



- Ables, J.R., Shepard, M. & Holman, J.R. 1976. Development of the parasitoids *Spalangia endius* and *Muscidifurax raptor* in relation to constant and variable temperature: simulation and validation. *Environmental Entomology* **5**, 329-333.
- Aldyhim, Y.N. & Khalil, A.F. 1993. Influence of temperature and daylength on population development of *Aphis gossypii* in *Cucurbita pepo*. *Entomologia Experimentalis et Applicata* **67**, 167-172.
- Ali, A. & Gaylor, M.J. 1992. Effects of temperature and larval diet on development of the beet armyworm (Lepidoptera: Noctuidae). *Environmental Entomology* **21**, 780-786.
- Ali, A., Luttrell, R.G. & Schneider, J.C. 1990. Effects of temperature and larval diet on development of the fall armyworm (Lepidoptera: Noctuidae). *Annals of Entomological Society of America* **83**, 725-733.
- Ali, A.S.A. & Watson, T.F. 1978. Effect of temperature on development and survival of *Zelus renardii*. *Environmental Entomology* **7**, 889-891.
- Allen, G.R. & Keller, M.A. 1991. *Uraba lugens* (Lepidoptera: Noctuidae) and its parasitoids (Hymenoptera: Braconidae): temperature, host size, and development. *Environmental Entomology* **20**, 458-469.
- Allsopp, P.G. 1977. Biology and capacity for increase of *Monistria discrepans* (Walker) (Orthoptera: Pyrgomophidae) in the laboratory. *Journal of Australian Entomological Society* **16**, 207-213.
- Allsopp, P.G., Cowie, B.A. & Franzmann, B.A. 1983. Development of immature stages of the Lucerne leafroller *Merophyas divulsana* (Walker) (Lepidoptera: Tortricidae) under constant temperatures and on several larval diets. *Journal of Australian Entomological Society* **22**, 287-291.
- Al-Maliky, S.K., Al-Izzi, M.A.J. & Jabbo, N.F. 1988. Effects of temperature and photoperiod on the development and oviposition of *Apanteles* sp. Group Ultor (Hymenoptera: Braconidae), a larval parasite of the Carob moth *Ectomyelois ceratoniae* (Lepidoptera: Pyralidae). *Entomophaga* **33**, 193-200.
- AlSaffar, Z.Y., Grainger, J.N.R. & Aldrich, J. 1995b. Influence of constant and changing temperature and humidity on developmental and survival of the eggs and pupae of *Drosophila melanogaster*. *Journal of Thermal Biology* **95**, 119-122.
- Anman, G.D. 1968. Effect of temperature and humidity on development and hatching of eggs of *Adelges piceae*. *Annals of Entomological Society of America* **61**, 1606-1611.
- Amos, T.G. 1968. Some laboratory observations on the rates of development, mortality and oviposition of *Dermestes frischii* (Coleoptera: Dermestidae). *Journal of Stored Products Research* **4**, 103-117.
- Ankersmit, G.W., Dijkmen, H., Keuning, N.J., Mertens, H., Sins, A. & Tecoma, H.M. 1986. *Episyrphus balteatus* as a predator of the aphid *Sitobion avenae* on winter wheat. *Entomologia Experimentalis et Applicata* **42**, 271-277.
- Araya, J.E., Cambron, S.E. & Ratcliffé, R.H. 1996. Development and reproduction of two color forms of English grain aphid (Homoptera: Aphididae). *Environmental Entomology* **25**, 366-369.
- Arbogast, R.T. 1975. Population growth of *Xylocoris flavipes*: influence of temperature and humidity. *Environmental Entomology* **4**, 825-832.
- Archer, T.L., Musick, G.L. & Murray, R.L. 1980. Influence of temperature and moisture on black cutworm (Lepidoptera: Noctuidae) development and reproduction. *Canadian Entomologist* **112**: 665-675.
- Archer, T.L. & Strong, R.G. 1975. Comparative studies on the biologies of six species of *Trogoderma*: *T. glabrum*. *Annals of the Entomological Society of America* **68**, 105-114.
- Arias-Reveron, J.M. & Browning, H.W. 1995. Development and mortality of the citrus snow scale (Homoptera: Diaspididae) under constant temperature and relative humidity. *Environmental Entomology* **24**, 1189-1195.
- Ash, N. & Greenberg, B. 1975. Developmental temperature responses of the sibling species *Phaenica sericata* and *Phaenica pallescens*. *Annals of the Entomological Society of America* **68**, 197-200.
- Ashby, K.R. 1961. The life-history and reproductive potential of *Cryptolestes pusillus* (Schönherr) (Coleoptera: Cucujidae) at high temperatures and humidities. *Bulletin of Entomological Research* **52**, 353-361.
- Avilla, J. & Copland, M.J.W. 1988. Development rate, number of mature oocytes at emergence and adult size of *Encarsia tricolor* at constant and variable temperatures. *Entomophaga* **33**, 289-298.
- Awan, M. 1988. Development and mating behaviour of *Oechalia schellenbergi* (Guerin-Meneville) and *Cermatulus nasalis* (Westwood) (Hemiptera: Pantatomidae). *Journal of Australian Entomological Society* **27**, 183-187.

- Babu, T.R. & Azam, K.M. 1987. Biology of *Cryptolaemus montrouzieri* Mulsant (Coccinellidae: Coleoptera) in relation to temperature. *Entomophaga* **32**, 381-386.
- Bachler, J.S. & Bradley, J.R. 1975. Effect of temperature on development and mortality of the boll weevil egg stage. *Environmental Entomology* **4**, 319-321.
- Bachler, J.S., Jones, J.W., Bradley, J.R. & Bowen, H.D. 1975. The effect of temperature on development and mortality of boll weevil immature stages. *Environmental Entomology* **4**, 808-811.
- Bailey, C.G. 1976. Temperature effects on non-diapause development of *Mamestra configurata* (Lepidoptera: Noctuidae). *Canadian Entomologist* **108**: 1339-1334.
- Baker, C.R.B. & Miller, G.W. 1974. Some effects of temperature and larval food on the development of *Spodoptera littoralis* (Boisd.) (Lepidoptera: Noctuidae). *Bulletin of Entomological Research* **63**, 495-511.
- Baldwin, J.D. & Dingle, H. 1986. Geographic variation in the effects of temperature on life-history traits in the large milkweed bug *Oncopeltus fasciatus*. *Oecologia* **69**, 64-71.
- Ballou, J.K., Tsai, J.H. & Center, T.D. 1986. Effects of temperature on the development, natality, and longevity of *Rhopalosiphum nymphaeae* (L.) (Homoptera: Aphididae). *Environmental Entomology* **15**, 1096-1099.
- Barfield, C.S., Mitchell, E.R. & Poe, S.L. 1978. A temperature dependent model for fall armyworm development. *Annals of the Entomological Society of America* **71**, 70-74.
- Barlow, C.A. 1962. The influence of temperature on the growth of experimental populations of *Myzus persicae* and *Macrosiphum euphorbiae*. *Canadian Journal of Zoology* **40**, 145-157.
- Banerjee, A.C. 1969. Development of *Crambus trisectus* at controlled constant temperatures in the laboratory. *Journal of Economic Entomology* **62**, 703-705.
- Barfield, C.S., Mitchell, E.R. & Poe, S.L. 1978. A temperature-dependent model for fall armyworm development. *Annals of the Entomological Society of America* **71**, 70-74.
- Barfield, C.S., Sharpe, P.J.H. & Bottrell, D.G. 1977. A temperature driven development model for the parasite *Bracon mellitor* (Hymenoptera: Braconidae). *Canadian Entomologist* **109**, 1503-1514.
- Barker, J.F. & Enz, J.W. 1994. Development of laboratory reared banded sunflower moth, *Cochylis hospes* (Lepidoptera: Cochylidae), in relation to temperature. *Journal of Kansas Entomological Society* **66**, 420-426.
- Barnes, J.K. 1976. Effect of temperature on development, survival, oviposition, and diapause in laboratory populations of *Sepedon fuscipennis* (Diptera: Sciomyzidae). *Environmental Entomology* **5**, 1089-1098.
- Barnes, P.T., Holland, B. & Courreges, V. 1984. Genotype by environment and epistatic interactions in *Drosophila melanogaster*: the effects of Gpdh allozymes, genetic background and rearing temperature on larval developmental time and viability. *Genetics* **122**, 859-868.
- Bartlett, A.C., Butler, G.D. & Hamilton, A.G. 1980. Developmental rate of the sooty strain of *Pectinophora gossypiella*. *Annals of the Entomological Society of America* **73**, 164-166.
- Bar-Zeev, M. 1958. The effect of temperature on the growth rate and survival of the immature stages of *Aedes aegypti* (L.). *Bulletin of Entomological Research* **49**, 157-163.
- Bastian, R.A. & Hart, E.R. 1991. Temperature effects on developmental parameters of the mimosa webworm (Lepidoptera: Plutellidae). *Environmental Entomology* **20**, 1141-1148.
- Baumgartner, J., Bieri, M. & Delucchi, V. 1987. Growth and development of immature life stages of *Propylaca 14-punctata* L. and *Coccinella 7-punctata* L. (Coleoptera: Coccinellidae) simulated by the metabolic pool model. *Entomophaga* **32**, 415-423.
- Baxendale, F.P., Teetes, G.L., Sharpe, P.J.H. & Wu, H. 1984. Temperature-dependent model for development of nondiapausing sorghum midges (Diptera: Cecidomyiidae). *Environmental Entomology* **13**, 1572-1576.
- Beach, M.R. & Todd, J.W. 1988. Development, reproduction, and longevity of *Autographa biloba* (Lepidoptera: Noctuidae), with observations on laboratory adaptations. *Annals of the Entomological Society of America* **81**, 943-949.
- Beckwith, R.C. 1982. Effects of constant laboratory temperatures on the douglas-fir tussock moth (Lepidoptera: Lymantriidae). *Environmental Entomology* **11**, 1159-1163.
- Bell, R.A. 1989. Respiratory activity during embryonic development in a diapausing and a selected non-diapausing strain of the gypsy moth, *Lymantria dispar* L. *Comparative Biochemistry and Physiology* **93A**, 767-771.



- Bell, R.J. & Watters, F.L. 1982. Environmental factors influencing the development and rate of increase of *Prostephanus truncatus* (Coleoptera: Bostrychidae) on stored maize. *Journal of Stored Products Research* **18**, 131-142.
- Bellinger, R.G. & Pienkowski, R.L. 1989. Polymorphic development in relation to the life history of *Melanoplus femurubrum* (Orthoptera: Acrididae). *Annals of the Entomological Society of America* **82**, 166-171.
- Bellows, T.S., Paine, T.D. & Gerling, D. 1992. Development, survival, longevity, and fecundity of *Clitostellus arcuatus* (Coleoptera: Coccinellidae) on *Siphoninus phillyreae* (Homoptera: Alcyrodidae) in the laboratory. *Environmental Entomology* **21**, 659-663.
- Benestad, E. 1970. Laboratory experiments on the biology of *Syrphus corrolae* (Fabr.) (Diptera: Syrphidae). *Norsk Entomologisk Tidsskrift* **17**, 77-85.
- Benson, E.P., Zungoli, P.A. & Smith, L.E. 1994. Comparison of developmental rates of two separate populations of *Periplaneta fuliginosa* (Diptera: Blattellidae) and equations describing development, preoviposition and oviposition. *Environmental Entomology* **23**, 979-986.
- Beppu, K., Yoshida, T. & Kimura, M. 1996. Seasonal life cycles and adaptations of four species of *Drosophila* at high altitudes in central Japan. *Japanese Journal of Entomology* **64**, 627-635.
- Berkett, L.P., Mowery, P.D. & Bode, W.M. 1976. Rate of development of *Plytynota idaeusalis* at constant temperatures. *Annals of the Entomological Society of America* **69**, 1091-1094.
- Bernhardt, J.L. & Shepard, M. 1978. Validation of a physiological equation: development of the Mexican bean beetle on snap beans and soybeans. *Environmental Entomology* **7**, 131-136.
- Bernal, J. & Gonzalez, D. 1993. Temperature requirements of four parasitoids of the Russian wheat aphid *Diuraphis noxia*. *Entomologia Experimentalis et Applicata* **69**, 173-182.
- Bernal, J. & Gonzalez, D. 1995. Thermal requirements of *Diaeretiella rapae* on Russian wheat aphid *Diuraphis noxia* (Homoptera: Aphididae) hosts. *Journal of Applied Entomology* **119**, 273-277.
- Blake, G.M. 1958. Diapause and the regulation of development in *Anthrenus verbasci* (L.) (Coleoptera: Dermestidae). *Bulletin of Entomological Research* **49**, 751-775.
- Blumberg, D. & Swirski, E. 1982. Comparative biological studies on two species of predatory beetles of the genus *Cybocephalus* (Coleoptera: Cybocephalidae). *Entomophaga* **27**, 67-76.
- Bosch, J. & Kemp, W.P. 2000. Development and emergence of the orchard pollinator *Osmia lignaria* (Hymenoptera: Megachilidae). *Environmental Entomology* **29**, 8-13.
- Braby, M.F. & Jones, R.E. 1994. Effect of temperature and hostplants on survival, development and body size in three tropical satyrine butterflies from northeastern Australia. *Australian Journal of Zoology* **42**, 195-213.
- Braman, S.K., Sloderbeck, P.E. & Yeargan, K.V. 1984. Effects of temperature on the development and survival of *Nabis roseipennis*, and *N. rufusculus* (Hemiptera: Nabidae). *Annals of the Entomological Society of America* **77**, 592-596.
- Braman, S.K. & Yeargan, K.V. 1988. Comparison of developmental and reproductive rates of *Nabis americanoferus*, *N. roseipennis*, and *N. rufusculus* (Hemiptera: Nabidae). *Annals of the Entomological Society of America* **81**, 923-930.
- Briere, J-F. & Pracros, P. 1998. Comparison of temperature-dependent growth models with the development of *Lobesia botrana*. *Environmental Entomology* **27**, 94-101.
- Britain, J.E. & Campbell, I.C. 1991. The effect of temperature on egg development in the Australian mayfly genus *Coloburiscoides* (Ephemeroptera: Coloburiscidae) and its relationship to distribution and life history. *Journal of Biogeography* **18**, 281-285.
- Britain, J.E., Lillehammer, A. & Saltveit, S.J. 1984. The effect of temperature on intraspecific variation in egg biology and nymphal size in the stonefly, *Capnia atra* (Plecoptera). *Journal of Animal Biology* **53**, 161-169.
- Britain, J.E. & Mutch, R.A. 1984. The effect of water temperature on the egg incubation period of *Mesocapnia ocnone* (Plecoptera) from the Canadian Rocky Mountains. *Canadian Entomologist* **116**, 549-554.
- Brown, H.D. 1972. On the biology of *Liadalia flavomaculata* (Coleoptera: Coccinellidae), a predator of the wheat aphid in South Africa. *Bulletin of Entomological Research* **61**, 673-679.



- Browning, H.W. & Oatman, E.R. 1981. Effects of different constant temperatures on adult longevity, development time, and progeny production of *Hyposoter exiguae* (Hymenoptera: Ichneumonidae). *Annals of the Entomological Society of America* 74, 79-82.
- Brunner, J.F. & Rice, R.E. 1984. Pearch twig borer, *Anarsia lineatella* Zeller (Lepidoptera: Gelechiidae), development in Washington and California. *Environmental Entomology* 13, 607-610.
- Brust, R. A. 1967. Weight and development time of different stadia of mosquitoes reared at various constant temperatures. *Canadian Entomologist* 99, 986-993.
- Bryan, D.E., Jackson, C.G., Carranza, R.L. & Neemann, E.G. 1976. *Lygus hesperus*: production and development in the laboratory. *Journal of Economic Entomology* 69, 127-129.
- Bryant, S.R., Bale, J.S. & Thomas, C.D. 1999. Comparison of development and growth of nettle-feeding larvae of Nymphalidae (Lepidoptera) under constant and alternating temperature regimes. *European Journal of Entomology* 96, 143-148.
- Burden, D.J. & Hart, E.R. 1989. Degree-day model for egg eclosion of the pine needle scale (Hemiptera: Diaspididae). *Environmental Entomology* 18, 223-227.
- Burges, H.D. & Cammell, M.E. 1964. Effect of temperature and humidity on *Trogoderma anthrenoides* (Sharp) (Coleoptera: Dermestidae) and comparisons with related species. *Bulletin of Entomological Research* 55, 313-325.
- Burges, H.D. & Haskins, K.P.F. 1964. Life-cycle of the tropical warehouse moth, *Cadra cautella* (Wlk.), at controlled temperatures and humidities. *Bulletin of Entomological Research* 55, 775-789.
- Butler, G.D. 1966. Development of the beet armyworm and its parasite *Chelonus texanus* in relation to temperature. *Journal of Economic Entomology* 59, 1324-1327.
- Butler, G.D. 1970a. Temperature and development of *Spanagonicus albofasciatus* and *Rhinacola forticornis*. *Journal of Economic Entomology* 63, 669-670.
- Butler, G.D. 1970. Temperature and the development of egg and nymphal stages of *Lygus desertus*. *Journal of Economic Entomology* 63, 1994-1995.
- Butler, G.D. 1976. Bollworm: development in relation to temperature and larval food. *Environmental Entomology* 5, 520-523.
- Butler, G.D. 1982. Development time of *Coccinella Septempunctata* in relation to constant temperatures (Coleoptera: Coccinellidae). *Entomophaga* 27, 349-353.
- Butler, G.D., Bryan, D.E. & Jackson, C.G. 1968. Development of the salt-marsh caterpillar parasite, *Exorista mella* at controlled constant and variable temperatures in the laboratory. *Journal of Economic Entomology* 61, 161-163.
- Butler, G.D. & Dickerson, U.A. 1972. Life cycle of the convergent lady beetle in relation to temperature. *Journal of Economic Entomology* 65, 1508-1509.
- Butler, G.D. & Hamilton, A.G. 1976. Development time of *Heliothis virescens* in relation to constant temperature. *Environmental Entomology* 5, 759-760.
- Butler, G.D. & Hamilton, A.G. 1976. Temperature-dependent development rates for four strains of *Pectinophora gossypiella*. *Annals of the Entomological Society of America* 69, 450-452.
- Butler, G.D., Hamilton, A.G. & Bartlett, A.C. 1975. Development of the dark strain of cabbage looper in relation to temperature. *Environmental Entomology* 4, 619-620.
- Butler, G.D., Hamilton, A.G. & Lopez, J.D. 1983. *Cardiochiles nigriceps* (Hymenoptera: Braconidae): development time and fecundity in relation to temperature. *Annals of the Entomological Society of America* 76, 536-538.
- Butler, G.D. & Hamilton, A.G. & Proshold, F.I. 1979. Developmental times of *Heliothis virescens* and *H. subflexa* in relation to constant temperature. *Annals of the Entomological Society of America* 72, 263-266.
- Butler, G.D. & Ritchie, P.L. 1967. The life cycle of *Hypera brunneipennis* and a parasite, *Bathyplectes curculionis*, in relation to temperature. *Journal of Economic Entomology* 60, 1239-1241.
- Butler, G.D. & Ritchie, P.L. 1970. Development of *Chrysopa carnea* at constant and fluctuating temperatures. *Journal of Economic Entomology* 63, 1028-1030.
- Butler, G.D. & Schmidt, K.M. 1985. *Goniozus legneri* (Hymenoptera: Bethyridae): development, oviposition, and longevity in relation to temperature. *Annals of the Entomological Society of America* 78, 373-375.

