

# Preference of mason bee females (*Osmia bicornis* L.) in relation to different types of nesting material

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## Introduction

In 2013 and 2014 four kinds of nesting material were compared. These were: grooved plates of linden wood, grooved MDF plates (Medium Density Fibreboard), plastic plates forming nesting blocks, and common reed (*Phragmites australis* (Cav.) Trin. ex Steud) tubes as the control. To check preferences of the mason bee in relation to different nesting materials under identical flow conditions, 4 nesting boxes were placed in 150-m distance apart. The boxes have been filled with different nesting materials and 4 thousand cocoons were placed in each box.

## Results

Problems with storing the cocoons resulted in very poor hatching of bees in 2013 – about 40%. However, the percentage of hatching bees in each combination of the experiment was similar and this allowed to assess bees' preferences in relation to different kinds of nesting material.

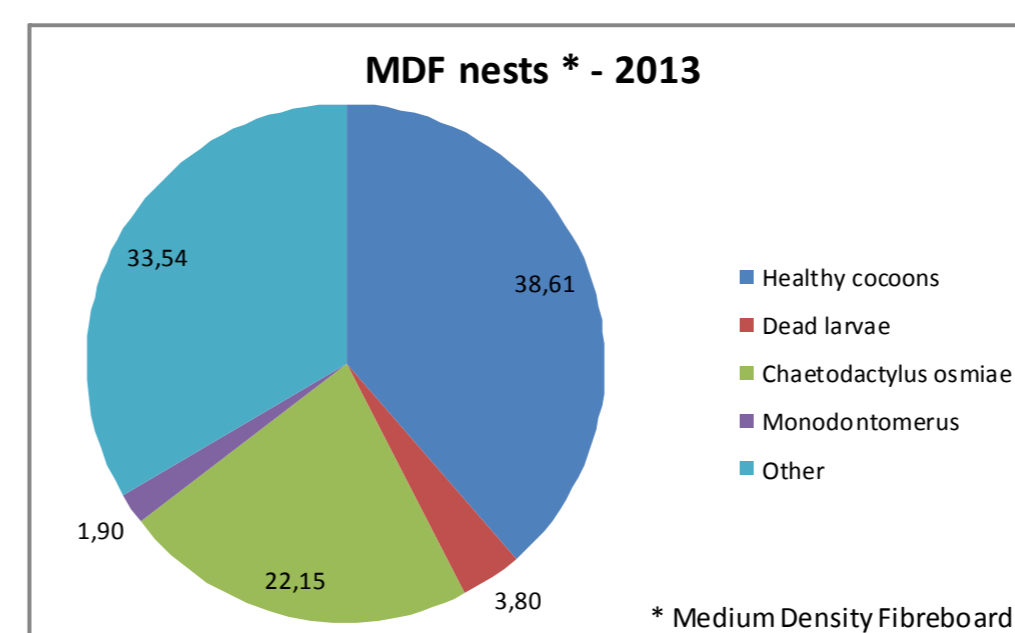
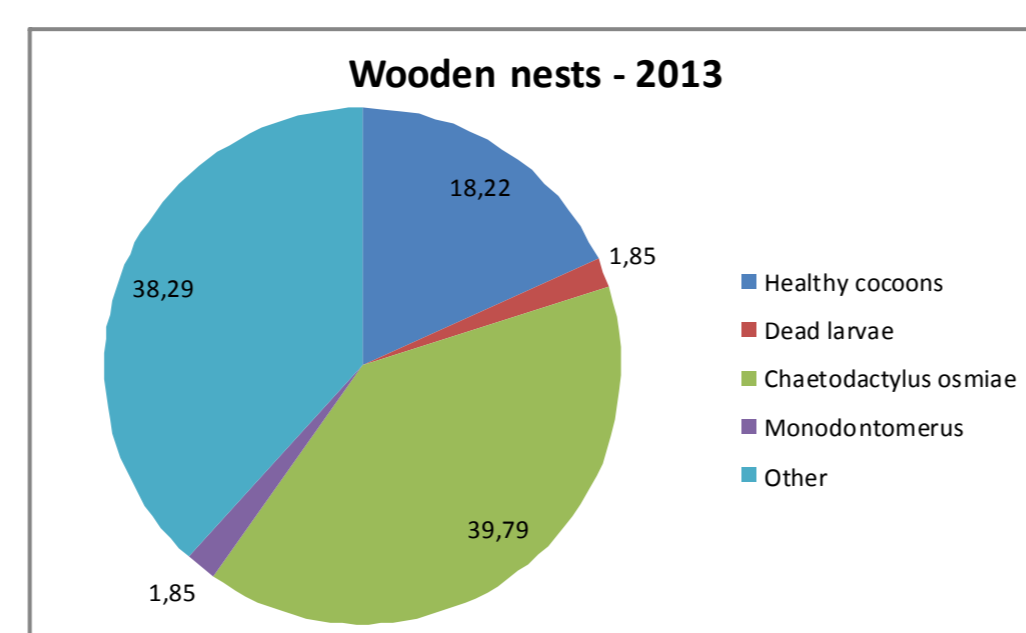
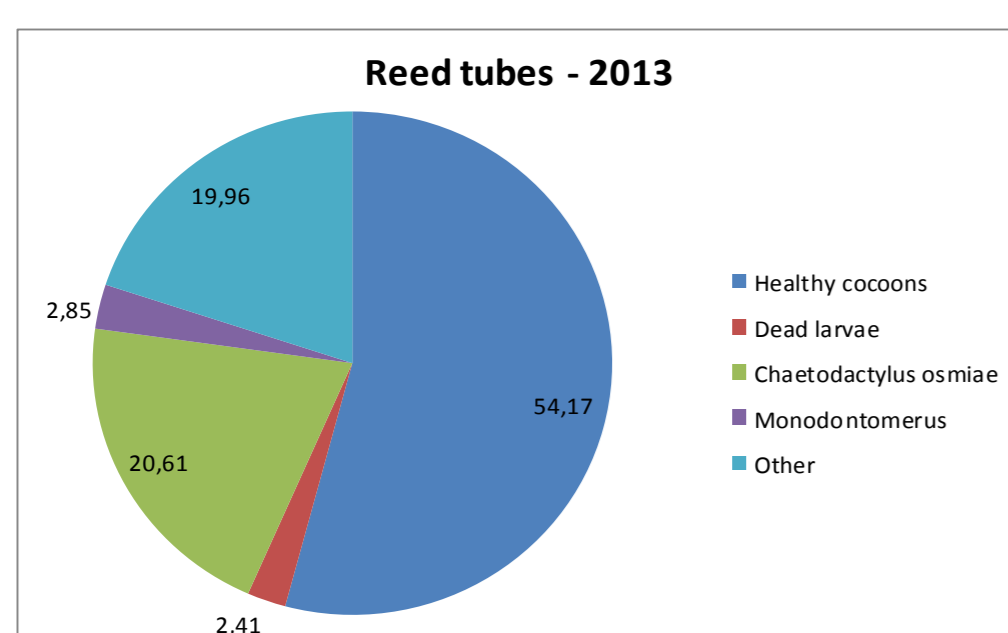
The highest index of growth population in 2013 (although very low) was noted for common reed (0.62). Growth population of *Osmia* bees reared in grooved linden wood plates was lower - 0.4%, while in grooved MDF plates this index was 0.15. In the part of the experiment where the mason bees had plastic plates as the nesting material, no established cell was found. The above-mentioned results, despite insufficient hatching, allowed assessing suitability of using different nesting materials in rearing the mason bee. Common reed turn out to be the most suitable material, with linden wood plates as the second best. Other materials used in the experiment, made entirely (plastic plates) or in a substantial part (MDF plates) of synthetic materials, were tolerated much worse.

In 2014 the hatching of bees was typical (about 96%) and colonization of all types of nests was much better than in 2013.

Approximate evaluation of colonization of nests indicates that the best were reed nests (colonization almost 100%). Wooden and MDF nests were colonized a little worse. The most unoccupied channels were in plastic nests. Detailed results of the growth population will be known after analysis nests in autumn.

