

PINEA SPOT CONGRESS

LISBON 2023

21 TO 23 NOVEMBER



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*Toumeyella parvicornis*  
(Cockerell): a rush to protect  
*Pinus pinea* L. in Europe

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# Experimentations plan



Monitoring: life cycle estimation



Molecular characterization: Different genes sequencing for barcoding



Potential suitability: high risk areas for possible spreading of the pest



Low-impact chemical approach: endotherpic treatment



Low-impact biological control approach: use of predators

# Monitoring: life cycle estimation

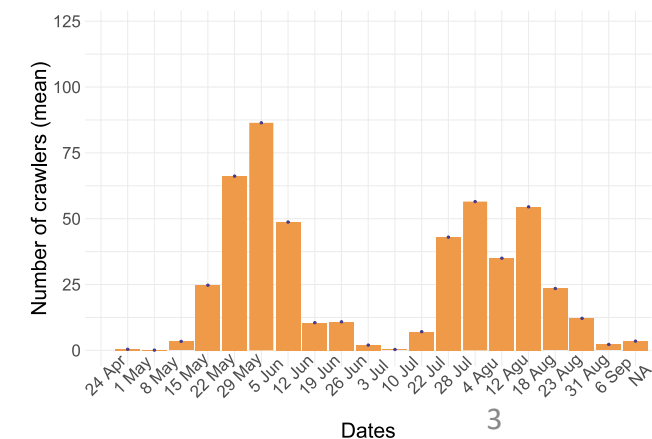
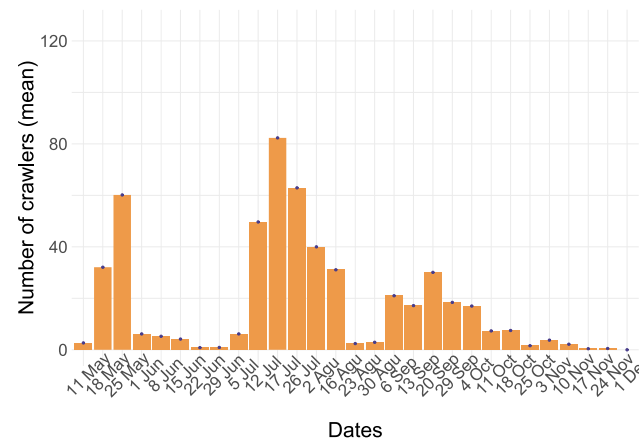
N1 nymphs capture during the dispersion phase  
 (Two years monitoring)

Usefulness

Demographic peak detection

Seasonal trend of the most vulnerable pest life stage

Relation between the dispersion and the climatic parameters



# Molecular characterization: Different genes sequencing for barcoding

Sequencing of five genes:

COI; Elongation factor (EF-1); 28S;  
 wingless; histone H3 (HexA)

Phylogenetic trees of Coccidae  
 family (Hemiptera: Sternorrhyncha)

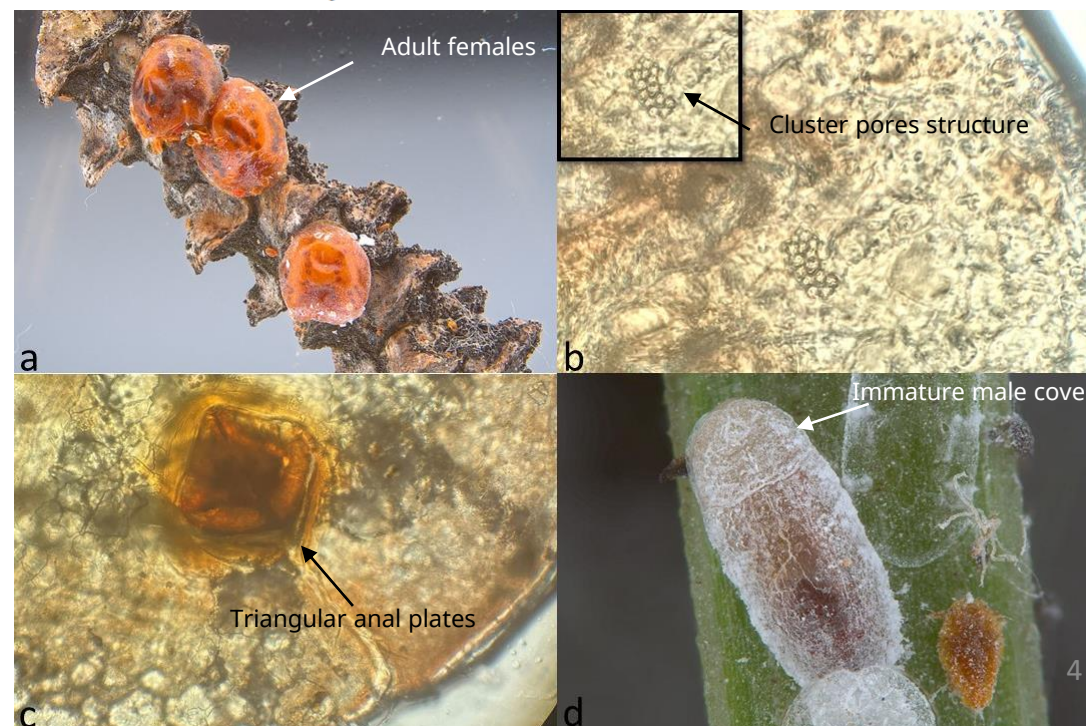
Crucial for the insect fast  
 identification (especially in new  
 areas of invasion)



