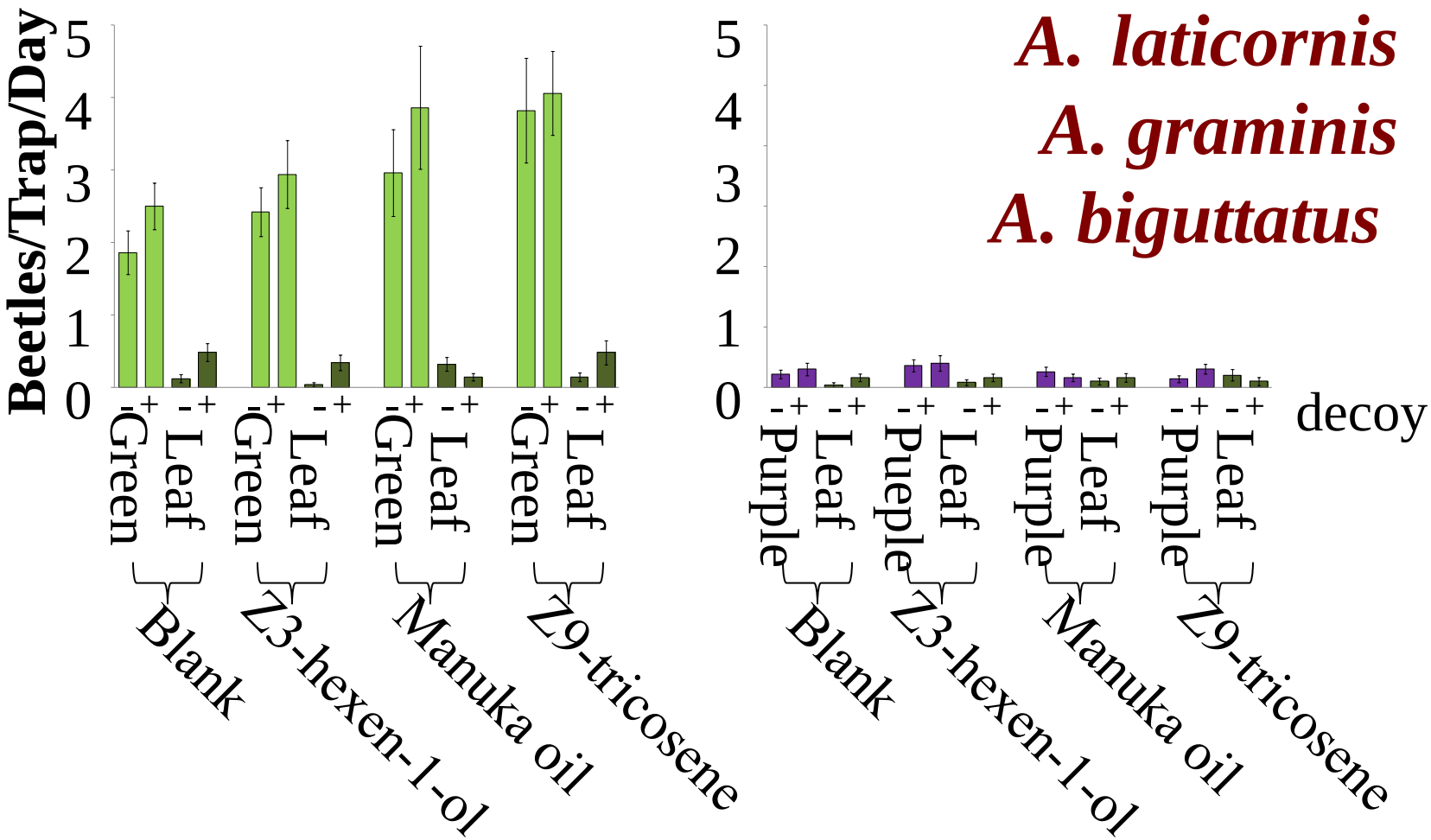


oak forest,
Mátrafüred, Hungary

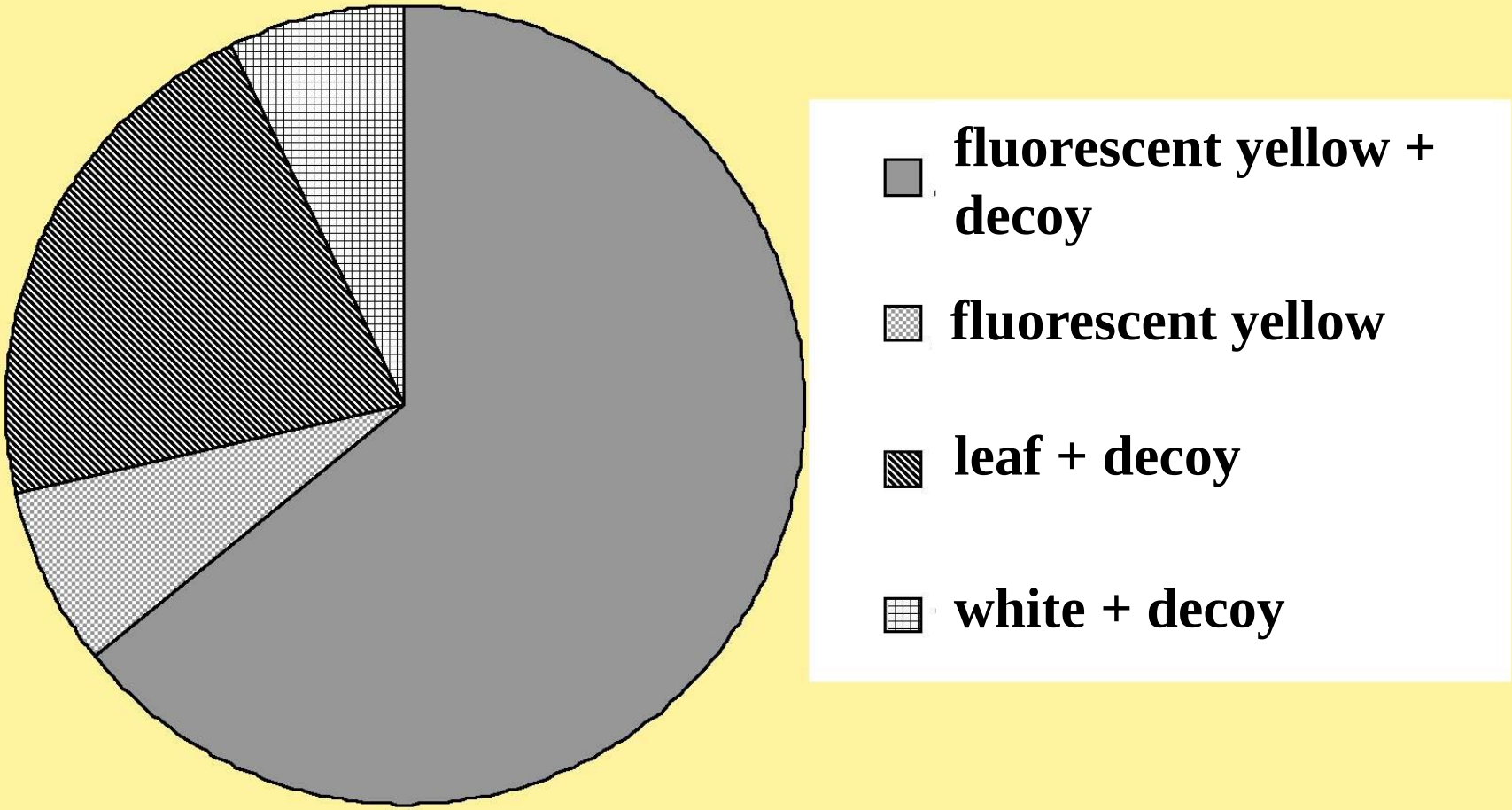
Odors

Decoy (p = 0.05)
Odor (p = 0.01)
Decoy * Odor (n.s.)

