

An Inordinate Fondness for Things that Sting

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*That so few now dare to be eccentric marks
the chief danger of the time* (John Stuart Mill)

This festschrift is in honor of an outstanding hymenopterist, Roy R. Snelling (1934–2008). Trager (2008) has provided a fine tribute to Roy's character and contributions. Roy was familiar to many of us not only for his publications but in his role as the keeper of the Hymenoptera collections at the Los Angeles County Museum of Natural History (LACM). In this introduction we give a brief biography and argue that this career so highly productive and important to generations of students could not readily happen in today's science.

Roy was born in 1934 in Turlock, California, USA, a small farming town in the heart of the San Joaquin Valley. In the 1930s Turlock was cited by *Ripley's Believe It or Not* as having the most churches per capita in the country. Since Roy was constitutionally froward, perhaps this explains his fervent atheism and vocal disapproval of religion. Somehow during those formative years in Turlock he developed an interest in insects. By the time he was 18 he was corresponding with J. C. Bequaert and R. M. Bohart and published his first paper, on mixed-species aggregations of *Polistes* queens.

His CV lists as his first job that of "Field Entomologist" with an agricultural company in Mexicali, Mexico, from 1953–1954. During this time his next four publications appear, and already he is showing both a solid focus on aculeates and a catholic approach within this group; two papers are on vespids, one is on a tiphiid, and the other is on an anthophorid. Around this

time he attended a year and a half at Modesto Junior College, at which point he ended his formal higher education. One of the most notable hymenopterists of our time was self educated, without a college degree.

He underwent two years of military service from 1957–1959, at Fort Benning, Georgia. It is unclear whether he enlisted or was drafted, but he never spoke kindly of his time in Georgia. Even so, his time there was not entirely bereft of entomology; he later published a paper on a ripiphorid host from Georgia. He returned to California and obtained work in entomology as a Survey Entomologist and then Technician for the Bureau of Entomology, California Department of Agriculture. His time in the military and then with the California Department of Agriculture marked a five-year hiatus in his publication record. In 1962 he published another bee paper, around the time that he was offered two positions, one as a Curatorial Assistant at the LACM and a similar position at the Bernice P. Bishop Museum in Hawaii. The Bishop Museum job was considered more prestigious and was certainly in a more glamorous locale, but against his mentors' advice Roy chose the LACM. He preferred California for biotic and probably for cultural reasons. The rest of his career was at the LACM, where he consistently published taxonomy until his death in 2008, becoming a world authority on ants and bees.

Roy was married twice, with two sons and a daughter from his first marriage. His second wife, Ruth Ann DeNicola, participated in his scientific work by providing



Fig. 1. Roy in the ant aisle of the Los Angeles County Museum of Natural History, November 2008. Photo by J.T. Longino.

illustrations for a number of his publications, most notably his revision of *Myrmecocystus*. By the 1980's he was a bachelor again and remained so for the rest of his life. Roy is also survived by a brother. His son Gordon (one of the authors) also developed an interest in myrmecology, working on New World army ants and managing the myrmecology newsletter *Notes from Underground*.

Roy's mother was Cherokee. He deeply identified with his Native American heritage, which was a great source of pleasure and pride. He surrounded himself with early photos of Native Americans and numerous cultural emblems and liked to learn about indigenous groups wherever he traveled. He also incorporated indigenous names into many of the taxa he described, yielding such tongue-twisters to the anglocentric as *Myrmecocystus ne-*

quazcatl, *Centris xochipillii*, and *Cephalotes kukulcan*. And he liked to look the part of an aboriginal son of the continent. Roy was an imposing man, often with a stern countenance, and he wore his hair in long braids. Many anecdotes revolve around first meetings, when the man who got off the plane or walked through the door caused jaws to drop and certainly did not match notions of what an ant taxonomist named Snelling would look like.

The dynamics at LACM were interesting. Roy began as a Curatorial Assistant, an entry-level civil service job, and remained at that level for 23 years. He became Collection Manager for his last six years before retirement. After retirement in 1993, right up until his death, he continued to work regularly at the museum. During his career at LACM he aggressively acquired collections, established an enviable publi-

cation record, and built an international reputation that helped put LACM entomology on the map. It is not clear whether his limited advancement at the museum was due to his lack of a PhD, personal choice, poor interactions with administrators, or some combination of these. He certainly had strong opinions and populist leanings. The security personnel and the cleaning staff all knew Roy and always exchanged friendly greetings, but relations with administrators were uniformly frosty. Still, administrations come and go, and Roy always outlasted them. Ultimately, Roy's choices must be seen as shrewd; by eschewing traditional notions of career advancement he was able to focus almost entirely on research, doing the work he loved.

Ants were not Roy's first love, and he only began paying attention to them as part of his work with the Department of Agriculture. His first ant publication was on the fire ants of the United States, motivated by the need to differentiate the imported fire ant from the native species. Even after this his work on ants was sparse for a long time, so that during the 1960s he published mostly on bees. It is clear, however, that his collecting and curating of ants was accelerating during this time. William Steel Creighton became an important mentor and colleague. When Creighton died in 1973, Roy arranged to acquire his collection for the LACM, as he would later do with the collections of William F. Buren and George & Jeanette Wheeler.

Roy's scientific publication list (see below) comprises 171 contributions. In these, he described 13 genus-group taxa and 20 species of bees, one genus and 78 species of ants, and one genus and four species-group taxa of social wasps, among others. His interests were eclectic, and he also published on Evaniidae, Tiphidae, Eurytomidae, Pompilidae, Bethyidae, and even a behavioral note on a thomisid spider.

The "always question authority" attitude that is central to the scientific world-

view was strong in Roy and extended to all aspects of his life. He despised fraud and sophistry and exposed it whenever possible. Chris Starr provided the following anecdote regarding one of Roy's favorite targets, Carlos Castaneda. Castaneda was an "anthropologist" who became famous in the late 1960s by describing training he supposedly received from a Yaqui shaman, Don Juan Matús. The Yaqui are a Native American people from the Sonoran region and a group with whom Roy was quite familiar. Even before Castaneda came generally to be regarded a fake (and Don Juan as a fictional character), Roy demonstrated this to his own satisfaction at one of Castaneda's public lectures. Rising in the question period, Roy asked "What is your name?" in Yaqui. Castaneda had no idea what he had said. Roy's reasoning: Castaneda cannot speak Yaqui; no Yaqui medicine man would stoop to speaking Spanish; therefore Castaneda had no way of communicating with Don Juan, and Don Juan did not exist. QED. For this and other reasons, Roy's conclusion is now generally accepted among anthropologists.

