George H. Gerber*

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George H. Gerber began his entomological career at the Saskatoon Research Station of what is now Agriculture & Agri-Food Canada. He spent three summers working there on soil insects while studying towards his Bachelor of Science in Agriculture at the University of Saskatchewan. Upon graduation in 1964, George stayed in Saskatoon enrolled in a graduate program in biology and completed a Ph.D. thesis in 1968 entitled: "Structure, formation, histochemistry, fate and function of the spermatophore of the caragana blister beetle, *Lytta nuttalli* Say (Coleoptera: Meloidae)." George was hired in 1969 as a scientist at the Canada Department of Agriculture Research Institute in Belleville, Ontario, where he began a long career investigating the biology of insect pests of crops. In September 1972, George and four of his Belleville colleagues were transferred to the Canada Department of Agriculture Research Station in Winnipeg. He became Head of the Crop and Stored-Products Pests Section at what by then was named the Cereal Research Centre, from 1989 to 1991. George worked there until his retirement in 1996.

From the beginning, George focussed his research on the reproductive biology of insects, particularly the morphology, histology and physiology of reproduction in Coleoptera. His first published paper grew out of a course project in insect physiology on the regulation of the female reproductive cycle in *Tenebrio molitor* Linnaeus (Gerber 1967). His graduate research was a comprehensive description of blister beetle reproduction (*Lytta* spp.) (Gerber *et al*. 1970a; Gerber *et al*. 1971a, b; Gerber and Church 1972, 1973, 1976; Church and Gerber 1977a, b). He sometimes broadened his perspective to apply the insights from this work to insect reproduction in general (Gerber 1967, 1970b), and then moved on to repeat his detailed examination on other species of beetles, first *T. molitor* (Gerber 1973, 1975a, 1976), and then the sunflower beetle, *Zygogramma exclamationis* (Fabricius) (Gerber and Neill 1978, 1979). The latter project was done in collaboration with G. Bruce Neill, the first of four graduate students George advised while an Adjunct Professor at the University of Manitoba. In recognition of his early contributions to our understanding of insect reproduction, George was awarded the C. Gordon Hewitt Award

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George believed strongly that basic research provides the best foundation for effective applied entomology. So, when he was transferred to an integrated pest management group in Winnipeg in 1972, he used his knowledge of insect reproduction as the starting point for contributing to the management of insect pests of canola. To broaden his expertise in pest management, George took a transfer of work to the Institute of Animal Resource Ecology at the University of British Columbia in 1979. In Winnipeg, he began working on a little known canola pest, red turnip beetle, *Entomoscelis americana* Brown, with investigations of egg survival, and egg and larval development (Gerber 1978, 1981, 1984 1985, 1987; Gerber and Lamb 1982; Lamb and Gerber 1985; Lamb *et al*. 1984). This background knowledge on the development of red turnip beetle was extended to host plant interactions (Gerber 1976; 1984; Gerber and Obadofin 1981a, b). He summed up the work on the life history of this native chrysomelid in reviews (Gerber 1989, 1994) and applied the insights he gained to pest management recommendations (Gerber 1982).

George also contributed his knowledge of insect reproduction to an important canola pest, bertha armyworm, *Mamestra configurata* Walker, and other Noctuidae (Bodnaryk and Gerber 1988; Gerber and Howlader 1987; Gerber and Walkof 1992; Howlader and Gerber 1986a, b; Gerber *et al*. 1991). George ended his research career with a series of papers from 1995 to 1998 on *Lygus lineolaris* (Palisot de Beauvois) in canola, beginning as usual with the reproductive aspects of the pest (Gerber 1995), but moving on to host plant relations and seasonal biology.

Besides maintaining an active research career, George contributed greatly to the Entomological Societies of Manitoba and Canada. In Manitoba, George served as Regional Director for the Entomological Society of Manitoba to the Entomological Society of Canada (1974), as editor of the Manitoba Entomologist (1981), as chair of the Scientific Program Committee (1983), and as Treasurer (1987–1989), as well as on Entomological Society of Manitoba committees. At the national level, George served as Secretary of the Entomological Society of Canada (1975–1978), as chair of the By-laws, Rules and Regulations Committee for many years, as Director-at-Large (1981–1984), and as President (1994). He always took his society responsibilities seriously, and gained a reputation as the person to ask about the intricacies of society business.