A. angustulus
A. sulcicollis
A. obscuricollis
A. laticornis
A. graminis
A. biguttatus



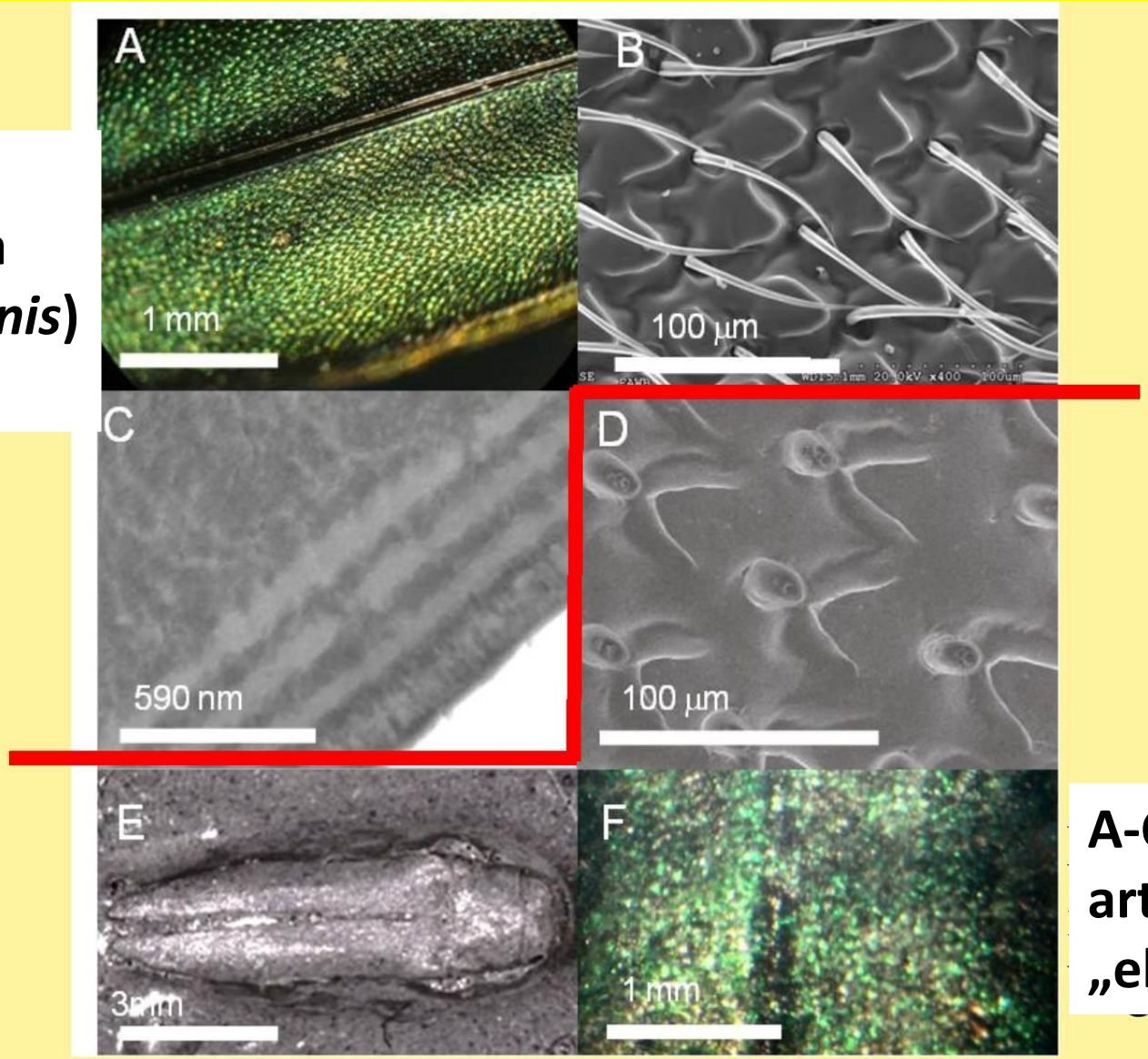
effect of background color and decoy



Domingue et al., 2013 Entomol. Exp. Appl

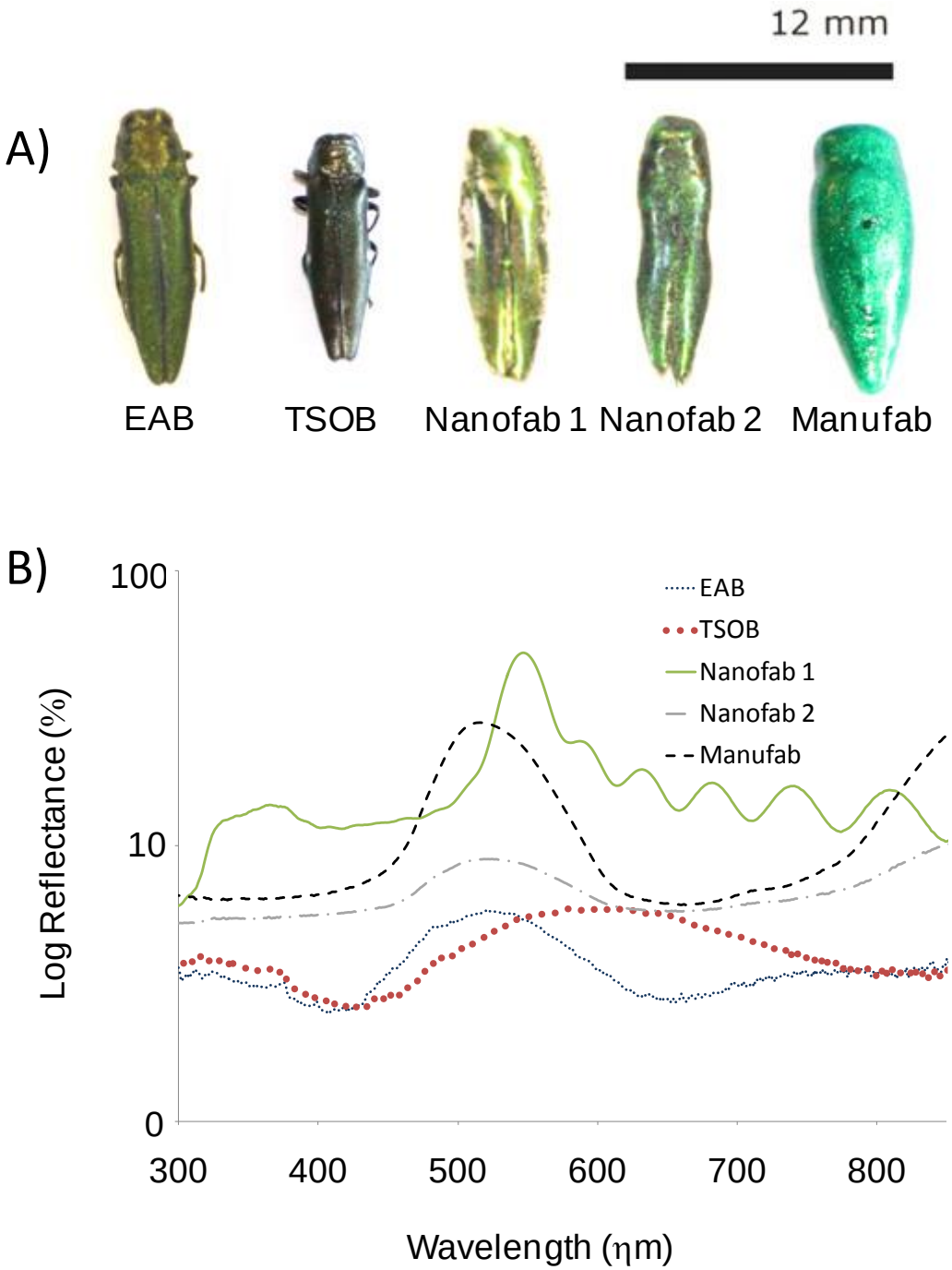
nanostructures

A-C:
beetle elytra
(*A. planipennis*)