Roy was a natural historian, a collector, and an *identifier*. For many ecologists from the 1970s onward he was the "go to" guy for ant identifications. It is quite an irony that Roy, in so many ways a maverick, was also a great collaborator. He played particularly important roles in the work of Murray Blum and Tappey Jones (chemical ecology), Doyle McKey (ant-plant associations) and Dinah Davidson (ant community ecology, ant-plant associations). In an era when systematics was beginning to rise from the ashes, professional taxonomists began (and continue) to bristle at any hint of being "ecologists' handmaidens." This was a healthy development for systematics and one cannot denigrate systematists for focusing on revisionary work, but Roy's unique position allowed him to play a very important role. He encouraged countless young students of ants by being willing to identify samples that arrived in a hodge-

podge of screwcap vials, babyfood jars, and cardboard boxes, all filled with little bits of paper with pencil-scrawled code numbers from ecological studies. Where an average taxonomist would have responded very politely "Your work sounds really interesting; I really wish I could help you, but I just have so many other obligations right now...", Roy, after some harsh words for ecologists and their crummy samples, would say "Yeah, send 'em to me." On the other hand, he had no patience with medical doctors and others who thought he should identify their material gratis, even though they could well afford to pay.

One result of Roy's willingness to identify samples was that he greatly increased the strength and geographic coverage of the LACM ant collection. Another, perhaps more important, result was that he acted as a bridge between ecology and taxonomy. He introduced many ecologists to the importance and the techniques of taxonomy by turning their disorderly boxes of vials into ranks of properly mounted, labeled, and identified specimens in a leading museum collection. He opened their eyes to the wonderful diversity and form that underpinned their hypotheses. Students were sometimes chagrined to find that their "species A" was actually a genus with many species in the ecological community they were studying. Other times they were intrigued and fascinated by that diversity. Some even crossed the bridge that Roy formed, finding that there was an exciting sphere of academic activity and inquiry on the other side.

One of us (JTL) was one of those ecologists whose proclivities drew him across the bridge, leading to an extended period of work with Roy in the mid 1980s. LACM was awarded an NSF collections-improvement grant, primarily to integrate the Buren collection and Daniel H. Janzen's massive collection of Central America acacia ants. At the time, Longino was an under-employed tropical biologist based at



Fig. 2. Roy interacting with local kids on a collecting trip to Kenya, February 2000. Photographer unknown.

the University of California, Santa Barbara. He took a half-time position with the LACM for two years, commuting from Santa Barbara and working two (long) days a week in the museum. During that time he became intimately familiar with Roy's routine: 7 a.m., arrive, boil water in a scale-incrusted coffee pot, make execrable instant coffee, get to work; 10 a.m., coffee and a donut at the museum coffee shop downstairs (you could set your watch by the "Well, young fellah, time for a coffee break"); continue to feed the starlings donut crumbs and chat about museum politics, while the driven acolyte was eager to get back upstairs to work; after another period of work, lunch (Roy usually had something sausagey); 3 p.m., another coffee break; 4 p.m., depart for his Long Beach apartment. During this time Roy drove an MG. One of the more exhilarating experiences was to drive with Roy to his apartment, screaming down LA freeways, inches above the pavement, open top, engine roaring, braids flying, darting through canyons of semi-truck trailers.

Roy's position at the LACM allowed a highly talented, self-educated taxonomist to make major contributions to science, to mentor and encourage students of nature, and to attract students to biological systematics. Roy was not compelled to turn his work space into a chemistry lab for DNA sequencing, to become the world expert on a single monophyletic taxon, or

to emphasize statistical analysis of macroecological patterns. He had the liberty to remain a generalized collector and identifier, and as a result was able to benefit a broad range of scientists. How many similar positions are available today?

ACKNOWLEDGMENTS

Jim Cane and Norm Johnson (Hymenoptera Name Server) helped with Roy's publication list. Justin Schmidt and Chris Starr were great sources and motivators.

LITERATURE CITED

Trager, J. 2008. Obituary: In memoriam – Roy R. Snelling (30 September 1934–21 April 2008). *Myrmecological News* 11: 227–229.