- Butler, G.D. & Wardecker, A.L. 1973. *Collops vittatus* (Coleoptera: Malachiidae): development at constant temperatures. *Annals of the Entomological Society of America* **66**, 1168-1170.
- Butler, G.D. & Wardecker, A.L. 1974. Development of *Peristenus stygicus*, a parasite of *Lygus hesperus* in relation to temperature. *Journal of Economic Entomology* **67**, 132-133.
- Butterfield, J. 1976. The response of development rate to temperature in the univoltine crane fly, *Tipula subnodicornis*. *Oecologia* **25**, 89-100.
- Buxton, J.H. & Madge, D.S. 1976. The evaluation of the European earwig (*Forficula auricularia*) as a predator of the Damson-hop aphid (*Phorodon humuli*). I. Feeding experiments. *Entomologia Experimentalis et Applicata* **19**, 109-114.
- Calhoun, D.S., Funderburk, J.E., & Teare, I.D. 1988. Soybean seed crude protein and oil levels in relation to weight, developmental time, and survival of southern green bug (Hemiptera: Pentatomidae). *Environmental Entomology* **17**, 727-729.
- Calvin, D.D., Higgins, R.A., Knapp, M.C., Poston, F.L., Welch, S.M., Showers, W.B., Witkowski, J.F., Mason, C.E., Chiang, H.C. & Keaster, A.J. 1991. Similarities in developmental rates of geographically separate European corn borer (Lepidoptera: Pyralidae) populations. *Environmental Entomology* **20**, 441-449.
- Calvin, D.D., Knapp, M.C., Welch, S.M., Poston, F.L., & Elzinga, R.J.C. 1984. Impact of environmental factors in *Trichogramma pretiosum* reared on southwestern corn borer eggs. *Environmental Entomology* **13**, 774-780.
- Campbell, A., Frazer, B.D., Gilbert, N., Gutierrez, A.P. & Mackauer, M. 1974. Temperature requirements of some aphids and their parasites. *Journal of Applied Ecology* **11**: 431-438.
- Campbell, A. & Mackauer, M. 1975. Thermal constants for development of the pea aphid (Homoptera: Aphididae) and some of its parasites. *Canadian Entomologist* **107**, 419-423.
- Campbell, A., Singh, N.B. & Sinha, R.N. 1976. Bioenergetics of the granary weevil, *Sitophilus granarius* (L.) (Coleoptera: Curculionidae). *Canadian Journal of Zoology* **54**, 786-798.
- Cannon, R.J.C. 1984. The development rate of *Metopolophium dirhodum* (Hemiptera: Aphididae) on winter wheat. *Bulletin of Entomological Research* **74**, 33-46.
- Capinera, J.L., Detling, J.K. & Parton, W.J. 1983. Assessment of range caterpillar (Lepidoptera: Saturniidae) effects with a grassland simulation model. *Journal of Economic Entomology* **76**, 1088-1094.
- Cardona, C. & Oatman, E.R. 1975. Biology and physical ecology of *Apantheles sublanchari* (Hymenoptera: Braconidae), with notes on temperature responses of *Apantheles scutellaris* and its host, the potato tubeworm. *Hilgardia* **43**, 1-51.
- Caroll, D.P. & Hoyt, S.C. 1986. Some effects of parental rearing conditions and age on progeny birth weight, growth, development, reproduction in the apple aphid, *Aphis pomi* (Homoptera: Aphididae). *Environmental Entomology* **15**, 614-619.
- Casey, T.M. 1977. Physiological responses to temperature of caterpillars of a desert population of *Manduca sexta* (Lepidoptera: Sphingidae). *Comparative Biochemistry and Physiology* **57A**, 53-58.
- Cave, R.D. & Gaylor, M.J. 1988. Influence of temperature and humidity on development and survival of *Telenomus reynoldsi* (Hymenoptera: Scelionidae) parasitizing *Geocoris punctipes* (Heteroptera: Lygaeidae) eggs. *Annals of the Entomological Society of America* **81**, 278-285.
- Champlain, R.A. & Butler, G.D. 1967. Temperature effects on development of the egg and nymphal stages of *Lygus hesperus* (Hemiptera: Miridae). *Annals of the Entomological Society of America* **60**, 519-521.
- Champlain, R.A. & Sholdt, L.L. 1967. Temperature range for development of immature stages of *Geocoris punctipes* (Hymenoptera: Lygaeidae). *Annals of the Entomological Society of America* **60**, 883-885.
- Chan, W.P., Ellsbury, M.M. & Baker, G.T. 1990. Effects of temperature on preimaginal development of *Hypera meles* (Coleoptera: Curculionidae). *Annals of the Entomological Society of America* **83**, 1116-1124.
- Chang, C.L., Kurashima, R. & Albrecht, C. 2000. Effect of limiting concentrations of growth factors in mass rearing diets for *Ceratitis capitata* larvae (Diptera: Tephritidae). *Annals of the Entomological Society of America* **93**, 898-903.
- Chaudhry, G.U. 1955. The development and fecundity of the oriental fruit moth, *Grapholitha* (Cydia) *molesta* under controlled temperatures and humidities. *Bulletin of Entomological Research* **46**, 869-898.



- Chazeau, J. 1981. Données sur la biologie de *Carlophora quadrivittata* (Coleoptera: Coccinellidae), prédateur de *Coccisviridis* (Hemiptera: Coccidae) en Nouvelle-Calédonie. *Entomophaga* **26**, 301-312.
- Chen, C.P., Delinger, D.L. & Lee, R.E. 1987. Responses of nondiapausing flesh flies (Diptera: Sarcophagidae) to low rearing temperatures: developmental rate, cold tolerance, and glycerol concentrations. *Annals of the Entomological Society of America* **80**, 790-796.
- Chea, C.S.J. 1987. Temperature requirements of the Chrysanthemum leaf miner, *Chromatomyia syngenesiae* (Diptera: Agromyzidae), and its ectoparasitoid, *Diglyphus isaca* (Hymenoptera: Eulophidae). *Entomophaga* **32**, 357-365.
- Cheah, A.S.-J. & McClure, M.S. 1998. Life history and development of *Pseudoscymnus tsugae* (Coleoptera: Coccinellidae), a new predator of the Hemlock woolly adelgid (Homoptera: Adelgidae). *Environmental Entomology* **27**, 1531-1536.
- Chmiel, S.M. & Wilson, M.C. 1979. Estimating threshold temperature and heat unit accumulation required for meadow spittlebug egg hatch. *Environmental Entomology* **8**, 612-614.
- Chmiel, S.M. & Wilson, M.C. 1979. Estimation of the lower and upper developmental threshold temperatures and duration of the nymphal stages of the meadow spittlebug, *Philaenus spumarius*. *Environmental Entomology* **8**, 682-685.
- Chown, S.L. & Scholtz, C.H. 1989. Biology and ecology of the *Dusmoecetes* Jeannel (Col. Curculionidae) species complex on Marion Island. *Oecologia* **80**, 93-99.
- Chritie, G.D. & Parrella, M.P. 1987. Biological studies with *Chrysocharis parksi* (Hymenoptera: Eulophidae) a parasite of *Liriomyza* spp. (Diptera: Agromyzidae). *Entomophaga* **32**, 115-126.
- Claret, J. 1978. La diapause facultative de *Pimpla instigator* (Hymenoptera: Ichneumonidae). II. Role de la température. *Entomophaga* **23**, 411-415.
- Clarke, R.G. & Howitt, A.J. 1975. Development of the strawberry weevil under and field conditions. *Annals of the Entomological Society of America* **68**, 715-718.
- Clarke, K.V. & Sardesai, J.B. 1975. An analysis of the effects of temperature upon the growth and reproduction of *Dysdercus fasciatus* Sign. (Hymenoptera: Pyrrhocoridae). I. The intrinsic rate of increase. *Bulletin of the Entomological Research* **50**, 387-405.
- Cohen, M.B. & Mackauer, M. 1987. Intrinsic rate of increase and temperature coefficients of the aphid parasite *Ephedrus californiae* Baker (Hymenoptera: Aphididae). *Canadian Entomologist* **119**, 231-237.
- Cohet, Y., Vouidibio, J. & David, J.R. 1980. Thermal tolerance and geographic distribution: A comparison of cosmopolitan and tropical endemic *Drosophila* species. *Journal of Thermal Biology* **5**, 69-74.
- Collier, R.H. & Finch, S. 1992. The effects of temperature on development of the large narcissus fly, (*Merodon equestris*). *Annals of Applied Biology* **120**, 383-390.
- Cook, I.M. & Spain, A.V. 1981. Rates of development of the immature stages of the buffalo fly, *Haematobia irritans exigua* de Meijere (Diptera: Muscidae), in relation to temperature. *Australian Journal of Zoology* **29**, 111-119.
- Coombs, C.W. 1978. The effect of temperature and relative humidity upon the development and fecundity of *Dermestes lardarius* L. (Coleoptera: Dermestidae). *Journal of Stored Products Research* **14**, 111-119.
- Coombs, C.W. 1979. The effect of temperature and humidity upon the development and fecundity of *Dermestes haemorrhoidalis* and *Dermestes peruvianus* (Coleoptera: Dermestidae). *Journal of Stored Products Research* **15**, 43-52.
- Coombs, C.W. 1981. The development, fecundity and longevity of *Dermestes ater* (Coleoptera: Dermestidae). *Journal of Stored Products Research* **17**, 31-36.
- Coombs, R.L. & Valerio, J.R. 1980. Biology of the fall armyworm on four varieties of bermudagrass when held at constant temperatures. *Environmental Entomology* **9**, 393-396.
- Cooper, R.A. & Schal, C. 1992. differential development and reproduction of the German cockroach (Diptoptera: Blattellidae) on three laboratory diets. *Journal of Economic Entomology* **85**, 838-844.
- Cox, P.D. 1976. The influence of temperature and humidity on the life cycles of *Ectomyelois ceratoniae* (Zeller) (Lepidoptera: Phycitidae). *Journal of Stored Products Research* **12**, 111-117.
- Cox, P.D., Crawford, L.A., Gjestrud, G., Bell, C.H. & Bowley, C.R. 1981. The influence of temperature and humidity on the life cycle of *Corcyra cephalonica* (Stainton) (Lepidoptera: Pyralidae). *Bulletin of the Entomological Research* **71**, 171-181.



- Cronin, A.L. & Schwarz, M.P. 1999. Life cycle and social behavior in a heathland population of *Exoneura robusta* (Hymenoptera: Apidae): Habitat influences opportunities for sib rearing in a primitively social bee. *Annals of Entomological Society of America* **92**, 707-716.
- Currie, J. 1967. Some effects of temperature and humidity on the rates of development, mortality and oviposition of *Cryptolestes pusillus* (Cucujidae: Coleoptera). *Journal of stored Products Research* **3**, 97-108.
- Dallwitz, R. 1984. The influence of constant and fluctuating temperatures on development rate and survival of pupae of the Australian sheep blowfly *Lucilia cuprina*. *Entomologia Experimentalis et Applicata* **36**, 89-95.
- Danthanarayana, W. 1975. The bionomics, distribution and host range of the light brown apple moth, *Epiphyas postvittana* (Tortricidae). *Australian Journal of Zoology* **23**, 419-437.
- Daramola, A.M. 1978. The biology and ecology of the kola weevil, *Sophrorhinus gbaanjaensis* D. and T. (Coleoptera: Curculionidae). *Journal of Natural History* **12**, 661-680.
- David, H., Easwaramoorthy, S., Nandagopal, V., Kurup, N.K., Shanmugasundaram, M. & Santhalakshmi, G. 1981. Influence of different temperatures on the tachinid parasite, *Sturmiopsis inferens* (Diptera). *Entomophaga* **26**, 333-338.
- David, W.A.L. & Gardiner, B.O.C. 1962. Oviposition and the hatching of the eggs of *Pieris brassicae* (L.) in a laboratory culture. *Bulletin of the Entomological Research* **53**, 91-109.
- David, P.J., Horsburgh, R.L. & Holtzman, G.I. 1989. Development of *Platynota flavedanna* and *P. idaeusalis* (Lepidoptera: Tortricidae) at constant temperatures in the laboratory. *Environmental Entomology* **18**, 15-18.
- Davies, L. & Ratcliffe, G.G. 1994. Development rates of some preadult stages in blowflies with reference to low temperatures. *Medical and Veterinary Entomology* **8**, 245-254.
- Davis, E.L., Kline, D.L., Reinert, J.F., Roberts, R.H. & Butler, J.F. 1983. Development of immature *Culicoides mississippiensis* (Diptera: Ceratopogonidae) in the laboratory. *Annals of the Entomological Society of America* **76**, 918-924.
- Dean, G.J. 1974. Effect of temperature on the cereal aphids, *Metopolophium dirhodum* (Wik.), *Rhopalosiphum padi* (L.) and *Macrosiphum avenae* (F.) (Hymenoptera: Aphididae). *Bulletin of the Entomological Research* **63**, 401-409.
- Decker, G.C. & Maddox, J.V. 1971. Effect of temperature on rate of development and survival of *Simyra henrici*. *Journal of Economic Entomology* **64**, 94-98.
- DeClercq, P. & Degheele, D. 1992. Development and survival of *Podius maculiventris* and *Podius sagitta* (Heteroptera: Pentatomidae) at various constant temperatures. *Canadian Entomologist* **124**, 125-133.
- Degrandi-Hoffman, G., Watkins, J.C., Collins, A.M., Loper, G.M., Martin, J.H., Arias, M.C. & Sheppard, W. 1998. Queen developmental times as a factor in the Africanization of European honey bee (Hymenoptera: Apidae) populations. *Annals of the Entomological Society of America* **91**, 52-58.
- Delden, W. van, & Kamping, A. 1991. Change in relative fitness with temperature among second chromosome arrangements in *Drosophila melanogaster*. *Genetics* **127**, 507-514.
- De Loach, C.J. & Cordo, H.A. 1970. Life cycle and biology of *Neochetina brucki*, a weevil attacking waterhyacinth in Argentina, with notes on *N. eichhorniae*. *Annals of the Entomological Society of America* **69**, 643-652.
- Depner, K.R. 1961. The effect of temperature on development and diapause of the hornfly, *Siphona irritans* (Diptera: Muscidae). *Canadian Entomologist* **93**: 855-859.
- Dowel, R.V. & Fitzpatrick, G.E. 1978. Effects of temperature on the growth and survivorship of the citrus blackfly (Homoptera: Aleyrodidae). *Canadian Entomologist* **110**: 1347-1350.
- Dunbar, D.M. & Bacon, O.G. 1972. Influence of temperature of development and reproduction of *Geocoris atricolor*, *G. pallens*, and *G. punctipes* (Heteroptera: Lygaeidae) from California. *Environmental Entomology* **1**: 596-600.
- Eckenrode, C.J. & Chapman, R.K. 1971. Effect of various temperatures upon rate of development of the cabbage maggot under artificial conditions. *Annals of the Entomological Society of America* **64**, 1079-1083.
- Edwards, P.B. 1986. Development and larval diapause in the southern African dung beetle, *Onitis caffer* Boehman (Coleoptera: Scarabaeidae). *Bulletin of the Entomological Research* **76**, 109-117.



- Eguagie, W.E. 1972. Effects of temperature and humidity on the development and hatching of eggs of the thistle lacebug, *Tingis ampliata* (Heteroptera: Tingidae). *Entomologia Experimentalis et Applicata* **15**, 183-189.
- Egwuatu, R.I. & Taylor, T.A. 1977. The effects of constant and fluctuating temperatures on the development of *Acanthomia tomentosicollis* (Hemiptera: Coccidae). *Journal of Natural History* **11**, 601-608.
- Elliott, N.C., Kieckheffer, R.W. & Walgenbach, D.D. 1988. Effect of constant and fluctuating temperatures on developmental rates and demographic statistics for the corn leaf aphid (Homoptera: Aphididae). *Journal of Economic Entomology* **81**, 1383-1389.
- Elsay, K.D. 1980. Pickleworm: effect of temperature on development, fecundity, and survival. *Environmental Entomology* **9**, 101-103.
- Elsay, K.D. & Lam, J.J. 1978. *Jalysus spinosus*: Instantaneous rate of population growth at different temperatures and factors influencing the success of storage. *Annals of the Entomological Society of America* **71**, 322-324.
- Eluwa, M.C. 1975. Studies on the life history of the African bushcricket *Zabalius apicalis* (Orthoptera: Tettigoniidae). *Journal of Natural History* **9**, 33-39.
- Engle, C.E. & Barnes, H.H. 1983. Developmental threshold temperatures and heat unit accumulation required for egg hatch of navel orangeworm (Lepidoptera: Pyralidae) *Environmental Entomology* **12**, 1215-1217.
- Er-Ning, H. & Bause, E. 1997. Effects of early temperature exposure on diapause development of spruce budworm (Lepidoptera: Tortricidae). *Environmental Entomology* **26**, 307-310.
- Eubank, W.P., Atmar, J.W. & Ellington, J.J. 1973. The significance and thermodynamics of fluctuating versus static thermal environments on *Heliothis zea* egg development rates. *Environmental Entomology* **2**, 491-497.
- Fan, Y., Groden, E. & Drummond, F.A. 1992. Temperature-dependent development of Mexican bean beetle (Coleoptera: Coccinellidae) under constant and variable temperatures. *Journal of Economic Entomology* **85**, 1762-1770.
- Fargo, W.S. & Bonjour, E.L. 1988. Developmental rate of the squash bug, *Anasa tristis* (Heteroptera: Coreidae), at constant temperatures. *Environmental Entomology* **17**, 926-928.
- Farkas, R., Hogsette, J.A. Borzsonyi, L. 1998. Development of *Hydrotaea aenescens* and *Musca domestica* (Diptera: Muscidae) in poultry and pig manures of different moisture content. *Environmental Entomology* **27**, 695-699.
- Fay, H.A.C. 1985. Temperature-regulated development rates of the immature stages of the African buffalo fly, *Haematobia thirouxi potans* (Bezzi) (Diptera: Muscidae). *Environmental Entomology* **14**, 38-41.
- Ferro, D.N., Logan, J.A., Voss, R.H. & Elkinton, J.S. 1985. Colorado potato beetle (Coleoptera: Chrysomelidae) temperature-dependent growth and feeding rates. *Environmental Entomology* **14**, 343-348.
- Fielding, D.J. & Ruesnik, W.G. 1988. Prediction of egg and nymphal developmental times of the squash bug (Hemiptera: Coreidae) in the field. *Journal of Economic Entomology* **81**, 1377-1382.
- Fisher, J.R. 1986. Development and survival of pupae of *Diabrotica virgifera virgifera* and *D. undecimpunctata howardi* (Coleoptera: Chrysomelidae) at constant temperatures and humidities. *Environmental Entomology* **15**, 626-630.
- Fisher, J.R., Kemp, W.P. & Pierson, F.B. 1996. Diapause, termination, postdiapause development, and prediction of hatch. *Environmental Entomology* **25**, 1158-1166.
- Fleming, D.A. & Jacobs, T.A. 1986. The influence of temperature and relative humidity upon the number and duration of larval instars in *Dermestes lardarius* (Coleoptera: Dermestidae). *Entomologist's Monthly Magazine* **122**, 43-50.
- Fletcher, M.G., Axtell, R.C., Skinner, R.E. & Wilhoit, L.R. 1991. Temperature-dependent development of immature *Carcinops pumilo* (Coleoptera: Histeridae), a predator of *Musca domestica* (Diptera: Muscidae). *Journal of Entomological Science* **26**, 99-108.
- Fluckiger, C.R. & Benz, G. 1982. A temperature driven model to simulate the population development of the summer fruit tortrix, *Adoxophyes orana*. *Entomologia Experimentalis et Applicata* **32**, 160-172.
- Foley, D.H. 1981. Pupal development rate of *Heliothis armiger* (Hubner) (Lepidoptera: Noctuidae) under constant and alternating temperatures. *Journal of Australian Entomological Society* **20**, 13-20.

- Foley, D.H. & Pyke, B.A. 1985. Developmental time of *Creontiades dilutus* (Stal) (Hemiptera: Miridae) in relation to temperature. *Journal of Australian Entomological Society* **24**, 125-127.
- Fornasari, L. 1995. Temperature effects on the embryonic development of *Aphthona abdominalis* (Coleoptera: Chrysomelidae) a natural enemy of *Euphorbia escula* (Euphorbiales: Euphorbiaceae). *Environmental Entomology* **24**, 720-723.
- Foster, J.E. & Taylor, P.L. 1974. Thermal unit requirements for development of the Hessian fly under controlled environments. *Environmental Entomology* **4**, 195-202.
- Frazer, B.D. & Gill, B. 1981. Age, fecundity, weight and the intrinsic rate of increase of the lupine aphid *Macrosiphum albifrons* (Homoptera: Amphididae). *Canadian Entomologist* **113**, 739-745.
- Frazer, B.D. & McGregor, R.R. 1992. Temperature-dependent survival and hatching rate of eggs of seven species of Coccinellidae. *Canadian Entomologist* **124**, 305-312.
- Fusco, R.A., Rhodas, L.D. & Blumenthal, H. 1978. *Compsilura concinnata*: effect of temperature on laboratory propagation. *Environmental Entomology* **7**, 15-19.
- Fye, R.E., Patana, L.D. & McAda, W.C. 1969. Developmental periods for boll weevils reared at several constant and fluctuating temperatures. *Journal of Economic Entomology* **62**, 1402-1405.
- Gabriel, A.D. & Obrycki, J.J. 1990. Thermal requirements for preimaginal development of the strawberry leafroller (Lepidoptera: Tortricidae). *Environmental Entomology* **19**, 339-344.
- Gangavalli, R.R. & Aliniaze, M.T. 1985. Temperature requirements for development of the obliquebanded leafroller, *Choristoneura rosaceana* (Lepidoptera: Tortricidae). *Environmental Entomology* **14**, 17-19.
- Gaylor, M.G. & Sterling, W.L. 1975. Effects of temperature on the development, egg production, and survival of the cotton fleahopper, *Pseudatomoscelis seriatus*. *Environmental Entomology* **4**, 487-491.
- Gehrken, U. 1989. Diapause termination in eggs of the stonefly *Arcynopteryx compacta* (McLachland) in relation to dehydration and cold hardiness. *Journal of Insect Physiology* **35**, 377-385.
- Geier, P.W. 1963. The life history of codling moth, *Cydia pomonella* (L.) (Lepidoptera: Tortricidae), in the Australian capital territory. *Australian Journal of Zoology* **11**, 323-367.
- Gilbert, N. 1984. Control of fecundity in *Pieris rapae*. II. Differential effects of temperature. *Journal of Animal Ecology* **53**, 589-597.
- Gilbert, N. & Raworth, D.A. 1996. Insects and temperature-A general theory. *Canadian Entomologist* **128**, 1-13.
- Giles, K.L., Madden, R.D., Payton, M.E. Dillwith, J.W. 2000. Survival and development of *Chrysoperla rufilabris* (Neuroptera: Chrysopidae) supplied with pea aphids (Homoptera: Aphididae) reared on alfalfa and faba bean. *Environmental Entomology* **29**, 304-311.
- Girma, M., Wilde, G. & Reese, J.C. 1990. Influence of temperature and plant growth stage on development, reproduction, life span, and intrinsic rate of increase of the Russian wheat aphid (Homoptera: Aphididae). *Environmental Entomology* **19**, 1438-1442.
- Goodenough, J.L., Hartstack, A.W. & King, E.G. 1983. Developmental models for *Trichogramma pretiosum* (Hymenoptera: Trichogrammatidae) reared on four hosts. *Journal of Economic Entomology* **76**, 1095-1102.
- Gormally, M.J. 1987. Effect of temperature on the duration of larval and pupal stages of two species of sciomyzid flies, predators of the snail *Lymnaea truncatula*. *Entomologia Experimentalis et Applicata* **43**, 95-100.
- Goto, M., Sekine, Y., Ota, H., Hujikura, M. Suzuki, K. 2001. Relationships between cold hardiness and diapause, and between glycerol and free amino acid contents in overwintering larvae of the oriental corn borer, *Ostrinia furnacalis*. *Journal of Insect Physiology* **47**, 157-165.
- Gould, J.R. & Elkinton, J.S. 1990. Temperature-dependent growth of *Cotesia melanoscela* (Hymenoptera: Braconidae), a parasitoid of the gypsy moth (Lepidoptera: Lymantridae). *Environmental Entomology* **19**, 859-865.
- Gray, D.R., Ravlin, F.W. & Braine, J.A. 2000. Diapause in the gypsy moth: a model of inhibition and development. *Journal of Insect Physiology* **47**, 173-184.
- Greenberg, S.M., Legaspi, B.C., Jones, W.A. & Enkegaard, A. 2000. Temperature-dependent life history of *Eretmocerus eremicus* (Hymenoptera: Aphelinidae) on two whitefly hosts (Homoptera: Aleyrodidae). *Environmental Entomology* **29**, 851-860.

