

Parasitism of *Hylobius abietis* in  
stumps and persistence of the  
applied entomopathogenic  
nematodes in peat soil



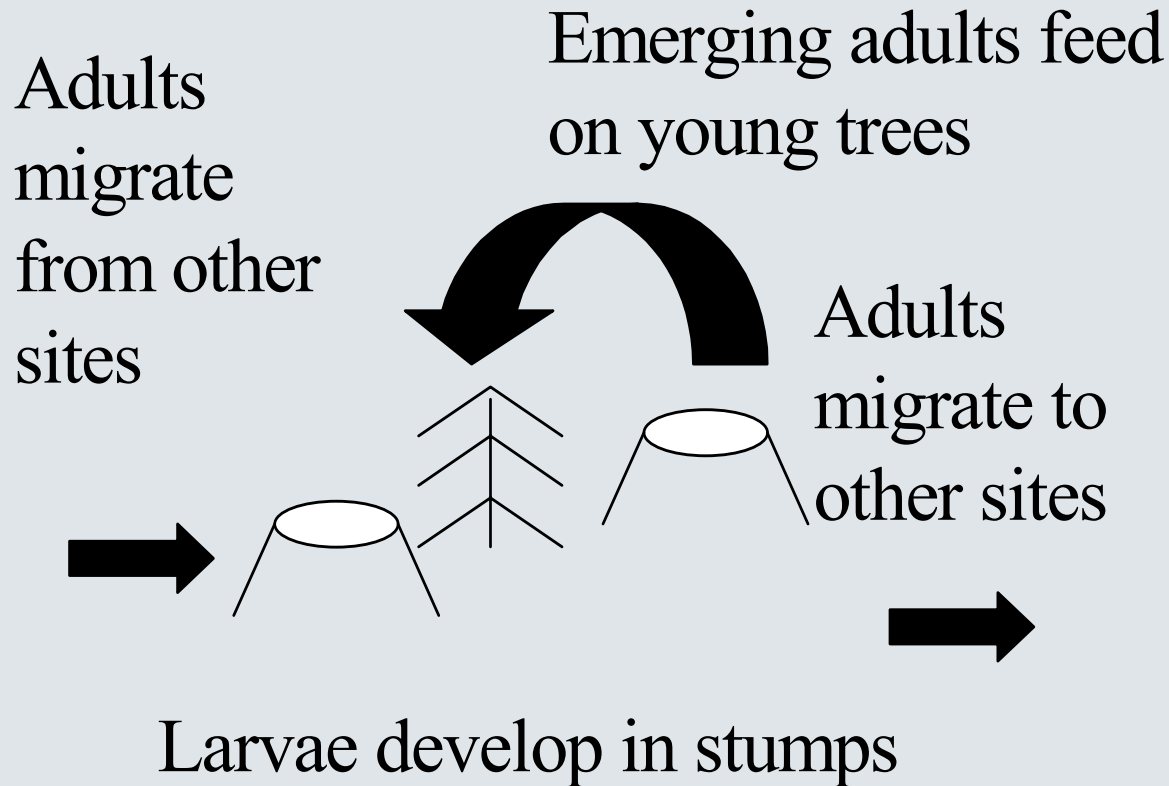
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**NUI Maynooth**

# The large pine weevil, *Hylobius abietis*



## Reforested Site



# Trial Sites



Previous crop Lodgepole pine (*Pinus contorta*) and Scots pine (*Pinus sylvestris*)