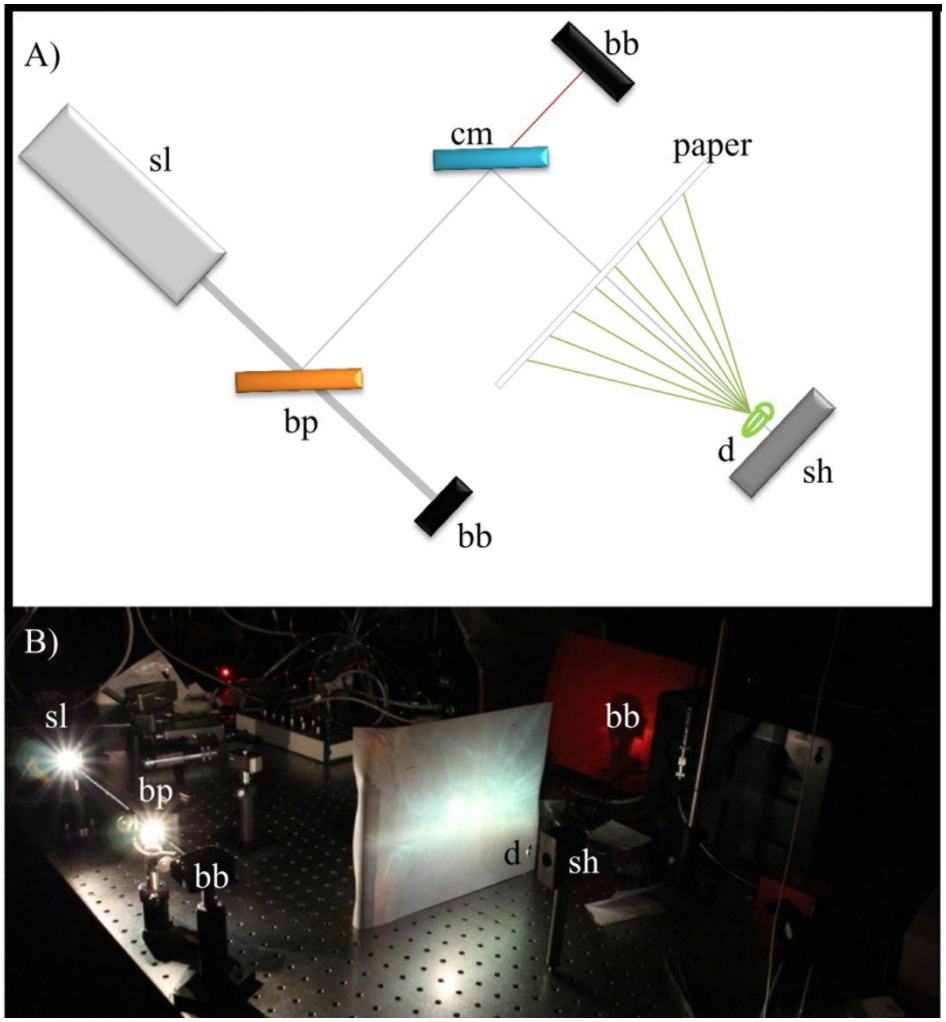


A-C:
artificial
„elytra"

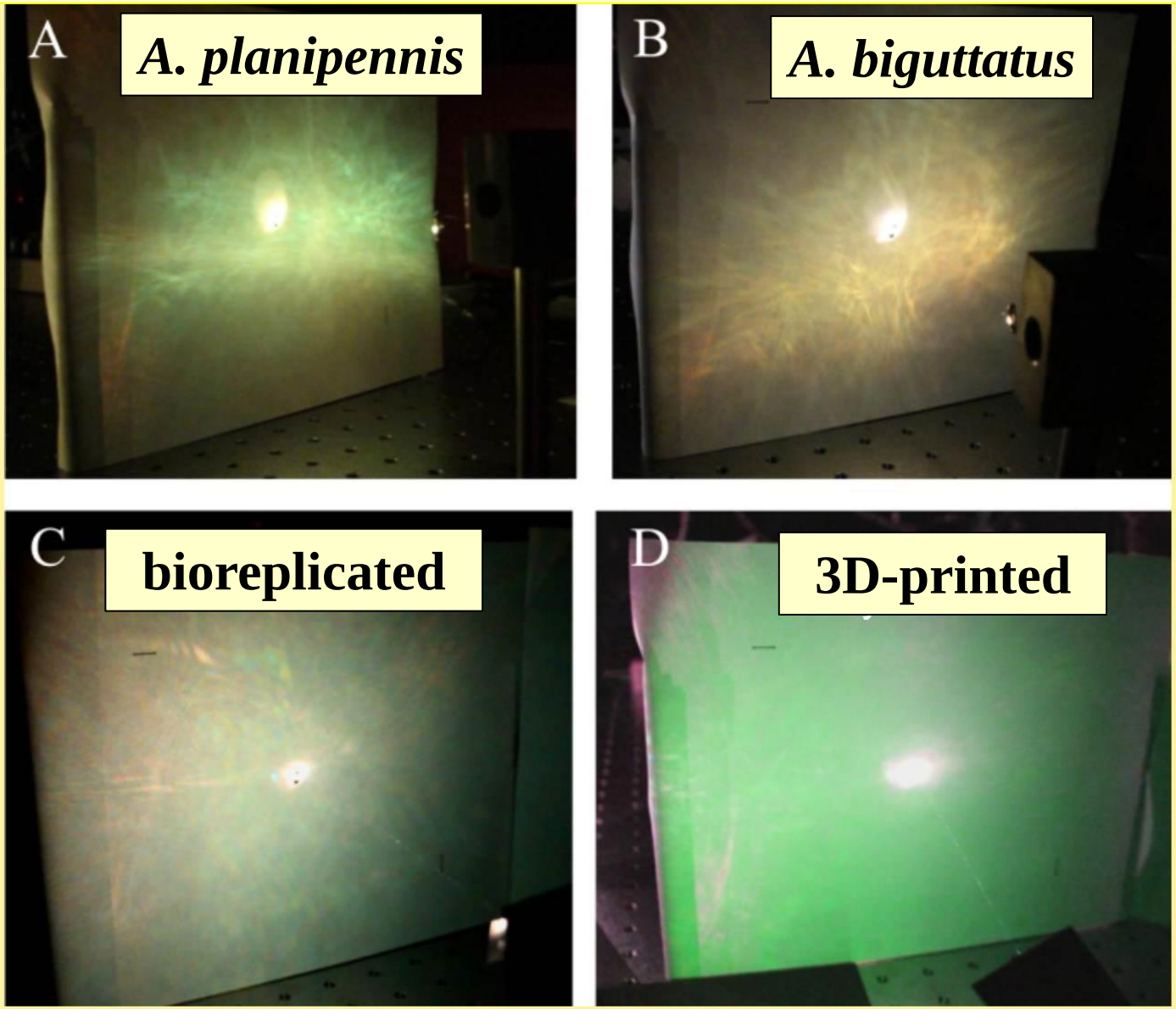
Domingue et al., 2014 PNAS


12 mm
A)
EAB
TSOB
Nanofab 1
Nanofab 2
Manufab
B)
100
10
0
Log Reflectance (%)
EAB
TSOB
Nanofab 1
Nanofab 2
Manufab
300
400
500
600
700
800
Wavelength (ηm)