- Gregg, P. 1983. Development of the Australian plague locust, *Chortoicetes terminifera*, in relation to weather I. Effects of constant temperature and humidity. *Journal of Australian Entomological Society* **22**, 247-251.
- Gunstream, S.E. & Chew, Z.M. 1967. The ecology of *Psorophora confinnis* (Diptera: Culicidae) in southern California. II. Temperature and development. *Annals of the Entomological Society of America* **60**, 434-439.
- Guppy, J.C. 1969. Some effects of temperature on the immature stages of the armyworm, *Pseudaletia unipuncta* (Lepidoptera: Noctuidae), under controlled conditions. *Canadian Entomologist* **101**, 1320-1327.
- Guppy, J.C. & Harcourt, D.G. 1978. Effects of temperature on development of the immature stages of the cereal leaf beetle, *Oulema melanopus* (Coleoptera: Chrysomelidae). *Canadian Entomologist* **110**, 257-263.
- Guppy, J.C. & Mukerji, M.K. 1974. Effects of temperature on developmental rate of the immature stages of the alfalfa weevil, *Hypera postica* (Coleoptera: Curculionidae). *Canadian Entomologist* **106**, 93-100.
- Hadaway, A.B. 1955. The biology of the dermestid beetles, *Trogoderma granarium* and *Trogoderma versicolor*. *Bulletin of Entomological Research* **46**, 781-796.
- Halstead, D.G.H. 1967. Biological studies on species of *Palorus* and *Coelopalorus* with comparative notes on *Tribolium* and *Latheticus* (Coleoptera: Tenebrionidae). *Journal of Stored Products Research* **2**, 273-313.
- Hamilton, J.G. & Zallucki, M.P. 1991. Effect of temperature on development rate, survival and fecundity of cotton tipworm, *Crociosema plebejana* (Lepidoptera: Tortricidae). *Australian Journal of Zoology* **38**, 191-200.
- Hammond, F.B., Poston, F.L. & Pedigo, L.P. 1979. Growth of the green cloverworm and a thermal unit system for development. *Environmental Entomology* **8**, 639-642.
- Han, E.-N., Bauce, E. Trempe-Bertrand, F. 2000. Development of the first-instar spruce budworm (Lepidoptera: Tortricidae). *Annals of the Entomological Society of America* **93**, 536-540.
- Hanec, W. & Brust, R.A. 1967. The effect of temperature on the immature stages of *Culiseta inornata* (Diptera: Culicidae) in the laboratory. *Canadian Entomologist* **99**, 59-64.
- Hanula, J.L., Debarr, G.L. & Berisfold, C.W. 1984. Oviposition behaviour and temperature effects on egg development of the southern pine coneworm, *Dioryctria amatella* (Lepidoptera: Pyralidae). *Environmental Entomology* **13**, 1624-1626.
- Hanula, J.L., Debarr, G.L. & Berisfold, C.W. 1987. Threshold temperature and degree-day estimates for developing of immature southern pine coneworms (Lepidoptera: Pyralidae) at constant and fluctuating temperatures. *Journal of Economic Entomology* **80**, 62-64.
- Harari, A.R., Ben-Yakir, D., Chen, M. & Rosen, D. 1998. Temperature-dependent developmental models for predicting the phenology of *Maladera matrida* (Coleoptera: Scarabaeidae). *Environmental Entomology* **27**, 1220-1228.
- Harbo, J.R. & Bolten, A.B. 1981. Development times of male and female eggs of the honey bee. *Annals of the Entomological Society of America* **74**, 504-506.
- Harcourt, D.G., Yee, J.M. & Guppy, J.C. 1983. Two models for predicting the seasonal occurrence of *Agromyza frontella* (Diptera: Agromyzidae) in eastern Ontario. *Environmental Entomology* **12**, 1455-1458.
- Harris, M.O., Galanihe, L.D. & Sandanayake, M. 1999. Adult emergence and reproductive behavior of the leaf curling midge *Dasineura mali* (Diptera: Cecidomyiidae). *Annals of Entomological Society of America* **92**, 748-757.
- Harris, C.R., Mazurek, J.H. & White, G.V. 1962. The life history of the black cutworm, *Agrotis ipsilon*, under controlled conditions. *Canadian Entomologist* **94**, 1183-1187.
- Harris, S.J. & Moran, M.D. 2000. Life history and population characteristics of the mantid *Stagmomantis carolina* (Mantodea: Mantidae). *Environmental Entomology* **29**, 64-68.
- Harrison, W.W., King, E.G. & Ouzid, J.D. 1985. Development of *Trichogramma exiguum* and *T. pretiosum* at five temperature regimes. *Environmental Entomology* **14**, 118-121.
- Hartley, J.C. & Ando, Y. 1988. Egg development patterns in diapausing and nondiapausing species of *Ruspolia*. *Entomologia Experimentalis et Applicata* **49**, 203-212.



- Harvey, J.A. 2000. Dynamic effects of parasitism by an endoparasitoid wasp on the development of two species: implications for host quality and parasitoid fitness. *Ecological Entomology* **25**, 267-278.
- Haugen, D.A. & Stephen, F.M. 1984. Development rates of Nantucket pine tip moth, *Rhyacionia frustrata* (Comstock) (Lepidoptera: Tortricidae), life stages in relation to temperature. *Environmental Entomology* **13**, 56-60.
- Havelka, J. 1980. Effect of temperature on the developmental rate of preimaginal stages of *Aphilodetes aphidimyza* (Diptera: Cecidomyiidae). *Entomologia Experimentalis et Applicata* **27**, 83-90.
- Havelka, J. & Zemek, R. 1988. Intraspecific variability of aphidophagous gall midge *Aphilodetes aphidimyza* (Diptera: Cecidomyiidae) and its importance for biological control of adults. I. Ecological and morphological characteristics of populations. *Journal of Applied Entomology* **105**, 280-288.
- Hawthorne, D.J. Rock, G.C. & Stinner, R.E. 1988. Redbanded leafroller (Lepidoptera: Tortricidae): thermal requirements for development and simulation of within season phenology in North Carolina. *Environmental Entomology* **17**, 40-46.
- Hayakawa, D.L., Grafius, E. & Stehr, F.W. 1990. Effects of temperature on longevity, reproduction, and development of the Asparagus aphid (Homoptera: Aphididae) and the parasitoid, *Diaeretiella rapae* (Hymenoptera: Braconidae). *Environmental Entomology* **19**, 890-897.
- Headrick, D.H., Bellows, T.S. & Perring, T.M. 1999. Development and reproduction of a population of *Eretmocerus eremicus* (Hymenoptera: Aphelinidae) on *Bemisia argentifolii* (Homoptera: Aleyrodidae). *Environmental Entomology* **28**, 300-306.
- Heinrichs, E.A. & Matmeny, E.L. 1969. Hatching of sod webworm eggs in relation to low temperatures. *Journal of Economic Entomology* **62**, 1344-1347.
- Hentz, M.G., Ellsworth, P.C., Naranjo, S.E. & Watson, T.F. 1998. Development, longevity, and fecundity of *Chelonus sp. nr. curvimaculatus* (Hymenoptera: Braconidae), an egg-larval parasitoid of pink bollworm (Lepidoptera: Gelechiidae). *Environmental Entomology* **27**, 443-449.
- Herbert, C. & Cloutier, C. 1990. Temperature-dependent development of eggs and larvae of *Winthemia fumiferana* (Diptera: Tachinidae), a larval-pupal parasitoid of the spruce budworm (Lepidoptera: Tortricidae). *Canadian Entomologist* **122**, 329-341.
- Herrera, C.J., Van Driesche, R.G. & Bellotti, H.C. 1989. Temperature dependent growth rates for the cassava mealybug, *Phenacoccus herreni*, and two of its encyrtid parasitoids *Epidinocarsis diversicornis* and *Acerophagus coccois* in Columbia. *Entomologia Experimentalis et Applicata* **50**, 21-27.
- Hertlein, M.B. 1986. Seasonal development of *Leptopilina bouvardi* (Hymenoptera: Euroilidae) and its hosts, *Drosophila melanogaster* and *D. Simulans* (Diptera: Drosophilidae), in California. *Environmental Entomology* **15**, 859-866.
- Hill, J.K. & Gatehouse, A.G. 1992. Effects of temperature and photoperiod on development and prereproductive period of the silver Y moth *Autographa gamma* (Lepidoptera: Noctuidae). *Bulletin of Entomological Research* **82**, 335-341.
- Hoard, M.W. & Weiss, M.J. 1995. Influence of postdiapause development on the voltinism of the European corn borer (Lepidoptera: Pyralidae) in North Dakota. *Environmental Entomology* **24**, 564-570.
- Hofsvang, T. & Hagvar, E.B. 1975. Duration of development and longevity in *Aphidius ervi* and *Aphidius platensis* (Hymenoptera: Aphidiidae) two parasites of *Myzus persicae* (Homoptera: Aphididae). *Entomophaga* **20**, 11-22.
- Hogg, D.B. 1985. Potato leafhopper (Homoptera: Cicadellidae) immature development, life tables, and population dynamics under fluctuating temperature regimes. *Environmental Entomology* **14**, 349-355.
- Holloway, R.L. & Smith, J.W. 1976. Lesser cornstalk borer response to photoperiod and temperature. *Environmental Entomology* **5**, 996-1000.
- Honěk, A. 1996. Geographical variation in thermal requirements for insect development. *European Journal of Entomology* **93**, 303-312.
- Honěk, A. 1997. Incidence of protogynous and protandrous development in the pre-imaginal stage of insect development: an overview. *Acta Societatis Zoologicae Bohemoslovenicae* **61**, 113-128.
- Honěk, A. 1999. Constraints on thermal requirements for insect development. *Entomological Science* **2**, 615-621.
- Honěk, A. & Kocourek, F. 1988. Thermal requirements for development of aphidophagous Coccinellidae (Coleoptera), Chrysopidae, Hemerobiidae (Neuroptera), and Syrphidae (Diptera): some general trends. *Oecologia* **76**, 455-460.

- Horne, P.A. & Horne, J.A. 1991. The effects of temperature and host density on the development and survival of *Copidosoma kochleri*. *Entomologia Experimentalis et Applicata* **59**, 289-292.
- Houghton, D.C. & Stewart, K.W. 1998. Life history and case-building behavior of *Culoptila cantha* (Trichoptera: Glossosomatidae) in the Brazos River, Texas. *Annals of Entomological Society of America* **91**, 59-70.
- Howe, R.W. 1956. The effect of temperature and humidity on the rate of development and mortality of *Tribolium castaneum* (Herbst) (Coleoptera: Tenebrionidae). *Annals of Applied Biology* **44**, 356-368.
- Howe, R.W. 1960. The effect of temperature and humidity on the rate of development and mortality of *Tribolium confusum* (Duval) (Coleoptera: Tenebrionidae). *Annals of Applied Biology* **48**, 363-376.
- Howe, R.W. 1962. The effect of temperature and humidity on the rate of development and mortality of *Tribolium madens* (Charp.) (Coleoptera: Tenebrionidae). *Annals of Applied Biology* **50**, 649-660.
- Howe, R.W. & Currie, J.E. 1964. Some laboratory observations on the rates of development, mortality and oviposition of several species of Bruchidae breeding on stored pulses. *Bulletin of Entomological Research* **55**, 437-477.
- Howell, J.F. & Neven, L.G. 2000. Physiological development time and zero development temperature of the codling moth (Lepidoptera: Tortricidae). *Environmental Entomology* **29**, 766-772.
- Hsieh, F., Roberts, S.J. & Arnbrust, E.J. 1974. Developmental rate and population of alfalfa weevil larvae. *Environmental Entomology* **3**, 593-597.
- Humpesch, U.H. 1980. Effect of temperature on the hatching time of eggs of five *Ecdyonurus* spp. (Ephemeroptera) from Australian streams and English streams, rivers and tubes. *Journal of Animal Ecology* **49**, 317-333.
- Humpesch, U.H. 1982. Effect of fluctuating temperature on the duration of embryonic development in two *Ecdyonurus* spp. and *Rhithrogena cf. hybrida* (Ephemeroptera) from Australian streams. *Oecologia* **55**, 285-288.
- Hunter-Jones, P. 1968. The effect of constant temperature on egg development in the desert locust, *Schistocerca gregaria* (Forsk.). *Bulletin of Entomological Research* **59**, 707-718.
- Hutchison, W.D., Butler, G.D. & Martin, J.M. 1986. Age-specific development times for pink bollworm (Lepidoptera: Gelechiidae): three age classes of eggs, five instars, and pupal. *Annals of the Entomological Society of America* **79**, 482-487.
- Hutchison, W.D., Butler, G.D. & Martin, J.M. 1986. Temperature-dependent development, mortality, and longevity of *Microplitis rufiventris* (Hymenoptera: Braconidae), a parasitoid of the beet armyworm (Lepidoptera: Noctuidae). *Annals of the Entomological Society of America* **79**, 262-265.
- Iheagwam, E.U. 1978. Effects of temperature on development of the immature stages of the cabbage whitefly, *Aleyrodes proletella* (Homoptera: Aleyrodidae). *Entomologia Experimentalis et Applicata* **23**, 91-95.
- Infante, F., Lius, J.H., Barrera, J.F., Gomez, J & Castillo, A. 1992. Thermal constants for preimaginal development of the parasitoid *Cephalonomia stephanoderis* (Hymenoptera: Bethyridae). *Canadian Entomologist* **124**, 935-941.
- Iqbal, M. & Aziz, S.A. 1973. Effect of different levels of temperature and humidity on the development of *Spathosternum prasiniferum* Walker (Orthoptera: Acridoidea). *Indian Journal of Entomology* **35**, 211-218.
- Isaacson, D.L. 1973. A life table for the cinnabar moth *Tyria jacobaeae*, in Oregon. *Entomophaga* **18**, 291-303.
- Isenhour, D.J. 1986. Developmental time, adult reproductive capability, and longevity of *Campoletis sonorensis* (Hymenoptera: Ichneumonidae) is a parasitoid of fall armyworm *Spodoptera frugiperda* (Lepidoptera: Noctuidae). *Annals of the Entomological Society of America* **79**, 893-397.
- Isenhour, D.J., Wiseman, B.R. & Widstrom, N.W. 1985. Fall armyworm (Lepidoptera: Noctuidae) feeding responses on corn foliage and foliage/artificial diet medium mixtures at different temperatures. *Journal of Economic Entomology* **78**, 328-332.
- Isenhour, D.J. & Yeagan, K.V. 1981. Effects of temperature on the development of *Orius insidiosus*, with notes on laboratory rearing. *Annals of the Entomological Society of America* **74**, 114-116.
- Jackai, L.E.N. & Inang, E.E. 1992. Developmental profiles of two cowpea pests on resistant and susceptible *Vigna* genotypes under constant temperatures. *Journal of Applied Entomology* **113**, 217-227.



- Jackson, C.G., Bryan, D.E., Butler, G.D. & Patana, R. 1970. Development, fecundity and longevity of *Leschnaultia adusta*, a tachnid parasite of the salt-marsh caterpillar. *Journal of Economic Entomology* **63**, 1398-1400.
- Jackson, C.G., Bryan, D.E., Neeman, E.G. & Patana, R. 1976. *Palexorista laxa*: development, longevity, and production of progeny in *Heliothis* spp. *Environmental Entomology* **5**, 431-435.
- Jackson, C.G., Butler, G.D. & Bryan, D.E. 1969. Time required for development of *Voria ruralis* and its host, the cabbage looper, at different temperatures. *Journal of Economic Entomology* **62**, 69-70.
- Jackson, C.G., Delph, J.S. & Neeman, E.C. 1978. Development, longevity and fecundity of *Chelonus blackburni* (Hymenoptera: Braconidae) as a parasite of *Pectiniphora gossypiella* (Lepidoptera: Gelechiidae). *Entomophaga* **23**, 35-42.
- Jackson, J.J. & Elliott, N.C. 1988. Temperature-dependent development of immature stages of the western corn rootworm, *Diabrotica virgifere virgiferea* (Coleoptera: Chrysomelidae). *Environmental Entomology* **17**, 166-171.
- Jacob, T.A. 1981. Observations on the biology of *Oryzaephilus acuminatus* with comparative notes on the common species of *Oryzaephilus* (Coleoptera: Silvanidae). *Journal of Stored Products Research* **17**, 17-23.
- Jacob, T. 1988. The effect of temperature and humidity on the developmental period and mortality of *Typhaea stercorea* (Coleoptera: Mycetophagidae). *Journal of Stored Products Research* **24**, 221-224.
- James, D.G. 1987. Effects of temperature and photoperiod on the development of *Venessa kershawi* McCoy and *Junonia villida* Godart (Lepidoptera: Nymphalidae). *Journal of Australian Entomological Society* **26**, 289-292.
- James, D.G. 1990. Development and survivorship of *Biprorulus bibax* (Hemiptera: Pentatomidae) under a range of constant temperatures. *Environmental Entomology* **19**, 874-877.
- James, D.G. 1992. Effect of temperature on development and survival of *Pristhesancus plagipennis* (Hemiptera: Reduviidae). *Entomophaga* **37**, 259-264.
- James, D.G. & Warren, G.N. 1991. Effect of temperature on development, survival, longevity and fecundity of *Trissolcus oenone* Dodd (Hymenoptera: Scelionidae). *Journal of Australian Entomological Society* **30**, 303-306.
- Johnson, D.W., Barfield, C.S. & Allen, G.E. 1983. Temperature-dependent developmental model for the velvetbean caterpillar (Lepidoptera: Noctuidae). *Environmental Entomology* **12**, 1657-1663.
- Jones, M.G. 1978. Development of wheat bulbfly (*Delia coarctata* Fall.) larvae and pupae at different temperatures. *Entomologia Experimentalis et Applicata* **23**, 288-300.
- Jones, J.M. & Stephen, F.M. 1994. Effect of temperature on development of hymenopterous parasitoids of *Dendroctonus frontalis* (Coleoptera: Scolytidae). *Environmental Entomology* **23**, 457-463.
- Jubb, G.L. & Watson, T.F. 1971. Development of the egg parasite *Telenomus utahensis* in two pentatomid hosts in relation to temperature and host age. *Annals of the Entomological Society of America* **64**, 202-205.
- Judd, G.J.R., Cossentine, J.E., Gardiner, M.G.T. & Thompson, D.R. 1994. Temperature dependent development of the speckled green fruitworm, *Orthosia hibisci* (Lepidoptera: Noctuidae). *Canadian Entomologist* **126**, 1263-1275.
- Kamata, N. & Igarashi, M. 1995. Relationship between temperature, number of instars, larval growth, body size, and adult fecundity of *Quadricalcarifera punctatella* (Lepidoptera: Noctuidae): cost benefit relationship. *Environmental Entomology* **24**, 648-656.
- Karandinos, M.G. & Axtell, R.C. 1967. Temperature effects on the immature stages of *Hippelates pusio*, *H. Bishoppi*, and *H. pallipes* (Diptera: Chloropidae). *Annals of the Entomological Society of America* **60**, 1055-1062.
- Kasana, A. & Ali-Niazee, M.T. 1994. Effect of constant temperatures on development of the walnut husk fly, *Rhagoletis completa*. *Entomologia Experimentalis et Applicata* **73**, 245-254.
- Kay, I.R. 1981. The effect of constant temperatures on the development time of eggs of *Heliothis armiger* (Hubner) (Lepidoptera: Noctuidae). *Journal of Australian Entomological Society* **20**, 155-156.
- Kehat, M. & Wyndham, M. 1972. The influence of temperature on development, longevity, and fecundity in the rutherfled bug, *Nsius vinitor* (Hemiptera: Lygaeidae). *Australian Journal of Zoology* **20**, 67-78.
- Kemp, D.J. 2000. The basis of life-history plasticity in the tropical butterfly *Hypolimnas bolina* (L.) (Lepidoptera: Nymphalidae). *Australian Journal of Zoology* **48**, 67-78.

