

Figs 218–224. Digital microscope photographs of the habitus of jumping spiders from Ndumo Game Reserve: (218) *Massagris natalensis* sp. n., male (photo T. Szűts); (219) *Menemerus zimbabwensis*, female; (220) *Nigorella plebeja*, male; (221, 222) *Pellenes bulawayoensis*, male, dorsal view (221), face of male (222); (223) *Phlegra arborea* sp. n., male; (224) *Pignus pongola* sp. n., male.

brown, with darker femora, bearing dark hairs and numerous spines; first femur and tibia with very long, dense hairs ventrally. Pedipalp with pronounced tubercle on venter of femur distally and smaller one on patella proximally (Fig. 209); tibial apophyses short, ventral one small, retrolateral one wide and blunt; tegulum ovoid, with small lobe on distal haematodocha, embolus sinuous (Fig. 208).

Material examined: 1♂ 26°52.464'S:32°16.050'E, subtropical bush, *A. nigrescens* woodland, beats, foliage, 8.xii.2000 (NCA 2008/2762).

Distribution: Species known only from South Africa.

Habitat and biology: This species is presumed to be arachnophagous, belonging to the Spartaeinae, and was collected from the foliage of dense thickets.

DISCUSSION

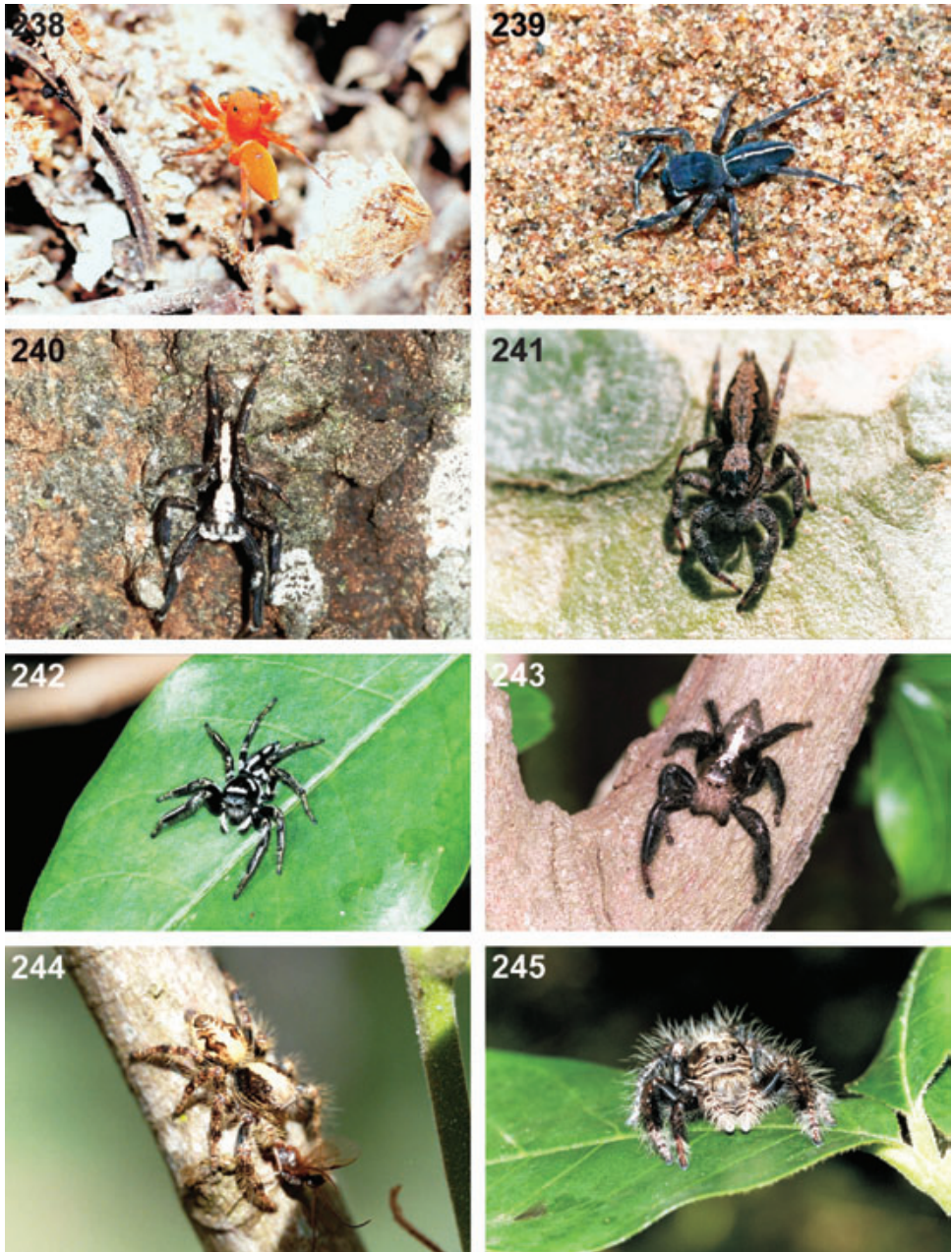
In total, 72 salticid species of 38 genera were found in the Ndumo Game Reserve. This is much more than in the Makalali Game Reserve, northern South Africa, where only 32 species were recorded, from a savannah area of similar size (100 km²) (Whitmore *et al.* 2002). This high species diversity of jumping spiders (and other arachnids – see Haddad *et al.* 2006) could be a result of the greater habitat heterogeneity of NGR (Haddad



