# Using a multi-lure approach for trapping Cerambycidae in high risk areas for the introduction of bark and wood boring pests in Austria

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BFW
Bundesforschungszentrum für Wald

Euphresco

Project: MULTITRAP

# Using a multi-lure approach for trapping Cerambycidae in high risk areas for the introduction of bark and wood boring pests in Austria

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Woodborers arriving in **wood packaging material**
(e.g. for stones imported from China)

Interceptions of woodboring beetles in WPM from China inspected in Austria

| | 2015 | 2016 | 2017 |
|---|---|---|---|
| No. inspected consignments | 382 | 377 | 186 |
| Living woodborers present | 10.2 % | 19.6 % | 17.7 % |


Regulation (EU) 2016/2031 of the European Parliament of the Council of 26 October 2016 on protective measures against pests of plants

# Project: MULTITRAP

Multi-lure and multi-trap surveillance for invasive tree pests

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Troy Kimoto, CFIA, Canada
Damon Crook, USDA-APHIS, USA

Joint study: Testing a multi-lure approach for trapping cerambycids and other bark-/woodboring beetles at ports of entry

## Background

- Sex and aggregation **pheromones** and **kairomones** (host volatiles, bark beetle pheromones) known for many cerambycid species (reviewed in Millar & Hanks 2017)

- Blends of several pheromones used in experiments in North America (e.g. Hanks et al. 2012, Hanks et al. 2018, Millar et al. 2018): **Multi-lures feasible for trapping many cerambycids**

- Multi-lure (ethanol, α-pinene; frontalin, ipsenol, ipsdienol) traps successfully tested to catch woodborers (particularly Scolytinae) at **ports of enty in Italy** (Rassati et al. 2014)

- Multi-component blends for trapping Cerambycidae at ports of entry in **France** (PORTRAP projects) (Fan et al. 2018)

## Lures used in MULTIRAP

based on previous experiments by project partner INRA

### Pheromones

**Fuscumol** (= geranyl acetol): pheromone of certain species in Aseminae/Spondylidinae, attractive for many Lamiinae
**Fuscumol acetate**: Attractant for some Lamiinae
**Geranyl acetone**: Fuscumol synthesized by reduction of geranyl acetone
**Monochamol**: Pheromone of *Monchamus* (Lamiinae)
**3-hydroxy-2-hexanone**: Pheromone of many Cerambycinae
**2-methyl-1-butanol**: Pheromone component of several Cerambycinae
**2,3-hexanediol**: Pheromone component of many Cerambycinae
**Prionic acid**: Female produced sex pheromone of *Prionus* spp.