PUBLICATIONS OF ROY R. SNELLING

- Snelling, R. 1952. Notes on nesting and hibernation of *Polistes* (Hymenoptera: Vespidae). *Pan-Pacific Entomologist* 28: 177.
- Snelling, R. R. 1953. Notes on the nesting and hibernation of the wasp, *Mischocyttarus flavitarsis* (De Saussure) (Hymenoptera: Vespidae). *Journal of the Kansas Entomological Society* 26: 143–145.
- . 1954. Wasps of the genus *Polistes* in California and Arizona (Hymenoptera: Vespidae). *Journal of the Kansas Entomological Society* 27: 151–155.
- . 1954. The host of *Myrmosula rutilans* (Blake) (Hymenoptera: Tiphidae). *Pan-Pacific Entomologist* 30: 124.
- . 1954. Records of *Exomalopsis sidae* in California and Baja California (Hymenoptera: Anthophoridae). *Pan-Pacific Entomologist* 30: 145.
- . 1955. Notes on some *Polistes* in the American Museum of Natural History, with descriptions of new North American subspecies (Hymenoptera, Vespidae). *American Museum Novitates* (1701): 1–9.
- . 1956. Bees of the genus *Centris* in California (Hymenoptera: Anthophoridae). *Pan-Pacific Entomologist* 32: 1–8.
- . 1962. Notes on the distribution of some southwestern megachilids, with descriptions of three new forms (Hymenoptera: Megachilidae). *Pan-Pacific Entomologist* 38: 225–234.
- . 1963. The United States species of “fire ants” of the genus *Solenopsis*, subgenus *Solenopsis* Westwood, with synonymy of *Solenopsis aurea* Wheeler (Hymenoptera: Formicidae). *California Department of Agriculture, Bureau of Entomology, Occasional Papers* (3): 1–15.
- . 1963. The evaniid wasps of California (Hymenoptera: Evaniidae). *Pan-Pacific Entomologist* 39: 107–108.
- . 1963. A host of *Macrosaigon cruentum* (Germar) in Georgia (Coleoptera: Rhipiphoridae). *Pan-Pacific Entomologist* 39: 87–88.
- . 1965. Studies on California ants. 2. *Myrmecina californica* M. R. Smith (Hymenoptera; Formicidae). *Bulletin of the Southern California Academy of Sciences* 64: 101–105.
- . 1965. Studies on California ants. 1. *Leptothorax hirticornis* Emery, a new host and descriptions of the female and ergatoid male (Hymenoptera: Formicidae). *Bulletin of the Southern California Academy of Sciences* 64: 16–21.
- . 1966. The female of *Eucryptocerus placidus* (F. Smith) (Hymenoptera: Formicidae). *Bulletin of the Southern California Academy of Sciences* 65: 37–40.
- . 1966. Studies on North American bees of the genus *Hylaeus*, 1. Distribution of the western species of the subgenus *Prosopis* with descriptions of new forms (Hymenoptera: Colletidae). *Contributions in Science, Natural History Museum of Los Angeles County* (98): 1–13.
- . 1966. A new species of *Heteranthidium* from California (Hymenoptera: Megachilidae). *Contributions in Science, Natural History Museum of Los Angeles County* (97): 1–8.
- . 1966. Studies on North American bees of the genus *Hylaeus*, 2. Description of a new subgenus and species. *Proceedings of the Biological Society of Washington* 79: 139–144.
- . 1966. Studies on North American bees of the genus *Hylaeus*, 3. The Nearctic subgenera (Hymenoptera: Colletidae). *Bulletin of the Southern California Academy of Sciences* 65: 164–175.
- . 1966. The taxonomy and nomenclature of some North American bees of the genus *Centris* with descriptions of new species (Hymenoptera: Anthophoridae). *Contributions in Science, Natural History Museum of Los Angeles County* (112): 1–33.
- . 1967. Studies on California ants. 3. The taxonomic status of *Proceratium californicum* Cook (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (124): 1–10.
- . 1967. Description of a new subgenus of *Osmia* (Hymenoptera: Megachilidae). *Bulletin of the Southern California Academy of Sciences* 66: 103–108.
- Creighton, W. S. and R. R. Snelling. 1967 (“1966”). The rediscovery of *Camponotus* (*Myrmaphaenus*) *yogi* Wheeler (Hymenoptera: Formicidae). *Psyche* 73: 187–195.
- Snelling, R. R. 1968. Honey ants, the industrious socialites. *Museum Alliance Quarterly* 7: 14–18.
- . 1968. A new species of *Eurhopalothrix* from El Salvador (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (154): 1–4.
- . 1968. Taxonomic notes on some Mexican cephalotine ants (Hymenoptera: Formicidae).

- Contributions in Science, Natural History Museum of Los Angeles County* (132): 1–10.
- . 1968. Studies on California ants. 4. Two species of *Camponotus* (Hymenoptera: Formicidae). *Proceedings of the Entomological Society of Washington* 70: 350–358.
- . 1968. Studies on North American bees of the genus *Hylaeus*. 4. The subgenera *Cephalylaeus*, *Metziella* and *Hylaeana* (Hymenoptera: Colletidae). *Contributions in Science, Natural History Museum of Los Angeles County* (144): 1–6.
- . 1969. Notes on the systematics and dulosis of some western species of *Formica*, subgenus *Raptiformica* (Hymenoptera: Formicidae). *Proceedings of the Entomological Society of Washington* 71: 194–197.
- . 1969. The repository of the T. W. Cook ant types (Hymenoptera: Formicidae). *Bulletin of the Southern California Academy of Sciences* 68: 57–58.
- . 1969. Taxonomic notes on the *Myrmecocystus melliger* complex (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (170): 1–9.
- . 1969. The Philippine subgenus *Hoploprosopis* of *Hylaeus* (Hymenoptera: Colletidae). *Contributions in Science, Natural History Museum of Los Angeles County* (171): 1–5.
- . 1970. Studies on California ants, 5. Revisionary notes on some species of *Camponotus*, subgenus *Tanaemyrmex* (Hymenoptera: Formicidae). *Proceedings of the Entomological Society of Washington* 72: 390–397.
- . 1970. Studies of North America bees of the genus *Hylaeus*. 5. The subgenus *Hylaeus*, s. str. and *Paraprosopis* (Hymenoptera: Colletidae). *Contributions in Science, Natural History Museum of Los Angeles County* (180): 1–59.
- . 1970. Ant warfare - offensive and defensive maneuvers. *Museum Alliance Quarterly* 8: 10–15.
- . 1970. The *Hylaeus* of the Bonin Islands, western Pacific Ocean (Hymenoptera: Colletidae). *Bulletin of the Southern California Academy of Sciences* 69: 1–19.
- . 1970. The social wasps of Lower California, Mexico (Hymenoptera: Vespidae). *Contributions in Science, Natural History Museum of Los Angeles County* (197): 1–20.
- . 1971. A new species of *Simopelta* from Costa Rica (Hymenoptera: Formicidae). *Bulletin of the Southern California Academy of Sciences* 70: 16–17.
- . 1971. Studies on California ants. 6. Three new species of *Myrmecocystus* (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (214): 1–16.
- Blum, M. S., J. M. Brand, R. M. Duffield, and R. R. Snelling. 1973. Chemistry of the venom of *Solenopsis aurea* (Hymenoptera: Formicidae). *Annals of the Entomological Society of America* 66: 702.
- Snelling, R. R. 1973. Studies on California ants. 7. The genus *Stenamamma* (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (245): 1–38.
- . 1973. Two ant genera new to the United States (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (236): 1–8.
- . 1973. The ant genus *Conomyrma* in the United States (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (238): 1–6.
- Creighton, W. S. and R. R. Snelling. 1974. Notes on the behavior of three species of *Cardiocondyla* in the United States (Hymenoptera: Formicidae). *Journal of the New York Entomological Society* 82: 82–92.
- Snelling, R. R. 1974. High rise in the ant world. *Terra* 12: 15–17.
- . 1974. Studies on California ants. 8. A new species of *Cardiocondyla* (Hymenoptera: Formicidae). *Journal of the New York Entomological Society* 82: 76–81.
- . 1974. Changes in the status of some North American *Polistes* (Hymenoptera: Vespidae). *Proceedings of the Entomological Society of Washington* 76: 476–479.
- . 1974. Notes on the distribution and taxonomy of some North American *Centris* (Hymenoptera: Anthophoridae). *Contributions in Science, Natural History Museum of Los Angeles County* (259): 1–41.
- Hunt, J. H. and R. R. Snelling. 1975. A checklist of the ants of Arizona. *Journal of the Arizona Academy of Science* 10: 20–23.
- Snelling, R. R. 1975. Descriptions of new Chilean ant taxa (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (274): 1–19.
- . 1975. A new North American genus of Eumenidae (Hymenoptera: Vespoidea). *Proceedings of the Entomological Society of Washington* 77: 56–58.
- . 1975. Taxonomic notes on some colletid bees of western North America with descriptions of new species (Hymenoptera: Colletidae). *Contributions in Science, Natural History Museum of Los Angeles County* (267): 1–9.
- . 1975. Range extension of two *Heteranthidium*, with description of *H. cordaticeps* male (Hymenoptera: Megachilidae). *Proceedings of the Entomological Society of Washington* 77: 87–90.
- and J. H. Hunt. 1975. The ants of Chile (Hymenoptera: Formicidae). *Revista Chilena de Entomología* 9: 63–129.
- and A. S. Menke. 1975. *Vespula germanica* (Fabricius), an adventive yellowjacket in the northeastern United States (Hymenoptera: Vespidae). *Cooperative Economic Insect Report, U. S. Department of Agriculture* 25: 193–200.

