

The green leafhopper, *Cicadella viridis* (Hemiptera, Auchenorrhyncha, Cicadellidae), jumps with near-constant acceleration

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This Corrigendum relates to *J. Exp. Biol.* **216**, 1270-1279.

There is an error on p.1276, line 15. The value of the force that the two feet exchange with the ground was incorrectly stated as 2.89 N. The prefix 'm' was missing and the correct wording is '2.89 mN'.

In addition, on p.1271, lines 4–7, the sentence 'However, the instantaneous force applied to the ground during the extremely fast thrust phase of the jump has not been characterized in these small animals' was misleading and does not take into account previously published data by other researchers. This sentence should be replaced by the following paragraph and additional references.

'Detailed kinematics, kinetics and the ground reaction forces of jumping have been previously published: for seven species of leafhopper (Brackenbury, 1996; Burrows, 2007b; Burrows, 2008a), including *Cicadella viridis*; for other closely related hemipterans such as froghoppers (Burrows, 2006a; Burrows, 2009a; Sutton and Burrows, 2010), psyllids (Burrows, 2012), planthoppers (Burrows, 2009a; Burrows, 2010) and treehoppers (Burrows, 2013). Detailed kinematics during take-off are also available for several more species, such as: hemipteran shore bugs (Burrows, 2009b) and Peloridiidae (Burrows et al., 2007); stick insects (Burrows, 2008); othopterans such as locusts (Bennet-Clark, 1975; Queathem and Full, 1995; Sutton and Burrows, 2008; Cofer et al., 2010), bush crickets (Burrows and Morris, 2002), Proscopiidae (Burrows and Wolf, 2002) and pygmy mole crickets jumping from both land (Burrows and Picker, 2010) and water (Burrows and Sutton, 2012); and fleas (Siphonaptera) (Bennet-Clark and Lucey, 1967; Rothschild, 1972; Sutton and Burrows, 2011). In these studies, high-speed cameras were used at frame rates of up to 5000 frames s⁻¹ and enabled up to 20 pictures of the insect to be captured during the few milliseconds in which it accelerates. This time resolution is insufficient to allow the statistical analysis of the kinematics we describe and so we filmed the thrust phase of the green leafhopper, *Cicadella viridis*, at 8000 frames s⁻¹. This allowed us to generate up to 45 pictures of this insect as it accelerated during a jump.'

The authors apologize to their colleagues for incompletely crediting their previously published work. They assure readers that the data, results and conclusions of the article are not affected.

References

- Bennet-Clark, H. C. (1975). The energetics of the jump of the locust *Schistocerca gregaria*. *J. Exp. Biol.* **63**, 53-83.
- Brackenbury, J. (1996). Targetting and optomotor space in the leaf-hopper *Empoasca vitis* (Gothe) (Hemiptera: Cicadellidae). *J. Exp. Biol.* **199**, 731-740.
- Burrows, M. (2006a). Jumping performance of froghopper insects. *J. Exp. Biol.* **209**, 4607-4621.
- Burrows, M. (2008a). The effect of leg length on jumping performance of short- and long-legged leafhopper insects. *J. Exp. Biol.* **211**, 1317-1325.
- Burrows, M. (2008b). Jumping in a wingless stick insect, *Timema chumash* (Phasmatodea, Timematodea, Timematidae). *J. Exp. Biol.* **211**, 1021-1028.
- Burrows, M. (2009a). Jumping performance of planthoppers (Hemiptera, Issidae). *J. Exp. Biol.* **212**, 2844-2855.
- Burrows, M. (2009b). Jumping strategies and performance in shore bugs (Hemiptera, Heteroptera, Saldidae). *J. Exp. Biol.* **212**, 106-115.
- Burrows, M. (2010). Energy storage and synchronisation of hind leg movements during jumping in planthopper insects (Hemiptera, Issidae). *J. Exp. Biol.* **213**, 460-478.
- Burrows, M. (2012). Jumping mechanisms in jumping plant lice (Hemiptera, Sternorrhyncha, Psyllidae). *J. Exp. Biol.* **215**, 3612-3621.
- Burrows, M. (2013). Jumping mechanisms of treehopper insects (Hemiptera, Auchenorrhyncha, Membracidae). *J. Exp. Biol.* **216**, 788-799.
- Burrows, M. and Picker, M. D. (2010). Jumping mechanisms and performance of pygmy mole crickets (Orthoptera, Tridactylidae). *J. Exp. Biol.* **15**, 2386-2398.
- Burrows, M. and Sutton, G. P. (2012). Pygmy mole crickets jump from water. *Curr. Biol.* **22**, 990-991.
- Burrows, M. and Wolf, H. (2002). Jumping and kicking in the false stick insect *Prosarthria teretirostris*: kinematics and motor control. *J. Exp. Biol.* **205**, 1519-1530.
- Burrows, M., Hartung, V. and Hoch, H. (2007). Jumping behaviour in a Gondwanan relict insect (Hemiptera: Coleorrhyncha: Peloridiidae). *J. Exp. Biol.* **210**, 3311-3318.
- Cofer, D., Cymbalyuk, G., Heitler, W. J. and Edwards, D. H. (2010). Control of tumbling during the locust jump. *J. Exp. Biol.* **213**, 3378-3387.
- Queathem, E. J. and Full, R. J. (1995). Variation in jump force production within an instar of the grasshopper *Schistocerca americana*. *J. Zool.* **235**, 605-620.
- Rothschild, M., Schlein, Y., Parker, K. and Sternberg, S. (1972). Jump of the oriental rat flea *Xenopsylla cheopis* (Roths.). *Nature* **239**, 45-48.
- Sutton, G. P. and Burrows, M. (2008). The mechanics of elevation control in locust jumping. *J. Comp. Physiol. A* **194**, 557-563.
- Sutton, G. P. and Burrows, M. (2010). The mechanics of azimuth control in jumping by froghopper insects. *J. Exp. Biol.* **213**, 1406-1416.
- Sutton, G. P. and Burrows, M. (2011). Biomechanics of jumping in the flea. *J. Exp. Biol.* **214**, 836-847.