Blend 1
Blend 2
Blend 3

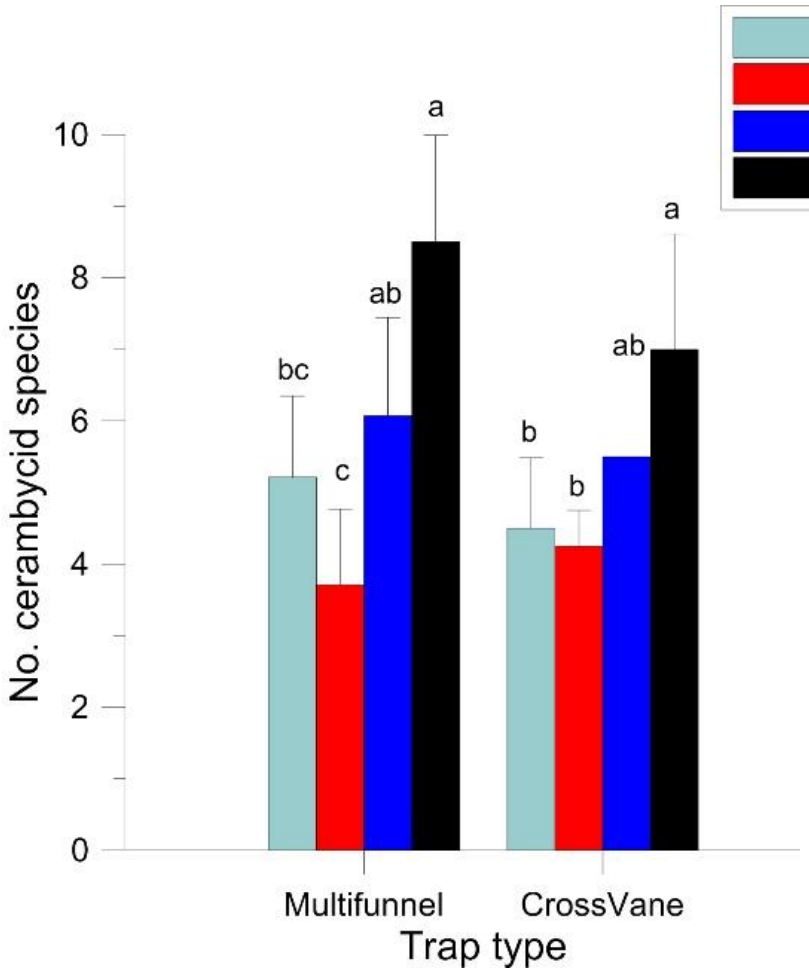
### Kairomones

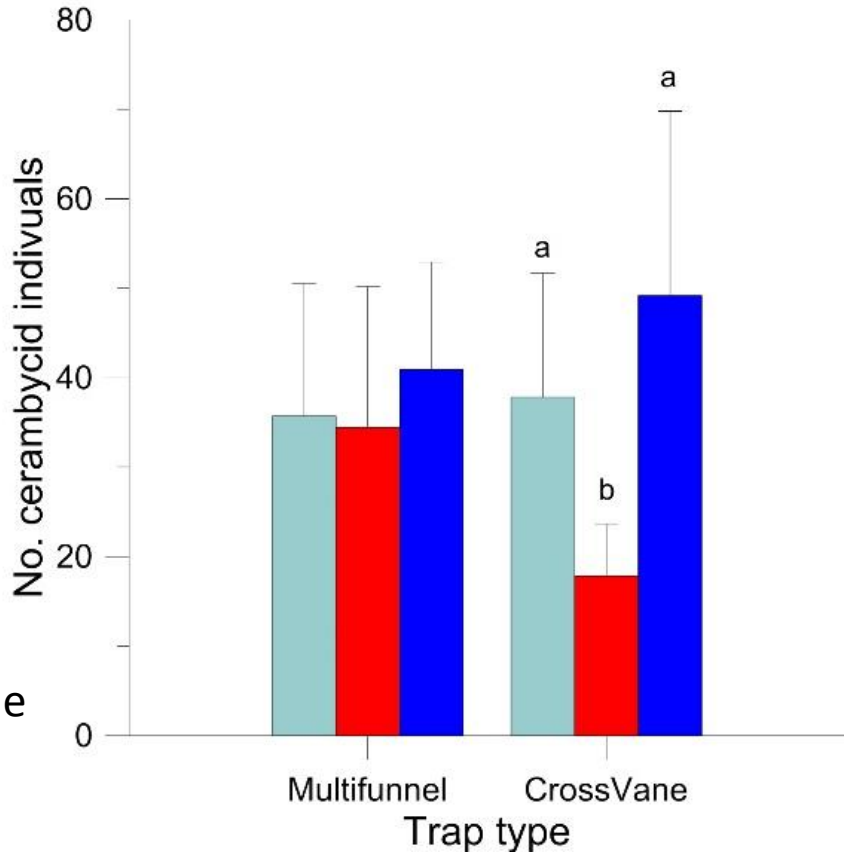
**Ethanol and α-Pinene**: Attractive kairomone for many bark and wood boring beetles

add

(Hanks et al. 2012, Millar & Hanks 2017, Sweeney et al. 2010, Barbour et al. 2011)

