Translocating Wood Ants:
A systematic review of methods and outcomes

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INTRODUCTION

- Wood ants are important **ecosystem engineers**[1]
- Many species have experienced population declines due to **habitat loss**[2]**,** and their **limited dispersal ability** makes colonisation difficult[3]
- Translocations can **prevent biodiversity loss** and **restore ecological function**[4]
- Documentation of wood ant translocations is **inconsistent** and highly **variable**

AIMS

1. Identify translocation methods associated with long-term colony success
2. Outline practical considerations for future efforts

METHODS

STUDY SCOPE

- Mound-building *Formica* species in Europe
- Intentional relocation or reintroduction
- Peer-reviewed and grey literature
- Qualitative analysis of known outcomes

DATA COLLECTION

Literature searching:

- Web of Science, Google Scholar
- Search strings combining key words

Expert consultation:

- Researchers and conservation practitioners
- Identified through professional networks

49 studies identified from **12** countries
12,250 translocated nests represented by **10** species
88% have no known outcome

Methods of Translocation:



Whole nest (German method)

Nest removed in layers by hand and placed into transport containers



Whole nest (digger)

Nest removed in one piece by machinery



Partial nest

Some nest material removed with queen and workers

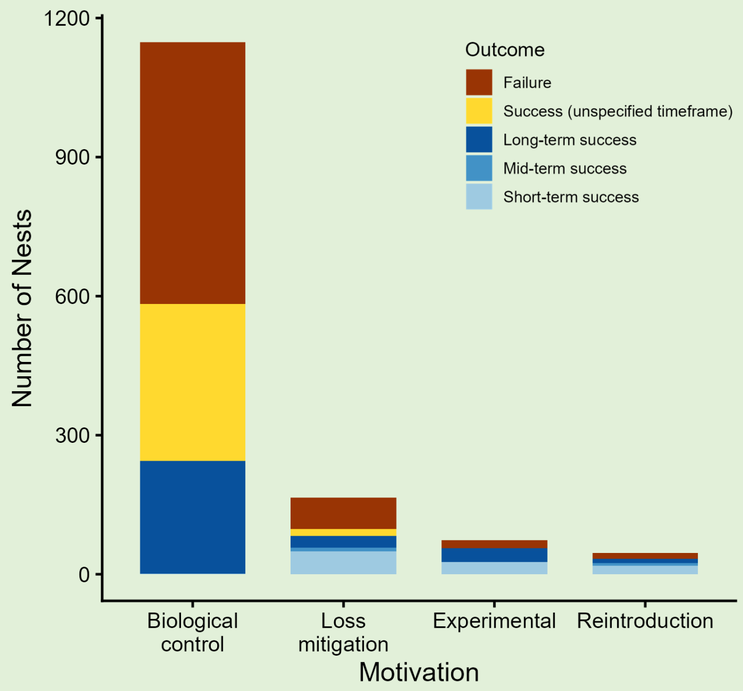
Outcome Classification:

Short-term success:	Survived 1 winter
Mid-term success:	Survived at least 2 winters
Long-term success:	Survived at least 4 winters