- Kemp, W.P. & Bosch, J. 2000. Development and emergence of the alfalfa pollinator *Megachile rotundata* (Hymenoptera: Megachilidae). *Annals of the Entomological Society of America* **93**, 904-911.
- Kemp, W.P. & Dennis, B. 1989. Development of two rangeland grass hoppers at constant temperatures: development thresholds revisited. *Canadian Entomologist* **121**, 363-371.
- Khatat, A.R. & Stewart, R.K. 1977. Development and survival of *Lygus lineolaris* exposed to different laboratory rearing conditions. *Annals of the Entomological Society of America* **70**, 274-278.
- Kilian, L. & Nielson, M.W. 1971. Differential effects of temperature on the biological activity of four biotypes of the pea aphid. *Journal of Economic Entomology* **64**, 153-155.
- Kimura, M.T., Ohtsu, T., Yoshida, T., Awasaki, T. & Liu, F.J. 1994. Climatic adaptations and distributions in *Drosophila takahashii* species subgroup (Diptera: Drosophilidae). *Journal of Natural History* **28**, 401-409.
- King, E.G., Brewer, F.D. & Martin, D.F. 1975. Development of *Diatraea saccharalis* (Lepidoptera: Pyralidae) at constant temperatures. *Entomophaga* **20**, 301-306.
- King, E.G. & Martin, D.F. 1975. *Lixophaga diatraeae*: development at different constant temperatures. *Environmental Entomology* **4**, 329-333.
- King, J.E., Price, R.G., Young, J.H., Wilson, L.J. & Pinkston, K.N. 1985. Influence of temperature on development and survival of the immature stages of the elm leaf beetle, *Pyrrhalta luteola* (Muller) (Coleoptera: Chrysomelidae). *Environmental Entomology* **14**, 272-274.
- Kirk, A.A. & Kirk, G. 1990. Effect of temperature on egg development in *Copris hispanus* and *Bubas bison* (Coleoptera: Scarabidae). *Journal of Australian Entomological Society* **29**, 89-90.
- Kirkland, R.L., Peries, I.D. & Hamilton, G.C. 1981. Differentiation and developmental rate of nymphal instars of greenbug reared on sorghum. *Journal of Kansas Entomological Society* **54**, 743-747.
- Kocourek, F., Havelka, J., Bernankova, J. & Jarosik, V. 1994. Effect of temperature on development rate and intrinsic rate on increase of *Aphis gossypii* reared in greenhouse cucumbers. *Entomologia Experimentalis et Applicata* **71**, 59-64.
- Kohane, M.J. & Parsons, P.A. 1986. Environment-dependent fitness differences in *Drosophila melanogaster*: Temperature, domestication and the alcohol dehydrogenase locus. *Heredity* **57**, 289-304.
- Kok, L.T., Ward, R.H. & Grills, C.C. 1975. Biological studies of *Ceutorrhynchidius horridus* (Panzer), an introduced weevil for thistle control. *Annals of the Entomological Society of America* **68**, 503-505.
- Krishnan, M. & Chockalingam, S. 1988. Influence of temperature on the bioenergetics of a tropical moth. *Journal of Thermal Biology* **3**, 149-155.
- Kukal, O., Denlinger, D.L. & Lee, R.E. 1991. Developmental and metabolic changes induced by anoxia in diapausing and non-diapausing flesh fly pupae. *Journal of Comparative Physiology B* **160**, 683-689.
- Kwong, S. 1980. A rearing method for *Sitona humeralis* Stephens (Coleoptera: Curculionidae), and its development under controlled conditions. *Bulletin of Entomological Research* **70**, 97-102.
- Lactin, D.J., Holliday, N.J., Johnson, D.L. & Craigen, R. 1995. Improved rate model of temperature-dependent development by arthropods. *Environmental Entomology* **24**, 68-75.
- Lajeunesse, S.E. & Johnson, G.D. 1992. Developmental time and host selection by the aphid parasitoid *Aphelinus sp. nr. varipes* (Hymenoptera: Aphelinidae). *Canadian Entomologist* **124**, 565-575.
- Lamana, M.L. & Miller, J.C. 1998. Temperature-dependent development in an Oregon population of *Harmonia axyridis* (Coleoptera: Coccinellidae). *Environmental Entomology* **27**, 1001-1005.
- Lamb, R.J. 1992. Developmental rate of *Acyrtosiphon pisum* (Homoptera: Aphididae) at low temperatures: Implications for estimating rate parameters for insects. *Environmental Entomology* **21**, 10-19.
- Lamb, R.J. & Loschiavo, S.R. 1981. Diel, temperature, and the logistic model of developmental rate for *Tribolium confusum* (Coleoptera: Tenebrionidae). *Canadian Entomologist* **113**, 813-818.
- Lamb, R.J. & MacKay, P.A. 1988. Effects of temperature on developmental rate and adult weight of Australian populations of *Acyrtosiphon pisum* (Homoptera: Aphididae). *Memoirs of the Entomological Society of Canada* **146**, 49-55.
- Lamb, R.J., MacKay, P.A. & Gerber, G.H. 1987. Are development and growth of pea aphids, *Acyrtosiphon pisum*, in North America adapted to local temperatures? *Oecologia* **72**, 170-177.
- Lapointe, S.L. 2000. Thermal requirements for the development of *Diaprepes abbreviatus* (Coleoptera: Curculionidae). *Environmental Entomology* **29**, 150-156.
- Larsen, K.J., Madden, L.V. & Nault, L.R. 1990. Effect of temperature and host plant on the development of the backfaced leafhopper. *Entomologia Experimentalis et Applicata* **55**, 285-294.



- Lashomb, J., Hg, Y.S., Jansson, R.K. & Bullock, R. 1987. *Edovum putleri* (Hymenoptera: Eulophidae), an egg parasitoid of Colorado potato beetle (Coleoptera: Chrysomelidae): development and parasitism on egg plant. *Journal of Economic Entomology* **80**, 65-68.
- Lawrence, R.K., Houseweare, M.W., Jennings, D.T. Southard, S.G. & Halteman, W.A. 1985. Development rates of *Trichogramma minutum* (Hymenoptera: Trichogrammatidae) and implications for timing augmentative releases for suppression of egg populations of *Choristoneura fumiferana* (Lepidoptera: Tortricidae). *Canadian Entomologist* **117**, 556-563.
- Leather, S.R. 1994. The effect of temperature on oviposition, fecundity and egg hatch in the pine beauty moth, *Panolis flammea* (Lepidoptera: Noctuidae). *Bulletin of Entomological Research* **84**, 515-520.
- Lee, R.E., Bryant, E.H. & Baust, J.G. 1985. Fecundity and longevity of houseflies after space flight. *Experientia* **41**, 1191-1192.
- Lee, D.A. & Spence, J.R. 1987. Developmental adaptations of the European corn borer (*Ostrinia nubilalis*) in Alberta. *Canadian Entomologist* **119**, 371-380.
- Lefkovich, L.P. & Currie, J.E. 1967. Some morphological, biological and genetical differences between *Cryptolestes pusillus* spp. and *Cryptolestes pusillus pusillus* (Coleoptera: Cucujidae). *Journal of Stored Products Research* **3**, 311-320.
- Legaspi, J.C. & O'Neil, R.J. 1994. Developmental response of nymphs of *Podisus maculiventris* (Heteroptera: Pentatomidae) reared with low numbers of prey. *Environmental Entomology* **23**, 374-380.
- Leibee, G.L. 1984. Influence of temperature on development and fecundity of *Liriomyza trifolii* (Diptera: Agromyzidae) on celery. *Environmental Entomology* **84**, 497-501.
- Leibee, G.L., Pass, B.C. & Yeargan, K.V. 1979. Developmental rates of *Patasson lameerei* (Hymenoptera: Mymeridae) and the effect of host egg age on parasitism. *Entomophaga* **24**, 345-348.
- Lema, K.M. & Herren, H.R. 1985. The influence of constant temperature on populations growth rates of the cassava mealybug, *Phenacoccus manihoti*. *Entomologia Experimentalis et Applicata* **38**, 165-169.
- Leopold, R.A. 2000. Short-term cold storage of house fly (Diptera: Muscidae) embryos: survival and quality of subsequent stages. *Annals of Entomological society of America* **93**, 884-889.
- Leppa, N.C., Ashley, T.R., Guy, R.H. & Butler, G.D. 1977. Laboratory life history of the velvetbean caterpillar. *Annals of the Entomological Society of America* **70**, 217-220.
- Lerin, J. & Koubaiti, K. 1998. Temperature-dependent model for simulating development of the larval stages of *Baris coerulescens* (Coleoptera: Curculionidae) on winter oilseed rape. *Environmental Entomology* **27**, 958-967.
- Levine, E. 1983. Temperature requirements for development of the stalk borer, *Papaipema nebris* (Lepidoptera: Noctuidae). *Annals of the Entomological Society of America* **76**, 892-895.
- Lin, S.Y.H. & Trumble, J.T. 1985. Influence of temperature and tomato maturity on development and survival of *Keiferia lycopersicella* (Lepidoptera: Gelechiidae). *Environmental Entomology* **14**, 855-858.
- Linde, T.C.K. van der, Hewitt, P.H., Pletzen, R. van, Nel, A. & Westhuizen, M.C. van der. 1987. Oogenesis and oviposition in *Culex theileri* (Diptera: Culicidae) at various constant temperatures. *Journal of Entomological Society of Southern Africa* **50**, 323-329.
- Linde, T.C.K. van der, Mitchell, J. & Nel, A. 1991. The influence of constant temperature on the development and survival of the immature stages of *Culex theileri* (Diptera: Culicidae). *Journal of Entomological Society of Southern Africa* **54**, 141-153.
- Litsinger, J.A. & Apple, J.W. 1973. Thermal requirements for embryonic and larval development of the alfalfa weevil in Wisconsin. *Journal of Economic Entomology* **66**, 309-311.
- Liu, S.S. & Hughes, R.D. 1984. The relationships between temperature and rate of development in two geographic stocks of *Aphidius sonchi* in the laboratory. *Entomologia Experimentalis et Applicata* **36**, 231-239.
- Liu, S-S. & Hughes, R.D. 1987. The influence of temperature and photoperiod on the development, survival and reproduction of the sowthistle aphid, *Hyperomyzus lactucae*. *Entomologia Experimentalis et Applicata* **43**, 31-38.
- Liu, T-X., Stansly, P.A., Hoelmar, K.A. & Osborne, L.S. 1997. Life history of *Nephaspis oculatus* (Coleoptera: Coccinellidae), a predator of *Bemisia argentifolii* (Homoptera: Aleyrodidae). *Annals of the Entomological Society of America* **90**, 776-782.
- Logan, J.A. & Amman G.D. 1986. A distribution model for egg development in mountain pine beetle. *Canadian Entomologist* **118**, 361-372.

- Logan, P.A., Casagrande, R.A. Faubert, H.H. & Drummond, F.A. 1985. Temperature-dependent development and feeding of immature Colorado potato beetle, *Leptinotarsa decemlineata* (Coleoptera: Chrysomelidae). *Environmental Entomology* **14**, 275-283.
- Lopez, R., Ferro, D.N. Elkinton, J.S. 1997. Temperature-dependent development rate of *Myiopharus doryphorae* (Diptera: Tachinidae) within its host, the Colorado potato beetle (Coleoptera: Chrysomelidae). *Environmental Entomology* **26**, 655-660.
- Lowry, V.K., Smith, J.W. & Mitchell, F.L. 1992. Life fertility tables for *Frankliniella fusca* and *F. occidentalis* (Thysanoptera: Thripidae) on peanut. *Annals of the Entomological Society of America* **85**, 744-754.
- Luckmann, W.H. 1963. Measurement of the incubation period of corn earworm eggs. *Journal of Economic Entomology* **56**, 60-62.
- Luckman, W.H., Shaw, J.T., Sherrod, D.W. & Ruesink, W.G. 1976. Developmental rate of the black cutworm. *Journal of Economic Entomology* **69**, 386-388.
- Lysyk, T.J. 1992. Simulating development of immature horn flies, *Haematobia irritans irritans* (Diptera: Muscidae), in Alberta. *Canadian Entomologist* **124**, 386-388.
- Lysyk, T.J. 1998. Relationship between temperature and life history parameters of *Trichomalopsis sarcophagae* (Hymenoptera: Pteromalidae). *Environmental Entomology* **27**, 488-498.
- Lysyk, T.J. 1999. Effect of temperature on time to eclosion and spring emergence of postdiapausing horn flies (Diptera: Muscidae). *Environmental Entomology* **28**, 387-397.
- Lysyk, T.J. 2000. Relationships between temperature and life history parameters of *Muscidifurax raptor* (Hymenoptera: Pteromalidae). *Environmental Entomology* **29**, 596-605.
- Lysyk, T.J. & Axtell, R.C. 1987. A simulation model of house fly (Diptera: Muscidae) development in poultry manure. *Canadian Entomologist* **119**, 427-437.
- Lysyk, T.J. & Nealis, V.G. 1988. Temperature requirements for development of the jack pine budworm (Lepidoptera: Tortricidae) and two of its parasitoids (Hymenoptera). *Journal of Economic Entomology* **81**, 1045-1051.
- MacGill, E.I. 1932. The biology of *Erythroneura (Zygina) pallidifrons*. *Bulletin of Entomological Society* **23**, 33-43.
- Mackerras, M.J. 1933. Observations on the life-histories, nutritional requirements and fecundity of blowflies. *Bulletin of Entomological Research* **24**, 353-362.
- Mackey, A.P. 1977. Growth and development of larval Chironomidae. *Oikos* **28**, 270-275.
- Madubunyi, L.C. & Koehler, C.S. 1974. Effects of photoperiod and temperature development in *Hypera brunneipennis*. *Environmental Entomology* **3**, 1017-1021.
- Madubunyi, L.C. & Koehler, C.S. 1974. Development, survival and capacity for increase of the *Albirzia psyllid* at various temperatures. *Environmental Entomology* **3**, 1013-1016.
- Mao, H. & Kunimi, Y. 1994. Effects of temperature on the development and parasitism of *Brachymeria lasus*, a pupal parasitoid of *Homona magnanima*. *Entomologia Experimentalis et Applicata* **71**, 87-90.
- Marco, V., Taberner, A. & Castanera, P. 1997. Development and survival of immature *Aubeonymus mariaefranciscae* (Coleoptera: Curculionidae) at constant temperatures. *Annals of the Entomological Society of America* **90**, 169-176.
- Margalit, J. & Shulov, A.S. 1972. Effect of temperature on the development of prepupa and pupa of the rat flea, *Xenopsylla cheopsis* Rothschild. *Journal of Medical Entomology* **9**, 117-125.
- Martel, P. Svec, H.J. & Harris, C.R. 1976. The life history of the carrot weevil, *Listronotus oregonensis* (Coleoptera: Curculionidae) under controlled conditions. *Canadian Entomologist* **108**, 931-934.
- Martin, M.M. & Van't Hof, H.M. 1988. The cause of reduced growth of *Manduca sexta* larvae on a low-water diet: increased metabolic processing costs or nutrient limitation? *Journal of Insect Physiology* **34**, 515-525.
- Martinat, P.S. & Allen, D.C. 1987. Laboratory response of saddled prominent (Lepidoptera: Notodontidae) eggs and larvae to temperatures and humidity: development and survivorship. *Annals of the Entomological Society of America* **80**, 541-546.
- Masaki, S. 1996. Geographical variation of life cycle in crickets (Ensifera: Grylloidea). *European Journal of Entomology* **93**, 281-302.
- Matteson, J.W. & Decker, G.C. 1965. Development of the European corn borer at controlled constant and variable temperatures. *Journal of Economic Entomology* **58**, 344-349.

- Matthews, J.R. & Petersen, J.J. 1988. Effect of temperature on parasitism, development, and diapause of the filth fly parasite, *Urolepis rufipes* (Hymenoptera: Pteromalidae). *Environmental Entomology* **18**, 728-731.
- Maugen, D.A. & Stepmen, F.M. 1984. Development rates of Nantuket pine tip moth, *Rhyacionia frustrana* (Lepidoptera: Tortricidae), life stages in relation to temperature. *Environmental Entomology* **13**, 56-60.
- Mawby, W.D. & Rock, G.C. 1986. Effects of food, strain, and sex on estimating thermal requirements for nondiapause larval and pupal development of tufted apple bud moth (Lepidoptera: Tortricidae). *Environmental Entomology* **15**, 210-215.
- Mays, W.T. & Kok, L.T. 1997. Oviposition, development, and host preference of the cross-stripped cabbageworm (Lepidoptera: Pyralidae). *Environmental Entomology* **26**, 1354-1360.
- McAvoy, T.J. & Kok, L.T. 1985. Viability and development rate of overwintering eggs of *Trichosirocalus horridus* (Coleoptera: Curculionidae). *Environmental Entomology* **14**, 284-288.
- McAvoy, T.J. & Smith, J.C. 1979. Feeding and developmental rates of the Mexican bean beetle on soybeans. *Journal of Economic Entomology* **72**, 835-836.
- McClain, D.C., Rock, G.C. & Stinner, R.E. 1990. Thermal requirements for development and simulation of the seasonal phenology of *Encarsia perniciosi* (Hymenoptera: Aphelinidae), a parasitoid of the San Jose scale (Homoptera: Diaspididae) in North Carolina orchards. *Environmental Entomology* **19**, 1396-1402.
- McDonald, J.R., Bale, J.S. & Watters, K.F.A. 1999. Temperature, development and establishment potential of *Thrips palmi* (Thysanoptera: Thripidae) in the United Kingdom. *European Journal of Entomology* **96**, 169-173.
- McGinnis, K.M. & Brust, R.A. 1983. Effect of different sea salt concentrations and temperatures on larval development of *Aedes togoi* (Diptera: Culicidae) from British Columbia. *Environmental Entomology* **12**, 1406-1411.
- McKenzie, J.A. 1978. The effect of developmental temperature on population flexibility in *Drosophila melanogaster* and *D. simulans* (Diptera: Drosophilidae). *Australian Journal of Zoology* **26**, 105-112.
- McLeod, D.G.R., Whistlecraft, J.W. & Harris, C.R. 1985. An improved rearing procedure for the carrot rust fly (Diptera: Psillidae) with observations on the life history and conditions controlling diapause induction and termination. *Canadian Entomologist* **117**, 1017-1024.
- McMullen, R.D. 1967. The effects of photoperiod, temperature, and food supply on rate of development and diapause in *Coccinella novemnotata*. *Canadian Entomologist* **99**, 578-586.
- McPherson, R.M. & Hensley, S.D. 1978. Response of the parasite *Lixophaga diatraeae* (Tachinidae) to photoperiod and temperature. *Environmental Entomology* **7**, 136-138.
- McMullen, R.D. & Jong, C. 1977. Effect of temperature on developmental rate and fecundity of the pear psylla, *Psylla pyricola* (Homoptera: Psyllidae). *Canadian Entomologist* **109**, 165-169.
- McNeil, J.N. & Fields, P.G. 1985. Seasonal diapause development and diapause termination in the European skipper, *Thymelicus lineola* (Ochs.). *Journal of Insect Physiology* **31**, 467-470.
- Meats, A. 1976. Developmental and long-term acclimation to cold by the queensland fruit-fly *Dacus tryoni* at constant and fluctuating temperatures. *Journal of Insect Physiology* **22**, 1013-1019.
- Mellors, W.K. & Allegro, A. 1984. Comparison of constant and alternating temperatures for determining developmental rates of Mexican bean beetle eggs and pupae. *Annals of the Entomological Society of America* **77**, 610.
- Mellors, W.K. & Helgessen, R.G. 1978. Developmental rates for the alfalfa leafminer, *Agromyza frontella*, at constant temperatures. *Annals of the Entomological Society of America* **71**, 886-888.
- Mellors, W.K. & Helgessen, R.G. 1982. Development of overwintering and summer generation pupae of the alfalfa blotch leafminer *Agromyza frontella* (Diptera: Agromyzidae) in central New York. *Annals of the Entomological Society of America* **75**, 636-641.
- Mellors, W.K. & Helgessen, R.G. 1983. Simulation of adult emergence for the alfalfa blotch leafminer (Diptera: Agromyzidae): interaction of environmental temperature and individual development rate variation. *Environmental Entomology* **12**, 178-185.
- Mendel, M.J., Shaw, P.B., Owen, J.C. & Richman, D.B. 1989. Developmental rates, thresholds and thermal constants of the egg of parasitoid *Anastatus semiflavidus* (Hymenoptera: Eupelmidae) and its hosts *Hemileuca oliviae* (Lepidoptera: Saturniidae). *Journal of Kansas Entomological Society* **62**, 300-306.
- Messenger, P.S. & Flitters, N.E. 1958. Effect of constant temperature environment on the egg stage of three species of Hawaiian fruit flies. *Annals of the Entomological Society of America* **51**, 109-119.