Article

## Molecular Characterization and Phylogenetic Analysis of the Pine Tortoise Scale Insect *Toumeyella parvicornis* (Cockerell) (Hemiptera: Coccidae)

Nicolò Di Sora <sup>1,\*</sup>, Silvia Turco <sup>1,\*†</sup>, Federico Brugneti <sup>1</sup>, Luca Rossini <sup>1,2,\*</sup>, Angelo Mazzaglia <sup>1</sup>, Mario Contarini <sup>1</sup> and Stefano Speranza <sup>1,3</sup>



# Potential suitability: high risk areas for possible spreading of the pest

Suitable areas for the pest in the Mediterranean basin:

Occurrences point through a local presence/absence survey

Bioclimatic variables

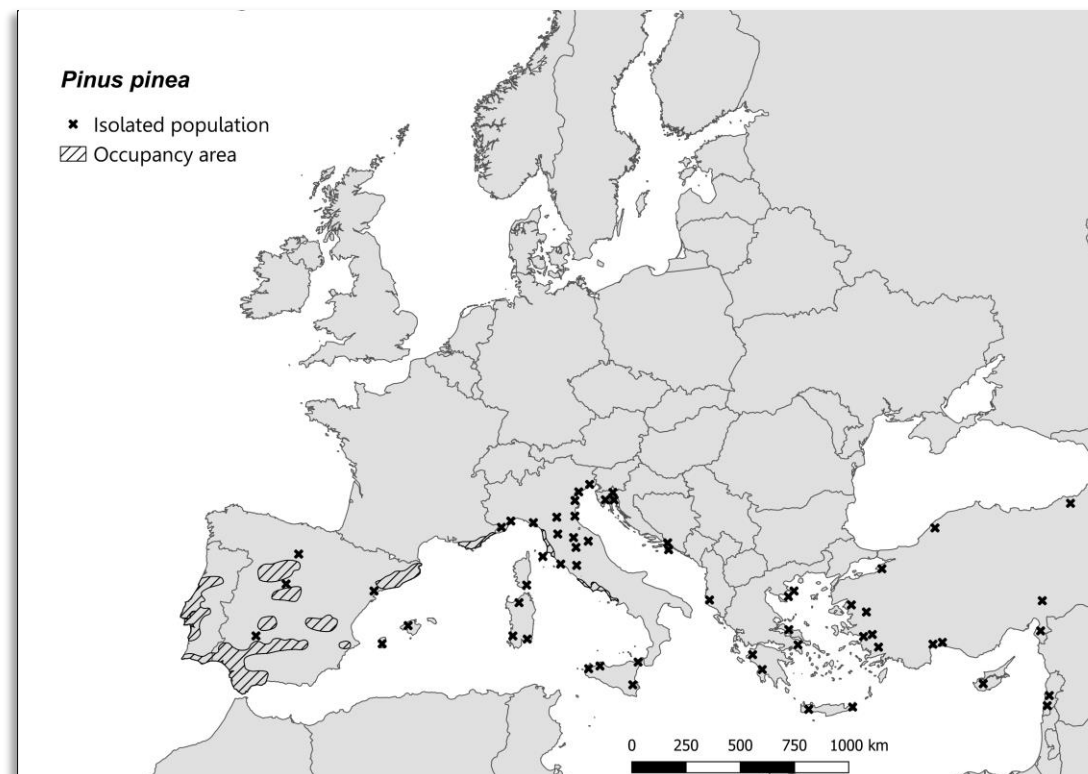
Comparison with the European stone pine distribution



Article

Using Species Distribution Models (SDMs) to Estimate the Suitability of European Mediterranean Non-Native Area for the Establishment of *Toumeyella Parvicornis* (Hemiptera: Coccidae)