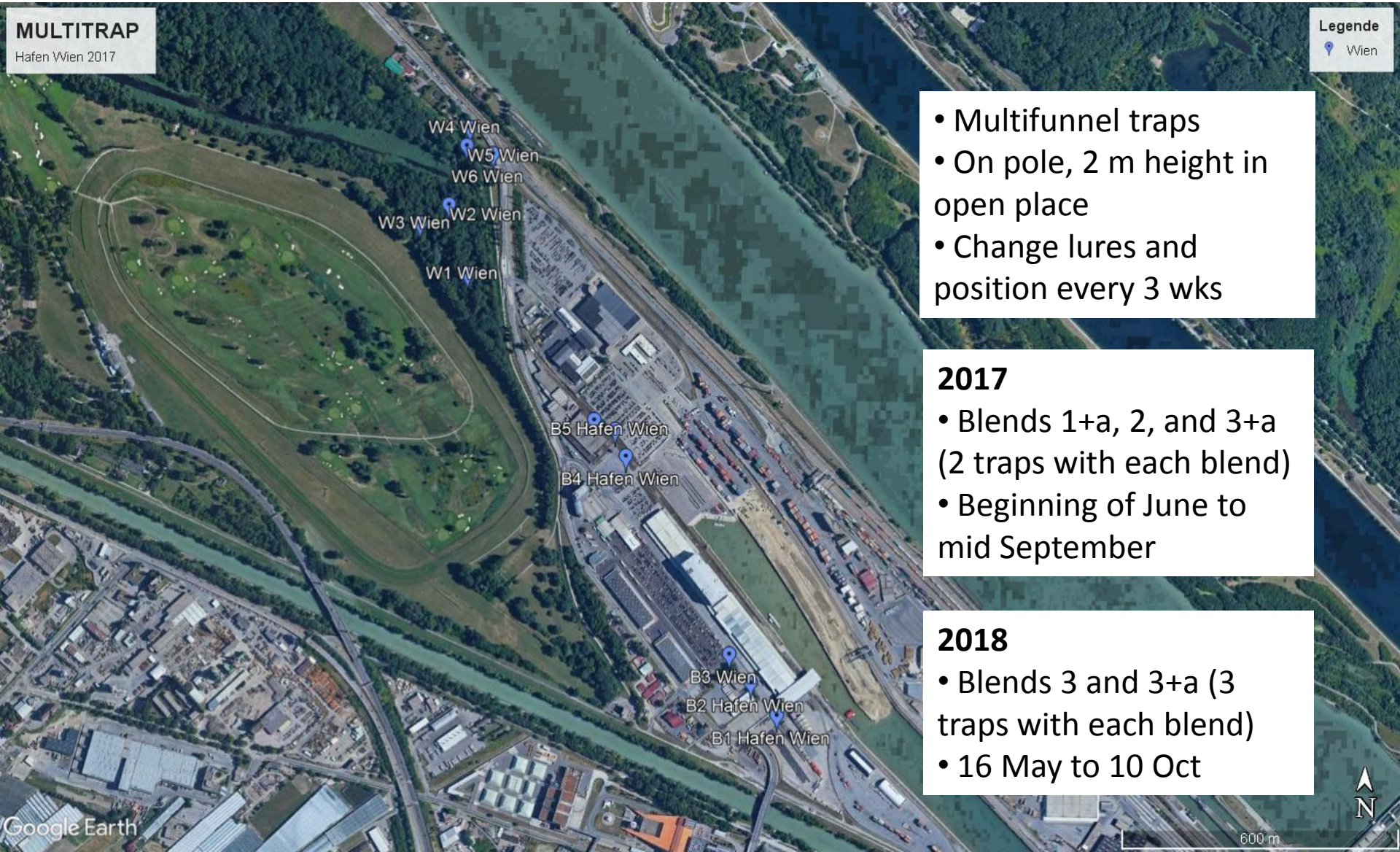
# All MULTITRAP Experiments, combined results FR, AT, NL, UK, 2017




Comparison of the mean trappings per lure and per trap type. Different letters in the same type of trap indicate signif. differences (Friedmann's Q test followed by Dunn–Nemenyi multiple comparison test, $P < 0.05$).

# Trapping in high risk areas:
# Port of Vienna




- Multifunnel traps
- On pole, 2 m height in open place
- Change lures and position every 3 wks