- Meyerdirk, D.E. & Moratorio, M.S. 1987. Biology of *Anagrus giraulti* (Hymenoptera: Mymaridae), an egg parasitoid of the beet leaf-hopper, *Circulifer tenellus* (Homoptera: Cicadellidae). *Annals of the Entomological Society of America* **80**, 272-277.
- Michels, G.J. & Behle, R.W. 1988. Reproduction and development of *Diuraphis noxia* (Homoptera: Aphididae) at constant temperatures. *Journal of Economic Entomology* **81**, 1097-1101.
- Michels, G.J. & Behle, R.W. 1991. Effects of two prey species on the development of *Hippodamia sinuata* (Coleoptera: Coccinellidae) larvae at constant temperatures. *Journal of Economic Entomology* **84**, 1480-1484.
- Miller, J.C. 1992. Temperature-dependent development of the convergent lady beetle (Coleoptera: Coccinellidae). *Environmental Entomology* **21**, 197-201.
- Miller, J.C. & Gerth, W.J. 1994. Temperature-dependent development of *Aphidius matricariae* (Hymenoptera: Aphidiidae), as a parasitoid of the Russian wheat aphid. *Environmental Entomology* **23**, 1304-1307.
- Miller, G.W. & Isgar, M.B. 1985. Effects of temperature on the development of *Liriomyza trifolii* (Diptera: Agromyzidae). *Bulletin of Entomological Research* **75**, 321-328.
- Miller, J.C. & Paustian, J.W. 1992. Temperature-dependent development of *Eriops connexa* (Coleoptera: Coccinellidae). *Environmental Entomology* **21**, 1138-1142.
- Miller, J.C., West, K.J. & Hanson, P.E. 1984. Temperature requirements for development of *Autographa californica* (Lepidoptera: Noctuidae). *Environmental Entomology* **13**, 593-594.
- Minkenberg, O.P.J.M. 1989. Temperature effects on the life history of the eulophid wasp *Diglyphus isaea*, an ectoparasitoid of leafminers (*Liriomyza* spp.), on tomatoes. *Annals of Applied Biology* **115**, 381-397.
- Minkenberg, O.P.J.M. & Helderman, C.A.J. 1990. Effects of temperature on the life history of *Liriomyza bryoniae* (Diptera: Agromyzidae) on tomato. *Journal of Economic Entomology* **83**, 117-125.
- Moon, R.D. 1983. Simulating development time of preadult face flies (Diptera: Muscidae) from air temperature records. *Environmental Entomology* **12**, 943-948.
- Moore, A.D. 1987. Effects of temperature and length of photophase on development and diapause in *Cystiphora schmidtii* (Diptera: Cecidomyiidae). *Journal of Australian Entomological Society* **26**, 349-354.
- Morales, J. & Hower, A.A. 1981. Thermal requirements for development of the parasite, *Microctonus aethiopoides*. *Environmental Entomology* **10**, 279-284.
- Morales-Ramos, J.A. & Cate, J.R. 1993. Temperature dependent rates of *Catolaccus grandis* (Hymenoptera: Pteromalidae). *Environmental Entomology* **22**, 226-233.
- Morris, D.E. & Cloutier, C. 1987. Biology of the predatory fly, *Coenosia tigrina* (Diptera: Anthomyiidae): reproduction, development, and larval feeding on earthworms in the laboratory. *Canadian Entomologist* **119**, 381-393.
- Mottram, P., Kay, B.H. & Kettle, D.S. 1986. The effect of temperature on eggs and immature stages of *Culex annulirostris* (Diptera: Culicidae). *Journal of Australian Entomological Society* **25**, 131-135.
- Mullen, M.A. 1981. Sweetpotato weevil, *Cylas formicarius elongatulus*: development, fecundity, and longevity. *Annals of the Entomological Society of America* **74**, 478-481.
- Mullens, B.A. & Ruta, D.A. 1983. Development of immature *Culionidaes variipennis* (Diptera: Ceratopogonidae) at constant laboratory temperatures. *Annals of the Entomological Society of America* **76**, 747-751.
- Munyaneza, J. & Obrycki, J.J. 1997. Reproductive response of *Coleomegilla maculata* (Coleoptera: Coccinellidae) to Colorado potato beetle (Coleoptera: Chrysomelidae) eggs. *Environmental Entomology* **26**, 1270-1275.
- Munyaneza, J. & Obrycki, J.J. 1998. Development of three populations of *Coleomegilla maculata* (Coleoptera: Coccinellidae) feeding on eggs of Colorado potato beetle (Coleoptera: Chrysomelidae). *Environmental Entomology* **27**, 117-122.
- Mussen, E.C. & Chiang, H.C. 1974. Development of the picnic beetle, *Glischrochilus quadrisignatus* at various temperatures. *Environmental Entomology* **3**, 1032-1034.
- Nadgauda, D. & Pitre, H. 1983. Development, fecundity, and longevity of the tobacco budworm (Lepidoptera: Noctuidae) fed soybean, cotton, and artificial diet at three different temperatures. *Environmental Entomology* **12**, 582-586.

- Nadgauda, D. & Pitre, H. 1986. Effects of temperature on feeding, development, fecundity, and longevity of *Nabis roseipennis* (Hemiptera: Nabidae) fed tobacco budworm (Lepidoptera: Noctuidae) larvae and tarnished plant bug (Hemiptera: Miridae) nymphs. *Environmental Entomology* **15**, 536-539.
- Naranjo, S.E., Gibson, R.L. & Walgenbach, D.D. 1990. Development, survival, and reproduction of *Scymnus frontalis* (Coleoptera: Coccinellidae), an imported predator of Russian wheat aphid, at four fluctuating temperatures. *Annals of Entomological Society of America* **83**, 527-531.
- Naresh, J.S. & Smith, C.M. 1983. Development and survival of rice stink bugs (Hemiptera: Pentatomidae) reared on different host plants at four temperatures. *Environmental Entomology* **12**, 1496-1499.
- Neal, J.W. & Douglass, L.W. 1988. Development, oviposition rate, longevity, and voltinism of *Stephanitis pyroides* (Heteroptera: Tingidae) an adventive pest of Azalea, at three temperatures. *Environmental Entomology* **17**, 827-831.
- Neal, J.W. & Douglass, L.W. 1990. Seasonal dynamics and the effect of temperature in *Corythucha cydoniae* (Heteroptera: Tingidae). *Environmental Entomology* **19**, 1299-1304.
- Nealis, V.G. & Fraser, S. 1988. Rate of development, reproduction, and mass rearing of *Apantheles fumiferanae* (Hymenoptera: Braconidae) under controlled conditions. *Canadian Entomologist* **120**, 197-204.
- Nebeker, T.E. & Purser, G.C. 1980. Relationship of temperature and prey type to development time of the bark beetle predator, *Thanasimus dubius* (Coleoptera: Cleridae). *Canadian Entomologist* **112**, 179-184.
- Nichols, J.R., Tauber, M.J. & Tauber, C.A. 1987. Geographical variability in ecophysiological traits controlling dormancy in *Chrysopa oculata* (Neuroptera: Chrysopidae). *Journal of Insect Physiology* **33**, 627-633.
- Neuenschwander, P. 1975. Influence of temperature and humidity on the immature stages of *Hemerobius pacificus*. *Environmental Entomology* **4**, 215-220.
- Neunzig, H.H. 1964. The eggs and early-instar larvae of *Heliiothis zea* and *Heliiothis virescens* (Lepidoptera: Noctuidae). *Annals of the Entomological Society of America* **57**, 98-102.
- Nilssen, A.C. 1997. Effect of temperature on pupal development and eclosion dates in the Reindeer oestrids *Hypoderma tarandi* and *Cephenemyia trombe* (Diptera: Oestridae). *Environmental Entomology* **26**, 296-306.
- Nilssen, A. & Tenow, O. 1990. Diapause, embryo growth and supercooling capacity of *Epirrita autumnata* eggs from northern Fennoscandia. *Entomologia Experimentalis et Applicata* **57**, 39-55.
- Nordin, G.L. & O'Conna, D. 1985. Developmental threshold temperatures and thermal constants for two types of fall webworm, *Hyphantria cunea* (Lepidoptera: Arctiidae), occurring in central Kentucky. *Journal of Kansas Entomological Society* **58**, 626-630.
- Nowosielski-Slepowron, B.J.A. & Aryeetey, E.A. 1980. Developmental biology of field and laboratory populations of *Laethicus oryzae* (Coleoptera: Tenebrionidae) under various conditions of temperature and humidity. *Journal of Stored Products Research* **16**, 55-66.
- Nteletsana, L., Schoeman, A.S. & McGeoch, M.A. 2001. Temperature effects on development and survival of the potato weevil, *Cylas puncticollis* Bohemia (Coleoptera: Apionidae). African Entomology (in press)
- Nylin, S., Wiklund, C., Wickman, P.O. & Garcia-Barros, E. 1993. Absence of trade-offs between sexual size dimorphism and early male emergence in a butterfly. *Ecology* **74**, 1414-1427.
- Obrycki, J.J., Gabriel, A.D., Orr, C.I. & Bing, J.W. 1990. Dormancy in the strawberry leafroller (Lepidoptera: Tortricidae). *Environmental Entomology* **19**, 932-936.
- Obrycki, J.J. & Tauber, M.J. 1978. Thermal requirements for development of *Coleomegilla maculata* (Coleoptera: Coccinellidae) and its parasite *Perilitus coccinellae* (Hymenoptera: Braconidae). *Canadian Entomologist* **110**, 407-412.
- Obrycki, J.J. & Tauber, M.J. 1981. Phenology of three coccinellid species: thermal requirements for development. *Annals of the Entomological Society of America* **74**, 31-36.
- Obrycki, J.J. & Tauber, M.J. 1982. Thermal requirements for development of *Hippodamia convergens* (Coleoptera: Coccinellidae). *Annals of the Entomological Society of America* **75**, 678-683.
- Ofomata, V.C., Overholt, W.A., Lux, S.A., Huis, A.V. & Egwuatu, R.I. 2000. Comparative studies on the fecundity, egg survival, larval feeding, and development of *Chilo partellus* and *Chilo orichalcociliellus* (Lepidoptera: Crambidae) on five grasses. *Annals of the Entomological Society of America* **93**, 492-499.



- Olsen, K.N., Cone, W.W. & Wright, L.C. 1998. Influence of temperature on grape leafhoppers in southcentral Washington. *Environmental Entomology* **27**, 401-405.
- O'Neill, W.L. 1973. Biology of *Trichopria popei* and *T. atrichomelinae* (Hymenoptera: Diapriidae), parasitoids of the Sciomyzidae (Diptera). *Annals of the Entomological Society of America* **66**, 1043-1050.
- Orr, D.B., Boethel, D.J. & Jones, W.A. 1985. Development and emergence of *Telenomus chloropus* and *Trissolcus basalis* (Hymenoptera: Scelionidae) at various temperatures and relative humidities. *Annals of the Entomological Society of America* **78**, 615-619.
- Orr, C.J. & Obrycki, J.J. 1990. Thermal and dietary requirements for development of *Hippodamia parenthesis* (Coleoptera: Coccinellidae). *Environmental Entomology* **19**, 1523-1527.
- Osborne, L.S. 1982. Temperature-dependent development of greenhouse whitefly and its parasite *Encarsia formosa*. *Environmental Entomology* **11**, 483-485.
- Oudman, L., Delden, W. van, Kamping, A. & Bijlsma, R. 1990. Polymorphism at the Adh and Gpdh loci in *Drosophila melanogaster*: effects of rearing temperature on developmental rate, body weight, and some biochemical parameters. *Heredity* **67**, 103-115.
- Page, F.D. 1983. Biology of *Australroasca viridigrisca* (Hemiptera: Cicadellidae). *Journal of Australian Entomological Society* **22**, 149-153.
- Paine, D. 1992. Cuban laurel thrips (Thysanoptera: Phlaeothripidae) biology in southern California seasonal abundance, temperature dependent development, leaf suitability, and predation. *Annals of the Entomological Society of America* **85**, 164-172.
- Parish, W.E.G. & Bale, J.S. 1993. Effects of brief exposures to low temperature on the development, longevity and fecundity of the grain aphid *Sitobion avenae* (Hemiptera: Aphididae). *Annals of Applied Biology* **122**, 9-21.
- Park, S.O. 1988. Effects of temperature on the development of the water strider, *Gerris paludum insularis* (Hemiptera: Gerridae). *Environmental Entomology* **17**, 150-153.
- Park, T. & Frank, M.B. 1948. The fecundity and development of the flour beetle, *Tribolium castaneum* at three constant temperatures. *Ecology* **29**, 368-374.
- Parker, B.M. 1979. Development of the mosquito *Aedes dorsalis* (Diptera: Culicidae) in relation to temperature and salinity. *Annals of the Entomological Society of America* **72**, 105-108.
- Parrella, M.P. & Kok, L.T. 1977. The development and reproduction of *Bedellia somnulentella* on hedge bindweed and sweet potato. *Annals of the Entomological Society of America* **70**, 925-928.
- Partida, G.J. & Strong, R.G. 1975. Comparative studies on the biologies of six species of *Trogoderma*: *T. variabile*. *Annals of the Entomological Society of America* **68**, 115-125.
- Patel, K.J. & Schuster, D.J. 1983. Influence of temperature on the rate of development of *Diglyphus intermedius* (Hymenoptera: Eulophidae), a parasite of *Liriomyza* spp. (Diptera: Agromyzidae). *Environmental Entomology* **12**, 885-887.
- Pershing, J.C. & Linit, M.J. 1986. Development and seasonal occurrence of *Monochamus carolinensis* (Coleoptera: Cerambycidae) in Missouri. *Environmental Entomology* **15**, 251-253.
- Pfadt, R.E., Lloyd, J.E. & Sharafi, G. 1975. Pupal development of cattle grubs at constant and alternating temperatures. *Journal of Economic Entomology* **68**, 325-328.
- Philip, J.S. & Watson, T.F. 1971. Influence of temperature on population growth of the pink bollworm, *Pectinophora gossypiella* (Lepidoptera: Gelechiidae). *Annals of the Entomological Society of America* **64**, 334-340.
- Philips, E.C. 1997. Life history and energetics of *Ancyronyx variegata* (Coleoptera: Elmidae) in north-west Arkansas and southern Texas. *Annals of Entomological Society of America* **90**, 54-61.
- Pires, C.S.S., Sujii, E.R., Fontes, E.M.G., Tauber, C.A. & Tauber, M.J. 2000. Dry-season embryonic dormancy in *Deois flavopicta* (Homoptera: Cercopidae): Roles of temperature and moisture in nature. *Environmental Entomology* **29**, 714-720.
- Plaut, H.N. 1972. On the biology of the immature stages of the almond wasp, *Eurytoma amygdali* (Hymenoptera: Eurytomidae) in Israel. *Bulletin of Entomological Research* **61**, 681-687.
- Porter, S.D. 1988. Impact of temperature on colony growth and developmental rates of the ant, *Solenopsis invicta*. *Journal of Insect Physiology* **34**, 1127-1133.



- Porter, S.D., Pesquero, M.A., Campiolo, S. & Fowler, H.G. 1995. Growth and development of *Pseudacteon* Phorid fly maggots (Diptera: Phoridae) in the heads of *Solenopsis* fire ant workers (Hymenoptera: Formicidae). *Environmental Entomology* **24**, 475-479.
- Powell, D.A. & Bellows, T.S. 1992. Preimaginal development and survival of *Bemisia tabaci* on cotton and cucumber. *Environmental Entomology* **21**, 359-363.
- Powell, D.A. & Bellows, T.S. 1992. Development and reproduction of two populations of *Eretmocerus* species (Hymenoptera: Aphelinidae) on *Bemisia tabaci* (Homoptera: Aleyrodidae). *Environmental Entomology* **21**, 651-658.
- Powell, J.E., Shepard, M. & Sullivan, M.J. 1981. Use of heating degree day and physiological day equations for predicting development of the parasitoid *Trissolcus basalis*. *Environmental Entomology* **10**, 1008-1011.
- Prawirodisastro, M. & Benjamin, D.M. 1979. Laboratory study on the biology and ecology of *Megaselia scalaris* (Diptera: Phoridae). *Journal of Medical Entomology* **16**, 317-320.
- Prinsloo, G.J. & du Plessis, U. 2000. Temperature requirements of *Aphelinus* sp. nr. *varipes* (Foerster) (Hymenoptera: Aphelinidae) a parasitoid of the Russian wheat aphid, *Duraphis noxia* (Kurdjumov) (Homoptera: Aphididae). *African Entomology* **8**, 75-79.
- Purcell, M. & Walter, S.C. 1990. Degree-day model for development of *Calocoris norvegicus* (Hemiptera: Miridae) and timing management strategies. *Environmental Entomology* **19**, 848-853.
- Quednau, F.W. 1967. Notes of mating, oviposition, adult longevity and incubation period of eggs of the larch casebearer, *Coleophora laricella* (Lepidoptera: Coleophoridae), in the laboratory. *Canadian Entomologist* **99**, 397-401.
- Quesada-Moraga, E. & Santiago-Alvarez, C. 2000. Temperature related effects on embryonic development of the Mediterranean locust, *Dociostaurus maroccanus*. *Physiological Entomology* **25**, 191-195.
- Quinn, M.A. & Hower, A.A. 1985. Determination of overwintering survivorship and predicting time of eclosion for eggs of *Sitona hispidulus* (Coleoptera: Curculionidae). *Environmental Entomology* **14**, 850-854.
- Rae, D.J. & De'ath, G. 1991. Influence of constant temperature on development, survival and fecundity of sugarcane mealybug, *Saccharicoccus sacchari* (Cockerell) (Hemiptera: Pseudococcidae). *Australian Journal of Zoology* **39**, 105-122.
- Raina, A.K., Bell, R.A. & Carlson, R.B. 1977. Influence of temperature on development of an Indian strain of the pink bollworm in the laboratory and observations on fecundity. *Annals of the Entomological Society of America* **70**, 628-630.
- Raksarat, P. & Tugwell, P. 1975. Effect of temperature on development of rice water weevil eggs. *Environmental Entomology* **4**, 543-545.
- Rao, G.V.R., Wightman, J.A. & Rao, D.V.R. 1989. Threshold temperatures and thermal requirements for the development of *Spodoptera litura* (Lepidoptera: Noctuidae). *Environmental Entomology* **18**, 548-551.
- Readshaw, J.L. 1965. The ecology of the swede midge, *Contarinia nasturtii* (Diptera: Cecidomyiidae). I. Life-history and influence of temperature and moisture on development. *Bulletin of Entomological Research* **56**, 685-698.
- Rechav, Y. & Orion, T. 1975. The development of the immature stages of *Chelonus inanitus*. *Annals of the Entomological Society of America* **68**, 457-462.
- Reede, R.H. & Wilde, H. 1986. Phenological models of development in *Pandemis heparana* and *Adoxophyes orana* for timing the application of insect growth regulators with juvenile-hormone activity. *Entomologia Experimentalis et Applicata* **40**, 151-159.
- Regniere, J. 1987. Temperature-dependent development of eggs and larvae of *Choristoneura fumiferana* (Lepidoptera: Tortricidae) and simulation of its seasonal history. *Canadian Entomologist* **119**, 717-728.
- Reichenbach, N.G. & Stairs, G.R. 1984. Response of the western spruce budworm, *Choristoneura occidentalis* (Lepidoptera: Tortricidae) to temperature: the stochastic nature of developmental rates and diapause termination. *Environmental Entomology* **13**, 1549-1556.
- Reisen, W.K. 1995. Effect of temperature on *Culex tarsalis* (Diptera: Culicidae) from the Coachella and San Joaquin valleys of California. *Journal of Medical Entomology* **32**, 636-645.
- Reissig, W.H., Barnard, J., Weires, R.W., Glass, E.M. & Dean, R.W. 1979. Prediction of apple maggot fly emergence from thermal unit accumulation. *Environmental Entomology* **8**, 51-54.



- Reitz, S.T. 1996. Development of *Eucelatoria bryani* and *Eucelatoria rubentis* (Diptera: Tachinidae) in different instars of *Helicoverpa zea* (Lepidoptera: Noctuidae). *Annals of the Entomological Society of America* **89**, 81-87.
- Reynolds, J.M. 1943. Effect of parental feeding on the rate of development and mortality of *Tribolium destructor* Uyttenboogaart (Coleoptera: Tenebrionidae). *Nature* **151**, 55.
- Ridgeway, van G.D. & Gyrisco, G.G. 1960. Effect of temperature on the rate of development of *Lygus lineolaris* (Hemiptera: Miridae). *Annals of the Entomological Society of America* **53**, 691-694.
- Ritland, D.B. & Scriber, J.M. 1985. Larval developmental rates of three putative subspecies of tiger swallowtail butterflies, *Papilio glaucus*, and their hybrids in relation to temperature. *Oecologia* **65**, 185-193.
- Roberts, W.P., Proctor, J.R. & Philips, J.H.H. 1978. Effect of constant temperatures on the number of larval instars of the oriental fruit moth, *Grapholitha molesta* (Lepidoptera: Tortricidae). *Canadian Entomologist* **110**, 623-626.
- Rock, G.C. 1985. Thermal and thermoperiodic effects on larval and pupal development and survival in tutted apple bud moth (Lepidoptera: Tortricidae). *Environmental Entomology* **14**, 637-640.
- Rock, G.C. & Shafer, P.L. 1983. Developmental rates of codling moth (Lepidoptera: Olethreutidae) reared on apple at four constant temperatures. *Environmental Entomology* **12**, 831-834.
- Rodriguezdel-Bosque, L.A., Smith, J.W. & Browning, H.W. 1989. Development and life-fertility tables for *Diatraea lineolata* (Lepidoptera: Pyralidae) at constant temperatures. *Annals of the Entomological Society of America* **82**, 450-459.
- Rodriguez-Leyva, E., Leyva, J.L., Gomez, V., Barcenas, N.M. & Elzen, G.W. 2000. Biology of *Catolaccus hunteri* (Hymenoptera: Pteromalidae), a parasitoid of pepper weevil and boll weevil (Coleoptera: Curculionidae). *Annals of the Entomological Society of America* **93**, 862-868.
- Rodriguez-Saona, C. & Miller, J.C. 1999. Temperature-dependent effects on development, mortality, and growth of *Hippodamia convergens* (Coleoptera: Coccinellidae). *Environmental Entomology* **28**, 518-522.
- Roltsch, W.J., Mayse, M.A. & Clausen, K. 1990. Temperature-dependent development under constant and fluctuating temperatures: comparison of linear versus nonlinear methods of modelling development of western grapeleaf skeletonizer (Lepidoptera: Zygaenidae). *Environmental Entomology* **19**, 1689-1697.
- Rose, D.J.W. 1973. Laboratory observations on the biology of *Cicadulina* spp. (Hemiptera: Cicadellidae), with particular reference to the effects of temperature. *Bulletin of Entomological Research* **62**, 471-476.
- Rössler, Y. 1979. Automated sexing of *Ceratitis capitata* (Diptera: Tephritidae): the development of strains with inherited sex-limited pupal color dimorphism. *Entomophaga* **24**, 411-416.
- Royer, T.A., Edelson, J.V. & Harris, M.K. 1999. Temperature related, stage-specific development and fecundity of colonizing and root-feeding morphs of *Pemphigus populitransversus* (Homoptera: Aphididae). *Environmental Entomology* **28**, 572-576.
- Rueda, L.M. & Axtell, R.C. 1996. Temperature-dependent development and survival of the lesser mealworm, *Alphitobius diaperinus*. *Medical and Veterinary Entomology* **10**, 80-86.
- Rueda, L.M., Patel, K.J., Axtell, R.C. & Stinner, R.E. 1990. Temperature-dependent development and survival rates of *Culex quinquefasciatus* and *Aedes aegypti* (Diptera: Culicidae). *Journal of Medical Entomology* **27**, 892-898.
- Ryoo, M.L. & Cho, K.L. 1988. A model for temperature-dependent development rate of *Sitophilus oryzae* (Coleoptera: Curculionidae) on rice. *Journal of Stored Products Research* **24**, 79-82.
- Safranyik, L. & Whitney, H.S. 1985. Development and survival of axenically reared mountain pine beetles, *Dendroctonus ponderosae* (Coleoptera: Scolytidae), at constant temperatures. *Canadian Entomologist* **117**, 185-192.
- Salom, S.M., Stephen, F.M. & Thompson, L.C. 1987. Development rates and temperature-dependent model of pales weevil, *Hylobius pales* development. *Environmental Entomology* **16**, 956-962.
- Sanborn, S.M., Wyman, J.A. & Chapman, R.K. 1982. Threshold temperature and heat unit summations for seed corn maggot development under controlled conditions. *Annals of the Entomological Society of America* **75**, 103-106.
- Sands, D.P.A., Scoltz, M. & Bourne, A.S. 1991. Effects of temperature on development and seasonality of *Eudocina salamina* (Lepidoptera: Noctuidae) in eastern Australia. *Bulletin of Entomological Research* **81**, 291-296.



