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Species composition of ground-dwelling ant communities in two banana plantations in Sri Lanka

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Abstract

Ants affect agro-ecosystems through the nutrient recycling, decomposition of organic matter, bioturbation and suppression of pests and diseases. Agricultural practices may affect the species composition of ground-dwelling ant communities. Ant assemblages of two banana plantations, one in Sinhapura, Polonnaruwa (B1) and the other in Mawathagama, Kurunegala (B2), were investigated on 7 September, 2008 and 30 September, 2009. Soil sifting (40), one-hour honey baiting (40) and hand collection (40) were conducted at 2.5 m intervals along five, 100-m transects set up at each plantation. Honey-baited pitfall trapping (20) for five hours was also conducted in each sampling area. Mean air (B1: 29.8± 0.44 °C; B2: 26.7± 0.75 °C) and soil temperature (B1: 30.6 ±0.89 °C; B2: 27.1 ±0.22 °C), soil moisture % (B1: 8.04± 5.2; B2: 17.0 ± 2.3) and soil pH (B1: 6.3±0.41; B2: 5.4±0.18) were also recorded. Collected worker ants were preserved in 70 % ethanol, sorted and identified under a low power stereo-microscope at suitable magnifications.

Thirteen genera and thirty one species in four subfamilies were recorded from the two plantations: Dolichoderinae - *Technomyrmex albipes* (Smith F.) (B1-3.5%), *Tapinoma indicum* Forel (B2 -0.2%); Formicinae - *Anoplolepis gracilipes* (Smith F.) (B2-76%), *Camponotus compressus* Fabricius (B2-0.2%), *Camponotus irritans* (Smith F.) (B2-0.2%), *Camponotus rufoglaucus* (Jerdon)

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(B1-2.5 %, B2-1.7 %), *Camponotus sericeus* (Fabricius) (B1-5.4 %), *Nylanderia yerburyi* (Forel) (B1-2.9 %, B2-5.3 %), *Paratrechina longicornis* (Latrielle) (B1-8.5 %), *Prenolepis* sp. 1 (B2-0.1 %), *Polyrhachis punctillata* Roger (B1-0.2 %); Myrmicinae - *Crematogaster biroi* Mayr (B2-0.6 %), *Crematogaster brunnea* Smith (B2-0.4 %), *Crematogaster dohrni* Mayr (B1-4.8 %), *Crematogaster rothneyi* Forel (B1-7 %, B2-0.2 %), *Lophomyrmex quadrispinosus* (Jerdon) (B1-5.8 %, B2-4.6 %), *Meranoplus bicolor* (Guerin-Meneville) (B2-8.5 %), *Monomorium destructor* (Jerdon) (B1-2.7 %), *M. floricola* (Jerdon) (B1-9.3 %, B2-0.2 %), *M. pharaonis* L. (B1-10 %), *Monomorium* sp. 2 (B1-0.2 %), *Monomorium* sp. 4 (B1-0.2%), *Pheidole* sp. 1 (B1-8.3 %), *Pheidole* sp. 3 (B1 – 0.6 %), *Pheidole* sp. 4 (B1-24.6 %), *Solenopsis geminata* (Fabricius) (B1 – 2.5 %), *Solenopsis* sp. 2 (B1 – 0.2 %), *Recurvidris recurvispinosa* (Forel) (B2 – 0.4 %), *Tetramorium bicarinatum* (Nylander) (B1 – 0.2 %), *T. walshi* (Forel) (B2 – 1.3 %); Ponerinae - *Anochetus graeffei* Mayr (B1 – 0.2 %). Higher proportions of *M. floricola*, *M. pharaonis*, *Pheidole* sp. 1 and *Pheidole* sp. 4 were observed at B1 (Chi-square: $p < 0.05$, $H' = 2.4$), whereas *A. gracilipes* and *M. bicolor* were observed in higher proportions at the B2 (Chi-square: $p < 0.05$, $H' = 0.98$). Current findings showed that species-rich ant fauna remains irrespective of the agricultural practices at the two plantations.

Key words: agro-ecosystem ants, tramp ant species, ground fauna, ant sampling

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