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The Impact of Landscape Characteristics on Biodiversity of Spider Assemblages in Okra Fields in West Africa

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Abstract

The objectives of this study were to investigate how ground dwelling spider abundance and family richness of okra agroecosystems change along an urbanisation gradient and also to investigate how changes in ground dwelling spider abundance and richness are affected by landscape elements. To achieve these objectives, 36 okra fields in and around Ouagadougou, Burkina Faso and Tamale, Ghana were selected, with 12 fields equally distributed in four areas (three fields per area) of the rural, peri-urban and urban zone. These fields were sampled for ground dwelling spiders using pitfall traps for two weeks. At the end of the study, the results show that spider assemblages in Ouagadougou and Tamale are unique and are also affected by climate. Ground dwelling spider abundance in the drier Ouagadougou was higher than in the wetter Tamale but Tamale is richer in ground dwelling spider families. Also, even though not significant, trends in Ouagadougou show that there is the increase of ground dwelling spider abundance from rural to urban zones while the opposite trend exists in Tamale. In both cities, the Gnaphosids decrease from rural to urban while the Lycosids increase from rural to urban. Ouagadougou ground dwelling spider assemblages are characterised by the dominance of the Gnaphosidae, the Lycosidae, the Salticidae and the Linyphiidae, while the ground dwelling spider assemblages in Tamale are characterised by the dominance of the Gnaphosidae, the Lycosidae, the Zodariidae, and the Thomisiidae. Future multi-seasonal studies should include multiple methods of sampling rather than only relying on pitfall trapping and on spider species determination.

Keywords: Aranae, biodiversity, urbanisation, West Africa