White laser projection



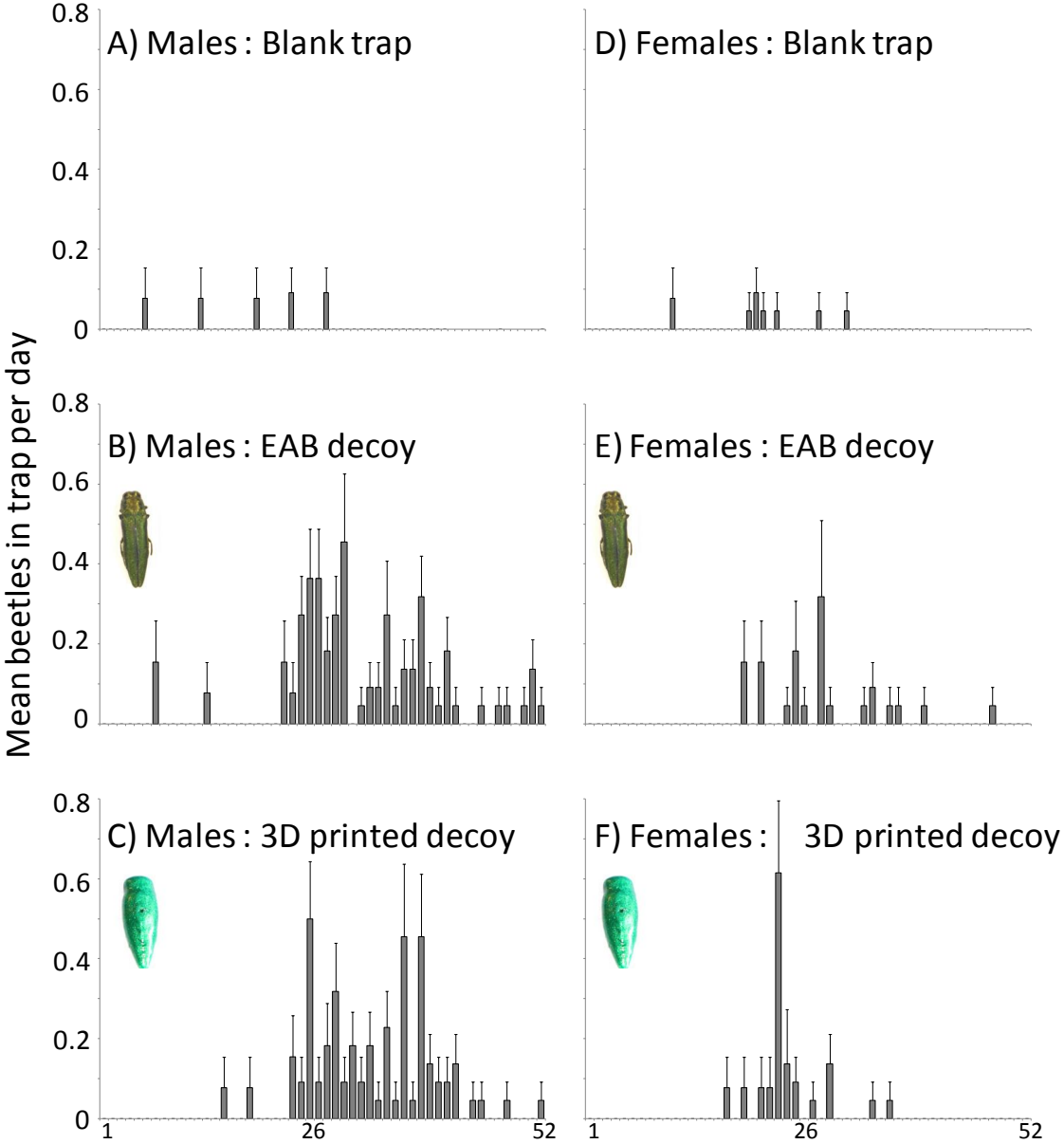
nanostructures in reflectance



Domingue et al., 2014 PNAS

nanofabricated decoys vs *A. biguttatus*

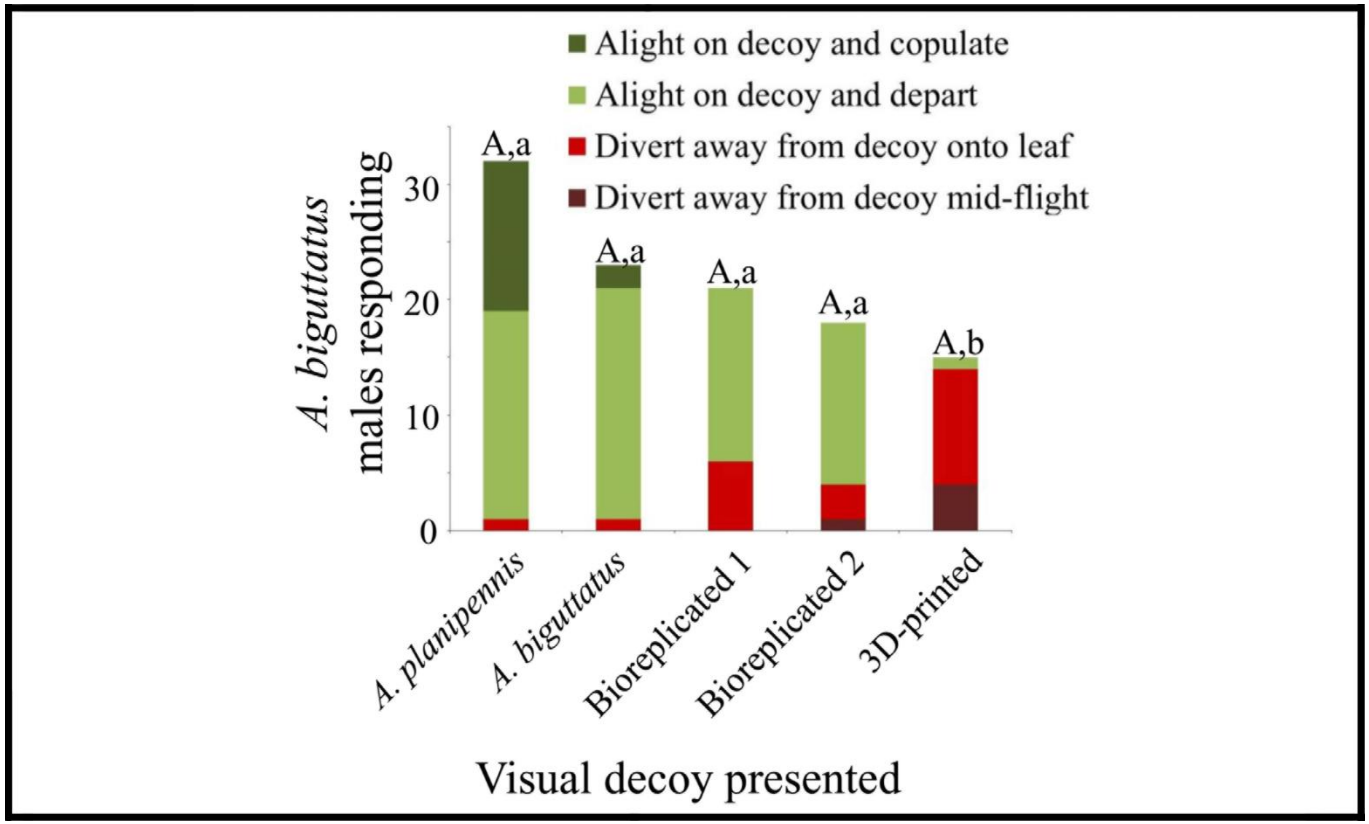
Average daily captures on 22 branch traps of each variety