**2017**
- Blends 1+a, 2, and 3+a (2 traps with each blend)
- Beginning of June to mid September

**2018**
- Blends 3 and 3+a (3 traps with each blend)
- 16 May to 10 Oct


HAFEN WIEN
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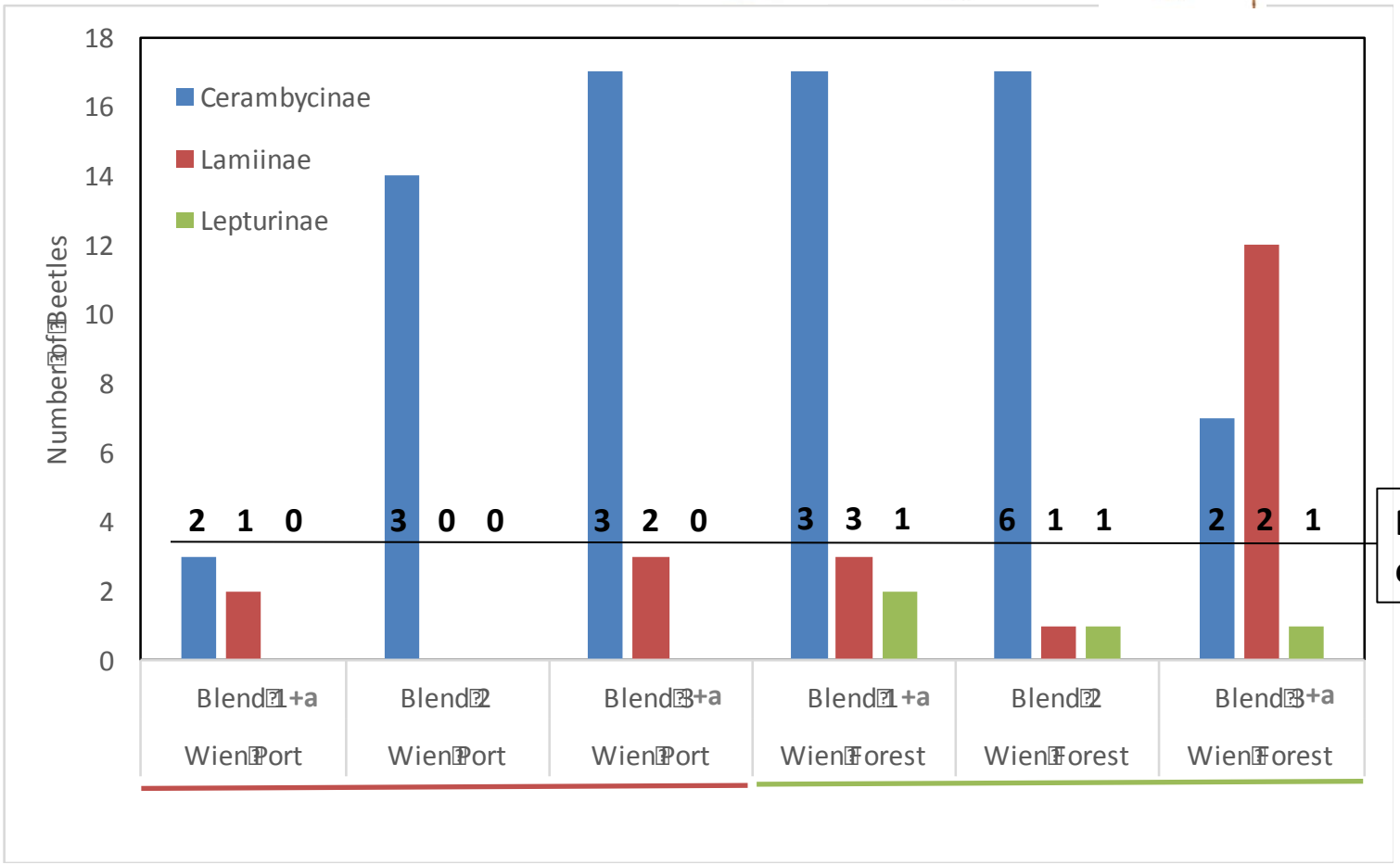
IM HERZEN DER STADT!