- Sanderson, J.P., Barnes, M.M., Youngman, R.R. & Engle, C.E. 1989. Developmental rates of the navel orangeworm (Lepidoptera: Pyralidae) at various constant temperatures. *Journal of Economic Entomology* **82**, 1096-1100.
- Schaafsma, A.W., Whitfield, G.H. & Ellis, C.R. 1991. A temperature-dependent model of egg development of the western corn rootworm, *Diabrotica virgifera* (Coleoptera: Chrysomelidae). *Canadian Entomologist* **123**, 1183-1197.
- Schroder, R.F.W. & Steinhauer, A.L. 1976. Effect of photoperiod and temperature regimens on the biology of European and United States alfalfa weevil populations. *Annals of the Entomological Society of America* **69**, 701-706.
- Scopes, N.E.A. & Biggerstaff, S.B. 1977. The use of temperature integrator to predict the development of the parasite *Aphidius matricariae*. *Journal of Applied Ecology* **14**, 799-802.
- Scriber, J.M. & Lederhouse, R.C. 1983. Temperature as a factor in the development and feeding ecology of tiger swallowtail caterpillars, *Papilio glaucus* (Lepidoptera). *Oikos* **40**, 95-102.
- Sedlacek, J.D., Yeargan, K.V. & Freytag, P.H. 1990. Effect of temperature on the development of blackfaced leafhopper (Homoptera: Cicadellidae). *Environmental Entomology* **19**, 209-214.
- Shanower, T.G., Gutierrez, A.P. & Wightman, J.A. 1993. Effect of temperature on development rates, fecundity and longevity of the groundnut leafminer, *Proaerema modicella* (Lepidoptera: Gelechiidae), in India. *Bulletin of Entomological Research* **83**, 413-419.
- Sharpe, P.J.H., Schoolfield, R.M. & Butler, G.D. 1981. Distribution model of *Heliothis zea* (Lepidoptera: Noctuidae) development times. *Canadian Entomologist* **113**, 845-856.
- Sheldon, J.K. & MacLeod, E.G. 1974. Studies in the biology of the Chrysopidae V. The developmental and reproductive maturation rates of *Chrysopa carnea* (Neuroptera: Chrysopidae). *Entomological News* **85**, 159-169.
- Sher, R.B. & Shields, E.J. 1991. Potato leafhopper (Homoptera: Cicadellidae) oviposition and development under cool fluctuating temperatures. *Environmental Entomology* **20**, 1113-1120.
- Shearman, P.W. & Watt, W.B. 1973. The thermal ecology of some *Colias* butterfly larvae. *Journal of Comparative Physiology* **83**, 25-40.
- Sherrod, D.W., White, C.E. & Eastman, C.E. 1982. Temperature-related development of the imported crucifer weevil, *Baris lepidii* (Coleoptera: Curculionidae), in the laboratory and field. *Environmental Entomology* **11**, 897-900.
- Shields, E.J. 1983. Development rate of variegated cutworm (Lepidoptera: Noctuidae). *Annals of the Entomological Society of America* **76**, 171-172.
- Shipp, J.L. & Whitfield, G.H. 1987. Influence of temperature on embryonic development and egg hatching of *Simulium articum* (Diptera: Simuliidae). *Environmental Entomology* **16**, 683-686.
- Shoukry, A. & Hafez, M. 1979. Studies on the biology of the Mediterranean fruitfly *Ceratilis capitata*. *Entomologia Experimentalis et Applicata* **26**, 33-39.
- Silverman, J., Rust, M.K. & Reiersen, D.A. 1981. Influence of temperature and humidity on survival and development of the cat flea, *Ctenocephalides felis* (Siphonaptera: Pulicidae). *Journal of Medical Entomology* **18**, 78-83.
- Simmons, A.M. & Yeargan, K.V. 1988. Development and survivorship of the green stinkbug, *Acrosternum hilare* (Hemiptera: Pentatomidae) on soybean. *Environmental Entomology* **17**, 527-532.
- Simonet, D.E., Clement, S.L., Rubink, W.L. & Rings, R.W. 1981. Temperature requirements for development and oviposition of *Peridroma saucia* (Lepidoptera: Noctuidae). *Canadian Entomologist* **113**, 891-897.
- Simonet, D.E. & Devenport, B.L. 1981. Temperature requirements for development and oviposition of the carrot weevil. *Annals of the Entomological Society of America* **74**, 312-315.
- Simonet, D.E. & Pienkowski, R.L. 1980. Temperature effect on development and morphometrics of the potato leafhopper. *Environmental Entomology* **9**, 798-800.
- Simpson, G.B. 1993. Effects of temperature on the development, longevity and fecundity of *Nala lividipes* (Dermaptera: Labiduridae). *Journal of Australian Entomological Society* **32**, 265-272.
- Slater, J.D. & Pritchard, G. 1979. A stepwise computer program for estimating development time and survival of *Aedes vexans* (Diptera: Culicidae) larvae and pupae in field populations in southern Alberta. *Canadian Entomologist* **111**, 1241-1253.

- Smith, A.M. 1984. Larval instar determination and temperature-development studies of immature stages of the common armyworm, *Mythimna convecta* (Lepidoptera: Noctuidae). *Journal of Australian Entomological Society* **23**, 91-97.
- Smith, L. 1992. Effect of temperature on life history characteristics of *Anisopteromalus calandrea* (Hymenoptera: Pteromalidae), a parasiting maize weevil larvae in corn kernels. *Environmental Entomology* **21**, 877-887.
- Smith, R.J., Hines, A., Richmond, S., Merrick, M., Drew, A. & Fargo, R. 2000. Altitudinal variation in body size and population density of *Nicrophorus investigator* (Coleoptera: Silphidae). *Environmental Entomology* **29**, 290-298.
- Smith, L. & Rutz, D.A. 1986. Development rate and survivorship of immature *Urolepis rufipes* (Hymenoptera: Pteromalidae), a parasitoid of pupal houseflies. *Environmental Entomology* **15**, 1301-1306.
- Smith L. & Tok, L.T. 1985. Influence of temperature on the development and mortality of immature *Rhinocyllus conicus* (Coleoptera: Curculionidae). *Environmental Entomology* **14**, 629-633.
- Smith, A.M. & Ward, S.A. 1995. Temperature effects on larval and pupal development, adult emergence, and survival of the pea weevil (Coleoptera: Chrysomelidae). *Environmental Entomology* **24**, 623-634.
- Siddiqui, W.H., Barlow, C.A. & Randolph, P.A. 1973. Effects of some constant and alternating temperatures on population growth of the pea aphid, *Acyrtosiphon pisum* (Homoptera: Aphididae). *Canadian Entomologist* **105**, 145-156.
- Spence, J.R., Spence, D.H. & Scudder, G.G.E. 1980. The effects of temperature on growth and development of water strider species (Heteroptera: Gerridae) of central British Columbia and implications for species packing. *Canadian Journal of Zoology* **58**, 1813-1820.
- Spurgeon, D.W., Lingren, P.D., Raulston, J.R. & Shaver, T.N. 1995. Pupal development and adult emergence patterns of the Mexican rice borer (Lepidoptera: Pyralidae). *Environmental Entomology* **24**, 76-79.
- Spurgeon, D.W. & Mack, T.P. 1990. Development and survival of three-corned alfalfa hopper (Homoptera: Membracidae) nymphs at constant temperatures. *Environmental Entomology* **19**, 229-233.
- Spurgeon, D.W. & Raulston, D.C. 1998. Boll weevil (Coleoptera: Curculionidae) reproductive development as a function of temperature. *Environmental Entomology* **27**, 675-678.
- Stairs, G.R. 1978. Effects of a wide range of temperatures on development of *Galleria mellonella* and its specific Baculovirus. *Environmental Entomology* **7**, 297-299.
- Steenis, M.J. van. 1993. Intrinsic rate of increase of *Aphidius colemani* (Hymenoptera: Braconidae), a parasitoid of *Aphis gossypii* (Homoptera: Aphididae), at different temperatures. *Journal of Applied Entomology* **116**, 192-198.
- Steenis, M.J. van & ElKhawass, K.A.M.H. 1995. Life history of *Aphis gossypii* on cucumber: influence of temperature, host plant and parasitism. *Entomologia Experimentalis et Applicata* **76**, 121-131.
- Stenseth, C. 1979. Effects of temperature on development of *Otiorrhynchus sulcatus* (Coleoptera: Curculionidae). *Annals of Applied Biology* **91**, 179-185.
- Stentón-Dozey, J. & Griffiths, C.L. 1980. Growth, consumption and respiration by larvae of the kelp-fly *Fucellia capensis* (Diptera: Anthomyiidae). *South African Journal of Zoology* **15**, 280-283.
- Stephen, W.P. 1965. Temperature effects on the development and multiple generations in the alkali bee, *Nomia melanderi*. *Entomologia Experimentalis et Applicata* **8**, 228-240.
- Stevenson, A.B. 1981. Development of the carrot rust fly, *Psila rosae* (Diptera: Psillidae), relative to temperature in the laboratory. *Canadian Entomologist* **113**, 569-574.
- Stevenson, A.B. 1986. Relationship between temperature and development of the carrot weevil, *Listronotus oregonensis* (Coleoptera: Curculionidae), in the laboratory. *Canadian Entomologist* **118**, 1278-1290.
- Stiefel, V.L., Nechols, J.R. & Margolies, D.C. 1997. Development and survival of *Anomoea flavokansiensis* (Coleoptera: Chrysomelidae) as affected by temperature. *Environmental Entomology* **26**, 223-228.
- Stone, J.D. & Watterson, G.P. 1985. Effects of temperature on the survival and development of the morrill lace bug (Hymenoptera: Tingidae) on guayule. *Environmental Entomology* **14**, 329-331.
- Stoner, A., Metcalfe, A.M. & Weeks, R.E. 1974. Development of *Podisus acutissimus* in relation to constant temperature. *Annals of the Entomological Society of America* **67**, 718-719.
- Stoner, A. & Weeks, R.E. 1974. *Copidosoma truncatellum*: effect of temperature on the developmental rate, duration of emergence, and longevity. *Environmental Entomology* **3**, 329-331.



- Strong, R.G. 1975. Comparative studies on the biologies of six species of *Trogoderma*: *T. inclusum*. *Annals of the Entomological Society of America* 68, 91-104.
- Strong, R.G. & Mead, D.W. 1975. Comparative studies on the biologies of six species of *Trogoderma*: *T. simplex*. *Annals of the Entomological Society of America* 68, 565-573.
- Sue, K., Ferro, D.N. & Emberson, R.M. 1980. A rearing method for *Sitona humeralis* (Coleoptera: Curculionidae) and its development under controlled conditions. *Bulletin of Entomological Research* 70, 97-102.
- Sukhapesna, V., Knapp, F.W., Lyons, E.T. & Drudge, J.H. 1975. Effect of temperature on embryonic development and egg batch ability of the horse bot, *Gasterophilus intestinalis* (Diptera: Gasterophilidae). *Journal of Medical Entomology* 12, 391-392.
- Summers, C.G. 1988. Cultivar and temperature influence on development, survival, and fecundity in four successive generations of *Acyrtosiphon kondoi* (Homoptera: Aphididae). *Journal of Economic Entomology* 81, 515-521.
- Summers, C.G., Coviello, R.L. & Gutierrez, A.P. 1984. Influence of constant temperatures on the development and reproduction of *Acyrtosiphon kondoi* (Homoptera: Aphididae). *Environmental Entomology* 13, 236-242.
- Sundby, R.A. 1966. A comparative study of the efficiency of three predatory insects, *Coccinella septempunctata* (Coleoptera: Coccinellidae), *Chrysopa carnea* (Neuroptera: Chrysopidae) and *Syrphus ribesii* (Diptera: Syrphidae) at two different temperatures. *Entomophaga* 11, 395-404.
- Talekar, N.S. & Lee, Y.H. 1988. Biology of *Ophiomyia centrosematis* (Diptera: Agromyzidae), a pest of soybean. *Annals of the Entomological Society of America* 81, 938-942.
- Tamaki, G., Annis, B., Fox, L. Gupta, R.K. & Mezeleny, A. 1982. Comparison of yellow holocyclic and green anholocyclic strains of *Myzus persicae*: Low temperature adaptability. *Environmental Entomology* 11, 231-233.
- Tamaki, G., Weiss, M.A. & Long, G.E. 1980. Impact of high temperatures on the population dynamics of the green peach aphid in field cages. *Environmental Entomology* 9, 331-337.
- Tang, Y.Q. & Yokomi, R.K. 1995. Temperature-dependent development of three hymenopterous parasitoids of Aphids (Homoptera: Aphididae) attacking citrus. *Environmental Entomology* 24, 1736-1740.
- Tatchell, G.M. 1981. The effects of a granulosis virus infection and temperature on the food consumption of *Pieris rapae* (Lepidoptera: Pieridae). *Entomophaga* 26, 291-299.
- Tauber, C.A., Johnson, J.B. & Tauber, M.J. 1992. Larval and development characteristics of the endemic Hawaiian lacewing, *Anomalochrysa frater* (Neuroptera: Chrysopidae). *Annals of the Entomological Society of America* 85, 200-206.
- Tauber, M.J. & Tauber, C.A. 1974. Thermal accumulations, diapause and oviposition in a conifer-inhabiting predator, *Chrysopa harrisii* (Neuroptera). *Canadian Entomologist* 106, 969-978.
- Tauber, C.A., Tauber, M.J., Gollands, B., Wright, R.J. & Obrycki, J. 1988. Preimaginal development and reproductive responses to temperature in two populations of the Colorado potato beetle (Coleoptera: Chrysomelidae). *Annals of the Entomological Society of America* 81, 755-763.
- Tauber, M.J., Tauber, C.A., Hoy, R.R. & Tauber, P.J. 1990. Life history, mating behaviour and courtship songs of the endemic Hawaiian *Anomalochrysa maclachlani* (Neuroptera: Chrysopidae). *Canadian Journal of Zoology* 68, 1020-1026.
- Tauber, C.A., Tauber, M.J. & Nechols, J.R. 1987. Thermal requirements for development in *Chrysopa oculata*: a geographically stable trait. *Ecology* 68, 1479-1487.
- Tauthong, P. & Brust, T.A. 1977. The effect of temperature on the development and survival of two populations of *Aedes campestris* (Diptera: Culicidae). *Canadian Journal of Zoology* 55, 135-137.
- Taylor, R.G. & Harcourt, D.G. 1978. Effect of temperature on developmental rate of immature stages of *Crioceris asparagi* (Coleoptera: Chrysomelidae). *Canadian Entomologist* 110, 57-62.
- Taylor, P.S. & Shields, E.J. 1990. Development of the armyworm (Lepidoptera: Noctuidae) under fluctuating daily temperature regimes. *Environmental Entomology* 19, 1422-1432.
- Taylor, P.S. & Shields, E.J. 1995. Development of migrant source populations of the potato leafhopper (Homoptera: Cicadellidae). *Environmental Entomology* 24, 1115-1121.



- Teulon, D.A.J. & Penman, D.R. 1991. Effects of temperature and diel on oviposition rate and development time of the New Zealand flower thrips, *Thrips obscuratus*. *Entomologia Experimentalis et Applicata* **60**, 143-155.
- Thomas, P.A. 1980. Life-cycle studies on *Paulinia acuminata* (Orthoptera: Paulinidae) with particular reference to the effects of constant temperature. *Bulletin of Entomological Research* **70**, 381-389.
- Thorne, E.J. 1994. Life history of immature maize weevils (Coleoptera: Curculionidae) on corn stored at constant temperatures and relative humidities in the laboratory. *Environmental Entomology* **13**, 1459-1471.
- Throne, E.J., Baker, J.E. & Scott, G.E. 1995. Development of maize weevils (Coleoptera: Curculionidae) in corn lines resistant to an alatoxin-producing fungus. *Environmental Entomology* **24**, 944-949.
- Throne, J.E. & Eckenrode, C.J. 1986. Development rates for the seed maffots *Delia platura* and *D. florilega* (Diptera: Anthomyiidae). *Environmental Entomology* **15**, 1022-1027.
- Tingle, C.C.D. & Copland, M.J.W. 1988. Predicting development of the mealybug parasitoids, *Anagyrus pseudococci*, *Leptomastix dactylopii* and *Leptomastidea abnormalis* under greenhouse conditions. *Entomologia Experimentalis et Applicata* **46**, 19-28.
- Toba, H.H., Kishaba, A.N., Pangaldan, R. & Vail, P.V. 1973. Temperature and development of the cabbage looper. *Annals of the Entomological Society of America* **66**, 965-974.
- Tolley, M.P. & Niemczyk, H.D. 1988. Upper and lower threshold temperatures and degree-day estimates for development of the fruitfly (Diptera: Chloropidae) at eight constant temperatures. *Journal of Economic Entomology* **81**, 1346-1351.
- Toscano, N.C. & Stern, V.M. 1976. Development and reproduction of *Euschistus conspersus* at different temperatures. *Annals of the Entomological Society of America* **69**, 839-840.
- Tracy, J.L. & Nechols, J.R. 1987. Comparisons between the squash bug egg parasitoids, *Oenocyrtus anasae* and *Oenocyrtus* sp. (Hymenoptera: Encyrtidae): development, survival, and sex ratio in relation to temperature. *Environmental Entomology* **16**, 1324-1329.
- Trimble, R.M. 1986. Effects of temperature on oviposition and egg development in the spotted tentiform leafminer, *Phyllonorycter blancardella* (Lepidoptera: Gracillariidae). *Canadian Entomologist* **118**, 781-787.
- Trimble, R.M. 1994. Role of photoperiod and temperature in the induction of overwintering pupal diapause in the spotted tentiform leafminer, *Phyllonorycter blancardella*. *Entomologia Experimentalis et Applicata* **72**, 25-31.
- Trimble, R.M., Blommers, L.H.M. & Helsen, H.H.M. 1990. Diapause termination and thermal requirements for pest diapause development in *Aphelinus mali* at constant and fluctuating temperatures. *Entomologia Experimentalis et Applicata* **56**, 61-69.
- Trimble, R.M. & Lund, C.T. 1983. Intra- and interpopulation variation in the thermal characteristics of preadult development of two latitudinally diverse populations of *Toxorhynchites rutilus septentrionalis* (Diptera: Culicidae). *Canadian Entomologist* **115**, 659-662.
- Trimble, R.M. & Smith, S.M. 1978. Geographic variation in development time and predation in the treehole mosquito, *Toxorhynchites rutilus entrionalis* (Diptera: Culicidae). *Canadian Journal of Zoology* **56**, 2156-2165.
- Trpis, M. 1972. Development and predatory behaviour of *Toxorhynchites brevipalpis* (Diptera: Culicidae) in relation to temperature. *Environmental Entomology* **1**, 537-547.
- Trpis, M. & Shemanchuk, J.A. 1969. The effect of temperature on pre-adult development of *Aedes flavescens* (Diptera: Culicidae). *Canadian Entomologist* **101**, 128-132.
- Trpis, M. & Shemanchuk, J.A. 1970. Effect of constant temperature on the larval development of *Aedes vexans* (Diptera: Culicidae). *Canadian Entomologist* **102**, 1048-1051.
- Tsai, J.H. 1998. Development, survivorship, and reproduction of *Toxoptera citricida* (Kirkaldy) (Homoptera: Aphididae) on eight host plants. *Environmental Entomology* **27**, 1190-1195.
- Tsai, J.H. & Kirsch, O.H. 1978. Bionomics of *Haplaxius crudus* (Homoptera: Cixiidae). *Environmental Entomology* **7**, 305-308.
- Tsai, J.H. & Liu, Y-H. 1998. Effect of temperature on development, survivorship, and reproduction of rice root aphid (Homoptera: Aphididae). *Environmental Entomology* **27**, 662-666.
- Tsai, J.H. & Wang, K. 1996. Development and reproduction of *Bemisia argentifolii* (Homoptera: Aleyrodidae) on five host plants. *Environmental Entomology* **25**, 810-816.