- . 1976. A revision of the honey ants, genus *Myrmecocystus* (Hymenoptera: Formicidae). *Natural History Museum Los Angeles County Science Bulletin* 24: 1–163.
- Francoeur, A. and R. R. Snelling. 1979. Notes for a revision of the ant genus *Formica*. 2. Reidentifications for some specimens from the T. W. Cook collection and new distribution data (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (309): 1–7.
- Snelling, R. R. 1979. Three new species of the Palaeotropical arboreal ant genus *Cataulacus* (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (315): 1–8.
- . 1979. *Aphomomyrmex* and a related new genus of arboreal African ants (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (316): 1–8.
- and C. D. George. 1979. The taxonomy, distribution and ecology of California desert ants. *Report to California Desert Plan Program, Bureau of Land Management, U.S. Dept. Interior*. 335 + 89 pp.
- Duffield, R. M., A. Fernandes, S. McKay, J. W. Wheeler, and R. R. Snelling. 1980. Chemistry of the exocrine secretions of *Hylaeus modestus* (Hymenoptera: Colletidae). *Comparative Biochemistry and Physiology* 67B: 159–162.
- Snelling, R. R. 1980. New bees of the genus *Hylaeus* from Sri Lanka and India (Hymenoptera: Colletidae). *Contributions in Science, Natural History Museum of Los Angeles County* (328): 1–18.
- . 1980. The bee genus *Bicornelia* (Hymenoptera: Colletidae). *Contributions in Science, Natural History Museum of Los Angeles County* (327): 1–6.
- . 1981. Systematics of social Hymenoptera. Pp. 369–453 in H. R. Hermann, ed. *Social insects. Volume 2*. Academic Press, New York. xiii+491 p.
- Blum, M. S., T. H. Jones, R. R. Snelling, W. L. Overal, H. M. Fales, and R. J. Highet. 1982. Systematic implications of the exocrine chemistry of some *Hypoclinea* species. *Biochemical Systematics and Ecology* 10: 91–94.
- Snelling, R. R. 1982 ("1981"). The taxonomy and distribution of some North American *Pogonomyrmex* and descriptions of two new species (Hymenoptera: Formicidae). *Bulletin of the Southern California Academy of Sciences* 80: 97–112.
- . 1982. The taxonomy of some neotropical *Hylaeus* and descriptions of new taxa. *Bulletin of the Southern California Academy of Sciences* 81: 1–25.
- . 1982. A revision of the honey ants, genus *Myrmecocystus*, first supplement (Hymenoptera: Formicidae). *Bulletin of the Southern California Academy of Sciences* 81: 69–86.
- . 1983. Prey-stalking behavior of a thomisid spider, *Xysticus californicus* Keyserling (Araneae: Thomisidae). *Entomological News* 94: 201–203.
- . 1983. Taxonomic and nomenclatural studies on American polistine wasps (Hymenoptera: Vespidae). *Pan-Pacific Entomologist* 59: 267–280.
- . 1983. The North American species of the bee genus *Lithurge* (Hymenoptera: Megachilidae). *Contributions in Science, Natural History Museum of Los Angeles County* (343): 1–11.
- . 1983. Studies on North American bees of the genus *Hylaeus*: 6. An adventive Palearctic species in Southern California (Hymenoptera: Colletidae). *Bulletin of the Southern California Academy of Sciences* 82: 12–16.
- . 1984. Studies on the taxonomy and distribution of American centridine bees (Hymenoptera: Anthophoridae). *Contributions in Science, Natural History Museum of Los Angeles County* (347): 1–69.
- . 1984. Notes on distribution of evaniid wasps in western North America (Hymenoptera: Evanidae). *Entomological News* 95: 27–28.
- and T. J. Zavortink. 1984. A revision of the cleptoparasitic bee genus *Ericrocis* (Hymenoptera: Anthophoridae). *Wasmann Journal of Biology* 42: 1–26.
- Blum, M. S., T. H. Jones, H. A. Lloyd, H. M. Fales, R. R. Snelling, Y. Lubin, and J. Torres. 1985. Poison gland products of *Solenopsis* and *Monomorium* species. *Journal of Entomological Science* 20: 254–257.
- Snelling, R. R. 1985. [Untitled. *Camponotus bakeri* Wheeler 1904 (elevated from subspecies of *C. hyatti*).], p. 24, in Miller, S.E., The California Channel Islands – past, present and future: an entomological perspective. Pp. 3–28 in Menke, A. S. and D. R. Miller, eds. *Entomology of the California Channel Islands. Proceedings of the first symposium*. Santa Barbara Museum of Natural History, Santa Barbara.
- . 1985. The systematics of the hylaeine bees (Hymenoptera: Colletidae) of the Ethiopian zoogeographical region: The genera and subgenera with revisions of the smaller groups. *Contributions in Science, Natural History Museum of Los Angeles County* (361): 1–33.
- and R. W. Brooks. 1985. A review of the genera of cleptoparasitic bees of the tribe Ericrocini (Hymenoptera: Anthophoridae). *Contributions in Science, Natural History Museum of Los Angeles County* (369): 1–34.
- and W. F. Buren. 1985. Description of a new species of slave-making ant in the *Formica sanguinea* group (Hymenoptera: Formicidae). *Great Lakes Entomologist* 18: 69–78.
- Rozen, J. G., Jr and R. R. Snelling. 1986. Ethology of the bee *Exomalopsis nitens* and its cleptoparasite (Hymenoptera: Anthophoridae). *Journal of the New York Entomological Society* 94: 480–488.