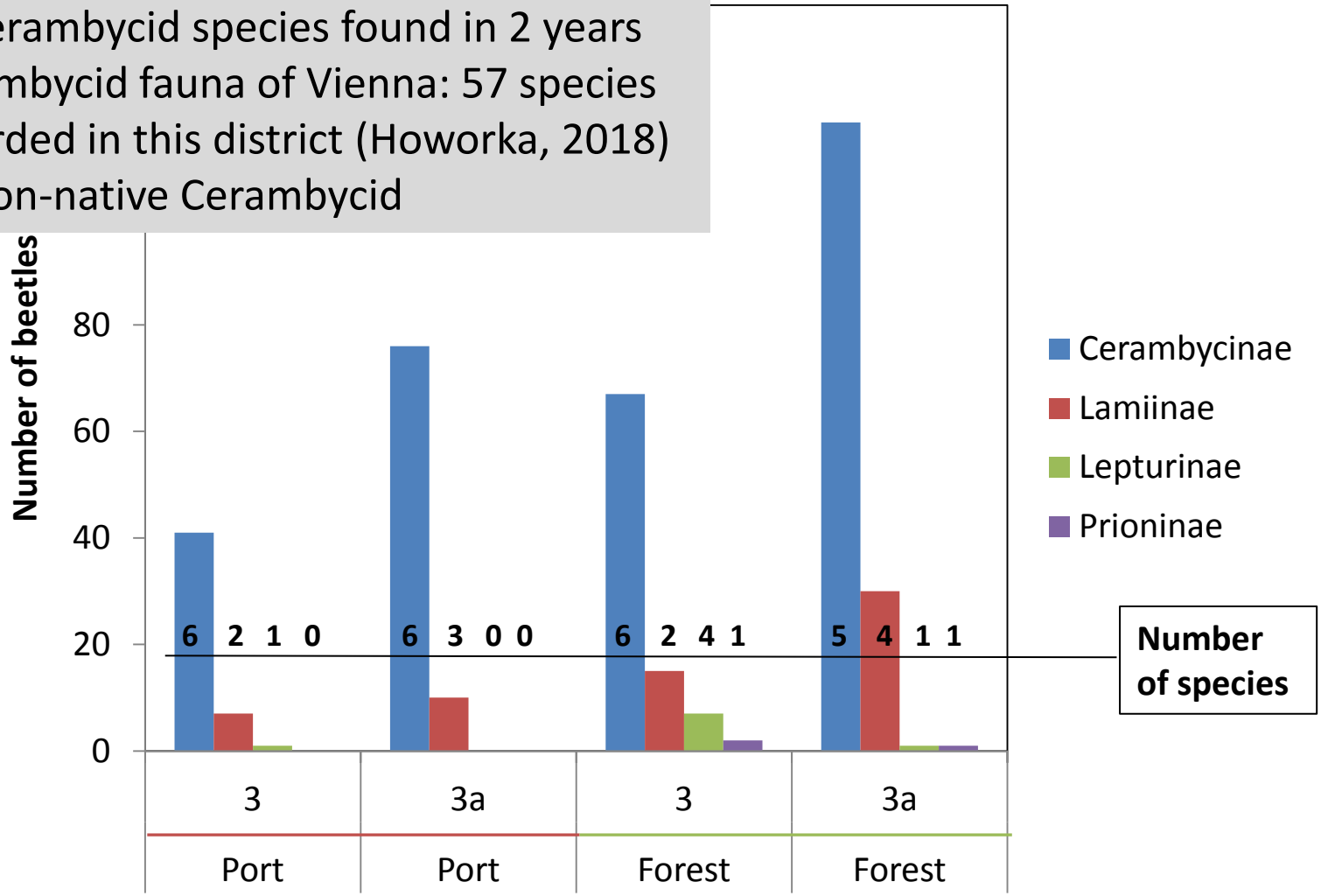
# Port of Vienna, 2017




Number of specimens from different subfamilies caught in different blends in port and in surrounding forest in 2017

## Port of Vienna, 2018

- 28 cerambycid species found in 2 years
- Cerambycid fauna of Vienna: 57 species recorded in this district (Howorka, 2018)
- no non-native Cerambycid