- Tsai, J.H. & Wang, K. 1999. Life table study of brown citrus aphid (Homoptera: Aphididae) at different temperatures. *Environmental Entomology* **28**, 412-419.
- Tsai, J.H. & Wilson, S.W. 1986. Biology of *Preregrinus maidis* with descriptions to immature stages (Homoptera: Delphacidae). *Annals of the Entomological Society of America* **79**, 395-401.
- Tsitsipis, J.A. & Mittler, T.E. 1976. Development, growth, reproduction and survival of apterous virginoparae of *Aphis fabae* at different temperatures. *Entomologia Experimentalis et Applicata* **9**, 764-768.
- Umble, J.R. & Fisher, J.R. 2000. Temperature-dependent development of *Otiorynchus ovatus* (Coleoptera: Curculionidae) pupae. *Environmental Entomology* **29**, 758-765.
- Urbaneja, A., Llacer, E., Tomas, O., Garrido, A. & Jacas, J.-A. 1999. Effect of temperature on development and survival of *Cirrospilus sp. near lyncus* (Hymenoptera: Eulophidae), parasitoid of *Phyllocnistis citrella* (Lepidoptera: Gracillariidae). *Environmental Entomology* **28**, 339-344.
- Van Dijk, T.S. 1994. On the relationship between food, reproduction and survival of two carabid beetles: *Calathus melanocephalus* and *Pterostichus versicolor*. *Ecological Entomology* **19**, 263-270.
- Vargas, R.I., Walsh, W.A., Jang, E.B., Armstrong, J.W. & Kanehisa, D.T. 1996. Survival and development of immature stages of four Hawaiian fruit flies (Diptera: Tephritidae). *Annals of the Entomological Society of America* **89**, 64-69.
- Vogt, W.G., Walker, J.M. & Runko, S. 1990. Estimation of development times for immature stages of the bushfly, *Musca vetustissima* (Diptera: Muscidae) and their simulation from air temperature and solar radiation records. *Bulletin of Entomological Research* **80**, 73-78.
- Vogt, W.G. & Woodburn, T.L. 1980. The influence of temperature and moisture on the survival and duration of the egg stage of the Australian sheep blowfly, *Lucilia cuprina* (Diptera: Calliphoridae). *Bulletin of Entomological Research* **70**, 665-671.
- Wagner, T.L. 1995. Temperature-dependent development, mortality, and adult size of sweet potato whitefly biotype B (Homoptera: Aleyrodidae) on cotton. *Environmental Entomology* **24**, 1179-1188.
- Wagner, T.L., Flam, R.O., Wu, H.I., Fargo, W.S. & Coulson, R.N. 1987. Temperature dependent model of life cycle development of *Ips calligraphus* (Coleoptera: Scolytidae). *Environmental Entomology* **16**, 495-502.
- Wagner, T.L., Hennier, P.B., Flamm, R.O. & Coulson, R.N. 1988. Development and mortality of *Ips avulsus* (Coleoptera: Scolytidae) at constant temperatures. *Environmental Entomology* **17**, 181-191.
- Walgenbach, D.D., Elliott, N.C. & Kieckhefer, R.W. 1988. Constant and fluctuating temperature effects on developmental rates and life statistics of the greenbug (Homoptera: Aphididae). *Journal of Economic Entomology* **81**, 501-507.
- Walgenbach, D.D. & Wyman, J.A. 1984. Colorado potato beetle (Coleoptera: Chrysomalidae) development in relation to temperature in Wisconsin. *Annals of the Entomological Society of America* **77**, 604-609.
- Wang, J.-J. & Tsai, J.H. 1996. Temperature effect on development and reproduction of silver leaf whitefly (Homoptera: Aleyrodidae). *Annals of the Entomological Society of America* **89**, 375-384.
- Wang, J.-J. & Tsai, J.H. 2000. Effect of temperature on the biology of *Aphis spiraeicola* (Homoptera: Aphididae). *Annals of the Entomological Society of America* **93**, 874-883.
- Wang, K., Tsai, J.H. & Harrison, N.A. 1997. Influence of temperature on development, survivorship, and reproduction of buckthorn aphid (Homoptera: Aphididae). *Annals of the Entomological Society of America* **90**, 62-68.
- Wang, J.-J., Tsai, J.H., Zhao, Z.-M. & Li, L.-S. 2000. Development and reproduction of the Psocid *Liposcelis bostrychophila* (Psocoptera: Liposcelidae) as a function of temperature. *Annals of the Entomological Society of America* **93**, 261-270.
- Wanner, P.H., Fehrer, M.D., Venso, E.a. & Grogan, W.L. 1995. Survival, development, and fecundity of gypsy moth (Lepidoptera: Lymantriidae) reared on baldcypress and white oak. *Environmental Entomology* **24**, 1069-1074.
- Ward, R.H. & Pienkowski, R.L. 1978. Biology of *Cassida rubiginosa*, a thistlefeeding shield beetle. *Annals of the Entomological Society of America* **71**, 585-591.
- Watters, F.L. 1966. The effects of short exposures to sub-threshold temperatures on subsequent hatching and development of eggs of *Tribolium confusum* Duval (Coleoptera: Tenebrionidae). *Journal of Stored Products Research* **2**, 81-90.



- Weber, J.D., Volney, W.J.A. & Spence, J.R. 1999. Intrinsic development rate of spruce budworm (Lepidoptera: Tortricidae) across a gradient of latitude. *Environmental Entomology* **28**, 224-232.
- Weinberg, M.L. & Lange, W.H. 1980. Developmental rate and lower threshold of the tomato pinworm. *Environmental Entomology* **9**, 245-246.
- Wellings, P.W. 1981. The effect of temperature on the growth and reproduction of two closely related aphid species on sycamore. *Ecological Entomology* **6**, 209-214.
- White, G.H. 1987. Effects of temperature and humidity on the rusted flour beetle, *Tribolium castaneum* (Coleoptera: Tenebrionidae), in wheat grain. *Australian Journal of Zoology* **35**, 43-59.
- Whitfield, G.H. & Richards, K.W. 1985. Influence of temperature on the survival and rate of development of *Pteromalus venustus* (Hymenoptera: Pteromalidae), a parasite of the alfalfa leaf-cutter bee (Hymenoptera: Megachilidae). *Canadian Entomologist* **117**, 811-818.
- Whitham, D.W. 1986. Developmental thermal requirements for the grasshopper, *Taeniopoda eques* (Orthoptera: Acrididae). *Annals of the Entomological Society of America* **79**, 711-714.
- Whitworth, R.J. & Poston, F.L. 1979. A thermal unit accumulation system for southwestern corn borer. *Annals of the Entomological Society of America* **72**, 253-255.
- Wilde, G.E. 1971. Temperature effect on development of western corn rootworm. *Journal of Kansas Entomological Society* **44**, 185-187.
- Wilkinson, J.D. & Daugherty, D.M. 1970. Comparative development of *Bradysia impatiens* (Diptera: Sciaridae) under constant and variable temperatures. *Annals of the Entomological Society of America* **63**, 1079-1083.
- Williams, G.C. 1954. Observations on the life history of *Laemophloeus minutus* (OL.) (Coleoptera: Cucujidae) when bred on various stored cereals and cereal products. *Bulletin of Entomological Research* **45**, 341-350.
- Wilson, K.G., Stinner, R.E. & Rabb, R.L. 1982. Effects of temperature, relative humidity, and host plant on larval survival of the Mexican bean beetle, *Epilachna varinestis*. *Environmental Entomology* **11**, 121-126.
- Wiseman, B.R. & Isenhour, D.J. 1989. Effects of temperature on development of corn earworm (Lepidoptera: Noctuidae) on meridic diets of resistant and susceptible corn silks. *Environmental Entomology* **18**, 683-686.
- Woodson, W.D. & Chandler, L.D. 2000. Effects on development of immature Mexican corn rootworm (Coleoptera: Chrysomelidae). *Annals of the Entomological Society of America* **93**, 55-58.
- Woodson, W.D. & Edelson, J.V. 1988. Developmental rate as a function of temperature in a carrot weevil, *Listronotus texanus* (Coleoptera: Curculionidae). *Annals of the Entomological Society of America* **81**, 252-254.
- Woodson, W.D. & Jackson, J.J. 1996. Development rate as a function of temperature in northern corn rootworm (Coleoptera: Chrysomelidae). *Annals of the Entomological Society of America* **89**, 226-230.
- Woolcock, L.T. 1975. Observations on the dung breeding fly, *Parasarcophaga knabi* Parker. *Journal of Australian Entomological Society* **14**, 71-75.
- Yang, P., Carey, J.R. & Dowell, R.V. 1994. Temperature influences on the development and demography of *Bactrocera dorsalis* (Diptera: Tephritidae) in China. *Environmental Entomology* **23**, 971-974.
- Yeagan, K.V. 1980. Effects of temperature on developmental rate of *Telenomus podisi* (Hymenoptera: Scelionidae). *Annals of the Entomological Society of America* **73**, 339-342.
- Yeagan, K.V. 1983. Effects of temperature on developmental rate of *Trissolcus euschisti* (Hymenoptera: Scelionidae), a parasite of stink bug eggs. *Annals of the Entomological Society of America* **76**, 757-760.
- Yue, B. & Liu, T-X. 2000. Host selection, development, survival, and reproduction of Turnip aphid (Homoptera: Aphididae) on green and red cabbage varieties. *Journal of Economic Entomology* **93**, 1308-1314.
- Zhou, X. & Carter, N. 1992. Effect of temperature, feeding position and crop growth stage on the population dynamics of the rose grain aphid, *Metopolophium dirhodum* (Hemiptera: Aphididae). *Annals of Applied Biology* **121**, 27-37.
- Zoebisch, T.G., Schuster, D.J., Smerage, G.H. & Stimac, A.J. 1992. Mathematical descriptions of oviposition and egg and larval developments of *Liriomyza trifolii* (Diptera: Agromyzidae) on tomato foliage. *Environmental Entomology* **21**, 1341-1344.



Zwaan, B.J., Bijlsma, R. & Hoekstra, R.F. 1992. On the developmental theory of ageing. II. The effect of developmental temperature on longevity in relation to adult body size in *Drosophila melanogaster*. *Heredity* **68**, 123-130.

5. Respiratory metabolism

- Aidley D.J. 1976. Increase in respiratory rate during feeding in larvae of the armyworm, *Spodoptera exempta*. *Physiological Entomology* **1**, 73-75.
- Alinazee, M.T. 1974. Effect of CO₂ gas on the respiration of the confused flour beetle *Tribolium confusum*. *Journal of Economic Entomology* **64**, 1304-1305.
- Allen, M.D. 1959. Respiration rates of worker honeybees of different ages and at different temperatures. *Journal of Experimental Biology* **36**, 92-101.
- Anderson R.L. & Mutchmor J.A. 1971. Temperature acclimation in *Tribolium* and *Musca* at locomotion, metabolic, and enzyme levels. *Journal of Insect Physiology* **17**, 2205-2219.
- Aparecida, M.J., Beraldo, M.J.A.H. & Mendes, E. 1982. The influence of temperature on oxygen consumption rates of workers of two leaf cutting ants, *Atta laevigata* (F. Smith, and *Atta sexdens rubropilosa* (Forel. 1908). *Comparative Biochemistry and Physiology* **71A**, 419-424.
- Argo, V.N. 1939. The effect of temperature upon the oxygen requirements of certain adult insects and insect eggs. *Annals of the Entomological Society of America* **32**, 147-163.
- Armstrong, G. & Mordue, W. 1985. Oxygen consumption of flying locusts. *Physiological Entomology* **10**, 353-358.
- Ashby, P.D. 1997. Conversion of mass-specific metabolic rate among High- and low- elevation populations of the Acridid grasshopper *Xanthippus corallipes*. *Physiological Zoology* **70**, 701-711.
- Ashby, P.D. 1998. The effect of standard metabolic rate on egg production in the Acridid grasshopper, *Xanthippus corallipes*. *American Zoologist* **38**, 561-567.
- Auerswald, L. & Gade, G. 2000. Metabolic changes in the African fruit beetle, *Pachnoda sinuata*, during starvation. *Journal of Insect Physiology* **46**, 343-351.
- Aunaas, T., Baust, J.G. & Zachariassen, K.E. 1983. Ecophysiological studies on arthropods from Spitsbergen. *Polar Research* **1**, 235-240.
- Bailey, C.G. & Mukerji, M.K. 1977. Energy dynamics of *Melanoplus bivittatus* and *M. femurrubrum* (Orthoptera: Acrididae) in a grassland ecosystem. *Canadian Entomologist* **109**, 605-614.
- Bailey, C.G. & Riegert, P.W. 1973. Energy dynamics of *Encoptolophus sordidus costalis* (Scudder) (Orthoptera: Acrididae) in a grassland ecosystem. *Canadian Journal of Zoology* **51**, 91-100.
- Bailey, C.G. & Singh, N.B. 1977. An energy budget for *Mamestra configurata* (Lepidoptera: Noctuidae). *Canadian Entomologist* **109**, 687-693.
- Bailey, S.W. 1969. The effect of physical stress in the grain weevil *Sitophilus granarius*. *Journal of Stored Products Research* **5**, 311-324.
- Bailey, W.J., Withers, P.C., Endersby, M. & Gaull, K. 1993. The energetic cost of calling in the bushcricket *Requena verticalis* (Orthoptera: Tettigoniidae, Listrocelidinae). *Journal of Experimental Biology* **178**, 21-37.
- Balderrama, N.M., Almeida de B., L.O. & Nunez, J.A. 1992. Metabolic rate during foraging in the honeybee. *Journal of Comparative Physiology* **162**, 440-447.
- Bartholomew, G.A. & Barnhardt, M.C. 1984. Tracheal gases, respiratory gas exchange, body temperature and flight in some tropical cicadas. *Journal of Experimental Biology* **111**, 131-144.
- Bartholomew, G.A. & Casey, T.M. 1977. Endothermy during terrestrial activity in large beetles. *Science* **195**, 882-883.
- Bartholomew, G.A. & Casey, T.M. 1977. Body temperature and oxygen consumption during rest and activity in relation to body size in some tropical beetles. *Journal of Thermal Biology* **2**, 173-176.
- Bartholomew, G.A. & Casey, T.M. 1978. Oxygen consumption of moths during rest, preflight warm-up, and flight in relation to body size and wing morphology. *Journal of Experimental Biology* **76**, 11-25.



- Bartholomew, G.A. & Lighton, J.R.B. 1985. Ventilation and oxygen consumption during rest and locomotion in a tropical cockroach, *Blaberus giganteus*. *Journal of Experimental Biology* **118**, 449-454.
- Bartholomew, G.A. & Lighton, J.R.B. 1986. Endothermy and energy metabolism of a giant tropical fly, *Pantophthalmus tabaninus* Thunberg. *Journal of Comparative Physiology B* **156**, 461-467.
- Bartholomew, G.A., Lighton, J.R.B. & Feener, D.H. 1988. Energetics of trail running, load carriage, and emigration in the column-raiding army ant *Eciton hamatum*. *Physiological Zoology* **61**, 57-68.
- Bartholomew, G.A., Lighton, J.R.B. & Louw G.N. 1985. Energetics of locomotion and patterns of respiration in Tenebrionid beetles from the Namib desert. *Journal of Comparative Physiology B*. **155**, 155-162.
- Bartholomew, G.A., Vleck, D. & Vleck, C.M. 1981. Instantaneous measurements of oxygen consumption during pre-flight warm-up and post-flight cooling in sphingid and saturniid moths. *Journal of Experimental Biology* **90**, 17-32.
- Beenakkers, A.M.TH., Van der Horst & Marrewijk, W.J.A. 1981. Metabolism during locust flight. *Comparative Biochemistry and Physiology* **69B**, 315-321.
- Bell, R.A. 1989. Respiratory activity during embryonic development in a diapausing and selected non-diapausing strain of the gypsy moth, *Lymantria dispar* L. *Comparative Biochemistry and Physiology* **93A**, 767-771.
- Bell, C., Cox P.D., Allen, L.P. Pearson, J. & Beirne, M.A. 1983. Diapause in twenty populations of *Ephestia cautella* (Walker) (Lepidoptera, Pyratidae) from different parts of the World. *Journal of Stored Products Research* **19**, 117-123.
- Beraldo, M.J.A.H. & Mendes, E.G. 1981. The respiratory metabolism of the castes of two leaf cutting ants, *Atta laevigata* (F. Smith, 1858) and *Atta sexdens rubropilosa* (Forel, 1908). *Comparative Biochemistry and Physiology* **68A**, 241-247.
- Beraldo, M.J.A.H. & Mendes, E.G. 1982. The influence of temperature on oxygen consumption rates of workers of two leaf cutting ants, *Atta laevigata* (F. Smith, 1858) and *Atta sexdens rubropilosa* (Forel, 1908). *Comparative Biochemistry and Physiology* **71A**, 419-424.
- Beraldo, M.J.A.H., Penteado, C.H.S. & Mendes, E.G. 1992. Respiratory regulation in workers of the leaf cutting ant, *Atta sexdens rubropilosa* Forel, 1908. *Comparative Biochemistry and Physiology* **101A**, 319-322.
- Berrigan, D. 1997. Acclimation of metabolic rate in response to developmental temperature in *Drosophila melanogaster*. *Journal of Thermal Biology* **22**, 213-218.
- Berrigan, D. & Lighton, J.R.B. 1994. Energetics of pedestrian locomotion in adult male blowflies, *Protophormia terraenovae* (Diptera, Calliphoridae). *Physiological Zoology* **67**, 1140-1153.
- Bjerke, R. & Zachariassen, K.E. 1997. Effects of dehydration on water content, metabolism, and body fluid solutes of a carabid beetle from dry savanna in east Africa. *Comparative Biochemistry and Physiology* **118A**, 779-787.
- Boomsma, J.J. & Isaaks, J.A. 1985. Energy investment and respiration in queens and males of *Lasius niger* (Hymenoptera: Formicidae). *Behavioral Ecology & Sociobiology* **18**, 19-27.
- Bosch, M., Chown, S.L. & Scholtz, C.H. 2000. Discontinuous gas exchange and water loss in the kiratin beetle, *Omorgus radula*, further evidence against the water conservation hypothesis. *Physiological Entomology* **24**, 309-314.
- Boyne, J.V. & Rock, G. C. 1985. Diapause in *Platynota idaeusalis* (Lepidoptera: Tortricidae), Characterization of larval diapause under laboratory and field conditions. *Environmental Entomology* **14**, 797-804.
- Braune, H.J. 1976. Effects of temperature on the rates of oxygen consumption during morphogenesis and diapause in the egg stage of *Leptopterna dolobrata* (Heteroptera: Miridae). *Oecologia* **25**, 77-87.
- Brown, A.V. & Fitzpatrick, L.C. 1978. Life history and population energetics of the Dobson fly, *Corydallus cornutus*. *Ecology* **59**, 1091-1108.
- Bursell, E. 1963. Aspects of the metabolism of amino acids in the tsetsefly, *Glossina* (Diptera). *Journal of Insect Physiology* **9**, 439-452.
- Bursell, E. 1966. Aspects of flight metabolism of tsetse (*Glossina*). *Comparative Biochemistry and Physiology* **19**, 809-818.



- Calabi, P. & Porter, S.D. 1989. Worker longevity in the fire ant *solenopsis invicta*, ergonomic considerations of correlations between temperature, size and metabolic rates. *Journal of Insect Physiology* **35**, 643-649.
- Calderwood, W.A. 1961. The metabolic rate of the flour beetle, *Tribolium confusum*. *Transactions of Kansas Academy of Science* **64**, 150-152.
- Cahill, K. & Lustick, S. 1976. Oxygen consumption and thermoregulation in *Apis mellifera* workers and drones. *Comparative Biochemistry and Physiology* **55A**, 55-57.
- Campbell, A., Singh, N.B. & Sinha, R.N. 1976. Bioenergetics of the granary weevil, *Sitophilus granarius* (L.) (Coleoptera: Curculionidae). *Canadian Journal of Zoology* **54**, 786-798.
- Candy, D.J. 1970. Metabolic studies on locust flight muscle using a new perfusion technique. *Journal of Insect Physiology* **16**, 531-543.
- Candy, D.J., Hall, L.J. & Spencer, I.M. 1976. The metabolism of glycerol in the locust *Schistocerca gregaria* during flight. *Journal of Insect Physiology* **22**, 583-587.
- Carlson, S.D. 1966. Respiration measurement of *Tribolium confusum* by gas chromatography. *Journal of Economic Entomology* **59**, 335-338.
- Case, J.F. 1956. Carbon dioxide and oxygen effects on the spiracles of flies. *Physiological Zoology* **29**, 163-171.
- Casey, T.M. 1976. Flight energetics of sphinx moths, heat production and heat loss in *Hyles lineata* during free flight. *Journal of Experimental Biology* **64**, 545-560.
- Casey, T.M. 1977. Physiological responses to temperature of caterpillars of a desert population of *Manduca sexta* (Lepidoptera, Sphingidae). *Comparative Biochemistry and Physiology* **57A**, 53-58.
- Casey, T.M. 1991. Energetics of caterpillar locomotion, biomechanical constraints of a hydraulic skeleton. *Science* **252**, 112-114.
- Casey, T.M. & Knapp, R. 1987. Caterpillar thermal adaptation, behaviour differences reflect metabolic thermal sensitivities. *Comparative Biochemistry and Physiology* **86A**, 679-682.
- Cayhill, K. & Lustic, S. 1976. Oxygen consumption and thermoregulation in *Apis mellifera* workers and drones. *Comparative Biochemistry and Physiology* **55A**, 355-357.
- Chadwick, L.E. 1947. The respiratory quotient of *Drosophila* in flight. *Biological Bulletin* **93**, 229-239.
- Chadwick L.E. & Gilmour D. 1940. Respiration during flight in *Drosophila repleta* Wollaston, The oxygen consumption considered in relation to the wing-rate. *Physiological Zoology* **13**, 398-410.
- Chaplin, S.B. & Wells P.H. 1982. Energy reserves and metabolic expenditures of monarch butterflies overwintering in southern California. *Ecological Entomology* **7**, 249-256.
- Chappell, M.A. 1983. Metabolism and thermoregulation in Desert and montane grasshoppers. *Oecologia* **56**, 126-131.
- Chapell, M.A. 1984. Temperature regulation and energetics of the solitary bee *Centris* during foraging and intermale mate competition. *Physiological Zoology* **57**, 215-225.
- Chapell, M.A. 1984. Thermoregulation and energetics of the green fig beetle (*Ctinus texana*) during flight and foraging behaviour. *Physiological Zoology* **57**, 581-589.
- Chappell, M.A. & Morgan, K.R. 1987. Temperature regulation, endothermy, resting metabolism, and flight energetics of tachinid flies (*Nowickia* sp.) *Physiological Zoology* **60**, 550-559.
- Chaudhry H.S. & Kapoor R.P.D. 1967. Studies on the respiratory metabolism of the red flour beetle. *Journal of Economic Entomology* **60**, 1334-1336.
- Chino, H. 1958. Carbohydrate metabolism in the diapause egg of the silkworm, *Bombyx mori*. II. Conversion of glycogen into sorbitol and glycerol during diapause. *Journal of Insect Physiology* **2**, 1-12.
- Chown, S.L. 1997. Thermal sensitivity of oxygen uptake of Diptera from sub-Antarctic South Georgia and Marion Island. *Polar Biology* **17**, 81-86.
- Chown, S.L., van der Merwe, M. & Smith, V.R. 1996. The influence of habitat and altitude on oxygen uptake in sub-Antarctic weevils. *Physiological Zoology* **70**, 116-124.
- Churchill, T.A. & Storey, K.B. 1989. Metabolic consequences of rapid cycles of temperature change for freeze-avoiding vs freeze-tolerant insects. *Journal of Insect Physiology* **35**, 579-585.
- Clarke K.U. 1957. The relationship of oxygen consumption to age and weight during the post embryonic growth of *Locusta migratoria* L. *Journal of Experimental Biology* **34**, 29-41.
- Coelho J.R. & Mitton, J.B. 1988. Oxygen consumption during hovering is associated with genetic variation of enzymes in honey-bees. *Functional Ecology* **2**, 141-146.