- Ruttner, F., E. C. Wilson, R. Snelling, G. Vorwohl, and D. Kauhausen. 1986. Die Evolution des Flügelgeaders der Honigbienen. *Apidologie* 17: 348–350.
- Schmidt, J. O., P. J. Schmidt, and R. R. Snelling. 1986. *Pogonomyrmex occidentalis*, an addition to the ant fauna of Mexico, with notes on other species of harvester ants from Mexico (Hymenoptera: Formicidae). *Southwestern Naturalist* 31: 395–396.
- Snelling, R. R. 1986. New synonymy in Caribbean ants of the genus *Leptothorax* (Hymenoptera: Formicidae). *Proceedings of the Entomological Society of Washington* 88: 154–156.
- . 1986. Contributions toward a revision of the new world nomadine bees. A partitioning of the genus *Nomada* (Hymenoptera: Anthophoridae). *Contributions in Science, Natural History Museum of Los Angeles County* (376): 1–32.
- . 1986. The taxonomic status of two North American *Lithurge*, Hymenoptera: Megachilidae. *Bulletin of the Southern California Academy of Sciences* 85: 29–34.
- . 1986. The taxonomy and nomenclature of some Australian paragiine wasps (Hymenoptera: Masaridae). *Contributions in Science, Natural History Museum of Los Angeles County* (378): 1–19.
- Stage, G. I. and R. R. Snelling. 1986. The subfamilies of Eurytomidae and systematics of the subfamily Heimbrinae (Hymenoptera: Chalcidoidea). *Contributions in Science, Natural History Museum of Los Angeles County* (375): 1–17.
- Snelling, R. R. 1987. A revision of the bee genus *Aztecantidium* (Hymenoptera: Megachilidae). *Pan-Pacific Entomologist* 63: 165–171.
- and in Rozen, J. G., Jr. 1987. [Description of *Hesperapis* (*Hesperapis*) *trochanterata*, new species] Nesting biology and immature stages of a new species in the bee genus *Hesperapis* (Hymenoptera: Apoidea: Melittidae: Dasypodinae). *American Museum Novitates* (2887): 1–13.
- and J. G. Rozen, Jr. 1987. Contributions toward a revision of the New World nomadine bees. 2. The genus *Melanomada* (Hymenoptera: Anthophoridae). *Contributions in Science, Natural History Museum of Los Angeles County* (384): 1–12.
- Blum, M. S., R. R. Snelling, R. M. Duffield, H. R. Hermann, and H. A. Lloyd. 1988. Mandibular gland chemistry of *Camponotus* (*Myrmothrix*) *abdominalis*: chemistry and chemosystematic implications (Hymenoptera: Formicidae). Pp. 481–490 in J. C. Trager ed. *Advances in Myrmecology*. E. J. Brill, Leiden, xxvii + 551 p.
- Davidson, D. W., J. T. Longino, and R. R. Snelling. 1988. Pruning of host plant neighbors by ants: an experimental approach. *Ecology* 69: 801–808.
- Duffield, R. M., J. W. Wheeler, and R. R. Snelling. 1988. Mellein in the mandibular glands of worker *Camponotus ferrugineus* (Fabr.): an anomaly [sic] in the subgenus *Camponotus*. Pp. 475–480 in J. C. Trager ed. *Advances in Myrmecology*. E. J. Brill, Leiden, xxvii + 551 p.
- Snelling, R. R. 1988. Taxonomic notes on Nearctic species of *Camponotus*, subgenus *Myrmentoma* (Hymenoptera: Formicidae). Pp. 55–78 in J. C. Trager, ed. *Advances in Myrmecology*. E. J. Brill, Leiden, xxvii + 551 p.
- . 1988. Geographical inexactitude. *Pan-Pacific Entomologist* 63: 339–340.
- . 1988. The generic placement of *Prosopis? Allodape? mustela* Vachal, 1895 (Hymenoptera: Apoidea). *Entomological News* 99: 10–12.
- . 1988. A new species of *Centris* (*Melanocentris*) from Cerro de la Neblina, Venezuela (Hymenoptera: Anthophoridae). *Entomological News* 99: 13–16.
- Davidson, D. W., R. R. Snelling, and J. T. Longino. 1989. Competition among ants for myrmecophytes and the significance of plant trichomes. *Biotropica* 21: 64–73.
- Lloyd, H. A., M. S. Blum, R. R. Snelling, and S. L. Evans. 1989. Chemistry of mandibular and Dufour's gland secretions of ants in genus *Myrmecocystus*. *Journal of Chemical Ecology* 15: 2589–2599.
- Snelling, R. R. 1990. A review of the native North American bees of the genus *Chalicodoma* (Hymenoptera: Megachilidae). *Contributions in Science, Natural History Museum of Los Angeles County* 421: 1–39.
- Davidson, D. W., R. B. Foster, R. R. Snelling, and P. W. Lozada. 1991. Variable composition of some tropical ant-plant symbioses. Pp. 145–162 in P. W. Price, T. M. Lewinsohn, G. W. Fernandes and W. W. Benson eds. *Plant-Animal Interactions: Evolutionary Ecology in Tropical and Temperate Regions*. John Wiley, New York, xiv + 639 p.
- Snelling, R. R. 1992. Two unusual new myrmicine ants from Cameroon (Hymenoptera: Formicidae). *Psyche* 99: 95–101.
- . 1992. A newly adventive ant of the genus *Pheidole* in southern California (Hymenoptera: Formicidae). *Bulletin of the Southern California Academy of Sciences* 91: 121–125.
- . 1992. A new species of the bee genus *Anthidium* (Hymenoptera: Megachilidae) from western North America. *Entomological News* 103: 175–179.
- and S. P. Cover. 1992. Description of a new *Proceratium* from Mexico (Hymenoptera: Formicidae). *Psyche* 99: 49–53.
- and B. N. Danforth. 1992. A review of *Perdita*, subgenus *Macrotera* (Hymenoptera: Andrenidae). *Contributions in Science, Natural History Museum of Los Angeles County* (436): 1–12.
- and J. T. Longino. 1992. Revisionary notes on the fungus-growing ants of the genus *Cyphomyrmex*, *rimosus* group (Hymenoptera: Formicidae: Attini). Pp. 479–494 in D. Quintero and A. Aiello,