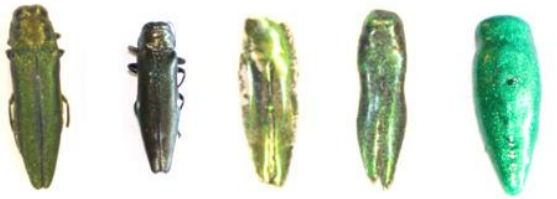


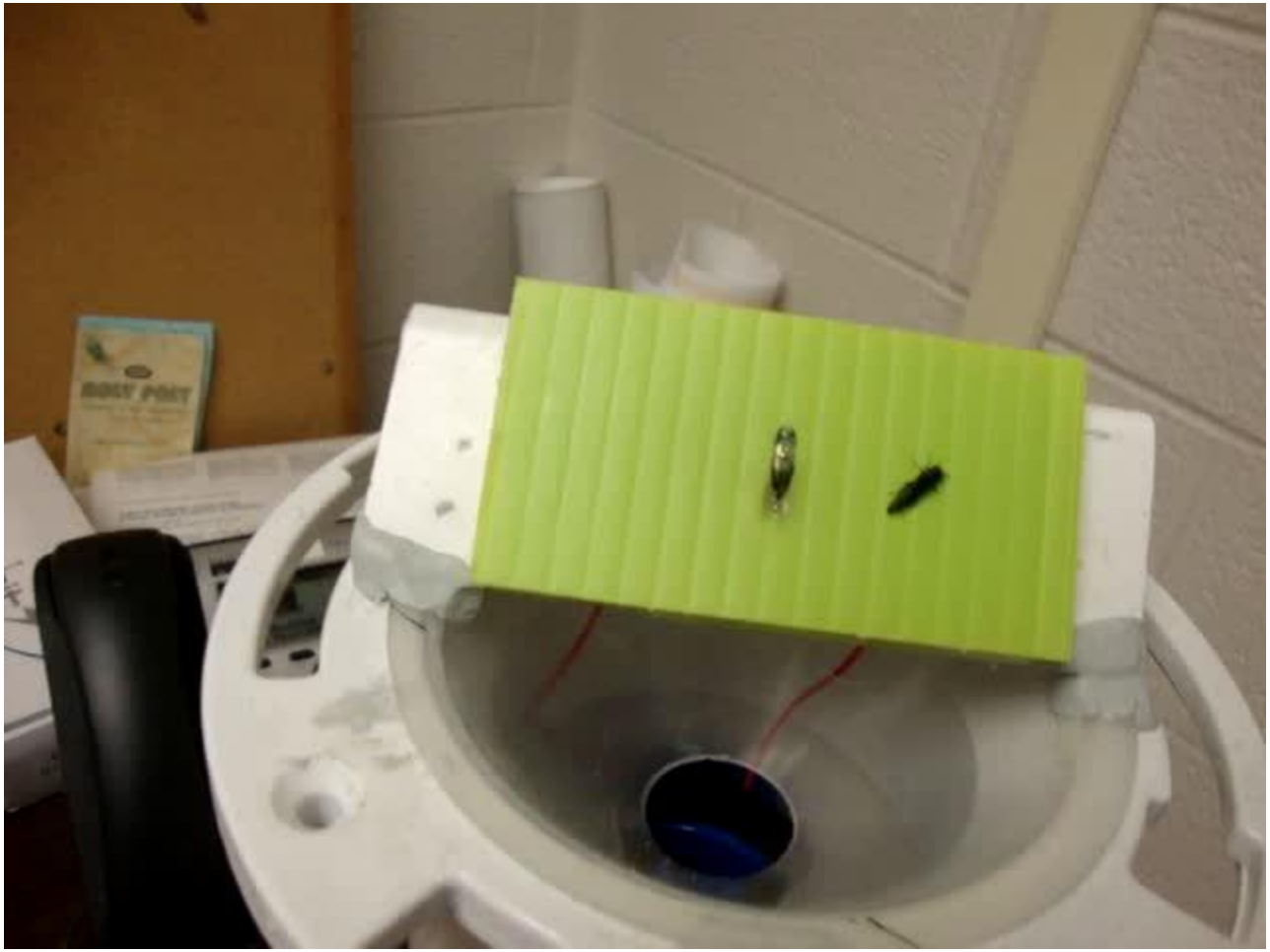
Domingue et al., 2014
J. Pest Sci.

TSOB in Hungary:

Results of observation experiment





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Written by
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Sep 21, 2014, 9:40 AM ET
COLUMN By LEE DYE via WORLD NEWS

This undated file photo provided by the Minnesota Department of Natural Resources shows an adult emerald ash borer.

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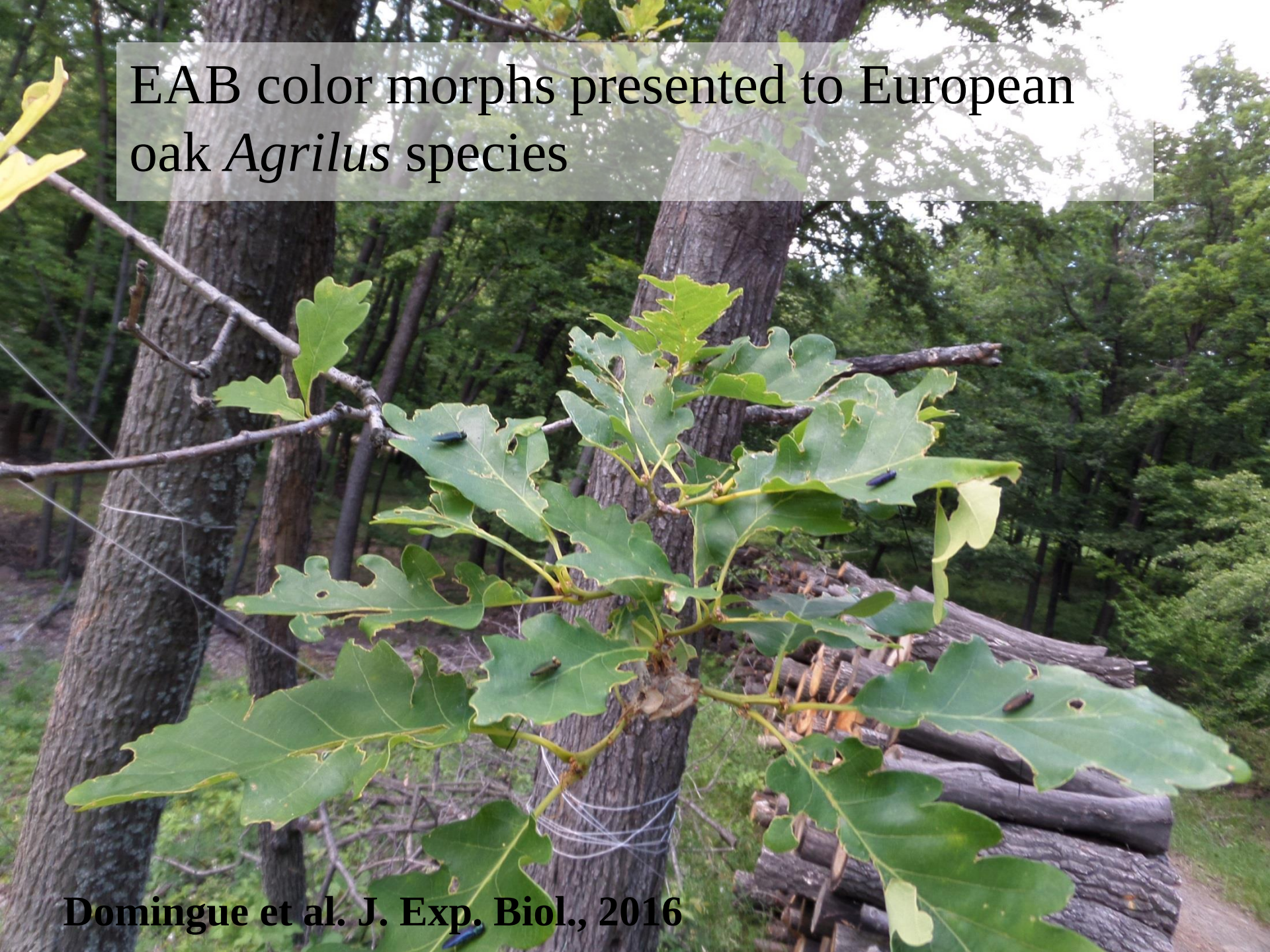
Emerald Ash Borer Femme Fatale

DURATION: 8 MINUTES
Using bio-replication to create fake Emerald Ash Borer females to trap the male pests

