

# NATURAL *FRAXINUS ANGUSTIFOLIA* STANDS THREATENED BY RECENT IMPACTS OF HARMFUL BIOTIC AGENTS IN CONNECTION WITH WATER RELATED STRESS AND OTHER ENVIRONMENTAL FACTORS – CROATIAN CASE STUDIES

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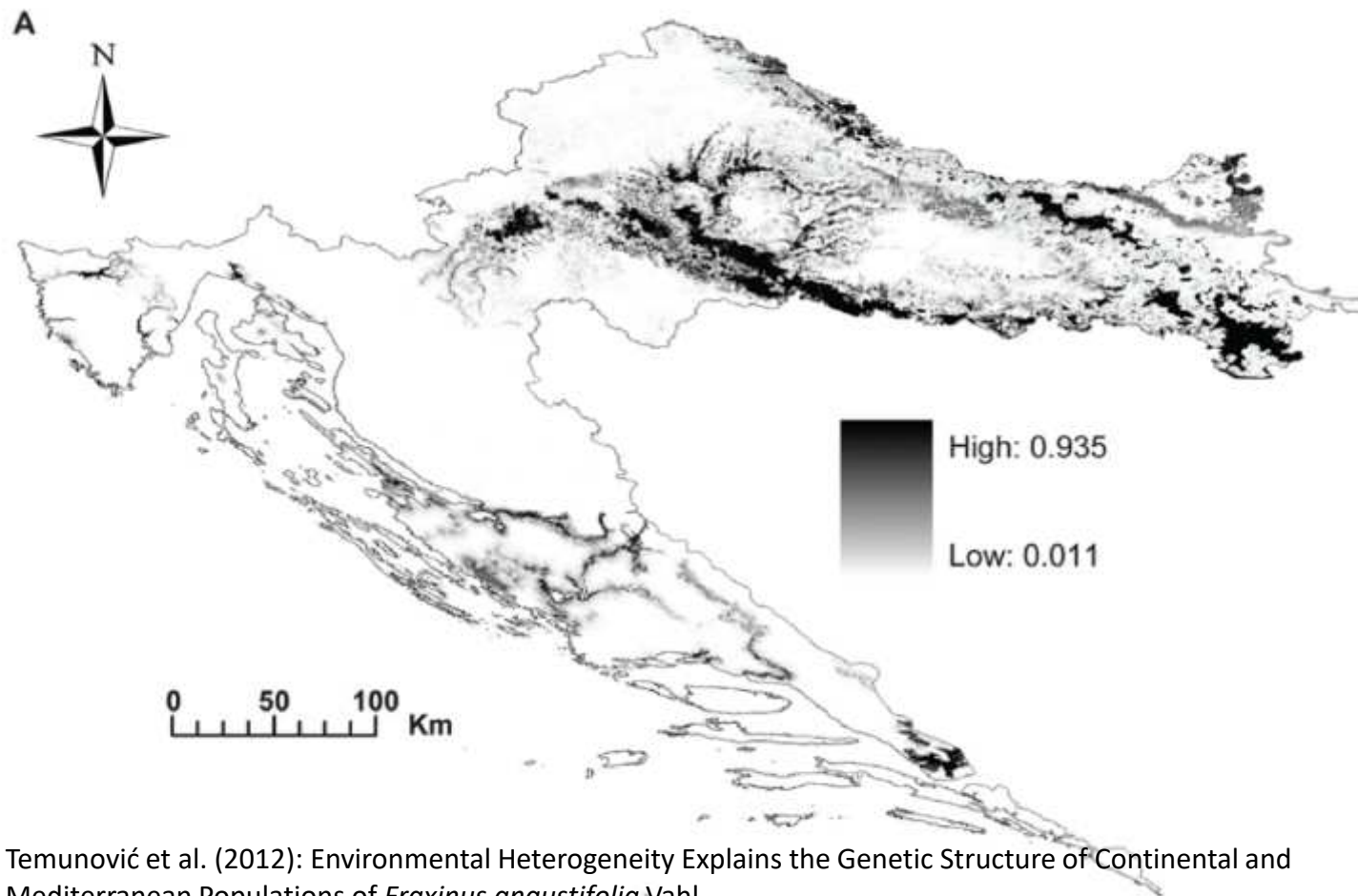
KASZÓ

WATER IN FORESTS

INTERNATIONAL CONFERENCE OF KASZÓ-LIFE PROJECT

29-30. MAY 2018.