After 50 years as a bachelor, George's life took on a new dimension when he and Margaret Elliott were married in 1992. He and Margaret moved into a new house together and George enjoyed establishing another garden. Only four years later, George retired, sooner than he wished, at the time canola research was transferred from the Cereal Research Centre to the Saskatoon Research Centre. In retirement, George moved on from entomology, but maintained his interest in natural history and photographing nature. Through his whole adult life, he was an enthusiastic curler, and continued this passion to the end. He was one of the "Aggie-Row Curlers", a mix of players from the Agriculture Canada Research Station and the University of Manitoba, Faculty of Agriculture. George was one of the keenest supporters of this group almost from the time he arrived in Manitoba. His well-known organizational skills were sometimes tested, when he had to

combine his enthusiasm for arriving on time at the curling rink on a Friday afternoon, with his focussed attention to detail in his research life.

Bibliography

Gerber, G.H. 1967. A possible mechanism for the regulation of the female reproductive cycle in *Tenebrio molitor* (Coleoptera: Tenebrionidae). The Canadian Entomologist 99: 1298–1303.

Gerber, G.H. 1970a. Adaptation of the Millon, Sudan black B, and periodic acid-Schiff technics for block staining of insect tissues. Stain Technology 45: 225–229.

Gerber, G.H. 1970b. Evolution of the methods of spermatophore formation in pterygotan insects. The Canadian Entomologist 102: 358–362.

Gerber, G.H., N.S. Church, and J.G. Rempel. 1971a. The anatomy, histology, and physiology of the reproductive systems of *Lytta nuttalli* Say (Coleoptera: Meloidae). I. The internal genitalia. Canadian Journal of Zoology 49: 523–533.

Gerber, G.H., N.S. Church, and J.G. Rempel. 1971b. The structure, formation, histochemistry, fate, and functions of the spermatophore of *Lytta nuttalli* Say (Coleoptera: Meloidae). Canadian Journal of Zoology 49: 1595–1610.

Loan, C.C., G.H. Gerber, and D.G. Reid. 1971. Biosystematics of the tingid parasite *Holdawayella* in Ontario (Hymenoptera: Braconidae, Euphorinae). The Canadian Entomologist 103: 1273–1284.

Gerber, G.H., and N.S. Church 1972. The anatomy, histology, and physiology of the reproductive systems of *Lytta nuttalli* Say (Coleoptera: Meloidae). II. The abdomen and external genitalia. Canadian Journal of Zoology 50: 649–660.

Gerber, G.H., and N.S. Church. 1973. Courtship and copulation in *Lytta nvttalli* (Coleoptera: Meloidae). The Canadian Entomologist 105: 719–724.

Gerber, G.H. 1973. Reproductive behaviour and physiology of *Tenebrio mo1itor* (Coleoptera: Tenebrionidae): I. Initiation of mating in young adults and the effects of adult density. The Canadian Entomologist 105: 807–811.

Gerber, G.H. 1975a. Reproductive behaviour and physiology of *Tenebrio mo1itor* (Coleoptera: Tenebrionidae): II. Egg development and oviposition in young females and the effects of mating. The Canadian Entomologist 107: 551–559.

Gerber, G.H. 1975b. Occurrence of a microsporidian infection in the red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae). The Canadian Entomologist 107: 1081–1082.

Gerber, G.H. 1976. Reproductive behaviour and physiology of *Tenebrio molitor* (Coleoptera: Tenebrionidae). III. Histogenetic changes in the internal genitalia, mesenteron, and cuticle during sexual maturation. Canadian Journal of Zoology 54: 990–1002.

Gerber, G.H. 1976. Effects of feeding by adults of the red turnip beetle, *Entomoscelis americana* Brown (Coleoptera: Chrysomelidae), during late July and August on the yield of rapeseed (Cruciferae). The Manitoba Entomologist 10: 31–35.

Gerber, G.H., and N.S. Church. 1976. The reproductive cycles of male and female *Lytta nuttalli* (Coleoptera: Meloidae). The Canadian Entomologist 108: 1125–1136.