18 months post felling

Trials June 2001, 2002 & 2003

# Treatments



**5 nematode treatments & water control**

**3.5 million IJs per stump**

# Nematodes tested



**Commercial (non indigenous)**

*Steinernema feltiae*

*Steinernema carpocapsae*

*Heterorhabditis megidis*

**Lab produced (indigenous)**

*Steinernema feltiae*

*Heterorhabditis downesi*

# Assessments



**1 Parasitised insects**

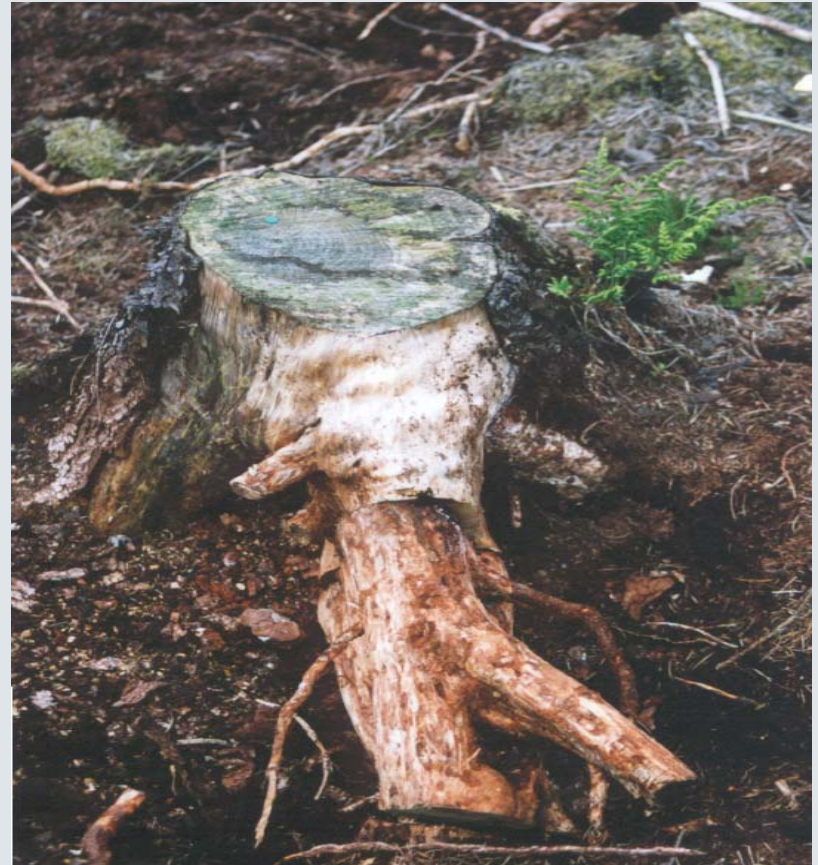
**2 Adult emergence**

**3 Persistence of nematodes**

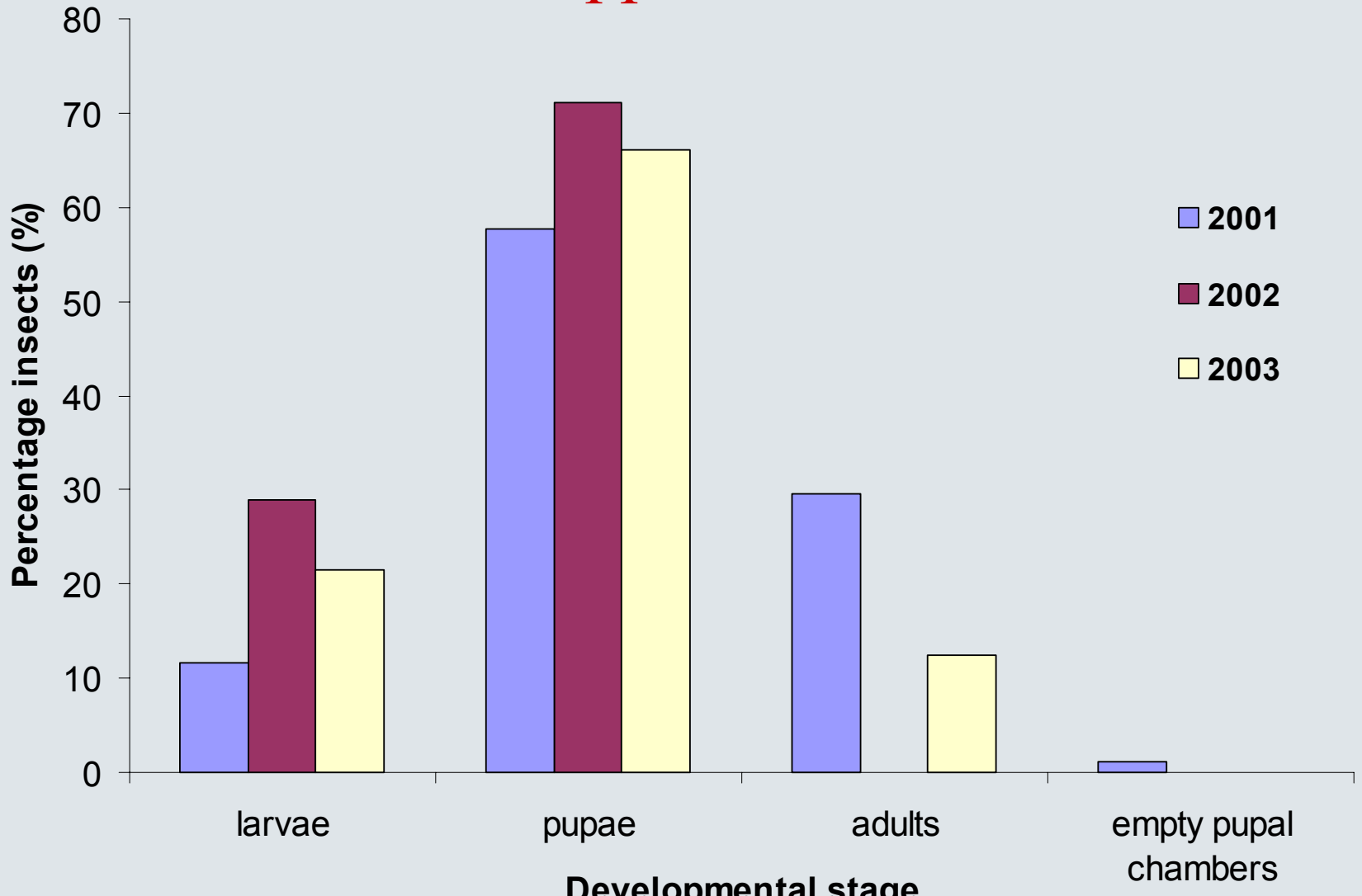
# Assessment of parasitised insect



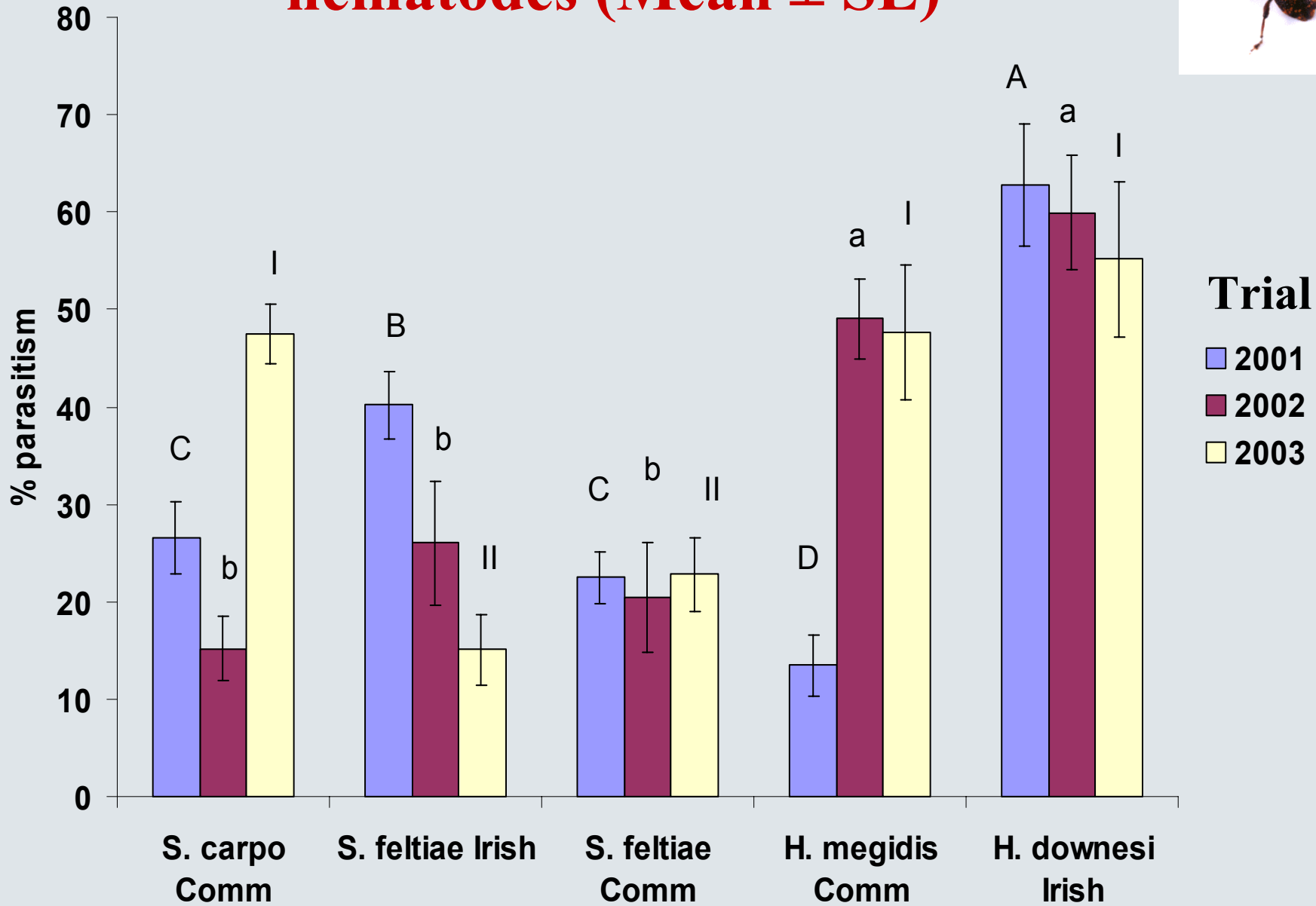
**Bark stripped  
from 1/4 stumps  
to a distance of  
40cm**