## FRAXINUS ANGUSTIFOLIA DISTRIBUTION

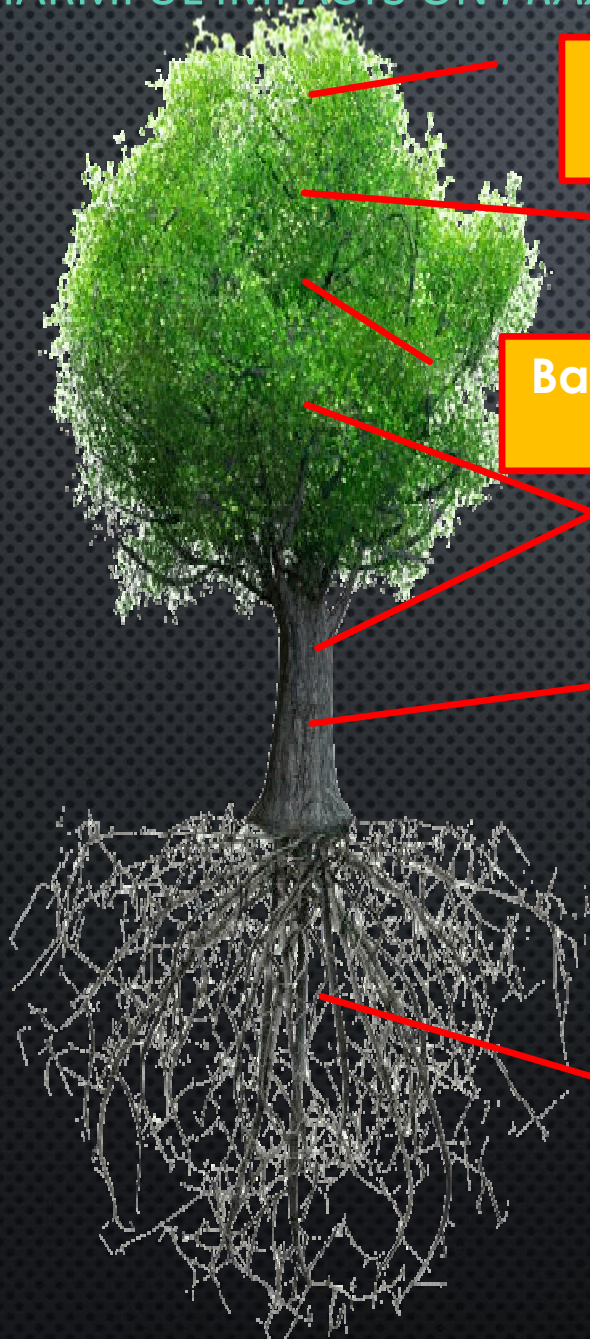


Temunović et al. (2012): Environmental Heterogeneity Explains the Genetic Structure of Continental and Mediterranean Populations of *Fraxinus angustifolia* Vahl