Figs 225–237. Digital microscope photographs of the habitus of jumping spiders from Ndumo Game Reserve: (225) *Thyene bucculenta*, male; (226, 227) *Thyene coccineovittata*, male (226), female (227); (228, 229) *Thyene inflata*, male (228), female (229); (230, 231) *Thyene natali*, male (230), female (231); (232, 233) *Thyene ogdeni*, male (232), female (233); (234) *Thyene pulchra*, female; (235, 236) *Thyene semiargentea*, male (235), female (236); (237) *Thyenula magna* sp. n., male.

et al. 2006). The relatively large number of newly described species (14 plus an additional one determined only to the generic level) and those newly recorded for South Africa (20 spp.) demonstrate again our incomplete knowledge of the spider fauna of this part of Africa (see also Wesołowska 2006 and Wesołowska & Cumming 2008).

Within the context of broader Maputaland ecology, NGR is a unique protected area. Many of the habitats found here, particularly Mahemane thicket and *A. tortilis* savannah, are more characteristic of inland savannahs. Similarly, the wetland habitats (*A. xanthophloea* and *F. sycomorus* forests) are also not as common in other Maputaland reserves (e.g. Phinda Resource Reserve, Mkuzi Game Reserve) or are absent (Seleza Game Reserve, Tembe Elephant Park). In contrast, more typical Maputaland habitats (sand forest and mixed woodland, see Matthews *et al.* 2001) are very restricted in their extent within NGR. Consequently, these largely unique habitats and their associated vegetation



Figs 238–245. Jumping spiders from Ndumo Game Reserve in their natural habitats: (238) *Cyrbia boveyi*, male; (239) *Cyrbia lineata*, male; (240, 241) *Holcolaetis zuluensis*, male (240), female (241); (242) *Hyllus argyrotokus*, male; (243–245) *Hyllus treleaveni*, male (243), female (244), face of female (245).



Figs 246–251. Spiders from Ndumo Game Reserve in their natural habitats: (246) *Kima variabilis*, male; (247) *Mexcala elegans*, female; (248) *Portia schultzi*, female; (249) *Stenaelurillus natalensis*, male; (250) *Thyene coccineovittata*, female; (251) *Thyene ogdeni*, female.

structures are likely to accommodate at least several species uniquely adapted to these environments. As such, preservation of such habitats is important for conservation of the richness of the Maputaland fauna as a whole.