# Percentage of *H. abietis* at each developmental stage in pine 1/4 stumps 4 weeks after nematode application



# Percentage of *H. abietis* killed by nematodes (Mean $\pm$ SE)



# Nematode persistence



## At stump

4 points sampled after 1 month

2 points sampled after 12 & 24 months

## At perimeter

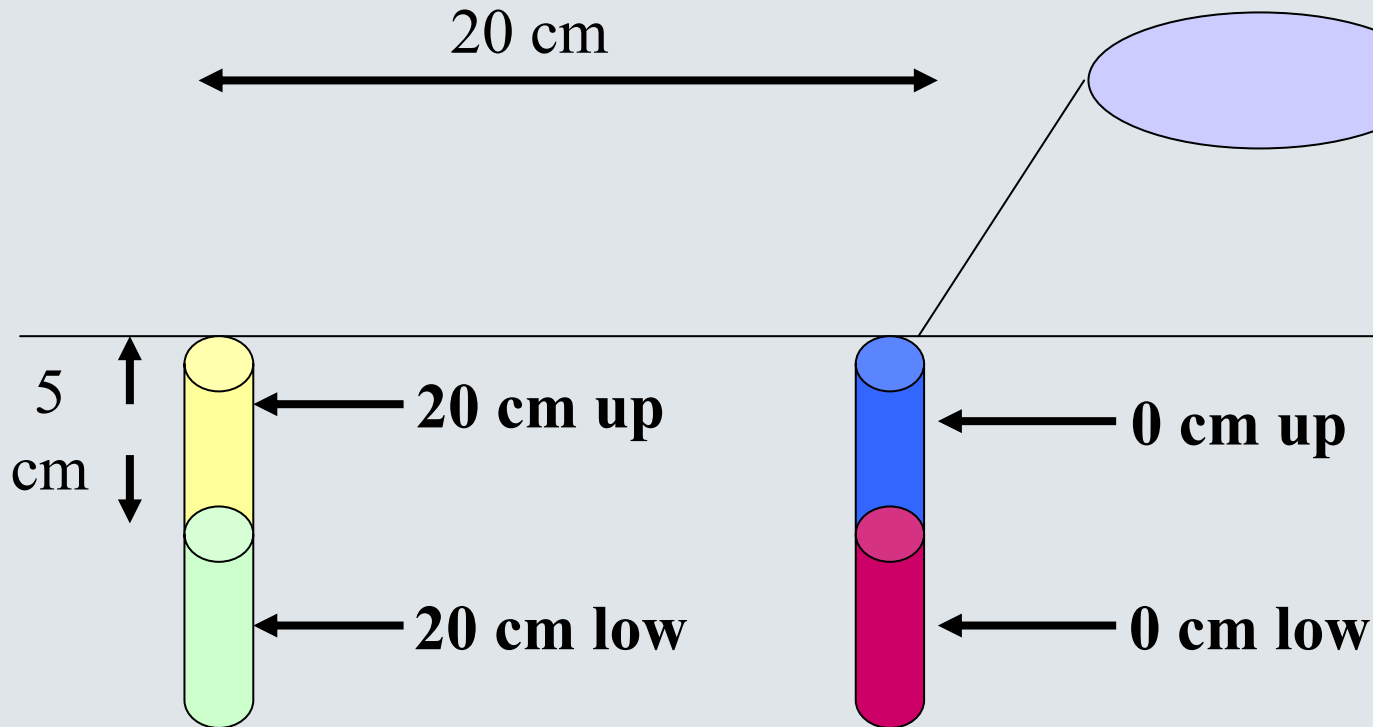
1, 5 and 10 m out from edge of treated site



