



Digital supplementary material to

ŚLIPIŃSKI, P. & CERDÁ, X. 2022: Higher soil temperatures cause faster running and more efficient homing in the temperate thermophilous ant *Formica cinerea* (Hymenoptera: Formicidae). – Myrmecological News 32: 149-158.

The content of this digital supplementary material was subject to the same scientific editorial processing as the article it accompanies. However, the authors are responsible for copyediting and layout.

Fig. S1: Measuring workers' speed and distance.

Fig. S2: Relationship between mean speed and maximum speed of workers.

Fig. S3: Relationship between sand temperature and number of workers going out.

Two other supplementary material files are available as separate files (.xlsx format) from the journal's webpage:

Table S1: Raw data – Data of 196 video recorded slices/fragments analysed.

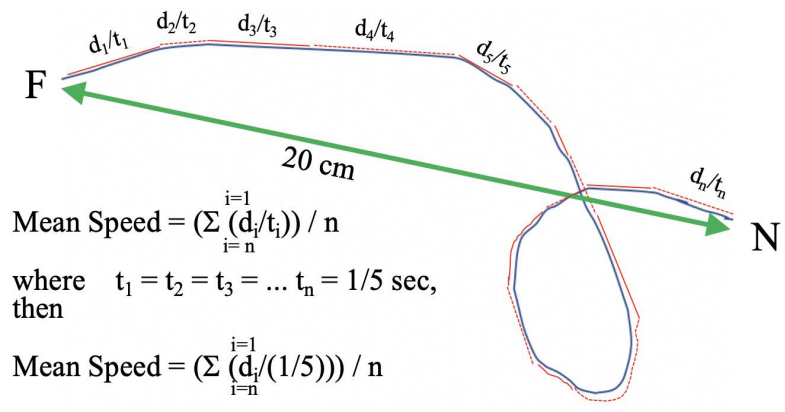
Table S2: Data of mean speed measurements, sand temperature and straightness.



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Fig. S1: Measuring workers' speed and distance. Schematic example of calculation of the variables from the video of the trajectories of a worker carrying a fly from the feeder (F) to the nest (N) in a time $5n$. The ant movement was manually tracked $\frac{1}{5}$ second by $\frac{1}{5}$ second ($t_1 = t_2 = t_n = \frac{1}{5}$ s) with Fiji software, calculating the distance travelled (d_i) in each time interval of $\frac{1}{5}$ second. Since time is always $\frac{1}{5}$ s, speed (in cm/s) is equal to $5 * \text{distance}$ and the maximum speed is 5 times the observed maximum distance travelled in $\frac{1}{5}$ s.



$$\text{Mean Speed} = \left(\sum_{i=1}^n (d_i / t_i) \right) / n$$

where $t_1 = t_2 = t_3 = \dots t_n = 1/5$ sec,
then

$$\text{Mean Speed} = \left(\sum_{i=1}^n (d_i / (1/5)) \right) / n$$

$$\text{Mean Speed} = \left(\sum_{i=1}^n (5d_i) \right) / n$$

Mean Speed (cm/s) = $5 \sum d_i / n$
where n is the recorded slices

Length = $\sum d_i$
Straightness = $20 / \text{Length}$

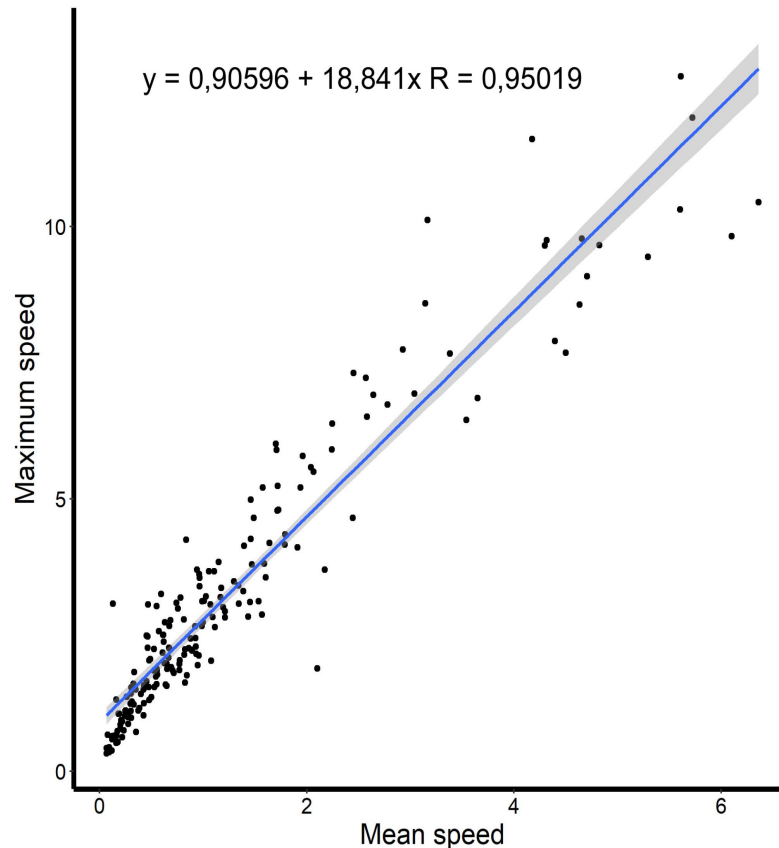
Maximum Speed = $\max_{(1, n)} [5d_i]$



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Fig. S2: Relationship between mean speed and maximum speed of workers (both in cm/s). In the publication we decided to use the mean speed of workers not the maximum speed, because both variables were highly correlated.





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Fig. S3: Relationship between sand temperature and number of workers going out of the inspected nest entrances (nest traffic data).