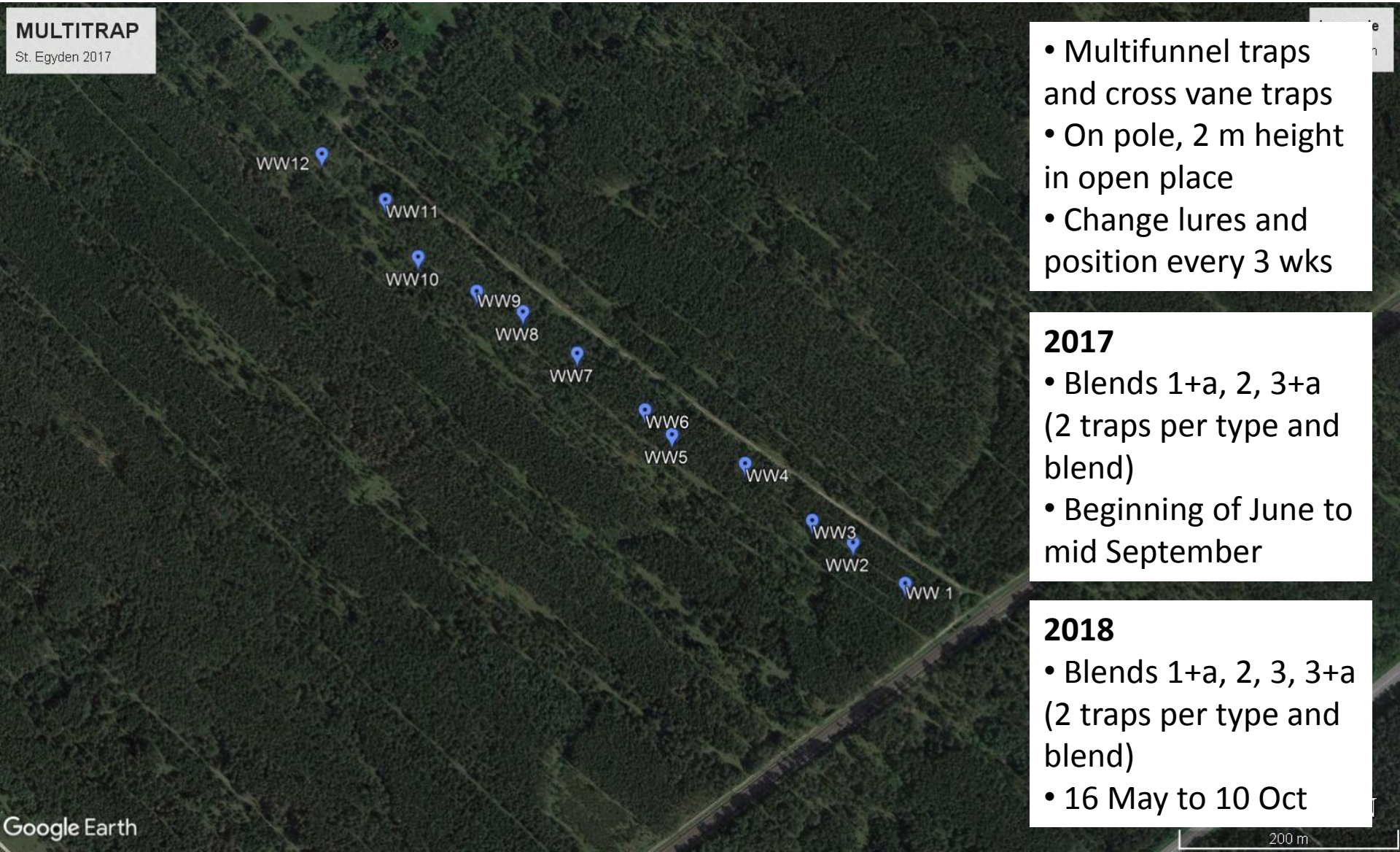



*Number of species: 9 9 13 11 (Total: 21)*

Number of specimens from different subfamilies caught in different blends in Port of Vienna and in surrounding forest in 2018