Nicolò Di Sora <sup>1,4</sup>, Roberto Mannu <sup>2,4</sup>, Luca Rossini <sup>1,3,\*</sup>, Mario Contarini <sup>1,\*</sup>, Diego Gallego <sup>4</sup> and Stefano Speranza <sup>1</sup>



# Low-impact chemical approach: endothermic treatment

## Research Article

Received: 29 January 2022 | Revised: 10 March 2022 | Accepted article published: 20 March 2022 | Published online in Wiley Online Library: 4 April 2022  
 (wileyonlinelibrary.com) DOI 10.1002/ps.6876

### Endothermic treatment to control *Toumeyella parvicornis* Cockerell infestations on *Pinus pinea* L

Nicolò Di Sora, <sup>a</sup> Luca Rossini, <sup>a</sup> Mario Contarini, <sup>a</sup> Enrico Chiarot <sup>a</sup> and Stefano Speranza <sup>a</sup>

Short-time evaluation of the efficacy and persistence of endothermic treatment against *T. parvicornis*

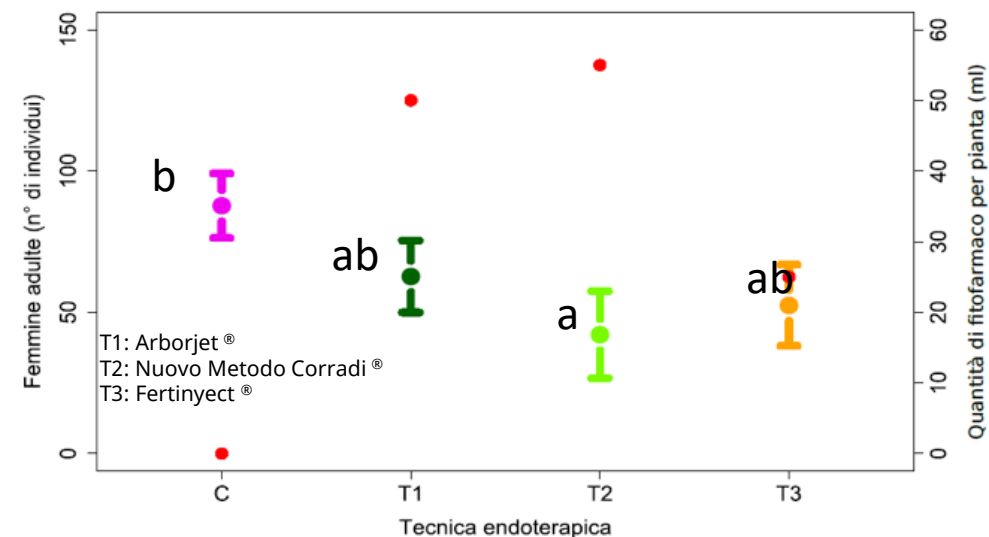
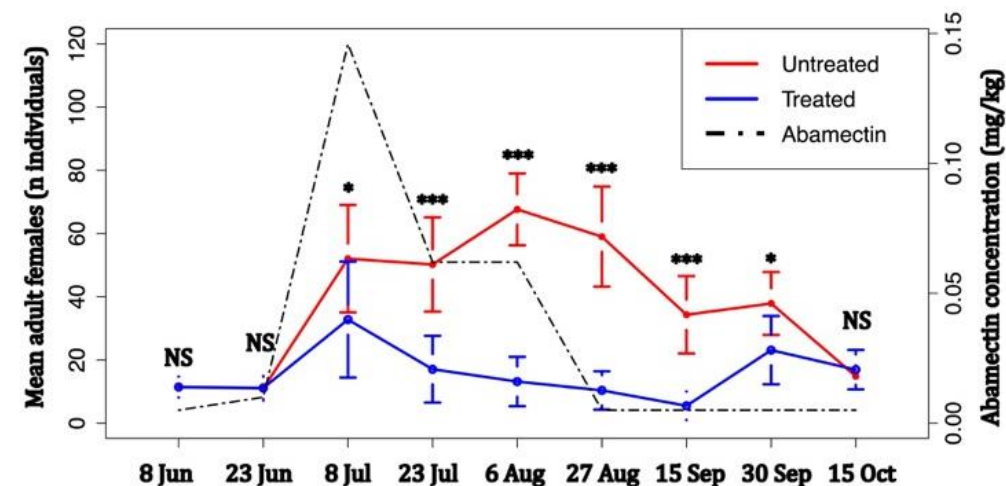
## Research Article