- eds. *Insects of Panama and Mesoamerica: Selected Studies*. Oxford University Press, Oxford. xxii + 692 p.
- Blum, M. S., T. M. M. Ali, T. H. Jones, and R. R. Snelling. 1994. Identification of a chemical releaser of alarm behavior for workers of *Harpegnathos saltator* Jerd. (Hymenoptera: Formicidae). *Memoirabilia Zoologica* 48: 17–22.
- Snelling, R. R. 1994. *Diadasia*, subgenus *Disiapis*, in North America (Hymenoptera: Anthophoridae). *Contributions in Science, Natural History Museum of Los Angeles County* 448: 1–8.
- Dejean, A., I. Olmstead, and R. R. Snelling. 1995. Tree-epiphyte-ant relationships in the low inundated forest of Sian Ka'an Biosphere Reserve, Quintana Roo, Mexico. *Biotropica* 27: 57–70.
- Perfecto, I. and R. R. Snelling. 1995. Biodiversity and the transformation of a tropical agroecosystem: ants in coffee plantations. *Ecological Applications* 5: 1084–1097.
- Snelling, R. R. 1995. Systematics of Nearctic ants of the genus *Dorymyrmex* (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (454): 1–14.
- . 1995 ("1992"). A new spider wasp of the genus *Psorthaspis* from the Greater Antilles (Hymenoptera: Pompilidae; Pompilinae). *Acta Científica* 6: 103–108.
- and G. I. Stage. 1995. Systematics and biology of the bee genus *Xeralictus* (Hymenoptera: Halictidae, Rophitinae). *Contributions in Science, Natural History Museum of Los Angeles County* (451): 1–17.
- and G. I. Stage. 1995. A revision of the nearctic Melittidae: the subfamily Melittinae. *Contributions in Science, Natural History Museum of Los Angeles County* (451): 19–31.
- Torres, J. A. and R. R. Snelling. 1995 ("1992"). Los himenópteros de Isla de Mona. *Acta Científica* 6: 87–102.
- Jones, T. H., J. A. Torres, R. R. Snelling, and T. F. Spande. 1996. Primary tetradecenyl amines from the ant *Monomorium floricola*. *Journal of Natural Products* 59: 801–802.
- , J. A. Torres, T. F. Spande, H. M. Garraffo, M. S. Blum, and R. R. Snelling. 1996. Chemistry of venom alkaloids in some *Solenopsis* (*Diplorhoptrum*) species from Puerto Rico. *Journal of Chemical Ecology* 22: 1221–1236.
- Snelling, R. R. 1996. Systematic notes on some Bethyridae from the Virgin Islands and Puerto Rico (Hymenoptera: Chrysidoidea). *Memoirs of the Entomological Society of Washington* 17: 194–208.
- Cane, J. H., R. R. Snelling, L. J. Kervin, and G. C. Eickwort. 1997. A new monolectic coastal bee, *Hesperapis oraria* Snelling and Stage (Hymenoptera: Melittidae), with a review of desert and neotropical disjunctives in the southeastern U.S. *Journal of the Kansas Entomological Society* 69 (Suppl.): 238–247.
- Dejean, A., B. Corbara, R. R. Snelling, and M. Belin-Depoux. 1997. Les jardins de fourmis de Guyane Française: Relations entre arbres support, épiphytes et fourmis. *Acta Botanica Gallica* 144: 333–345.
- Snelling, R. R. 1997. *Polistes tepidus malayanus* Cameron erroneously reported from the Hawaiian Islands (Hymenoptera: Vespidae). *Records of the Hawaii Biological Survey for 1997* 56: 33–35.
- Torres, J. A. and R. R. Snelling. 1997. Biogeography of Puerto Rican ants: a non-equilibrium case? *Biodiversity and Conservation* 6: 1103–1121.
- Frankie, G. W., S. B. Vinson, M. A. Rizzardi, T. L. Griswold, S. O'Keefe, and R. R. Snelling. 1998. Diversity and abundance of bees visiting a mass flowering tree species in disturbed seasonal dry forest, Costa Rica. *Journal of the Kansas Entomological Society* 70: 281–296.
- Gorman, J. S. T., T. H. Jones, T. F. Spande, R. R. Snelling, J. A. Torres, and H. M. Garraffo. 1998. 3-hexyl-5-methylindolizidine isomers from thief ants, *Solenopsis* (*Diplorhoptrum*) species. *Journal of Chemical Ecology* 24: 933–943.
- Snelling, R. R. 1998. Social Hymenoptera of the Lakekamu Basin. Pp. 39–46, 131–146 in Mack, A. L. ed. *A Biological Assessment of the Lakekamu Basin Papua New Guinea*. Conservation International, Washington D.C. 187 pp.
- and J. A. Torres. 1998. *Camponotus ustus* Forel and two similar new species from Puerto Rico (Hymenoptera: Formicidae). *Contributions in Science, Natural History Museum of Los Angeles County* (469): 1–10.
- Jones, T. H., R. C. Flournoy, J. A. Torres, R. R. Snelling, T. F. Spande, and H. M. Garraffo. 1999. 3-methyl-4-phenylpyrrole from the ants *Anochetus kemphi* and *Anochetus mayri*. *Journal of Natural Products* 62: 1343–1345.
- , J. S. T. Gorman, R. R. Snelling, J. H. C. Delabie, M. S. Blum, H. M. Garraffo, P. Jain, J. W. Daly, and T. F. Spande. 1999. Further alkaloids common to ants and frogs: decahydroquinolines and a quinolizidine. *Journal of Chemical Ecology* 25: 1179–1193.
- , T. J. Wojciechowski, R. R. Snelling, J. A. Torres, P. Chacon, and P. J. DeVreis. 1999. Dialkylpyrrolidines from the ants *Megalomyrmex cyendyra* Brandao and *M. latreillei* Emery. *Caribbean Journal of Science* 35: 310–311.
- Snelling, R. R. 1999. [Untitled. *Cephalotes kukulcan* Snelling new species.]. Pp. 402–410 in de Andrade, M. L. and C. Baroni-Urbani eds. *Diversity and Adaptation in the Ant Genus Cephalotes Past and Present*. *Stuttgarter Beiträge zur Naturkunde, Serie B (Geologie und Paläontologie)* 271: 1–889.
- . 1999. [Untitled. *Cephalotes chacmul* Snelling new species.]. Pp. 611–615 in de Andrade, M. L. and C. Baroni-Urbani eds. *Diversity and Adaptation in the Ant Genus Cephalotes Past and Present*.

