

ACKNOWLEDGMENTS

The following were extremely helpful in the loan of specimens: C. Besuchet (MHNG), V. Raineri (MCSN), S. Shaw (MCZC), D. Smith (USNM), R. Snelling (LACM), and P. Ward (U.C. Davis). For help and companionship in the field I thank Jim Crisp, Lisa Ellis, John Lattke, Mauricio Linares, Nalini Nadkarni, Dan Perlman, Phil Ward, and students from various OTS courses. I thank Nalini Nadkarni for the generous provision of lab space and supplies and Tracy McLellan for technical and intellectual help with the manuscript. Roy Snelling and Phil Ward have been a continual inspiration and guide, and greatly helped with the manuscript. This work was supported by National Geographic Society Grant 2900-84 to the author and NSF Biological Research Resources Program grant BSR-8800344 to LACM (Hogue).

LITERATURE CITED

- Andrade, J.C. de. 1984. Desempenho e distribuição de *Azteca alfari* (Formicidae) em *Cecropia lyratiloba* var. *nana* (Cecropiaceae) na restinga do Recreio dos Bandeirantes, Rio de Janeiro. *Atas da Sociedade de biologia do Rio de Janeiro* 24:11-15.
- Andrade, J.C. de, and J.P.P. Carauta. 1982. The *Cecropia*-*Azteca* association: a case of mutualism? *Biotropica* 14:15.
- Arnett, R.H., and G.A. Samuelson. 1986. *The Insect and Spider Collections of the World*. Gainesville, Florida: E.J. Brill/Flora & Fauna Publications, 220 pp.
- Bailey, I.W. 1922. Notes on neotropical ant-plants. I. *Cecropia angulata*, sp. nov. *Botanical Gazette* 74: 369-391.
- Benson, W.W. 1985. Amazon ant-plants. In *Amazonia*, eds. G.T. Prance and T.E. Lovejoy, 239-266. Oxford, England: Pergamon.
- Bequaert, J. 1922. Ants of the American Museum Congo expedition. IV. Ants in their diverse relations to the plant world. *Bulletin of the American Museum of Natural History* 45:333-583.
- Berg, C.C. 1978a. Cecropiaceae, a new family of Urticales. *Taxon* 27:39-44.
- . 1978b. Espécies de *Cecropia* da Amazônia brasileira. *Acta Amazônica* 8:149-182.
- Brêthes, J. 1914. Note sur quelques Dolichoderines argentines. *Anales del Museo Nacional de Historia Natural de Buenos Aires* 26:93-96.
- Buckley, R.C. 1982. Ant-plant interactions: a world review. In *Ant-Plant Interactions in Australia*, ed. R.C. Buckley, 111-162. The Hague: Dr. W. Junk.
- Eberhard, W.L. 1985. *Sexual Selection and Animal Genitalia*. Cambridge, Massachusetts: Harvard University Press.
- Emery, C. 1893. Studio monografico sul genere *Azteca* Forel. *Memorie della Royal Accademia delle Scienze dell'Istituto di Bologna* 5(3):119-152. 2 pls.
- . 1896. Alcune forme nuove del genere *Azteca* For. e note biologiche. *Bollettino dei Musei di Zoologia ed Anatomia comparata della R. Università di Torino* 11(230):1-7.
- Fiebrig, K. 1909. *Cecropia peltata* und ihr Verhältnis zu *Azteca alfari*, zu *Atta sexdens* und anderen Insekten, mit einer Notiz über Ameisen-Dornen bei *Acacia cavenia*. *Biologisches Zentralblatt* 29:1-16, 33-55, 65-77, 5 pls.
- Forel, A. 1878. Études myrmécologiques en 1878 (première partie) avec l'anatomie du gésier des fourmis. *Bulletin de la Société Vaudoise des Sciences naturelles* 15:337-392, 1 pl.
- . 1899. Formicidae. *Biologia Centrali-Americanica, Hymenoptera* 3:1-160.
- . 1904a. Miscellanea myrmécologiques. *Revue Suisse de Zoologie* 12:1-52.
- . 1904b. In und mit Pflanzen lebende Ameisen aus dem Amazonas-Gebiet und aus Peru, gesammelt von Herrn E. Ule. *Zoologische Jahrbücher. Abtheilung für Systematik, Geographie und Biologie der Thiere* 20:677-707.
- . 1906. Fourmis néotropiques nouvelles ou peu connues. *Annales de la Société Entomologique de Belgique* 50:225-249.
- . 1908. Ameisen aus São Paulo (Brasilien), Paraguay etc. gesammelt von Prof. Hern. v. Ihering, Dr. Lutz, Dr. Fiebrig, etc. *Verhandlungen der Zoologisch-botanischen Gesellschaft in Wien* 58:340-418.
- . 1909. Ameisen aus Guatemala usw., Paraguay und Argentinien (Hym.). *Deutsche entomologische Zeitschrift* 1909:239-269.
- . 1912. Formicides néotropiques. Part V. 4me sous-famille Dolichoderinae Forel. *Mémoires de la Société Entomologique de Belgique* 20:33-58.
- . 1914. Formicides d'Afrique et d'Amérique nouveaux ou peu connus. *Bulletin de la Société Vaudoise des Sciences naturelles* 50:211-288.
- Gallardo, A. 1916. Las hormigas de la República Argentina: subfamilia Dolichoderinas. *Anales del Museo Nacional de Historia Natural de Buenos Aires* 28:1-130.
- Harada, A.Y. 1982. Contribuição ao conhecimento do gênero *Azteca* Forel, 1878 (Hymenoptera: Formicidae) e aspectos da interação com plantas do gênero *Cecropia* Loefling, 1758. Thesis, Instituto Nacional de Pesquisas da Amazônia e Fundação Universidade do Amazonas, Manaus, Amazonas, Brasil.
- Harris, R.A. 1979. *A Glossary of Surface Sculpturing*. Occasional Papers in Entomology, No. 28, 31 pp. California Department of Food and Agriculture.
- Hillis, D.M. 1988. Systematics of the *Rana pipiens* complex: puzzle and paradigm. *Annual Review of Ecology and Systematics* 19:39-63.
- Hölldobler, B., and H. Engel-Siegel. 1982. Tergal and sternal glands in male ants. *Psyche* 89:113-132.
- Janzen, D.H. 1969. Allelopathy by myrmecophytes: the ant *Azteca* as an allelopathic agent of *Cecropia*. *Ecology* 50:147-153.
- . 1973. Dissolution of mutualism between *Cecropia* and its *Azteca* ants. *Biotropica* 5:15-28.
- Kempf, W.W. 1972. Catálogo abreviado das formigas da Região Neotropical. *Studia Entomologica* 15:3-344.
- Longino, J. T. 1989. Geographic variation and community structure in an ant-plant mutualism: *Azteca* and *Cecropia* in Costa Rica. *Biotropica* 21:126-132.
- Ross, H. 1909. Pflanzen und Ameisen im tropischen Mexiko. *Naturwissenschaftlichen Wochenschrift* 8: 822-830.
- Snodgrass, R. E. 1941. *The Male Genitalia of Hymenoptera*. Smithsonian Miscellaneous Collections, vol. 99, no. 14, 86 pp., 33 pls. Smithsonian Institution.
- Trager, J. C. 1984. A revision of the genus *Paratrechina* (Hymenoptera: Formicidae) of the continental United States. *Sociobiology* 9:51-162.
- Ward, P.S. 1985. The Nearctic species of the genus *Pseudomyrmex* (Hymenoptera: Formicidae). *Quaestiones Entomologicae* 21:209-246.