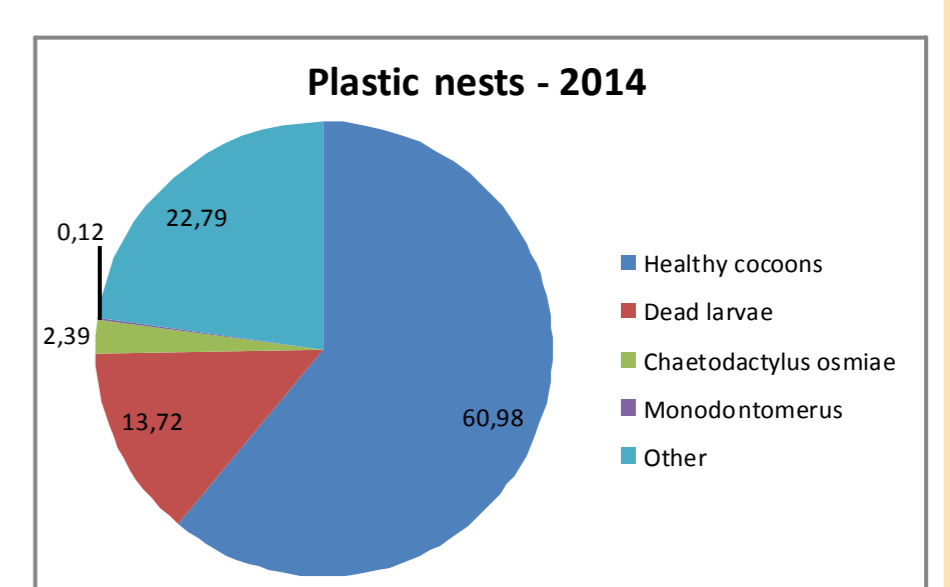
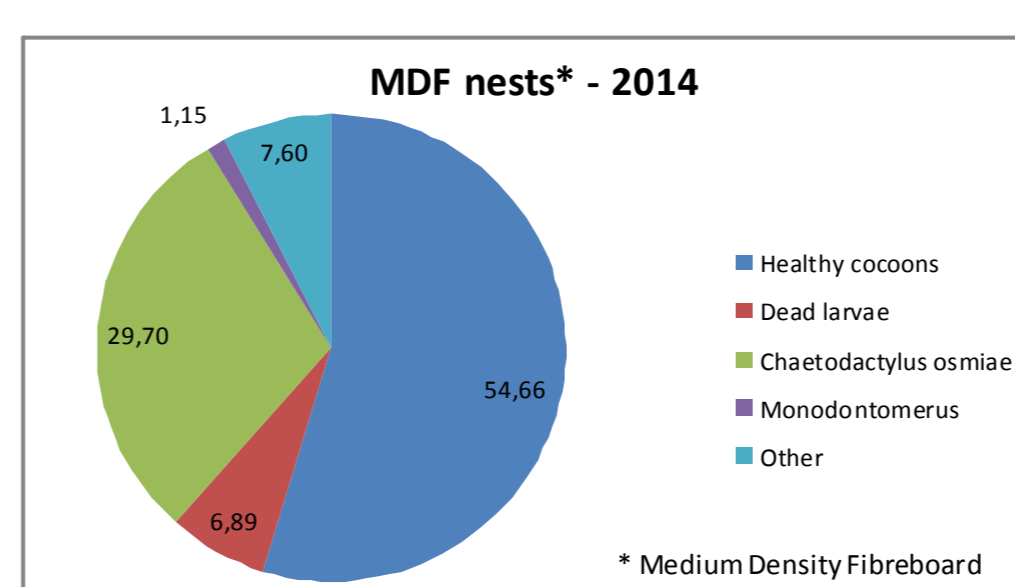
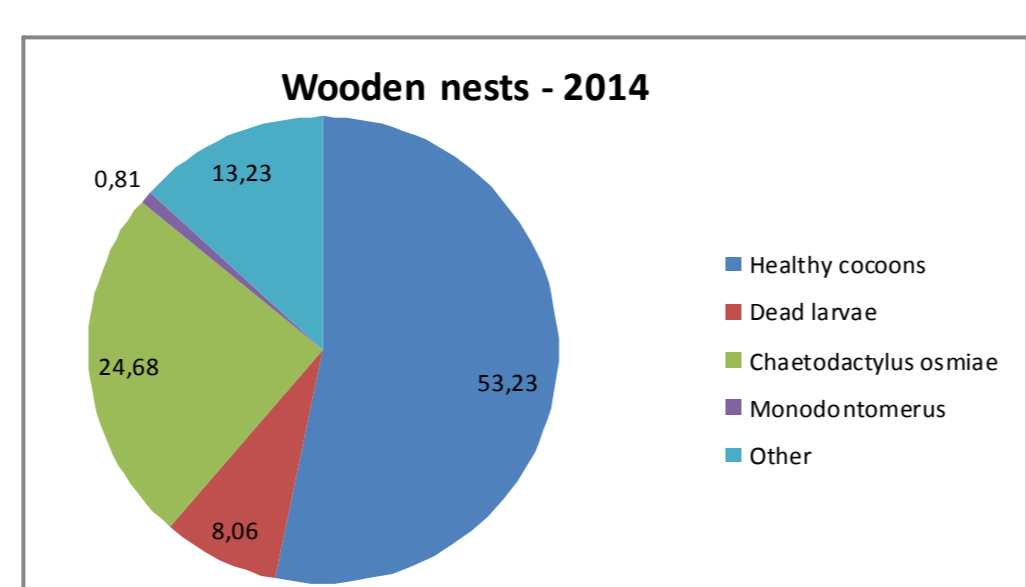
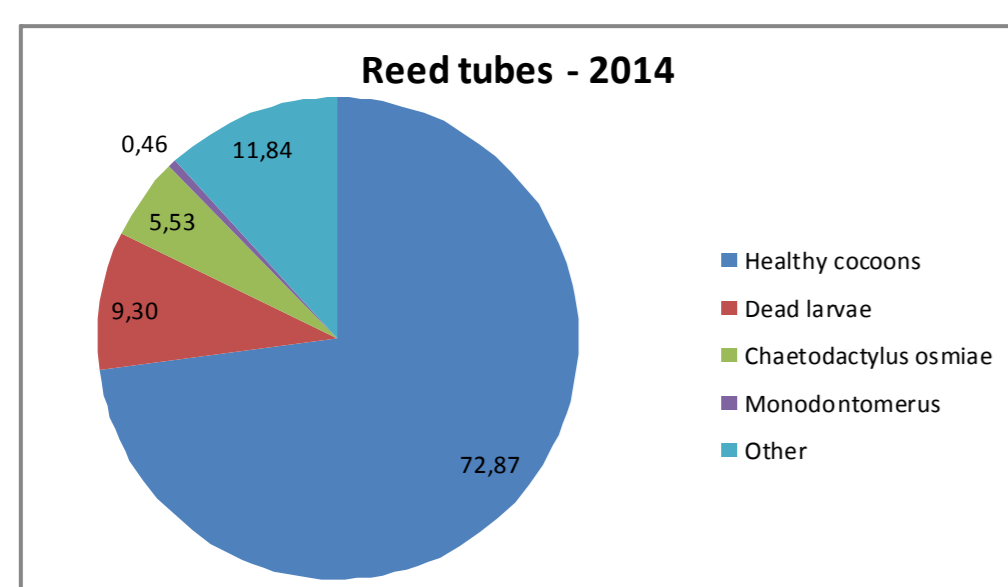
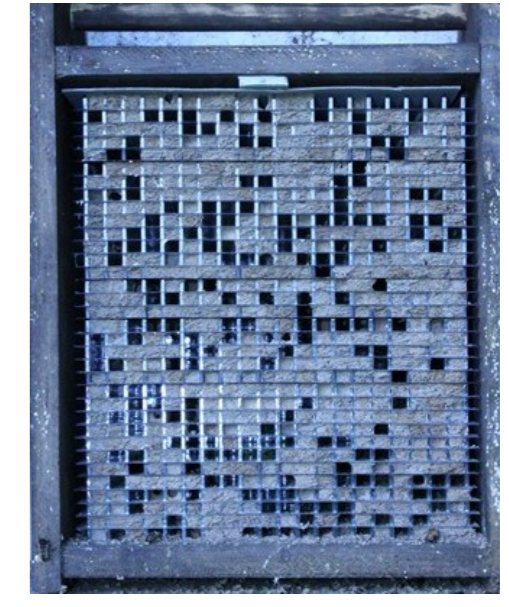
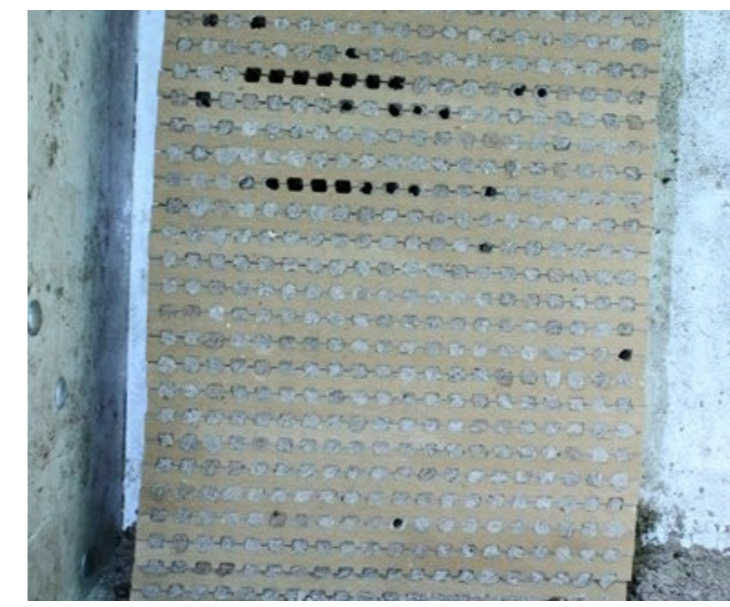
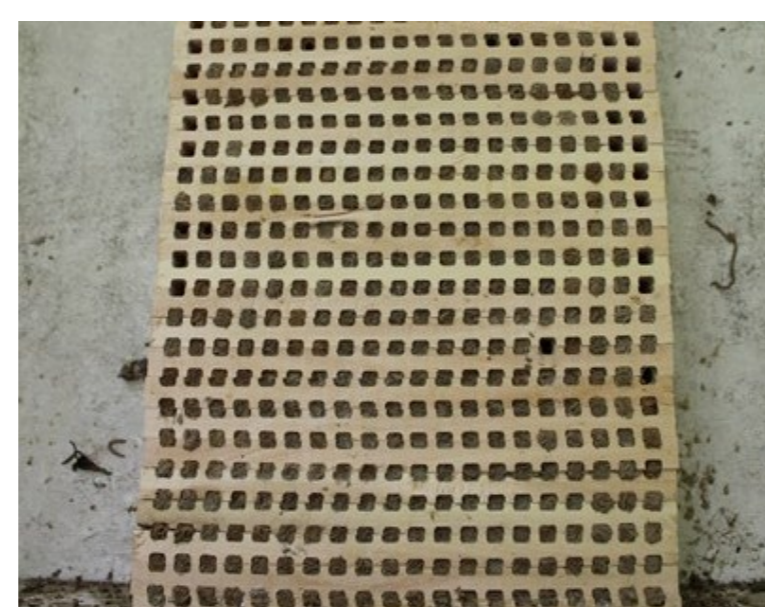
The evaluation of *Osmia* colony health, presented on charts, was made on the basis of the analysis of 300 nest canals. Analysis of material in 2014, indicates that the highest percentage of well-developed cocoons was in the reed nests. In other types of nest, the number of cocoons was smaller. It is characteristic that parasitized by *Chaetodactylus osmiae* was significantly higher in in wooden and MDF nests than in the reed and plastic nests. This was probably due to migration of the mites in transverse of the porous nest plates.

## The health of the *Osmia* population reared in different types of nesting materials in an atypical year 2013 (%)



No colonized canals

## The health of the *Osmia* population reared in different types of nesting materials in a typical year 2014 (%)



## Conclusions

1. The best nests material in rearing of *Osmia bicornis* proved common reed (*Phragmites australis*).
2. In the nests of wood and MDF was found the most parasites *Chaetodactylus osmiae*. This was due to migration of the mites in transverse of the porous nest plates.
3. In the plastic nests was found the largest percentage of dead larvae.