- Stuttgarter Beiträge zur Naturkunde, Serie B (Geologie und Paläontologie) 271: 1–889.
- Spande, T. F., P. Jain, H. M. Garraffo, L. K. Pannell, H. J. C. Yeh, J. W. Daly, S. Fukumoto, K. Imamura, T. Tokuyama, J. A. Torres, R. R. Snelling, and T. H. Jones. 1999. Occurrence and significance of decahydroquinolines from dendrobatid poison frogs and a myrmicine ant: use of ^1H and ^{13}C NMR in their conformational analysis. *Journal of Natural Products* 62: 5–21.
- Daly, J. W., H. M. Garraffo, P. Jain, T. F. Spande, R. R. Snelling, C. Jaramillo, and A. S. Rand. 2000. Arthropod-frog connection: Decahydroquinoline and pyrrolizidine alkaloids common to microsympatric myrmicine ants and dendrobatid frogs. *Journal of Chemical Ecology* 26: 73–85.
- Dejean, A., B. Corbara, J. Orivel, R. R. Snelling, J. H. C. Delabie, and M. Belin-Depoux. 2000. The importance of ant gardens in the pioneer vegetal formations of French Guiana (Hymenoptera: Formicidae). *Sociobiology* 35: 425–439.
- Snelling, R. R. 2000. A review of the *Camponotus montivagus* complex (Hymenoptera: Formicidae). *Sociobiology* 36: 599–611.
- . 2000. Ants of the Wapoga River area, Irian Jaya, Indonesia. Pages 43–46, 96–100 in *RAP Bulletin of Biological Assessment* (Conservation International), #14.
- Torres, J. A., R. R. Snelling, and M. Canals. 2000. New records of parasitoids of Aculeate Hymenoptera in Puerto Rico. *Journal of Agriculture of the University of Puerto Rico* 84: 99–100.
- , R. R. Snelling, and T. H. Jones. 2000. Distribution, ecology and behavior of *Anochetus kempfi* (Hymenoptera: Formicidae) and description of the sexual forms. *Sociobiology* 36: 505–516.
- Garraffo, H. M., T. F. Spande, P. Jain, T. Kaneko, T. H. Jones, M. S. Blum, T. M. M. Ali, R. R. Snelling, L. A. Isbell, H. G. Robertson, and J. W. Daly. 2001. Ammonia chemical ionization tandem mass spectrometry in structural determination of alkaloids. II. Tetraponerines from pseudomyrmecine ants. *Rapid Communications in Mass Spectrometry* 15: 1409–1415.
- Snelling, R. R. 2001. Two new species of thief ants (*Solenopsis*) from Puerto Rico (Hymenoptera: Formicidae). *Sociobiology* 37: 511–525.
- Torres, J. A., R. R. Snelling, M. S. Blum, R. C. Flournoy, T. H. Jones, and R. M. Duffield. 2001. Mandibular gland chemistry of four Caribbean species of *Camponotus* (Hymenoptera : Formicidae). *Biochemical Systematics and Ecology* 29: 673–680.
- , R. R. Snelling, and M. Canals. 2001. Seasonal and nocturnal periodicities in ant nuptial flights in the tropics (Hymenoptera: Formicidae). *Sociobiology* 37: 601–626.
- , V. E. Zottig, J. E. Co, T. H. Jones, and R. R. Snelling. 2001. Caste specific alkaloid chemistry of *Solenopsis maboya* and *S.-torresi* (Hymenoptera : Formicidae). *Sociobiology* 37: 579–583.
- Duffield, R. M. and R. R. Snelling. 2002. *Tapinoma sessile* (Say) (Hymenoptera : Formicidae) nest in association with the northern pitcher plant, *Sarracenia purpurea* L. (Sarraceniaceae). *Proceedings of the Entomological Society of Washington* 104: 814–816.
- Durou, S., A. Dejean, I. Olmsted, and R. R. Snelling. 2002. Ant diversity in coastal zones of Quintana Roo, Mexico, with special reference to army ants. *Sociobiology* 40: 385–402.
- Longino, J. T. and R. R. Snelling. 2002. A taxonomic revision of the *Procryptocerus* (Hymenoptera: Formicidae) of Central America. *Contributions in Science, Natural History Museum of Los Angeles County* (495): 1–30.
- Co, J. E., T. H. Jones, A. Hefetz, A. Tinaut, and R. R. Snelling. 2003. The comparative exocrine chemistry of nine Old World species of *Messor* (Formicidae : Myrmicinae). *Biochemical Systematics and Ecology* 31: 367–373.
- Davidson, D. W., S. C. Cook, R. R. Snelling, and T. H. Chua. 2003. Explaining the abundance of ants in lowland tropical rainforest canopies. *Science* 300: 969–972.
- Dejean, A., S. Durou, I. Olmsted, R. R. Snelling, and J. Orivel. 2003. Nest site selection by ants in a flooded Mexican mangrove, with special reference to the epiphytic orchid *Myrmecophila christinae*. *Journal of Tropical Ecology* 19: 325–331.
- Jones, T. H., D. A. Clark, B. E. Heterick, and R. R. Snelling. 2003. Farnesylamine from the ant *Monomorium fieldi* Forel. *Journal of Natural Products* 66: 325–326.
- , V. E. Zottig, H. G. Robertson, and R. R. Snelling. 2003. The venom alkaloids from some African *Monomorium* species. *Journal of Chemical Ecology* 29: 2721–2727.
- Snelling, R. R. 2003. Bees of the Hawaiian Islands, exclusive of *Hylaeus* (*Nesoprosopis*) (Hymenoptera: Apoidea). *Journal of the Kansas Entomological Society* 76: 342–356.
- Davidson, D. W., S. C. Cook, and R. R. Snelling. 2004. Liquid-feeding performances of ants (Formicidae): ecological and evolutionary implications. *Oecologia* 139: 255–266.
- Jones, T. H., D. A. Clark, A. A. Edwards, D. W. Davidson, T. F. Spande, and R. R. Snelling. 2004. The chemistry of exploding ants, *Camponotus* spp. (*cylindricus* complex). *Journal of Chemical Ecology* 30: 1479–1492.
- Snelling, R. R. and J. A. Torres. 2004. The spider wasps of Puerto Rico and the British Virgin Islands (Hymenoptera: Pompilidae). *Journal of the Kansas Entomological Society* 77: 356–376.
- Davidson, D. W., S. C. Cook, and R. R. Snelling. 2004. Liquid-feeding performances of ants (Formicidae): ecological and evolutionary implications.