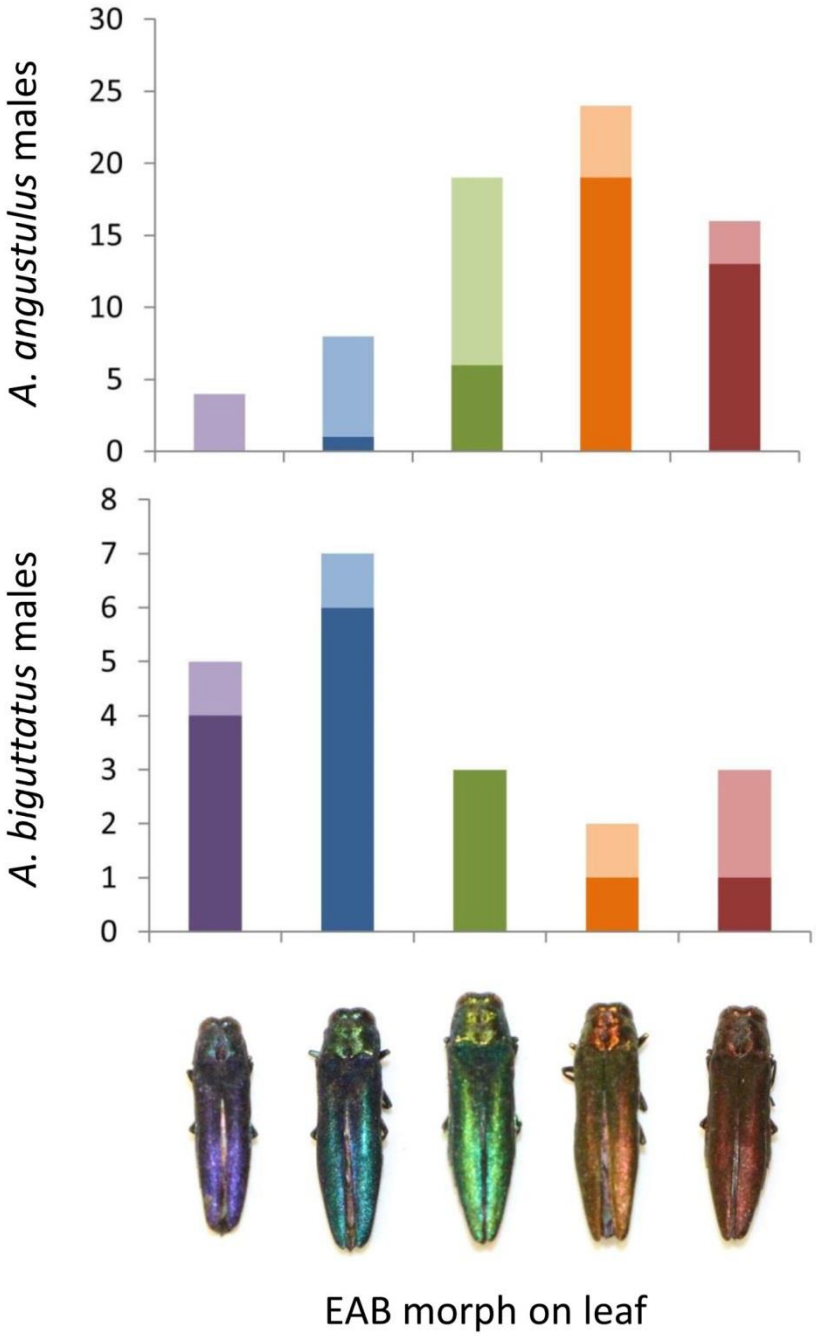
EAB color morphs presented to European oak *Agrilus* species



Domingue et al. J. Exp. Biol., 2016

Flights of European *Agrilus* to EAB color morph decoys.

Darker shading: beetle landed directly on decoy



A non-sticky design – 2018

transparent
vs
fluorescent yellow

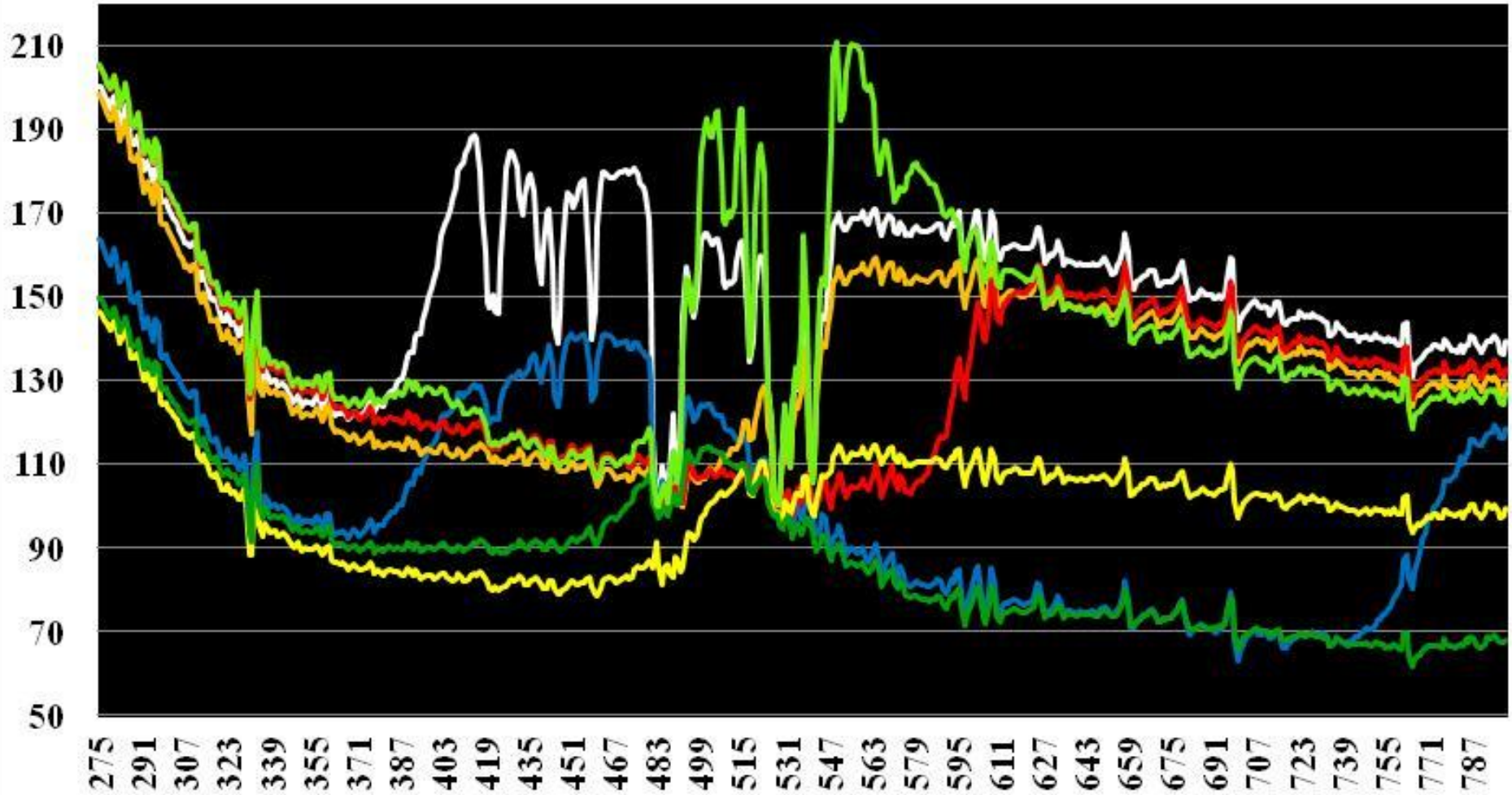
****

sticky
vs
non-sticky
(PTFE)