SUMMARY

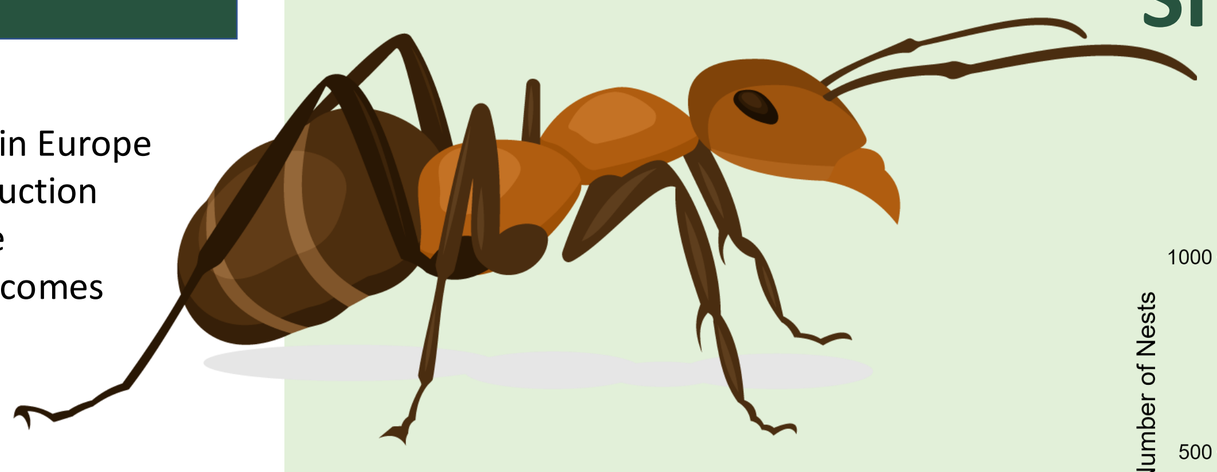
- Long-term outcomes are not often documented and sample sizes are small, making it challenging to draw conclusions
- Published reports may be biased towards successful outcomes
- Genetic data may be required to measure true colony success as nest extinction, budding and merging is common
- A **standardised approach** to **reporting** and **monitoring** is recommended to increase understanding of translocation success

1. Fürjes-Mikó, Á. et al. (2025). The Role of Red Wood Ants (Formica rufa Species Group) in Central European Forest Ecosystems—A Literature Review. In *Insects* (Vol. 16, Issue 5). Multidisciplinary Digital Publishing Institute (MDPI).
2. Van Buggenum, H. J. M. (2022). Presence after three decades of red wood ants (Formica rufa group; Hymenoptera: Formicidae) in forests in an agricultural landscape. *European Journal of Entomology*, *119*, 85–91.
3. Maeder, A. et al. (2016). Wood ant reproductive biology and social systems. *Wood ant ecology and conservation*, p.37.
4. Swan, K. D. et al. (2018). Projecting further increases in conservation translocations: A Canadian case study. *Biological Conservation*, *228*, 175–182.



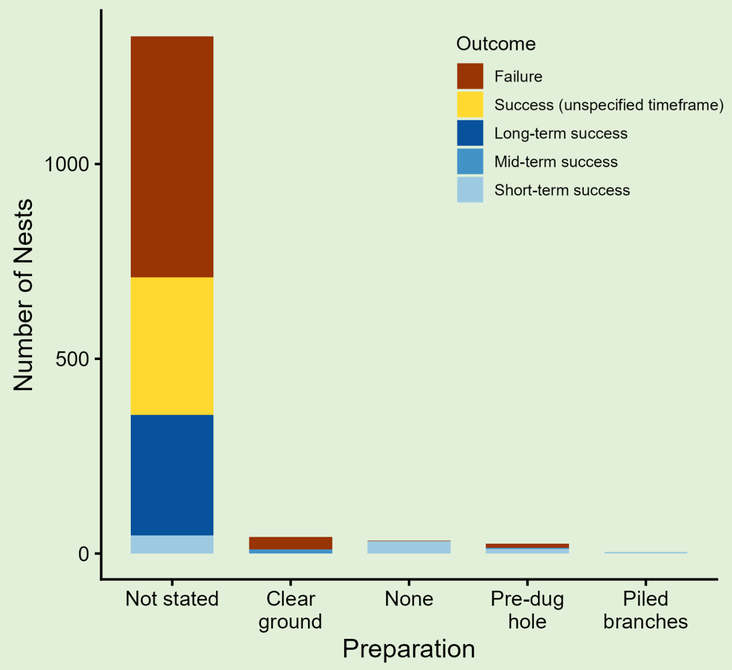
MOTIVATION

- Experimental translocations and reintroductions have a high proportion of successful outcomes (77% and 72%)
- High incentive for monitoring reintroductions where long-term success is the goal
- Lower incentive for monitoring 'rescue' translocations where the goal is primarily to move the nest out of harm's way
- Motivation can influence what method will be most appropriate