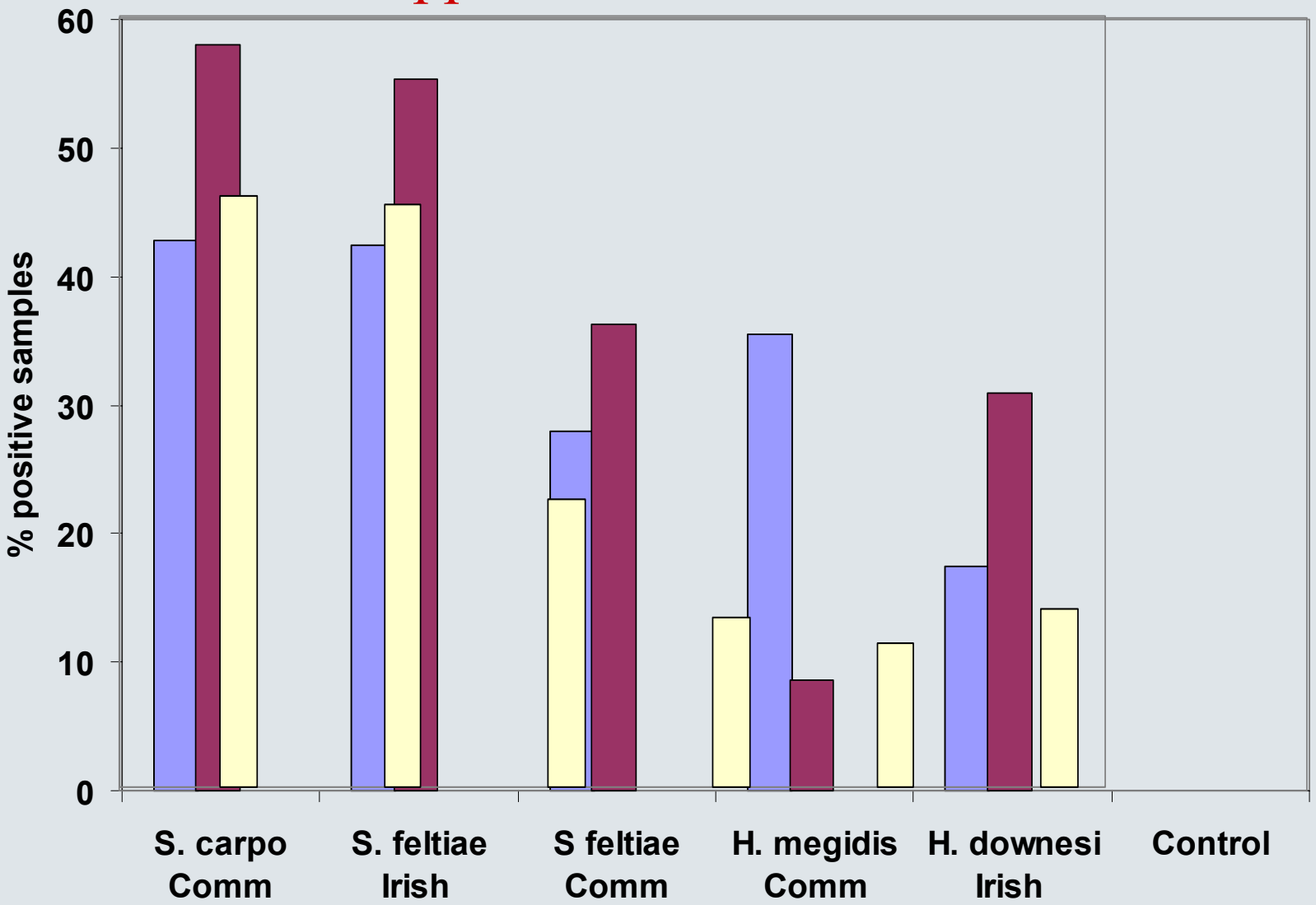
# Nematode persistence



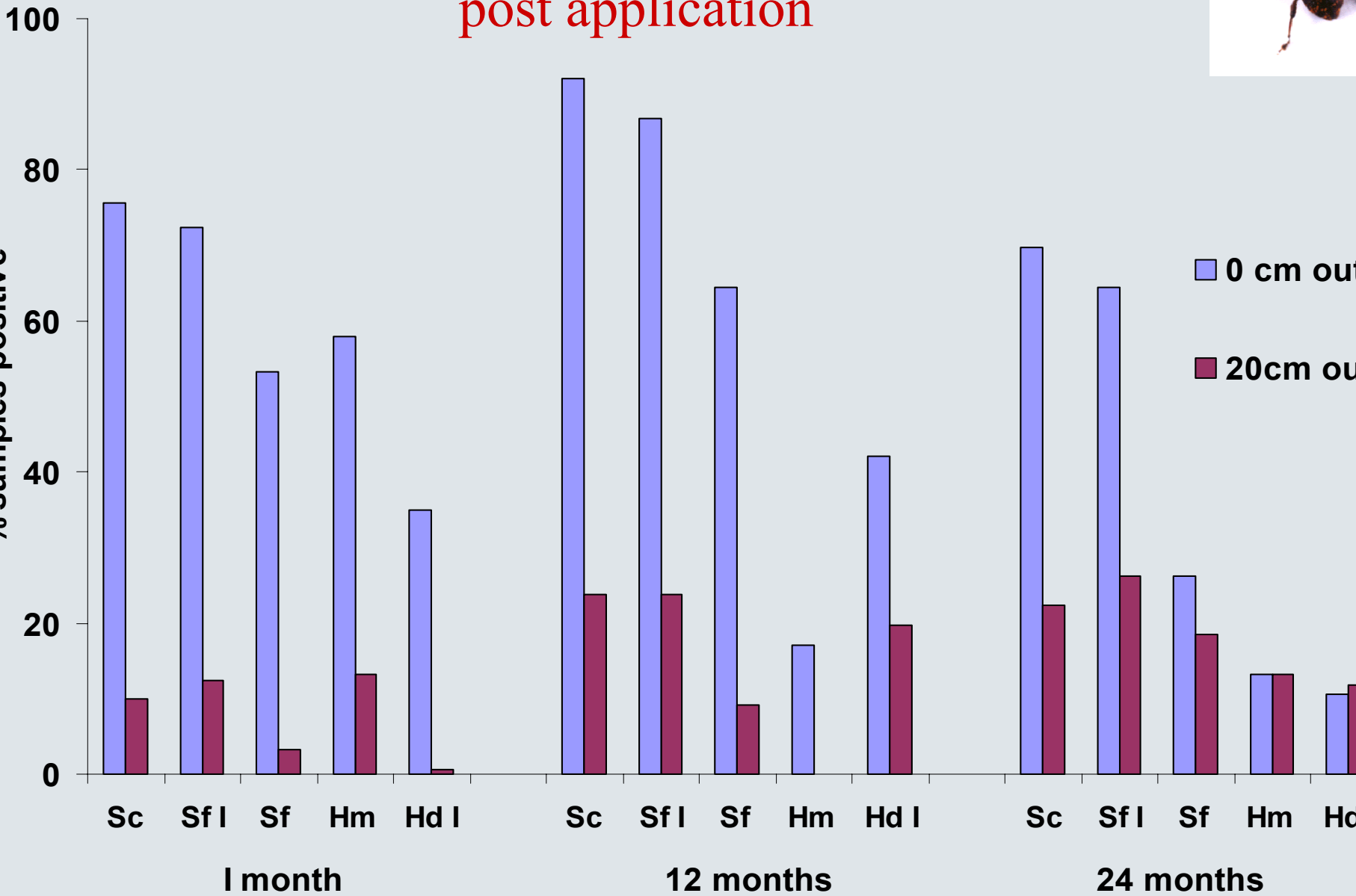
**At the stumps**



# Total percentage of soil samples from which nematodes were isolated 1, 12 and 24 months post application



# Percentage of soil samples from which nematodes were isolated 1, 12 and 24 months post application



# Nematode persistence



## At perimeter

No nematodes recovered 1, 5 and 10 m out from edge of treated site 1, 12 or 24 months after application

# Conclusions



**Highest percentage parasitism consistently in stumps treated with *H. downesi***

**Applied nematodes recycled through available hosts**

**Nematodes move out from point of application possibly as available hosts become diminished**

# What now?



- **Do nematodes continue to kill immature stages of the large pine weevil in the second and third season following application?**
- **How long do nematodes persist on reforested sites?**

# Would not have been possible without.....



- **Coillte**
- **The numerous ‘volunteers’  
who chiseled out the weevils  
during the stump assessment**