The composition of the salticid assemblage is generally similar to that found in other African areas. Four of the more speciose African genera are well represented, including *Evarcha* (8 spp.), *Thyene* (7 spp.), *Heliophanus* (6 spp.) and *Myrmarachne* (5 spp.). Worthy of note is the presence of five species of the Spartaeinae (genera *Cyrba*, *Portia* and *Veissella*) and three lyssomanine species (genera *Asemonea* and *Goleba*). Members of the latter subfamily are rarely recorded, as they are difficult to find (small, greenish, living among leaves). Only three species of the Aelurillinae (two *Phlegra* spp. and

Stenaelurillus) are found in the study area; this is surprising, as the subfamily is usually well represented in other parts of Africa (e.g. Wesołowska & Russell-Smith 2000; Wesołowska & Tomasiewicz 2008).

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REFERENCES

- BACELAR, A. 1953. Algumas Aranhas de Moçambique (Colecção de Rose Monteiro). *Archivos do Museu Bocage* **24**: 1–19.
- BENJAMIN, S.P. 2004. Taxonomic revision and phylogenetic hypothesis for the jumping spider subfamily Ballinae (Araneae: Salticidae). *Zoological Journal of the Linnean Society* **142**: 1–82.
- BERLAND, L. & MILLOT, J. 1941. Les araignées de l'Afrique occidentale française. I. Les Salticidés. *Mémoires du Muséum national d'Histoire naturelle* **12**: 297–424.
- CAPORIACCO, L. DI. 1939. Arachnida. In: Missione biologica nel paese dei Borana. Raccolte zoologiche. 3. Roma: Reale Accademia d'Italia, pp. 303–385.
- 1940. Aracnidi raccolte nella Reg. dei Laghi Etiopici della Fossa Galla. *Atti della Reale Accademia d'Italia* **11**: 767–873.
- 1941. Arachnida (esc. Acarina). *Missione Biologica Sagan-Omo, Zoologia* **12**: 1–159.
- 1947. Arachnida Africae Orientalis, a dominibus Kittenberger, Kovács et Bornemisza lecta, in Museo Nationali Hungarico servata. *Annales historico-naturales Musei nationalis hungarici* **40**: 97–257.
- CLARK, D.J. 1974. Notes on Simon's types of African Salticidae. *Bulletin of the British Arachnological Society* **3**: 11–27.
- CUSHING, P.E. 1997. Myrmecomorphy and myrmecophily in spiders: a review. *Florida Entomologist* **80**: 165–193.
- DE MOOR, P.P., POOLEY, E., NEVILLE, G. & BARICHEVY, J. 1977. The vegetation of Ndumo Game Reserve, Natal: A quantitative physiognomic survey. *Annals of the Natal Museum* **23**: 239–272.
- GERSTAECKER, R. 1873. Gliedertierfauna des Sansibargebietes. In: Von der Decken, C., ed., *Reisen in Ostafrika, Arachnoidea*. 3 (2). Leipzig.
- HADDAD, C.R. 2003. Fruit chafers (Coleoptera: Scarabaeidae: Cetoniini) of the Ndumo Game Reserve and Tembe Elephant Park, KwaZulu-Natal. *African Entomology* **11**: 130–133.
- HADDAD, C.R., DIPPENAAR-SCHOEMAN, A.S. & WESOŁOWSKA, W. 2006. A checklist of the non-acarine arachnids (Chelicerata: Arachnida) of the Ndumo Game Reserve, Maputaland, South Africa. *Koedoe* **49**: 1–22.
- HADDAD, C.R. & WESOŁOWSKA, W. 2006. Notes on taxonomy and biology of two *Stenaelurillus* species from southern Africa (Araneae: Salticidae). *Annales Zoologici* **56**: 575–586.
- INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE (ICZN) 1999. *International Code of Zoological Nomenclature*. 4th edition. London: International Trust for Zoological Nomenclature.
- JACKSON, R.R. 1995. Cues for web invasion and aggressive mimicry signalling in *Portia* (Araneae, Salticidae). *Journal of Zoology* **236**: 131–149.
- JACKSON, R.R. & HALLAS, S.E.A. 1986. Comparative biology of *Portia africana*, *P. albimana*, *P. fimbriata*, *P. labiata*, and *P. shultzi* [*sic!*], araneophagic, web-building jumping spiders (Araneae: Salticidae):