- Oecologia* 139: 255–266 (Erratum: *Oecologia* 143: 335).
- Jones, T. H., S. R. Brunner, A. A. Edwards, D. W. Davidson, and R. R. Snelling. 2005. 6-alkylsalicylic acids and 6-alkylresorcylic acids from ants in the genus *Crematogaster* from Brunei. *Journal of Chemical Ecology* 31: 407–417.
- Snelling, R. R. 2005. Wasps, ants, and bees: Aculeate Hymenoptera. Pp. 283–296 in J. Lazell. *Island: Facts and Theory in Nature*. University of California Press, Berkeley. 382 p.
- . 2006. Taxonomy of the *Camponotus festinatus* complex in the United States of America (Hymenoptera: Formicidae). *Myrmecologische Nachrichten* 8: 83–97.
- Wetterer, J. K. and R. R. Snelling. 2006. The red imported fire ant, *Solenopsis invicta*, in the Virgin Islands (Hymenoptera : Formicidae). *Florida Entomologist* 89: 431–434.
- Jones, T. H., H. L. Voegtle, H. M. Miras, R. G. Weatherford, T. F. Spande, H. M. Garraffo, J. W. Daly, D. W. Davidson, and R. R. Snelling. 2007. Venom chemistry of the ant *Myrmecaria melanogaster* from Brunei. *Journal of Natural Products* 70: 160–168.
- Snelling, G. C. and R. R. Snelling. 2007. New synonymy, new species, new keys to *Neivamyrmex* army ants of the United States. Pp. 459–550 in Snelling, R. R., B. L. Fisher and P. S. Ward eds. *Advances in Ant Systematics (Hymenoptera: Formicidae): Homage to E.O. Wilson - 50 years of Contributions*. *Memoirs of the American Entomological Institute* 80.
- Snelling, R. R. 2007. Preface. Pp. 1–2 in Snelling, R. R., B. L. Fisher and P. S. Ward eds. *Advances in Ant Systematics (Hymenoptera: Formicidae): Homage to E.O. Wilson - 50 years of Contributions*. *Memoirs of the American Entomological Institute* 80.
- . 2007. A review of the arboreal Afrotropical ant genus *Axinidris*. Pp. 551–579 in Snelling, R. R., B. L. Fisher and P. S. Ward, eds. *Advances in Ant Systematics (Hymenoptera: Formicidae): Homage to E.O. Wilson - 50 years of Contributions*. *Memoirs of the American Entomological Institute* 80.
- Snelling, R. R., B. L. Fisher and P. S. Ward, eds. 2007. *Advances in Ant Systematics (Hymenoptera: Formicidae): Homage to E.O. Wilson - 50 years of Contributions*. *Memoirs of the American Entomological Institute* 80.
- Snelling, R. R. 2008. A new name for *Myopias punctigera* (Emery 1901), not *M.-maligna* var. *punctigera* (Emery 1900) (Hymenoptera: Formicidae). *Proceedings of the Entomological Society of Washington* 110: 261–261.
- Voegtle, H. L., T. H. Jones, D. W. Davidson, and R. R. Snelling. 2008. E-2-ethylhexenal, E-2-ethyl-2-hexenol, mellein, and 4-hydroxymellein in *Camponotus* species from Brunei. *Journal of Chemical Ecology* 34: 215–219.
- Duffield, R. M., R. R. Snelling, H. M. Fales, and M. S. Blum. 2009. Mandibular gland chemistry of two Nearctic species of *Camponotus* (*Colobopsis*) (Hymenoptera: Formicidae). *Journal of Hymenoptera Research* 18: 140–144.
- Snyder, A. J., T. H. Jones, G. C. Snelling, and R. R. Snelling. 2009. Venom alkaloids from some *Monomorium* species. *Journal of Hymenoptera Research* 18: 145–150.
- Snelling, R. R., G. C. Snelling, J. O. Schmidt, and S. P. Cover. 2009. The sexual castes of *Pogonomyrmex anzensis* Cole (Hymenoptera: Formicidae). *Journal of Hymenoptera Research* 18: 315–321.



Longino, John T. and Snelling, Gordon C. 2009. "An Inordinate Fondness for Things that Sting." *Journal of Hymenoptera research* 18, 125–135.

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