Received: 8 February 2023 | Revised: 20 April 2023 | Accepted article published: 11 May 2023 | Published online in Wiley Online Library:  
 (wileyonlinelibrary.com) DOI 10.1002/ps.7547

### *Toumeyella parvicornis* versus endothermic abamectin: three techniques, 1 year after

Nicolò Di Sora, <sup>a</sup> Luca Rossini, <sup>a,b</sup> Mario Contarini, <sup>a</sup> Giovanni Mastrandrea <sup>c</sup> and Stefano Speranza <sup>a</sup>

Long-time evaluation of endothermic treatment and comparison among three different techniques





# Low-impact biological control approach: use of predators

Two ladybugs species candidates as predators for *T. parvicornis*

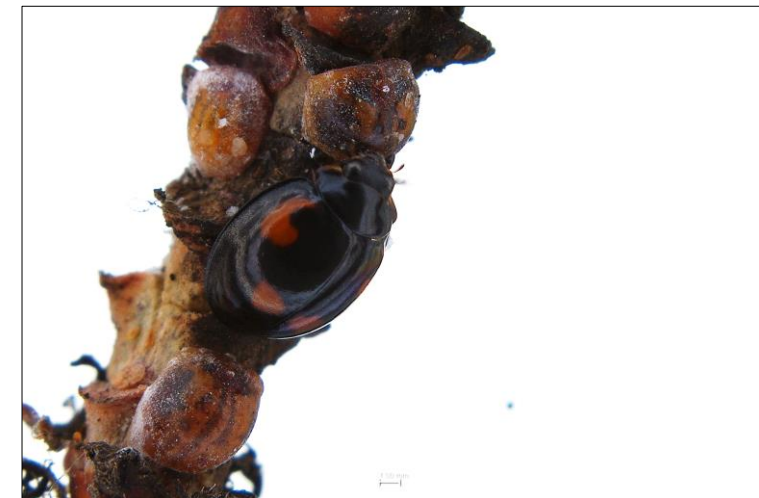
*Exochomus quadripustulatus* and  
*Cryptolaemus montrouzieri*