- utilisation of webs, predatory versatility, and intraspecific interactions. *New Zealand Journal of Zoology* **13**: 423–489.
- 1990. Evolutionary origins of displays used in aggressive mimicry by *Portia*, a web-invading araneophagic jumping spider (Araneae: Salticidae). *New Zealand Journal of Zoology* **17**: 7–23.
- JACKSON, R.R. & VAN OLPHEN, A. 1992. Prey-capture techniques and prey preferences of *Chrysilla*, *Natta* and *Siler*, ant-eating jumping spiders (Araneae, Salticidae) from Kenya and Sri Lanka. *Journal of Zoology* **227**: 163–170.
- KARSCH, F. 1878. Exotischaraneologisches. *Zeitschrift für die gesammten Naturwissenschaften* **51**: 323–333, 771–826.
- 1879. Westafrikanische Arachniden gesammelt von Herrn Stabsarzt Dr Falkenstein. *Zeitschrift für die gesammten Naturwissenschaften* **52**: 329–373.
- KOCH, L. 1875. *Aegyptische und abyssinische Arachniden gesammelt von Herrn C. Jickeli*. Nürnberg: Verlage von Bauer & Raspe, pp. 1–96.
- LAWRENCE, R.F. 1927. Contributions to a knowledge of the fauna of South-West Africa V. Arachnida. *Annals of the South African Museum* **25**: 1–75.
- 1937. A collection of Arachnida from Zululand. *Annals of the Natal Museum* **8**: 211–273.
- 1938. A collection of spiders from Natal and Zululand. *Annals of the Natal Museum* **8**: 455–524.
- 1942. A contribution to the araneid fauna of Natal and Zululand. *Annals of the South African Museum* **10**: 141–190.
- 1947. A collection of Arachnida made by Dr I. Trägårdh in Natal and Zululand (1904–05). *Göteborgs konglige vetenskaps- och vitterhets- samhällens Handlingar* **6**: 1–41.
- LESSERT, R. DE. 1925a. Araignées du Kilimandjaro et du Merou (suite). 5. Salticidae. *Revue suisse de Zoologie* **31**: 429–528.
- 1925b. Araignées du sud de l’Afrique (suite). *Revue suisse de Zoologie* **32**: 323–365.
- 1927. Araignées du Congo I. *Revue suisse de Zoologie* **34**: 405–475.
- 1933. Araignées d’Angola. (Resultats de la Mission scientifique suisse en Angola 1928–1929). *Revue suisse de Zoologie* **40**: 85–159.
- 1936. Araignées de l’Afrique orientale portugaise recueillies par M. P. Lesne at H.-B. Cott. *Revue suisse de Zoologie* **43**: 207–306.
- LOGUNOV, D.V. 1995. New and little known species of the jumping spiders from Central Asia (Araneae: Salticidae). *Zoosystematica rossica* **3**: 237–246.
- 2001. A redefinition of the genera *Bianor* Peckham & Peckham, 1885 and *Harmochirus* Simon, 1885, with the establishment of a new genus *Sibianor* gen. n. *Arthropoda selecta* **9**: 221–286.
- 2004. Taxonomic notes on a collection of jumping spiders from Sudan (Araneae, Salticidae). *Bulletin of the British Arachnological Society* **13**: 86–90.
- LOGUNOV, D.V. & AZARKINA, G.N. 2006. New species and records of *Phlegra* from Africa (Araneae, Salticidae). *Revue suisse de Zoologie* **113**: 727–746.
- LOGUNOV, D.V., MARUSIK, Y.M. & RAKOV, S.Y. 1999. A review of the genus *Pellenes* in the fauna of Central Asia and the Caucasus (Araneae, Salticidae). *Journal of Natural History* **33**: 89–148.
- MATTHEWS, W.S., VAN WYK, A.E., VAN ROOYEN, N. & BOTHA, G.A. 2001. Vegetation of the Tembe Elephant Park, Maputaland, South Africa. *South African Journal of Botany* **27**: 573–594.
- PECKHAM, G.W. & PECKHAM, E.G. 1892. Ant-like spiders of the family Attidae. *Occasional Papers of the Natural History Society of Wisconsin* **2**: 1–83.
- 1895. Spiders of the *Homalattus* group of the family Attidae. *Occasional Papers of the Natural History Society of Wisconsin* **2**: 159–178.
- 1902. Some new genera and species of Attidae from South Africa. *Psyche* **9**: 330–335.
- 1903. New species of the family Attidae from South Africa. *Transactions of the Wisconsin Academy of Sciences, Arts and Letters* **14**: 173–278.
- PICKARD-CAMBRIDGE, O. 1872. General list of the spiders of Palestine and Syria with descriptions of numerous new species and characters of two new genera. *Proceedings of the Zoological Society of London* **1872**: 212–354.
- PLATNICK, N.I. 2009. The World Spider Catalog, Version 9.5. New York: American Museum of Natural History. (<http://research.amnh.org/entomology/spiders/catalog>; accessed March 03, 2009)
- PRÓCHNIEWICZ, M. 1989. Über die Typen von Arten der Salticidae (Araneae) aus der äthiopischen Region im Zoologischen Museum Berlin. *Mitteilungen aus dem zoologischen Museum in Berlin* **65**: 207–228.
- PRÓSZYŃSKI, J. 1968. Redescriptions of type-species of genera of Salticidae (Araneida) IV–V. *Annales zoologici* **26**: 217–225.
- 1984. *The atlas of diagnostic figures of poorly known Salticidae* [Atlas rysunków diagnostycznych mniej znanych Salticidae] I. Siedlce: Zeszyty Naukowe Wyższej Szkoły Rolniczo-Pedagogicznej.