## RECENT LARGER SCALE DECLINE IN NATURAL ASH STANDS



## HARMFUL IMPACTS ON *FRAXINUS ANGUSTIFOLIA*



Inflorescence and seed  
damaging acari and insects

Defoliating insects

Bark beetles and other xylophages  
in branches and twigs

*Hymenoscyphus fraxineus*

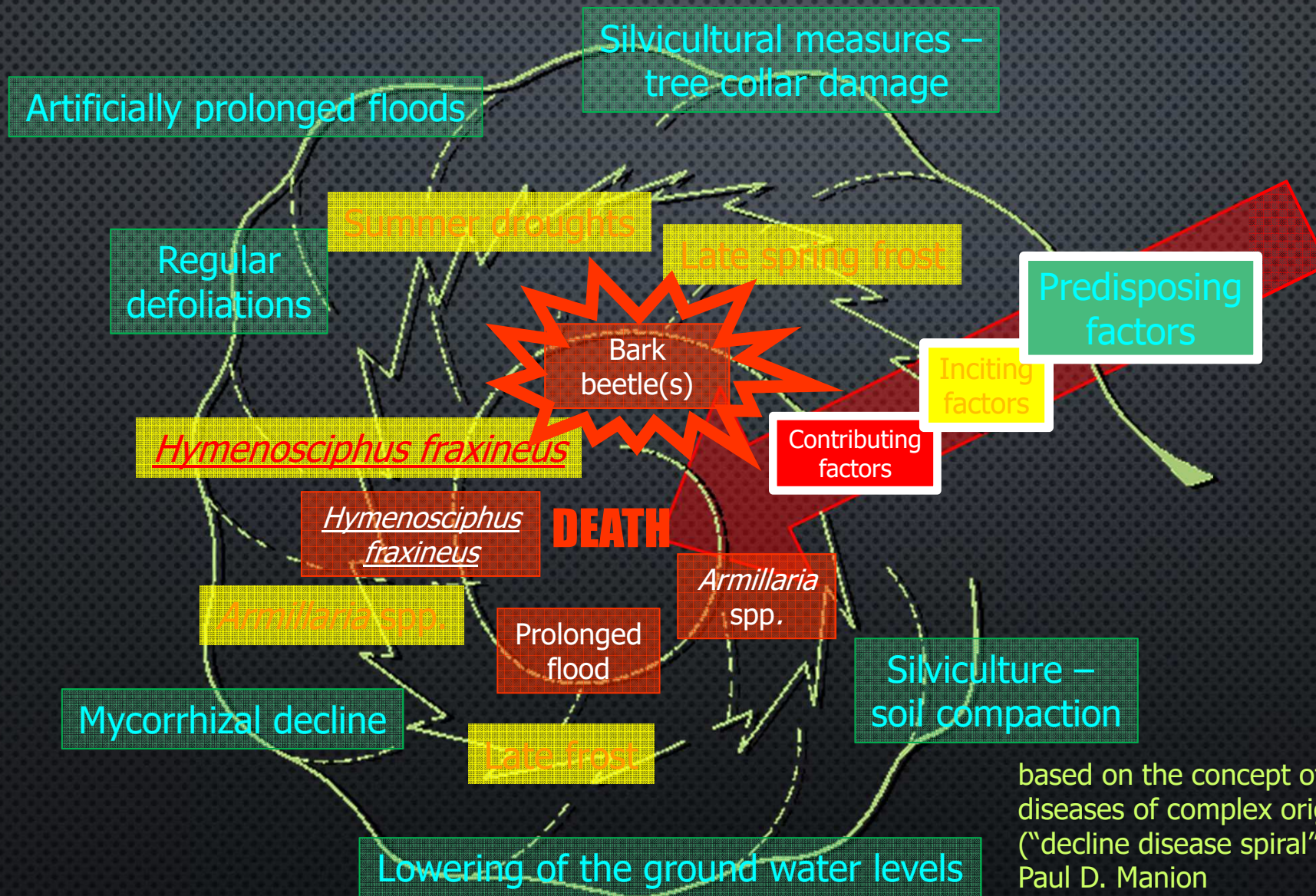
Bark beetles in trunk

Complex of soil inhabiting  
fungi and fungi like  
organisms

Late spring frost

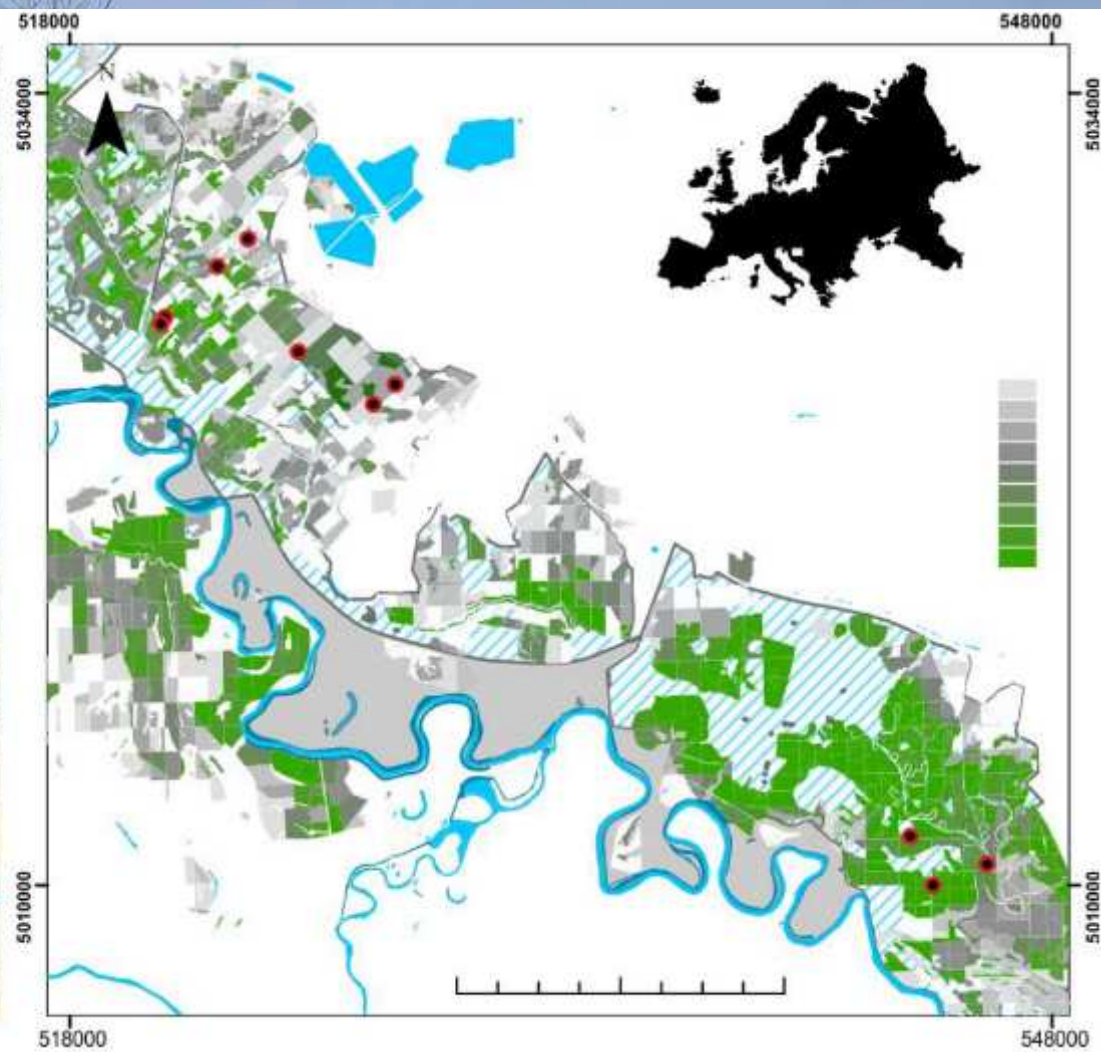