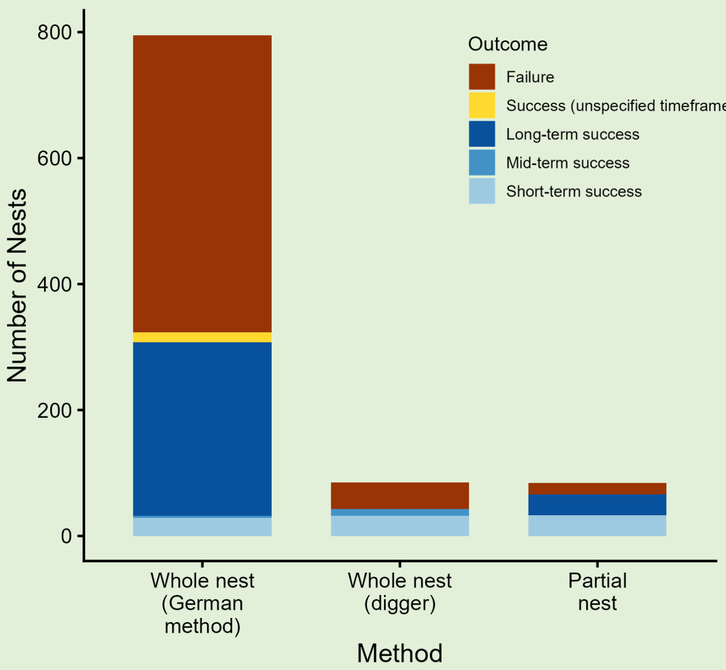


SITE PREPARATION

- Many studies do not report
- No clear evidence to support ground clearing or digging a hole, but can take significant effort to carry out
- Piled branches could help create nest structures
- Ants are likely to move away from a prepared site within the first year



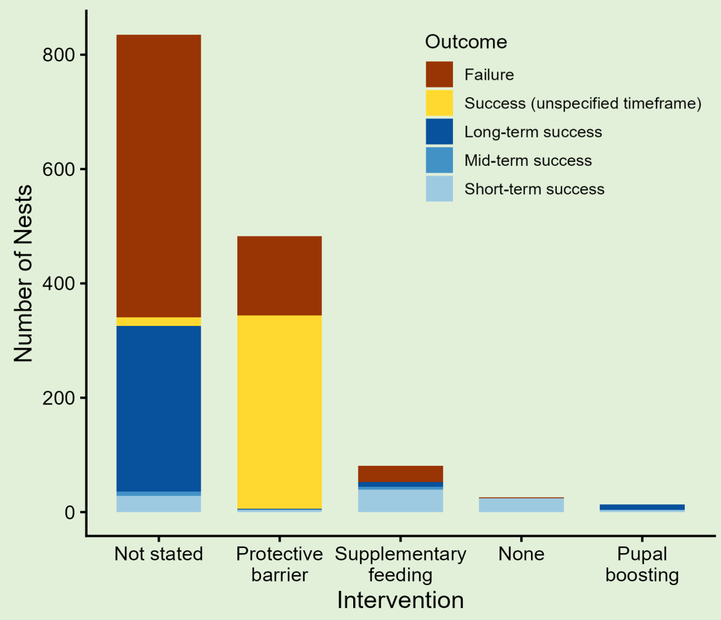
TRANSLOCATION METHOD



- Of known outcomes, 41% of translocations were successful
- 40% of 'German method' translocations succeeded
- 50% of digger method translocations succeeded, but no reported long-term success
- 79% of partial nest method were successful, but this may be reflective of increased investment in reintroduction translocations that use this method

INTERVENTION

- Many studies do not report
- Protective barriers may not be effective if ants are likely to move away from release site
- Supplementary feeding is common and may be important during initial weeks post-release whilst foraging routes become established
- Few studies supplement nests with additional pupae, but no reported failures



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