## Trapping in forest:

# Austrian pine forest, Neunkirchen



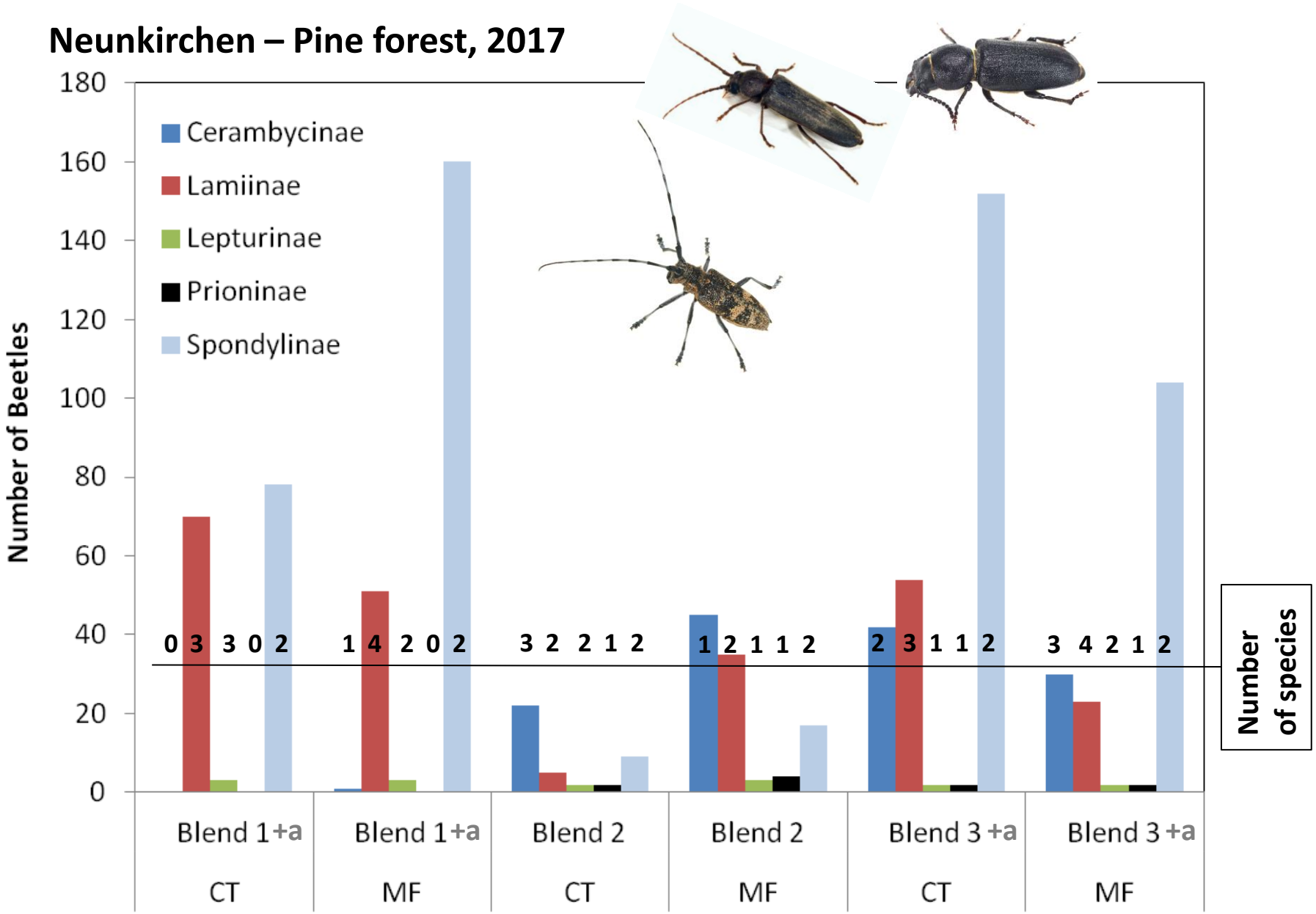

- Multifunnel traps and cross vane traps
- On pole, 2 m height in open place
- Change lures and position every 3 wks

**2017**

- Blends 1+a, 2, 3+a (2 traps per type and blend)
- Beginning of June to mid September