Flood water

# THE FUNCTIONAL ROLE OF HARMFUL IMPACTS/ORGANISMS

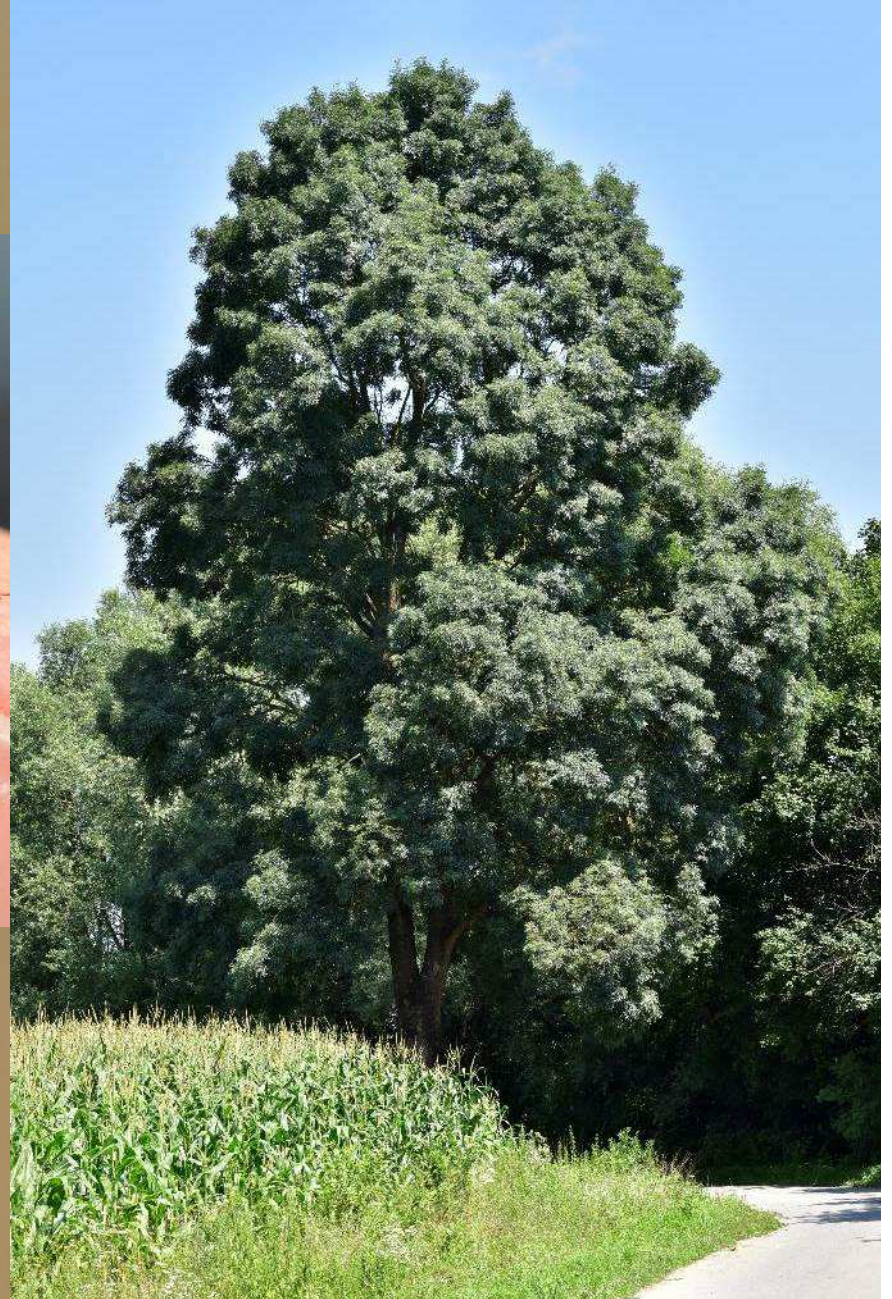


based on the concept of decline diseases of complex origin ("decline disease spiral"), after Paul D. Manion