Church, N.S., and G.H. Gerber. 1977a. Observations on the ontogeny and habits of *Lytta nuttalli*, *L. viridana*, and *L. cyanipennis* (Coleoptera: Meloidae): The adults and eggs. The Canadian Entomologist 109: 565–573.

Church, N.S., and G.H. Gerber. 1977b. The development and habits of *Linsleya sphaericollis* (Coleoptera: Meloidae). The Canadian Entomologist 109: 375–380.

Gerber G.H. 1978. Effects of burying the eggs in soil on survival in the red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae). Manitoba Entomologist 12: 49–51.

Gerber, G.H., and G.B. Neill. 1978. The anatomy and histology of the internal reproductive organs of the sunflower beetle, *Zygogramma exclamationis* (Coleoptera: Chrysomelidae). Canadian Journal of Zoology 56: 2542–2553.

Gerber, G.H., and G.B. Neill. 1979. The reproductive cycles of the sunflower beetle, *Zygogramma exclamationis* (Coleoptera: Chrysomelidae), in Manitoba. Canadian Journal of Zoology 57: 1934–1943.

Turnock, W.J., G.H. Gerber, M. Bickis, and R.B. Bennett. 1979. The applicability of X-ray energy-dispersive spectroscopy to the identification of populations of red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae). The Canadian Entomologist 111:113–125.

Turnock, W.J., G.H. Gerber, and D.U. Sabourin. 1980. An evaluation of the use of elytra and bodies in X-ray energy-dispersive spectroscopic studies of the red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae). The Canadian Entomologist 112: 609–614.

Gerber, G.H., and A.A. Obadofin. 1981a. The suitability of nine species of Cruciferae as hosts for the larvae of the red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae). The Canadian Entomologist 113: 407–413.

Gerber, G.H., and A.A. Obadofin. G. H. 1981b. Growth, development, and survival of the larvae of the red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae), on *Brassica campestris* and *B. napus* (Cruciferae). The Canadian Entomologist 113: 395–406.

Gerber, G.H. 1981. Cold-hardiness in the eggs of the red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae). The Canadian Entomologist 113: 795–800.

Gerber, G.H. 1982. A pest management system for the red turnip beetle on rapeseed and canola. Canada Agriculture 27: 8–11.

Gerber, G.H., and R.J. Lamb. 1982. Phenology of egg hatching for the red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae). Environmental Entomology 11: 1258– 1263.

Gerber, G.H. 1984. Effects of starvation in the first instar larva on growth, development and survival in the red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae). The Canadian Entomologist 116: 529–536.

Gerber, G.H., and D.U. Sabourin. 1984. Oviposition site selection in *Tenebrio molitor* (Coleoptera: Tenebrionidae). The Canadian Entomologist 116: 27–39.

Gerber, G.H. 1984. Influence of date of oviposition on egg hatching and embryo survival in the red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae). The Canadian Entomologist 116: 645–652.

Lamb, R.J., G.H. Gerber, and G.F. Atkinson. 1984. Comparison of developmental rate curves applied to egg hatching data of *Entomoscelis americana* Brown (Coleoptera: Chrysomelidae). Environmental Entomology 13: 868–872.

Gerber, G.H. 1984. Native host plants of the larvae of the red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae). The Canadian Entomologist 116: 1281–1286.

Lamb, R.J., and G.H. Gerber. 1985. Effects of temperature on the development, growth, and survival of larvae and pupae of a north-temperate chrysomelid beetle. Oecologia 67: 8–18.

Gerber, G.H. 1985. Effects of temperature during embryogenesis on embryogenesis, embryo survival, and egg hatching in the red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae). The Canadian Entomologist 117: 459–466.

Howlader, M.A., and G.H. Gerber. 1986a. Calling behavior of the bertha armyworm, *Mamestra configurata* (Lepidoptera: Noctuidae). The Canadian Entomologist 118: 735–743.

Howlader, M.A., and G.H. Gerber. 1986b. Effects of age, egg development, and mating on calling behavior of the bertha armyworm, *Mamestra configurata* (Lepidoptera: Noctuidae). The Canadian Entomologist 118: 1221–1230.