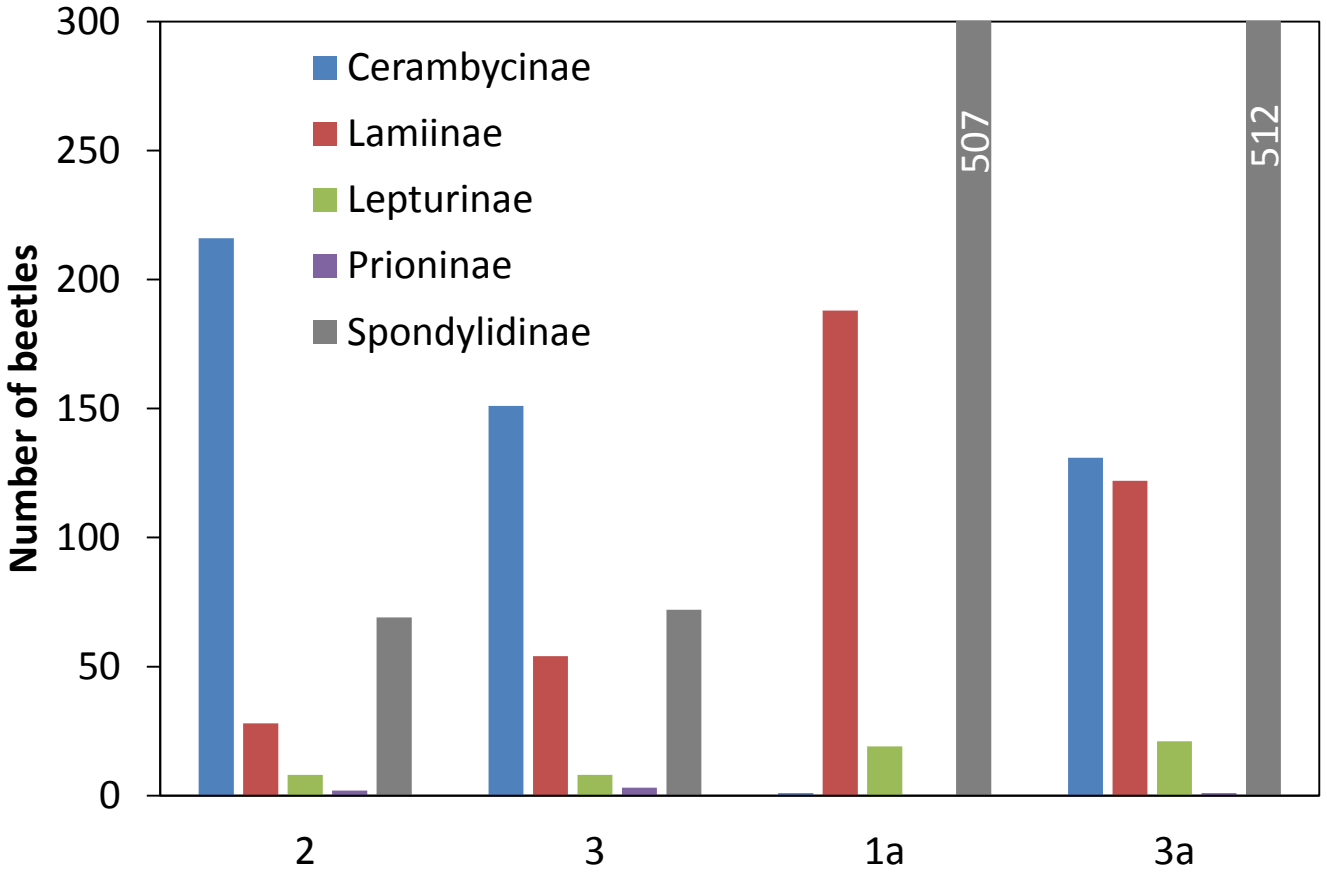
**2018**

- Blends 1+a, 2, 3, 3+a (2 traps per type and blend)
- 16 May to 10 Oct




Number of specimens from different subfamilies caught in different blends in cross vane (CT) and multi funnel (MF) traps

## Neunkirchen – Pine forest, 2018




*Number of species:* *2 4 3 1 2* *3 6 5 1 2* *1 6 4 0 2* *4 7 4 1 2*

*12* *17* *13* *18* *(Total: 21)*

2113 individuals
21 species

Number of specimens from different subfamilies caught in different blends in Austrian pine forest (trap types combined)

**Specificity of Lures** 1 and 2 for Lamiinae and Cerambycidinae, respectively:

- Lure 1+a: only 1 specimen (*Phymatodes testaceus*) in out of 140 Cerambycidinae in 2017, and 1 specimen (*Clytus lama*) out of 499 in 2018
- Preference of Lamiinae for Lure 1+a
- Specific response of *Prionus coriarius* to prionic acid (but low no.)

(Results from pine forest Neunkirchen)

**EtOH + alpha pinene** leads to higher catch (Lure 3 vs. 3a):

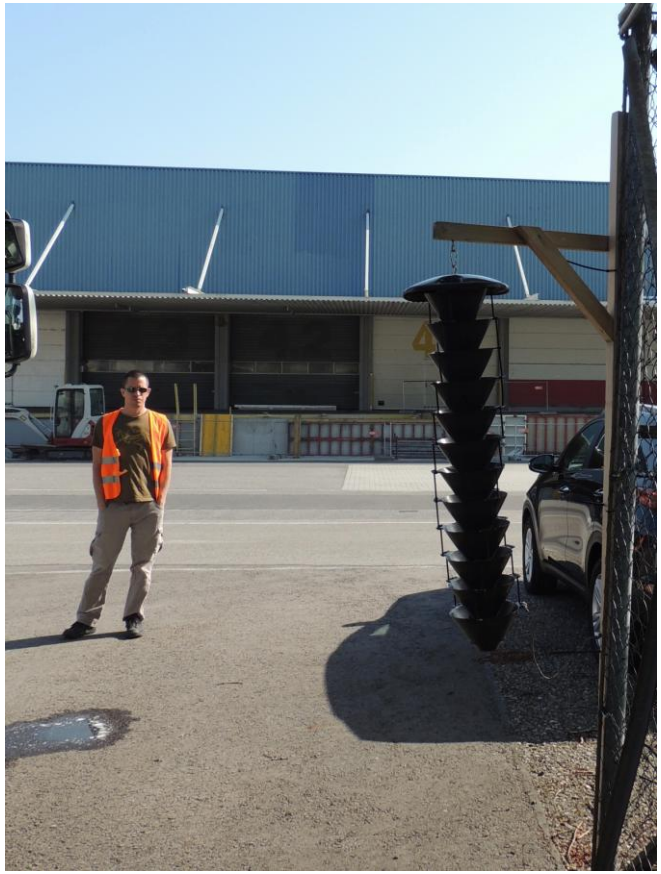
- Vienna (port + forest) 140 vs. 236 specimens
- Neunkirchen 288 vs. 787, mostly due to Spondylidinae and *Monochamus*

**Combination of lures** 1 + 2 (= 3) + a is promising for multitrapping





# Conclusions from MULTITRAP



Potential benefits from replacing single-lure trapping programmes with combined multi-lure programmes for early detection: Trap density can be increased (compared to single-lure trapping) for better early detection

Not only regulated pest species arrive at ports of entry

Many specimens have to be identified

Additional use of method in faunistic studies (two years trapping in Vienna: half of cerambycid fauna of this area)

Euphresco

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Thanks to project partners:
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# Thank you for your attention

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