## THE EFFECT OF PROLONGED FLOODS



## THE EFFECT OF DEFOLIATION



ASH BARK BEETLE COMPLEX – *HYLESINUS CRENATUS*



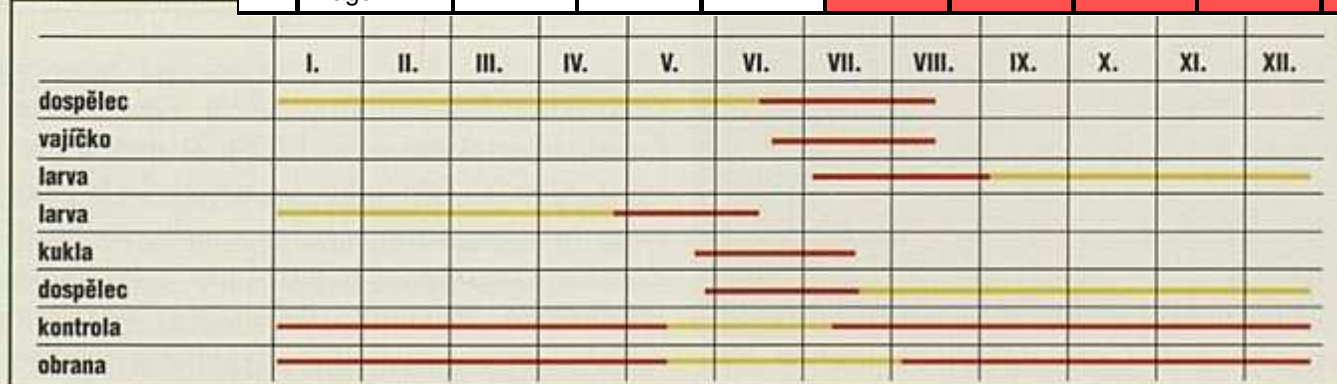
# ASH BARK BEETLE COMPLEX – *HYLESINUS CRENATUS*

SCENARIJ 1	<i>Hylesinus crenatus</i> - gospodarska jedinica Radinje - 2015. godina								
	razvoji stadij	svibanj	lipanj	srpanj	kolovoz	rujan	listopad	studení	prosinac
	imago								
	jaje								
	ličinka								
	kukuljica								
	imago	—	—	—					

larva  
kukla  
dospělec  
kontrola  
obrana

Modlinger & K  
Vývojový diagram

SCENARIJ 2	<i>Hylesinus crenatus</i> - gospodarska jedinica Radinje - 2015. godina								
	razvoji stadij	svibanj	lipanj	srpanj	kolovoz	rujan	listopad	studení	prosinac
	imago								
	jaje								
	ličinka								
	kukuljica								
	imago	—	—	—					



— hlavní období výskytu nebo činnosti

— možné období výskytu nebo činnosti

## EARLY RESEARCH ON THE „AGGRESSIVENESS” OF *LEPERESINUS FRAXINI*

**Spaić (1964):** Ash tree predisposition to the attack of *Leperesinus fraxini* (in Croatian with German summary - DIE BRUTBAUMDISPOSITION DER ESCHEN FÜR DEN BEFALL DES KLEINEN ESCHENBASTKÄFERS *Hylesinus fraxini* Panz)

Measuring of *F. angustifolia* **physiological vigor** status through the **water sucking potential** by than recent and new described method of Šardakov (1956) **and exposure to *Leperesinus fraxini* attack**

### CONCLUSIONS

- *L. fraxini* can only develop in dead (cut) branches (smaller trees) and is not able to develop fully in standing, visually healthy ash trees
- Even freshly cut (vigorous) trees are immediately not suitable for the *L. fraxini* colonization
- **Its role in the recorded massive ash decline (in 1960' !!!) is of no importance to the foresters !**



ASH BARK BEETLE COMPLEX – *LEPERESINUS FRAXINI*,  
*HYLESINUS OLEIPERDA*



## ASH BARK BEETLE COMPLEX – TIMBER (AMBROSIA) BEETLES

5 recorded bark beetle species on standing, freshly fallen or cut timber of *Fraxinus angustifolia* (typical indicators of decline and high availability of ash suitable timber for their development)

1. *Xyleborus dispar*
2. *Xyleborus saxesenii*
3. *Xyleborus monographus*
4. *Xyleborus dryographus*
5. *Xylosandrus germanus*
6. *Platypus cylindrus*



*Xyleborus saxesenii*



*Platypus cylindrus*

ASH BARK BEETLE COMPLEX – LAST ONES IN THE „SPIRAL OF DEATH”  
SCENARIO OR ONLY *THE UNDERTAKERS* ??



**THANK YOU FOR  
YOUR  
ATTENTION !**



trees in a pile.

(2011): Bark beetle outbreak on  
ash trees and applied control