23x36 cm
colored surface

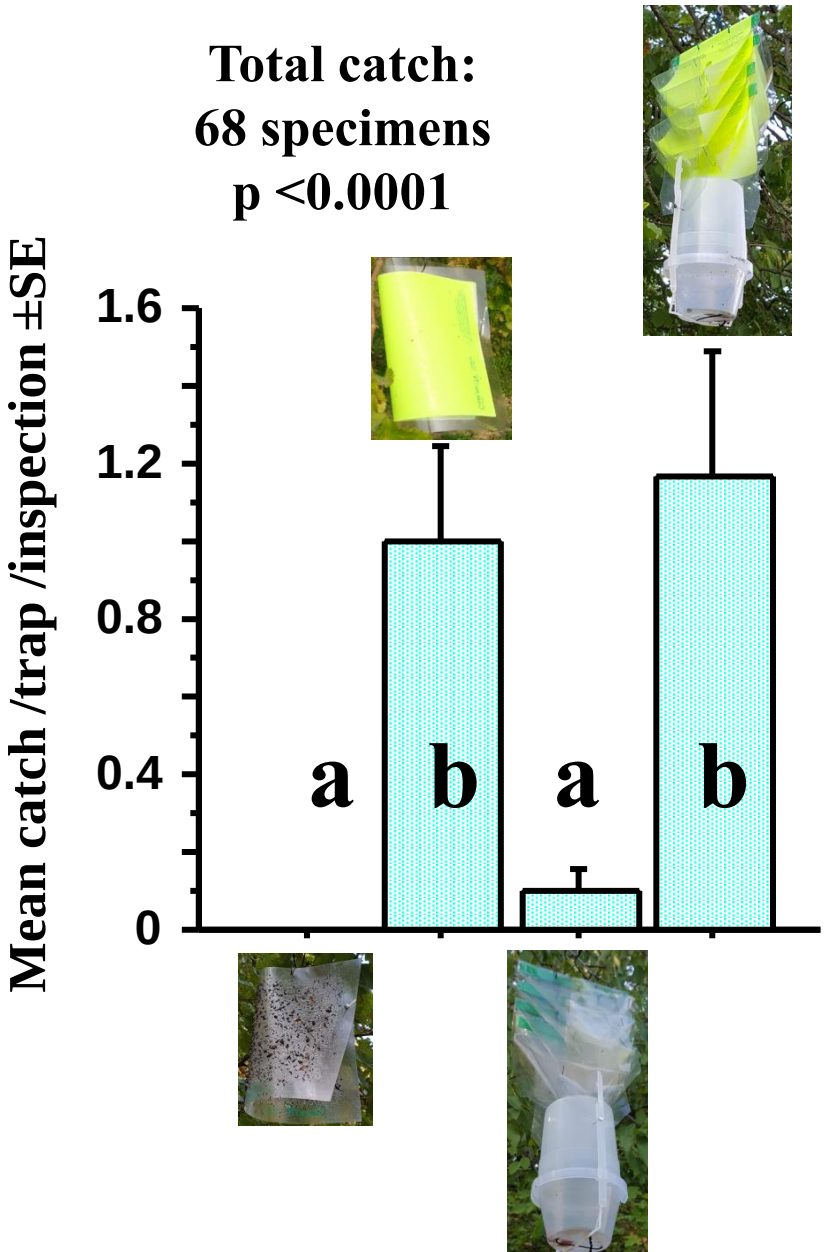
Reflectance spectra

(275-800 nm)



white | blue | orange | red | yellow | green | green

Agrilus obscuricollis

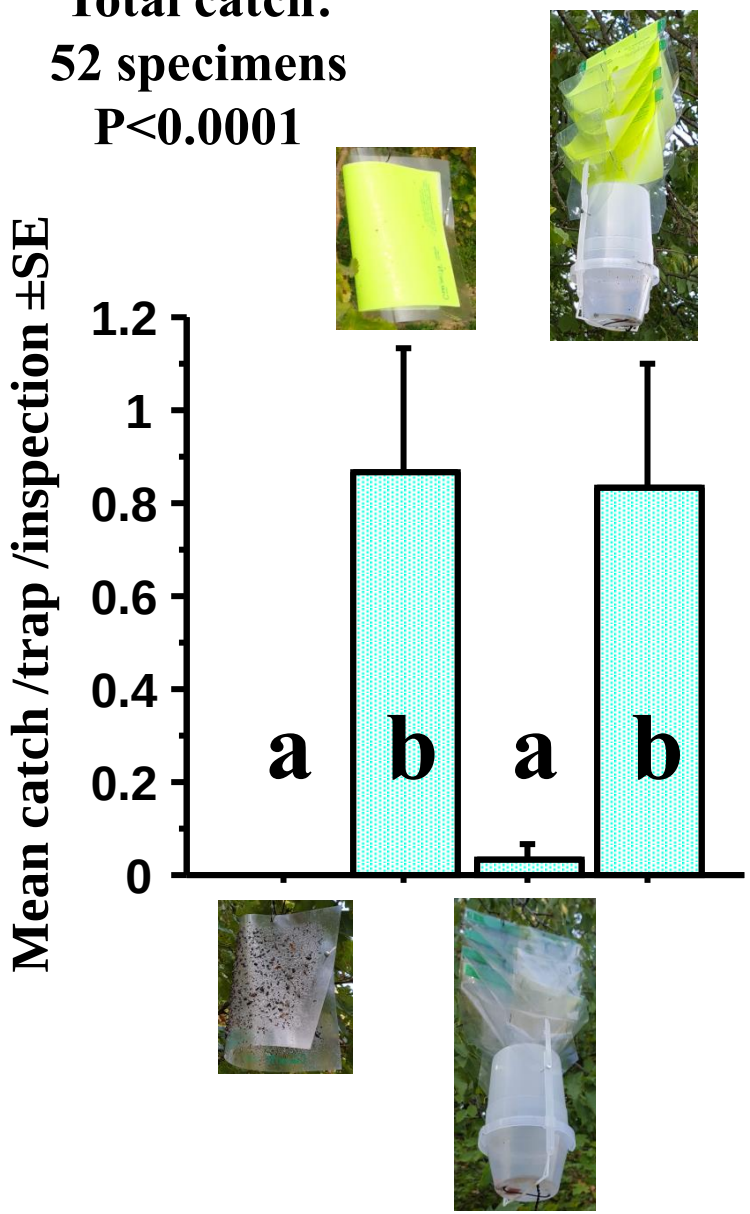


host: *Quercus* (thin branches)

