The walking and sprint speeds of the Japanese ant *Formica japonica*

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BACKGROUND

There are very few studies of comparison between the walking and sprint speeds of the Japanese ant *Formica japonica*.

METHODS

Walking speed was measured for worker ants freely walking on the ground and calculated from the time they spent walking 1 m. Sprint speed was measured for worker ants driven away by one of the authors (A. Shiba) and calculated from the distance they ran 5 s. When one of the authors (A. Shiba) walked at a usual pace over 10 m and ran at full speed over 100 m, the ratio of these speeds were also measured and compared with that of ants.

RESULTS

The standard deviation of sprint speeds was larger than that of walking speeds, but the coefficients of variation were similar for both speeds (Table 1). The ratio of the average sprint speed to the average walking speed was 2.8 for *F. japonica* and 4.8 for Shiba. The frequency distribution of sprint speeds was more skewed to the right (Fig. 1).

CONCLUSIONS

The similar coefficients of variation suggest that whether ants walk or sprint, the relative variation in their speed is nearly constant. The smaller ratio of the average sprint speed to the average walking speed may suggest that ants usually walk at a faster pace than we do. The right-skewed distribution of sprint speeds may suggest that ants running slowly are relatively few in number.
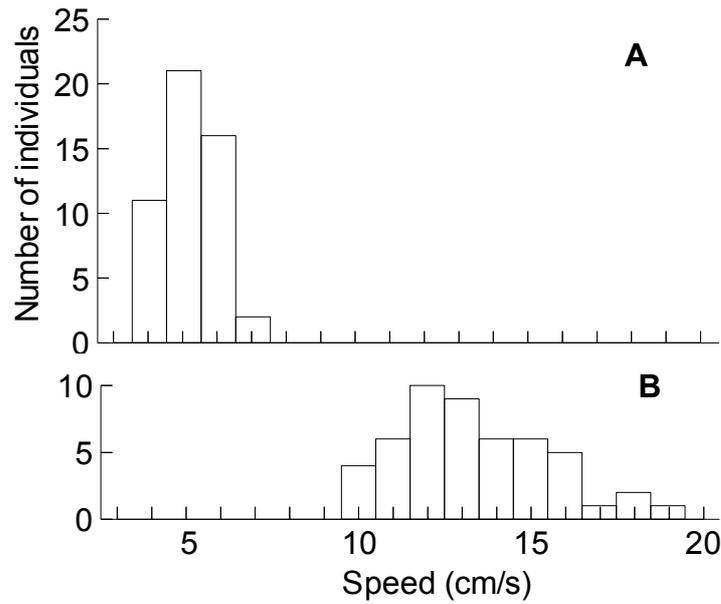
Fig. 1 Frequency distributions of walking (A) and sprint (B) speeds of the ants *Formica japonica*. For both experiments, *n* = 50.

Table 1 Basic statistics for walking and sprint speeds of the ants *Formica japonica*. SD is standard deviation and CV (= SD/Mean) is the coefficient of variation.

	Mean (cm/s)	SD	CV	n
Walk	5.1	0.87	0.17	50
Sprint	13.4	1.48	0.11	50

日本語要旨

　クロヤマアリの歩く速さ（通常速度）と走る速さ（逃走速度）が測定され，比較された。逃走速度のほうが分散は大きかったが，変動係数は両者ほぼ同じであった（Table 1）。これは，アリが歩いても走っても，速度の相対的なバラツキは，ほぼ一定であることを示唆する。逃走速度 の 通常速度 に対する比は，筆者の1人，柴の値より，アリの値のほうが小さかった。これは，人間と比較すれば，このアリがいつも早歩きしていることを示唆する。逃走速度 は，右に尾を引いた頻度分布を示した（Fig. 1）。これは，このアリが走る時，極端に遅い個体が相対的に少ないことを示唆する。

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