- 1987. *The atlas of diagnostic figures of poorly known Salticidae* [Atlas rysunków diagnostycznych mniej znanych Salticidae] 2. Siedlce: Zeszyty Naukowe Wyższej Szkoły Rolniczo-Pedagogicznej.
- 2003. Salticidae (Araneae) of the Lewant. *Annales zoologici* **53**: 1–180.
- RAMSAR. 2008. *The list of wetlands of international importance*. (<http://www.ramsar.org/sitelist.pdf>; accessed February 10, 2009)
- ROEWER, C.F. 1965. Die Lyssomanidae und Salticidae pluridentati der Aetiopischen Region (Araneae). *Annales du Musée royal de l'Afrique Centrale* **139**: 1–86.
- ROLLARD, C. & WESOŁOWSKA, W. 2002. Jumping spiders (Arachnida, Araneae, Salticidae) from the Nimba Mountains in Guinea. *Zoosystema* **24**: 283–307.
- SIMON, E. 1884. Arachnides recueillis à Khartoum (Soudan égyptien) par M. Vossion, appartenant au Museum de Paris. *Bulletin de la Société zoologique de France* **9**: 1–28.
- 1885. Matériaux pour servir à la faune arachnologiques de l'Asie méridionale. I. Arachnides recueillis à Wagra-Karooor pres Gundacul, district de Bellary par M. M. Chaper. II. Arachnides recueillis à Ramnad, district de Madura par M. l'abbé Fabre. *Bulletin de la Société zoologique de France* **10**: 1–39.
- 1886. Études arachnologiques. 18^e Mémoire. XXVI. Matériaux pour servir à la faune des arachnides du Sénégal. (Suivi d'une appendice intitulé: Descriptions de plusieurs espèces africaines nouvelles). *Annales de la Société entomologique de France* **5**: 345–396.
- 1900a. Descriptions d'arachnides nouveaux de la famille des Attidae. *Annales de la Société entomologique Belgique* **44**: 381–407.
- 1900b. Études arachnologiques. 30^e Mémoire. XLVII. Descriptions d'espèces nouvelles de la famille des Attidae. *Annales de la Société entomologique de France* **69**: 27–61.
- 1901a. Etudes arachnologiques. 31^e Mémoire XLVIII. Etude sur les *Heliophanus* d'Afrique et de Madagascar. *Annales de la Société entomologique de France* **70**: 52–61.
- 1901b. Descriptions d'Arachnides nouveaux de la famille des Salticidae (Attidae) (suite). *Annales de la Société entomologique de Belgique* **45**: 141–161.
- 1901c. *Histoire naturelle des araignées*. T. 2, fasc. 3. Paris: Encyclopédie Roret, pp. 381–668.
- 1902a. Descriptions d'Arachnides nouveaux. *Annales de la Société entomologique Belgique* **46**: 24–56, 363–406.
- 1902b. Etudes arachnologiques. 31^e Mémoire LI. Descriptions d'espèces nouvelles de la famille des Salticidae (suite). *Annales de la Société entomologique de France* **71**: 389–421.