spread: all over Europe, widespread

Agrilus graminis

Total catch:
52 specimens
P<0.0001

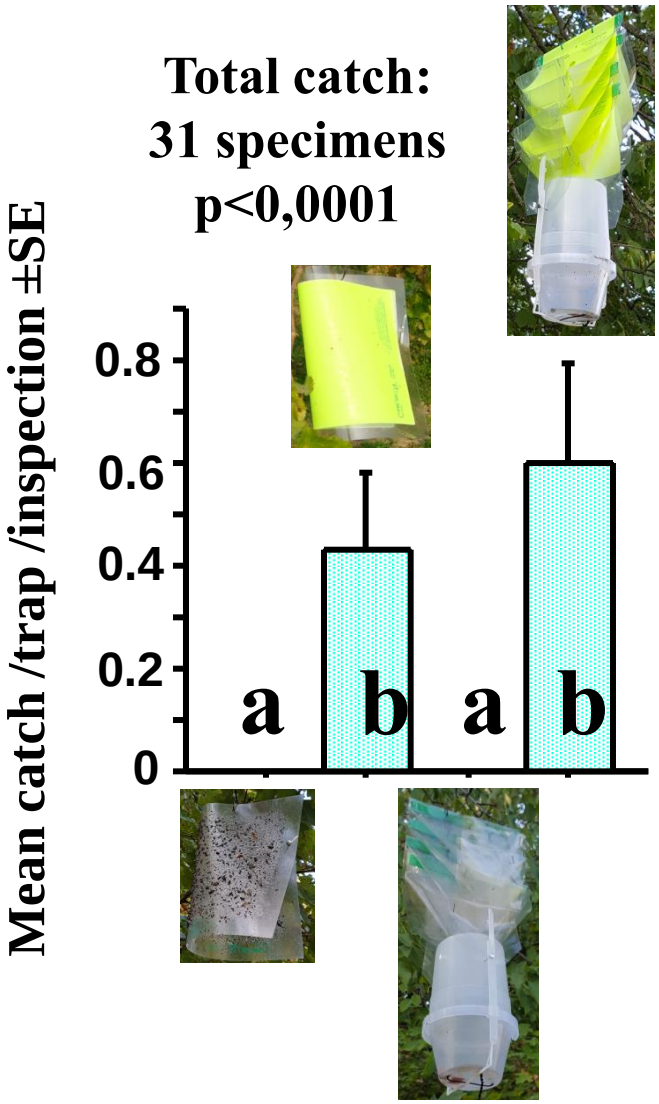


Nikola Rahmé

hosts: ***Quercus, Alnus, Carpinus, Corylus, Fagus, Sorbus***

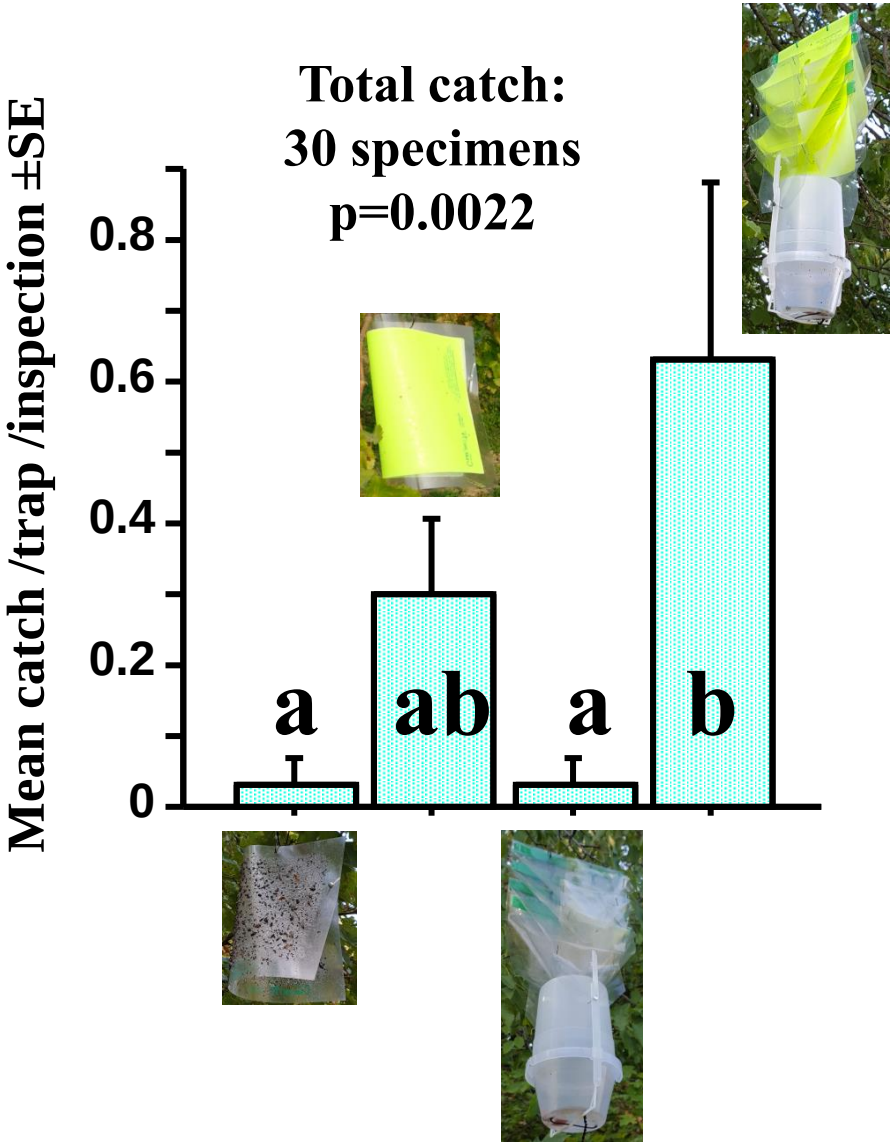
spread: mid and Southern Europe, fairly common

Agrilus angustulus



host: ***Fagus, Quercus, Corylus***
spread: all over Europe, widespread

Agrilus laticornis



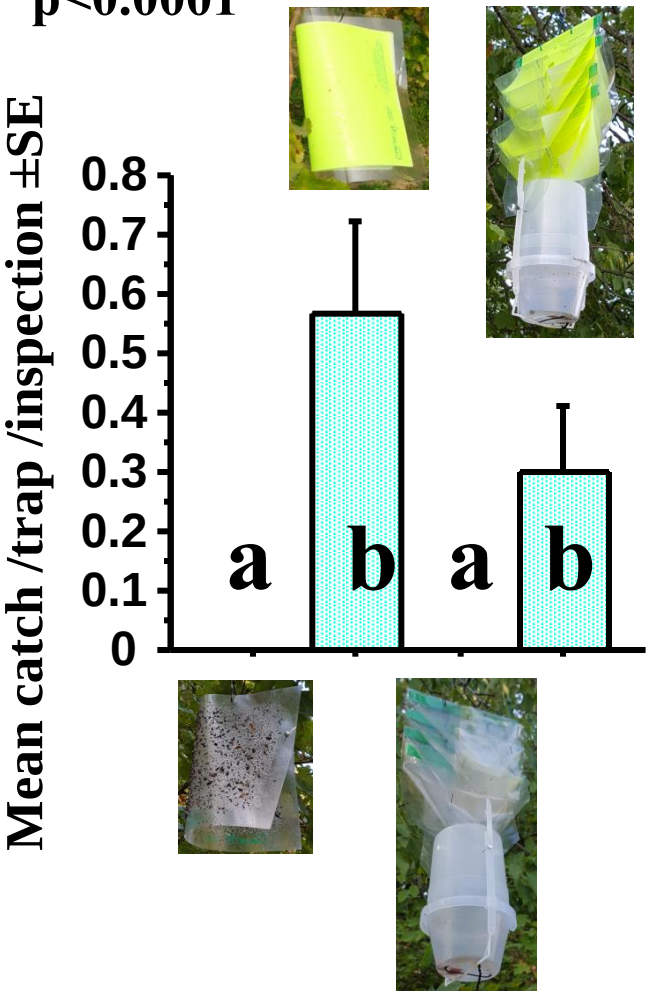
Nikola Rahmé

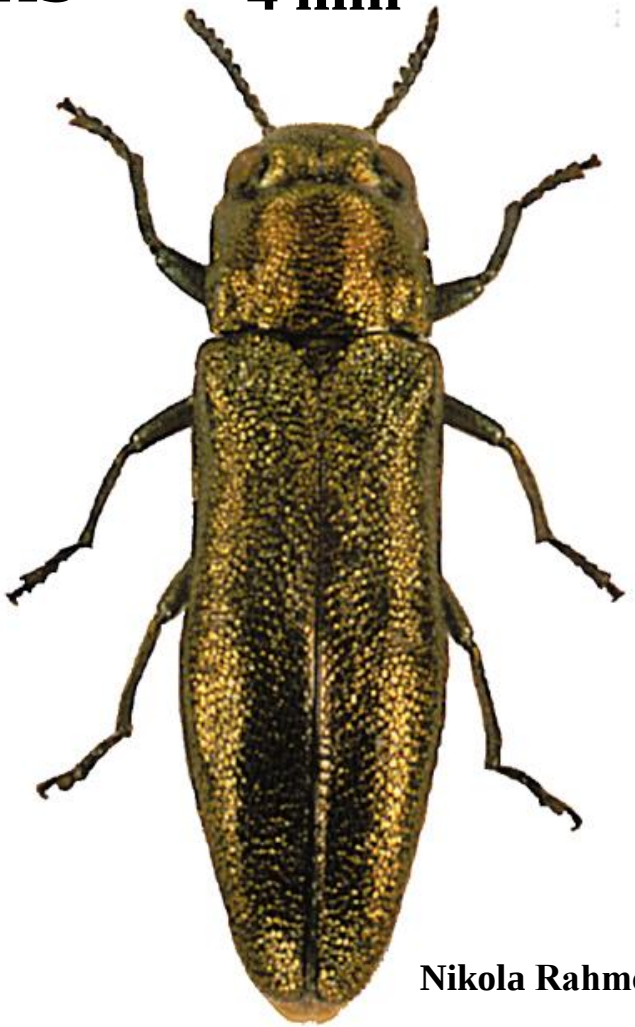
hosts: ***Quercus*, *Carpinus*, *Castanea*, Corylus (thin branches)**

spread: all over Europe, common

Agrilus convexicollis

Total catch:
26 specimens
p<0.0001





hosts: polyphagous - *Fraxinus, Syringa, Cotoneaster, Sorbus, Tilia*

spread: from France to Ukraine, common

Acknowledgements

Michael Domingue

Tom Baker


Thank you for your attention!