## Laboratory tests:

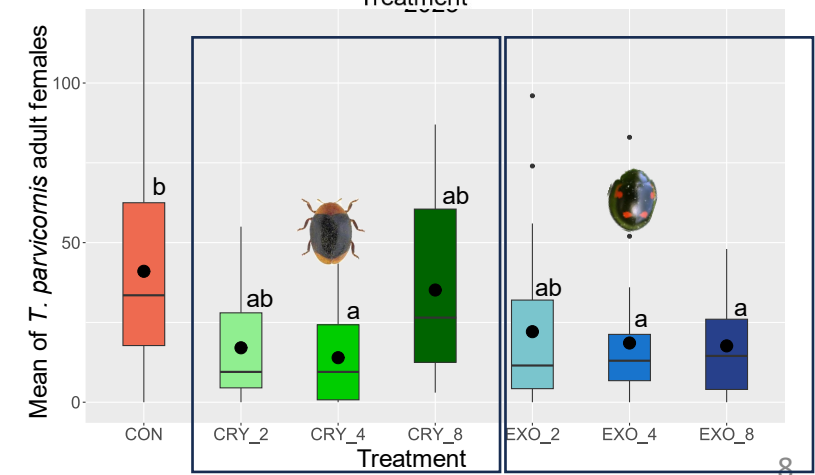
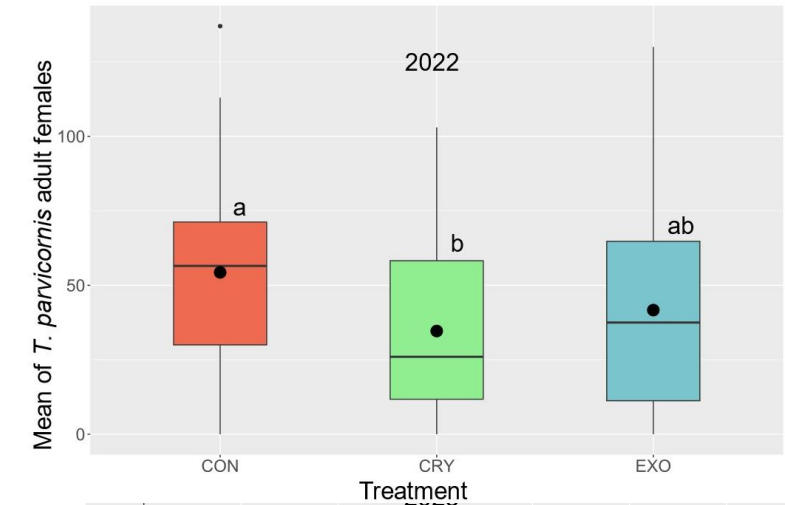
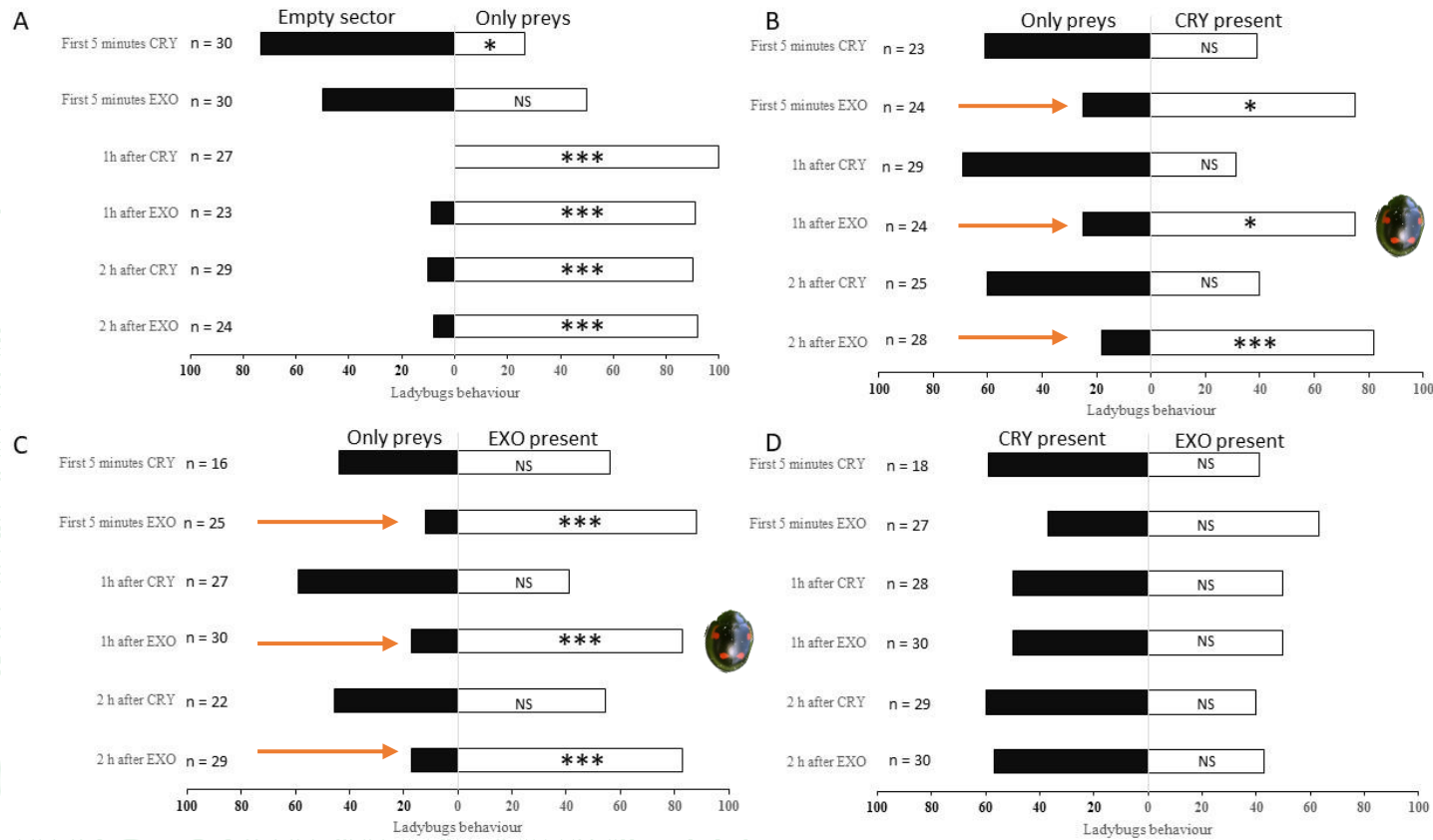
Survival time; Predation rate on N1;  
double choice test

## Semi-field tests:

Impact on stone pines infestation level affected by the scale





# Low-impact biological control approach: use of predators



# Low-impact biological control approach: use of predators



<i>Timing (minutes)</i>	2.7 ± 0.1	1.8 ± 0.1
<i>Median survival probability</i>	25	40
<i>Predation rate (predated/offered)</i>	0.93 	0.92 

**Then?** More investigation on intraguild relation affecting the predation rate and open field evaluation

# CONGRESSO PINEA SPOT LISBOA 2023

21 A 23 DE NOVEMBRO



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