- 1903a. *Histoire naturelle des araignées*. T. 2, fasc. 4. Paris: Encyclopédie Roret, pp. 669–1080.
- 1903b. Etudes arachnologiques. 33^e Mémoire. LII. Etude sur les arachnides recueillis par M. le Lieutenant de vaisseau Blaise dans l'estuaire du Gabon, pendant qu'il commandait la canonnière “la Cigogne” au Congo français (1894–1896). *Annales de la Société entomologique de France* **71**: 719–725.
- 1909. Arachnides recueillis par. L. Fea sur la côte occidentale d'Afrique. 2^e partie. *Annali del Museo Civico di Storia naturale* **43**: 335–449.
- 1910. Arachnoidea. Araneae. II. In: Schulze, L. *Zoologische und anthropologische Ergebnisse einer Forschungsreise im westlichen und zentralen Südafrika*. IV. *Denkschriften medicinisch-naturwissenschaftlichen Gesellschaft zu Jena* **16**: 175–218.
- STRAND, E. 1906. Diagnosen nordafrikanischer, hauptsächlich von Carlo Freiherr von Erlanger gesammelter Spinnen. *Zoologischer Anzeiger* **30**: 604–637, 655–690.
- 1908. Beiträge zur Spinnenfauna Madagaskars. *Nytt Magasin for Naturvidenskaberne* **46**: 97–227.
- 1909. Nordafrikanische, hauptsächlich von Carlo Freiherr von Erlanger gesammelte Oxyopiden und Salticiden. (Forts. u. Schluss.). *Societas entomologica* **23**: 155–188, **24**: 4–91.
- SZÚTS, T. 2000. An Afrotropical species, *Asemonea stella* (Araneae: Salticidae), found in Australia. *Folia entomologica hungarica* **61**: 61–63.
- WANLESS, F.R. 1978a. A revision of the genus *Marengo* (Araneae: Salticidae). *Bulletin of the British Museum of Natural History (Zoology)* **33**: 259–278.
- 1978b. A revision of the spider genera *Belippo* and *Myrmarachne* (Araneae: Salticidae) in the Ethiopian region. *Bulletin of the British Museum of Natural History (Zoology)* **33**: 1–139.
- 1978c. A revision of the genus *Portia* (Araneae: Salticidae). *Bulletin of the British Museum of Natural History (Zoology)* **34**: 83–124.
- 1980. A revision of the spider genera *Asemonea* and *Pandisus* (Araneae: Salticidae). *Bulletin of the British Museum of Natural History (Zoology)* **39**: 213–257.
- 1981. A revision of the genus *Hispo* (Araneae: Salticidae). *Bulletin of the British Museum of Natural History (Zoology)* **41**: 179–198.
- 1984a. A revision of the spider genus *Cyrba* (Araneae: Salticidae) with the description of a new presumptive pheromone dispersing organ. *Bulletin of the British Museum of Natural History (Zoology)* **47**: 445–481.