Gerber, G.H. 1987. Reproductive cycles of the red turnip beetle, *Entomoscelis americana* Brown (Coleoptera: Chrysomelidae). The Canadian Entomologist 119: 1069–1079.

Gerber, G.H., and M.A. Howlader. 1987. The effects of photoperiod and temperature on calling behaviour and egg development of the bertha armyworm, *Mamestra configurata* (Lepidoptera: Noctuidae). Journal of Insect Physiology 33: 429–436.

Lamb, R.J., P.A. MacKay, and G.H. Gerber. 1987. Are development and growth of pea aphids, *Acyrthosiphon pisum*, in North America adapted to local temperatures? Oecologia 72: 170–177.

Bodnaryk, R.P., and G.H. Gerber. 1988. Inhibition of spermiogenesis of eupyrene spermatozoa by elevated, sublethal temperatures during pupal-adult development of the bertha armyworm, *Mamestra configurata* Wlk. (Lepidoptera, Noctuidae). International Journal of Invertebrate Reproduction and Development 13: 65–85.

Gerber, G.H. 1989. The red turnip beetle, *Entomoscelis americana* (Coleoptera: Chrysomelidae): distribution, temperature adaptations, and zoogeography. The Canadian Entomologist 121: 315–324.

Gerber, G.H., R.P. Bodnaryk, and J. Walkof. 1991. Effects of elevated, sublethal temperatures during pupal-adult development of male bertha armyworm, *Mamestra configurata* Walker (Lepidoptera, Noctuidae), on fertility, mating, and egg laying. Invertebrate Reproduction and Development 19: 213–224.

Gerber, G.H., and J. Walkof. 1992. Phenology and reproductive status of adult redbacked cutworms, *Euxoa ochrogaster* (Guenée) (Lepidoptera: Noctuidae), in southern Manitoba. The Canadian Entomologist 124: 541–551.

Gerber, G.H., J. Walkof, and D. Juskiw, 1992. Portable, solar-powered charging system for blacklight traps. The Canadian Entomologist 124: 553–554.

Gerber, G.H. 1994. Biology of *Entomoscelis* Chevrolat. *In* Jolivet, P.H., M.L. Cox and E. Petitpierre (Eds.). Novel aspects of the biology of Chrysomelidae. Series Entomologica 50: 549–553. Springer Netherlands.

Gerber, G.H. 1995. Fecundity of *Lygus lineolaris* (Heteroptera: Miridae). The Canadian Entomologist 127: 263–264.

Turnock, W.J., G.H. Gerber, B.H. Timlick, and R.J. Lamb. 1995. Losses of canola seeds from feeding by *Lygus* species (Heteroptera: Miridae) in Manitoba. Canadian Journal of Plant Science 75: 731–736.

Gerber, G.H., and I.L. Wise. 1995. Seasonal occurrence and number of generations of *Lygus lineolaris* and *L. borealis* (Heteroptera: Miridae) in southern Manitoba. The Canadian Entomologist 127: 543–559.

Gerber, G.H. 1996. Field evaluation of the suitability of four *Brassica* and two *Sinapis* species (Brassicaceae) as host plants of *Lygus lineolaris* (Palisot de Beauvois) (Heteroptera: Miridae). Canadian Journal of Plant Science 76: 203–205.

Leferink, J.H.M., and G.H. Gerber. 1997. Development of adult and nymphal populations of *Lygus lineolaris* (Palisot de Beauvois), *L. elisus* Van Duzee, and *L. borealis* (Kelton) (Heteroptera: Miridae) in relation to seeding date and stage of plant development on canola (Brassicaceae) in southern Manitoba. The Canadian Entomologist 129: 777–787.

Gerber, G.H. 1997. Oviposition preferences of *Lygus lineolaris* (Palisot de Beauvois) (Heteroptera: Miridae) on four *Brassica* and two *Sinapis* species (Brassicaceae) in field cages. The Canadian Entomologist 129: 855–858.

Gerber, G.H. 1998. Suitability of *Brassica juncea* (Brassicaceae) as a host plant for oviposition for *Lygus lineolaris* (Palisot de Beauvois) (Heteroptera: Miridae) Canadian Journal of Plant Science 78: 139–143.