- 1984*b*. A review of the spider subfamily Spartheinae nom. n. (Araneae, Salticidae) with descriptions of six new genera. *Bulletin of the British Museum of Natural History (Zoology)* **46**: 135–205.
- 1985. A revision of the spider genera *Holcolaetis* and *Sonoita* (Araneae, Salticidae). *Bulletin of the British Museum of Natural History (Zoology)* **48**: 249–278.
- WANLESS, F.R. & CLARK, D.J. 1975. On a collection of spiders of the family Salticidae from the Ivory Coast (Araneae). *Revue de Zoologie Africaine* **89**: 273–296.
- WESOŁOWSKA, W. 1986. A revision of the genus *Heliophanus* C. L. Koch, 1833 (Aranei: Salticidae). *Annales zoologici* **40**: 1–254.
- 1992. A revision of the spider genus *Festucula* Somon, 1901 (Araneae, Salticidae). *Journal of African Zoology* **106**: 45–54.
- 1993*a*. Notes on the genus *Natta* Karsch, 1879. *Genus* **4**: 17–32.
- 1993*b*. On the genus *Tularosa* Peckham et Peckham, 1903 (Araneae: Salticidae). *Genus* **4**: 34–37.
- 1994. Notes on the African species of the genus *Harmochirus* Simon, 1885 (Aranei: Salticidae). *Genus* **5**: 197–207.
- 1999*a*. New and little known species of jumping spiders from Zimbabwe (Araneae: Salticidae). *Arnoldia Zimbabwe* **10**: 145–174.
- 1999*b*. A revision of the spider genus *Menemerus* in Africa (Araneae: Salticidae). *Genus* **10**: 251–353.
- 2003. New data on African *Heliophanus* species with descriptions of new species (Araneae: Salticidae). *Genus* **14**: 249–294.
- 2006*a*. A new species of *Cyrba* from South Africa (Araneae: Salticidae: Spartheinae). *Genus* **17**: 617–620.
- 2006*b*. Jumping spiders from the Brandberg massif in Namibia (Araneae: Salticidae). *African Entomology* **14**: 225–256.
- 2007. Taxonomic notes on the genus *Menemerus* in Africa (Araneae: Salticidae). *Genus* **18**: 517–527.
- 2008. Taxonomic notes on the genus *Hyllus* C. L. Koch, 1846 in Africa (Araneae: Salticidae). *Genus* **19**: 319–334.
- 2009. A revision of the spider genus *Mexcala* Peckham et Peckham, 1902 (Araneae: Salticidae). *Genus* **20**: 149–186.
- WESOŁOWSKA, W. & CUMMING, M.S. 2004. A redescription and natural history of *Hyllus treleaveni* Peckham et Peckham, 1902, the largest jumping spider in Africa (Araneae: Salticidae). *Annales zoologici* **54**: 579–586.
- 2008. Taxonomy and natural history of a species rich assemblage of jumping spiders (Araneae, Salticidae); a long-term study of a suburban site in Zimbabwe. *Annales zoologici* **58**: 167–230.
- WESOŁOWSKA, W. & JACKSON, R. 2003. *Evarcha culicivora* sp. n., a mosquito-eating jumping spider from East Africa (Araneae: Salticidae). *Annales zoologici* **53**: 335–338.
- WESOŁOWSKA, W. & RUSSELL-SMITH, A. 2000. Jumping spiders from Mkomazi Game Reserve in Tanzania (Araneae: Salticidae). *Tropical Zoology* **13**: 11–127.
- WESOŁOWSKA, W. & SZEREMETA, M. 2001. A revision of the ant-like salticid genera *Enoplomischus* Giltay, 1931, *Kima* Peckham et Peckham, 1902 and *Leptorchestes* Thorell, 1870 (Araneae: Salticidae). *Insect Systematics & Evolution* **32**: 217–240.
- WESOŁOWSKA, W. & TOMASIEWICZ, B. 2003. *Blaisea* Simon, 1902 synonymised with *Tusitala* Peckham et Peckham, 1902 (Araneae, Salticidae). *Annales zoologici* **53**: 719–722.
- 2008. New species and records of Ethiopian jumping spiders (Araneae, Salticidae). *Journal of Afrotropical Zoology* **4**: 3–59.
- WESOŁOWSKA, W. & VAN HARTEN, A. 1994. *The jumping spiders of Yemen*. Sana'a: Yemeni-German Plant Protection Project.
- 2007. Additions to the knowledge of jumping spiders (Araneae: Salticidae) of Yemen. *Fauna of Arabia* **23**: 189–269.
- WHITMORE, C., SLOTOW, R., CROUCH, T.E. & DIPPENAR-SCHOEMAN, A.S. 2002. Diversity of spiders (Araneae) in a savannah reserve, Northern Province, South Africa. *Journal of Arachnology* **30**: 344–356.