- Coelho J.R. & Moore A.J. 1989. Allometry of resting metabolic rate in cockroaches. *Comparative Biochemistry and Physiology* **94A**, 587-590.
- Cohen A.C. & Cohen J.L. 1981. Microclimate, temperature and water relations of two species of desert cockroaches. *Comparative Biochemistry and Physiology* **69A**, 165-167.
- Conradi-Larsen, E-M. & Sømme, L. 1973. Anaerobiosis in the overwintering beetle *Pelophila borealis*. *Nature* **245**, 388-390.
- Conradi-Larsen, E-M. & Sømme, L. 1973. The overwintering of *Pelophila borealis* Payk. II. Aerobic and anaerobic metabolism. *Norsk Entomologisk Tidsskrift* **20**, 325-332.
- Cooper, P.D. 1993. Field metabolic rate and cost of activity in two tenebrionid beetles from the Mojave desert of North America. *Journal of Arid Environment* **24**, 165-175.
- Crafford, J.E. & Chown, S.L. 1993. Respiratory metabolism of sub-Antarctic insects from different habitats on Marion Island. *Polar Biology* **13**, 411-415.
- Crailsheim, K. & Stabentheiner, A., Hrassnigg, N. & Leonhard B. 1999. Oxygen consumption at different activity levels and ambient temperatures in isolated honeybees (Hymenoptera: Apidae). *Entomologia Generalis* **24**, 001-012.
- Crozier, A.J.A. 1979. Supradian and infradian cycles in oxygen uptake of diapausing pupae of *Pieris brassicae*. *Journal of Insect Physiology* **25**, 575-582.
- Davidson E.A. 1987. Respiration and energy flow in two Australian species of desert harvester ants, *Chelaner rothsteini* and *Chelaner whitei*. *Journal of Arid Environment* **12**, 61-82.
- Davis, L.V., Chown, S.L., McGeoch, M.A. & Scholtz, C.H. 2000. A comparative analysis of metabolic rate in six *Scarabaeus* species (Coleoptera: Scarabaeidae) from the southern Africa, further caveats when inferring adaptation. *Journal of Insect Physiology* **46**, 553-562.
- Davis, L.V., Chown, S.L. & Scholtz, C.H. 1999. Discontinuous gas-exchange cycles in *Scarabaeus* dung beetles (Coleoptera: Scarabaeidae), Mass-scaling and temperature dependence. *Physiological and Biochemical Zoology* **72**, 555-565.
- Davis, R.A. & Fraenkel, G. 1940. The oxygen consumption of flies during flight. *Journal of Experimental Biology* **17**, 402-407.
- Dreyer W.A. 1932. The effect of hibernation and seasonal variation of temperature on the respiratory exchange of *Formica ulkei*. *Physiological Zoology* **5**, 301-331.
- Drummond, R.Q. & Chamberlain, W.F. 1961. Studies on respiration of cattle grubs. *Annals of Entomological Society of America* **54**, 524-526.
- Duke, K.M. & Crossley, Jr. D.A. 1975. Population energetics and ecology of the rock grasshopper, *Trimerotropis saxatilis*. *Ecology* **56**, 1106-1117.
- Duncan, F.D. & Crewe, R.M. 1993. A comparison of the energetics of foraging of three species of *Leptogenys* (Hymenoptera: Formicidae). *Physiological Entomology* **18**, 372-378.
- Duncan, F.D. & Lighton, J.R.B. 1994. The burden within: the energy cost of load carriage in the honeypot ant, *Myrmecocystus*. *Physiological Zoology* **67**, 190-203.
- Duncan, F.D. & Newton, R.D. 2000. The use of anaesthetic, influence, for determining of metabolic rates and respiratory parameters in insects, using the ant, *Camponotus maculatus* (Fabricius) as the model. *Journal of Insect Physiology* **46**, 1529-1534.
- Edwards, G.A. 1946. The influence of temperature upon the oxygen consumption of several arthropods. *Journal of Cellular and Comparative Physiology* **27**, 53-64.
- Edwards D.K. 1958. Effects of acclimation and sex on respiration and thermal resistance in *Tribolium* (Coleoptera: Tenebrionidae). *Canadian Journal of Zoology* **36**, 363-382.
- Edwards, R.W. 1958. The relation of oxygen consumption to body size and to temperature in the larvae of *Chironomus riparius* Meigen. *Journal of Experimental Biology* **35**, 383-395.
- Edwards, G.A. & Irving, L. 1943. The influence of season and temperature upon the oxygen consumption of the beach flea, *Talorchestia megalophthalma*. *Journal of Cellular and Comparative Physiology* **21**, 183-189.
- Elzen, G.W. 1986. Oxygen consumption and water loss in the imported fire ant *Solenopsis invicta* Buren. *Comparative Biochemistry & Physiology* **84A**, 13-17.
- Engelmann, M.D. 1961. The role of soil arthropods in the energetics of an old field community. *Ecological Monograph* **31**, 221-238.



- Ettershank, G. & Whitford, W.G. 1973. Oxygen consumption of two species of *Pogonomyrmex harvester* ants (Hymenoptera: Formicidae). *Comparative Biochemistry & Physiology* **46A**, 605-611.
- Evans D.E. 1977. Some aspects of acclimation to low temperatures in the grain weevils, *Sitophilus oryzae* (L.) and *Sitophilus granarius* (L.). *Australian Journal of Ecology* **2**, 309-318.
- Evans D.E. 1979. The effect of thermal acclimation and relative humidity on the oxygen consumption of three *Sitophilus* species. *Journal of Stored Products Research* **15**, 87-93.
- Evans, D.E. 1981. Thermal acclimation in several species of stored-grain beetles. *Australian Journal of Zoology* **29**, 483-492.
- Farrar, M.D. 1931. Metabolism of the adult honey bee. *Journal of Economic Entomology* **24**, 611-616.
- Fewell, J.H. 1988. Energetic and time costs of foraging in harvester ants, *Pogonomyrmex occidentalis*. *Behavioral Ecology and Sociobiology* **22**, 401-408.
- Fewell, J.H., Harrison, J.F., Lighton, J.R.B. & Breed, M.D. 1996. Foraging energetics of the ant, *Paraponera clavata*. *Oecologia* **105**, 419-427.
- Forlow, L.J. & MacMahon, J.A. 1988. A seasonal comparison of metabolic and water loss rates of three species of grasshoppers. *Comparative Biochemistry and Physiology* **89A**, 51-60.
- Fraenkel, G. & Blewett, M. 1944. The utilisation of metabolic water in insects. *Bulletin of Entomological Research* **35**, 127-139.
- Gehrken, U. 1985. Physiology of diapause in the adult bark beetle, *Ips acuminatus* Gyll. Studied in relation to cold hardiness. *Journal of Insect Physiology* **31**, 909-916.
- Golley, F.B. & Gentry, J.B. 1964. Bioenergetics of the southern harvester ant, *Pogonomyrmex badius*. *Ecology* **45**, 217-225.
- Gromadzka J. 1968. Respiratory metabolism of the Colorado beetle (*Leptinotarsa decemlineata* Say). *Ekologia Polska* **16**, 375-389.
- Guerra, A.A. & Cochran, D.G. 1970. Respiration during the life cycle of the face fly. *Journal of Economic Entomology* **63**, 918-920.
- Gunn, D.L. 1933. The temperature and humidity relations of the cockroach (*Blatta orientalis*) I. Desiccation. *Journal of Experimental Biology* **10**, 274-285.
- Gunn, D.L. 1935. Oxygen consumption of the cockroach in relation to moulting. *Nature* **29**, 434-435.
- Gunn, D.L. 1935. The temperature and humidity relations of the cockroach. III. A comparison of temperature preference, and rates of desiccation and respiration of *Periplaneta americana*, *Blatta orientalis* and *Blatella germanica*. *Journal of Experimental Biology* **12**, 185-190.
- Gyllenberg, G. 1969. The energy flow through a *Chorthippus parallelus* (Zett.) (Orthoptera) population on a meadow in Tvarmine, Finland. *Acta Zoologica Fennica* **123**, 1-74.
- Hack, M.A. 1997. The effects of mass and age on standard metabolic rate in house crickets. *Physiological Entomology* **22**, 325-331.
- Hadley, N.F. & Massion, D.D. 1985. Oxygen consumption, water loss and cuticular lipids of high and low elevation populations of the grasshopper *Aeropedellus clavatus*. *Comparative Biochemistry and Physiology* **80A**, 307-311.
- Hadley, N.F. & Quinlan, M. 1993. Discontinuous carbon dioxide release in the eastern Lubber grasshopper *Romalea guttata* and its effect on respiratory transpiration. *Journal of Experimental Biology* **177**, 169-180.
- Hadley, N.F., Quinlan, M. & Kennedy, M.L. 1991. Evaporative cooling in the desert Cicada, Thermal efficiency and water/metabolic costs. *Journal of Experimental Biology* **159**, 269-283.
- Hagvar, S. & Ostbye, E. 1974. Oxygen consumption, caloric values, water and ash content of some terrestrial arthropods from alpine habitats at Finse, south Norway. *Norsk Entomologisk Tidsskrift* **21**, 117-126.
- Hamilton, A.G. 1964. The occurrence of periodic or continuous discharge of carbon dioxide by male desert locusts *Schistocerca gregaria* (Forsk.) measured by an infra-red gas analyser. *Proceedings of the Royal Society of London B* **160**, 373-395.
- Hargrove, J.W. 1976. Amino acid metabolism during flight in tsetse flies. *Journal of Insect Physiology* **22**, 309-313.
- Harrison, J.F. & Fewell, J.H. 1995. Thermal effects on feeding behavior and net energy intake in a grasshopper experiencing large diurnal fluctuations in body temperature. *Physiological Zoology* **68**, 453-473.



- Harrison, J.F. & Lighton, J.R.B. 1998. Oxygen-sensitive flight metabolism in the dragon fly *Erythemis simplicicollis*. *Journal of Experimental Biology* **201**, 1739-1744.
- Harrison, J.F., Phillips, J.E. & Gleeson, T.T. 1991. Activity physiology of the two-striped grasshopper, *Malanoplus bivittatus*: gas exchange, haemolymph acid-base status, lactate production, and the effect of temperature. *Physiological Zoology* **64**, 451-472.
- Heath, J.E. & Phillips, A.A. 1967. Regulation of heat production by large moths. *Journal of Experimental Biology* **47**, 21-33.
- Headlee, T.J. 1914. Some data on the effect of temperature and moisture on the rate of insect metabolism. *Journal of Economic Entomology* **7**, 413-417.
- Heatwole, H., Muir, R. & Davison, E. 1986. Oxygen consumption of some terrestrial invertebrates from the pre-Saharan steppe of Tunisia. *Journal of Arid Environment* **11**, 219-226.
- Heiman, D.R. & Knight, A.W. 1975. The influence of temperature on the bioenergetics of the carnivorous stonefly nymph, *Acroneuria californica* Banks (Plecoptera: Perlidae). *Ecology* **56**, 105-116.
- Heinrich, B. 1971. Temperature regulation of the sphinx moth, *Manduca sexta*. I. Flight energetics and body temperature during free and tethered flight. *Journal of Experimental Biology* **54**, 141-152.
- Heinrich, B. 1972. Energetics of temperature regulation and foraging in a bumblebee, *Bombus terricola* Kirby. *Journal of Comparative Physiology* **77**, 49-64.
- Heinrich, B. 1975. Thermoregulation in bumblebees. II. Energetics of warm-up and free flight. *Journal of Comparative Physiology* **95B**, 155-166.
- Heinrich, B. 1980. Mechanisms of body-temperature regulation in honeybees, *Apis mellifera*. *Journal of Experimental Biology* **85**, 73-87.
- Heinrich, B. & Casey, T.M. 1973. Metabolic rate and endothermy in sphinx moths. *Journal of Comparative Physiology* **83**, 195-206.
- Herreid, C.F. & Full, R.J. 1984. Cockroaches on a treadmill, Aerobic running. *Journal of Insect Physiology* **30**, 395-403.
- Herreid, C.F., Full, R.J. & Prawel, D.A. 1981. Energetics of running Cockroaches. *Science* **212**, 331-332.
- Herreid, C.F. II, Full, R.J. & Prawel, D.A. 1981. Energetics of cockroach locomotion. *Journal of Experimental Biology* **94**, 189-202.
- Hinton, J.M. 1971. Energy flow in a natural population of *Neophilaenus lineatus* (Homoptera). *Oikos* **22**, 155-171.
- Hoback, W.W. & Wagner, W.E. 1997. The energetic cost of calling in the variable field cricket, *Gryllus lineaticeps*. *Physiological Entomology* **22**, 286-290.
- Hoffmann, K-H. 1977. The regulatory role of muscle pyruvate kinase in carbohydrate metabolism of invertebrates: A comparative study in catalytic properties of enzymes isolated from *Tubifex tubifex* (Oligochaeta) and *Tenebrio molitor* (Coleoptera). *Physiological Zoology* **50**, 142-155.
- Holter, P. 1982. Resource utilization and local coexistence in a guild of scarabaeid dung beetles (*Aphodius* spp.) *Oikos* **39**, 213-227.
- Holter, P. & Spangenberg, A. 1997. Oxygen uptake in coprophilous beetles (*Aphodius*, *Geotrupes*, *Sphaeridium*) at low oxygen and high carbon dioxide concentrations. *Physiological Entomology* **22**, 339-343.
- Horne, P.A. 1992. Respiration rates of two closely related species of carabids in Australia. *Physiological Entomology* **17**, 162-164.
- Horn-Mrozowska, E. 1976. Energy budget elements of an experimental nest of *Formica pratensis* Retzius (Hymenoptera: Formicidae). *Polar Ecological Studies* **23**, 55-98.
- Horwath, K.L. & Duman, J.G. 1983. Preparatory adaptations for winter survival in the cold hardy beetles, *Dendroides canadensis* and *Dendroides concolor*. *Journal of Comparative Physiology* **151**, 225-232.
- Ingrisch S. 1987. Oxygen consumption by developing and diapausing eggs of *Eupholidoptera smyrnensis* (Orthoptera: Tettigoniidae). *Journal of Insect Physiology* **33**, 861-865.
- Jeeva, D., Bignell, D.E. Eggleton, P. & Maryati, M. 1999. Respiratory gas exchanges of termites from the Sabah (Borneo) assemblage. *Physiological Entomology* **24**, 11- 17.
- Jensen, T.F. 1978. An energy budget for a field population of *Formica pratensis* Retz. (Hymenoptera: Formicidae). *Natura Jutlandica* **3**, 203-226.
- Jensen, T.F. 1978. Annual production and respiration in ant populations. *Oikos* **31**, 207-213.



- Jensen, T.F. & Nielsen, M.G. 1975. The influence of body size and temperature on worker ant respiration. *Natura Jutlandica* **18**, 21-25.
- Joanisse, D.R. & Storey, K.B. 1994. Enzyme activity profiles in an overwintering population of freeze-tolerant larvae of the gall fly, *Eurosta solidaginis*. *Journal of Comparative Physiology B* **164**, 247-255.
- Joos, B., Lighton, J.R.B., Harrison, J.F., Suarez, R.K. & Roberts, S.P. 1997. Effects of ambient oxygen tension on flight performance, metabolism, and water loss of the honey bee. *Physiological Zoology* **70**, 167-174.
- Juliano, S.A. 1986. Resistance to desiccation and starvation of two species of *Brachinus* (Coleoptera, Carabidae) from southeastern Arizona. *Canadian Journal of Zoology* **64**, 73-80.
- Kammer, A.E. & Heinrich, B. 1974. Metabolic rates related to muscle activity in bumblebees. *Journal of Experimental Biology* **61**, 219-227.
- Kay, C.A. & Whitford, W.G. 1975. Influences of temperature and humidity on oxygen consumption of five Chihuahuan desert ants. *Comparative Biochemistry and Physiology* **52A**, 281-286.
- Keilin, D. 1944. Respiratory systems and respiratory adaptations in larvae and pupae of Diptera. *Parasitology* **36**, 1-66.
- Keister, M. & Buck, J. 1961. Respiration of *Phormia regina* in relation to temperature and oxygen. *Journal of Insect Physiology* **7**, 51-72.
- Kennington, G.S. 1957. Influence of altitude and temperature upon rate of oxygen consumption of *Tribolium confusum* Duval and *Camponotus pennsylvanicus* moduc Wheeler. *Physiological Zoology* **30**, 305-314.
- Knight, A.W. & Gaufin, A.R. 1966. Oxygen consumption of several species of stoneflies (Plecoptera). *Journal of Insect Physiology* **12**, 347-355.
- Koelho, J.R. & Moore, A.J. 1989. Allotropy of resting metabolic rate in cockroaches. *Comparative Biochemistry & Physiology* **94A**, 587-590.
- Kostal, V., Sula, J. & Simek, P. 1998. Physiology of drought tolerance and cold hardiness of the mediterranean tiger moth, *Cymbalophora pudica* during summer diapause. *Journal of Insect Physiology* **44**, 165-173.
- Krishnan, M. & Chockalingam, S. 1988. Influence of temperature on the bioenergetics of a tropical moth. *Journal of Thermal Biology* **13**, 149-155.
- Krogh, A. & Weis-Fogh, T. 1951. The respiratory exchange of the desert locust (*Schistocerca gregaria*) before, during and after flight. *Journal of Experimental Biology* **28**, 344-357.
- Kucera, W.G. 1934. Oxygen consumption in the male and female fly, *Drosophila melanogaster*. *Physiological Zoology* **7**, 449-458.
- Kukal, O., Ayres, M.P. & Scriber, J.M. 1991. Cold tolerance of the pupae in relation to the distribution of swallowtail butterflies. *Canadian Journal of Zoology* **69**, 3028-3037.
- Kukal, O., Denlinger, D.L. & Lee, R.E. 1991. Developmental and metabolic changes induced by anoxia in diapausing and non-diapausing flesh fly pupae. *Journal of Comparative Physiology B* **160**, 683-689.
- Kukal, O., Duman, J.G. & Serianni, A.S. 1989. Cold-induced mitochondria degradation and cryoprotectant synthesis in freeze-tolerant arctic caterpillars. *Journal of Comparative Physiology B* **158**, 661-671.
- Kukal, O., Serianni, A.S. & Duman, J.G. 1988. Glycerol metabolism in a freeze-tolerant arctic insect, an in vivo ¹³C NMR study. *Journal of Comparative Physiology B* **158**, 175-183.
- Krolikowski, K. & Harrison, J.F. 1996. Haemolymph acid-base status, tracheal gas levels and the control of post-exercise ventilation rate in grasshoppers. *Journal of Experimental Biology* **199**, 391-399.
- Lanciani, C.A., Giesel, J.T., Anderson, J.F. & Emerson, S.S. 1990. Photoperiod-induced changes in metabolic response to temperature in *Drosophila melanogaster* Meigen. *Functional Ecology* **4**, 41-45.
- Lawton, J.H. 1970. Feeding and food energy assimilation in larvae of the damselfly *Pyrrosoma nymphula* (Sulz.) (Odonata: Zygoptera). *Journal of Animal Ecology* **39**, 669-689.
- Lee, R.E. & Baust, J.G. 1982. Absence of metabolic cold adaptation and compensatory acclimation in the antarctic fly, *Belgica antarctica*. *Journal of Insect Physiology* **28**, 725-729.
- Lee, R.E., Dommel, R.A., Joplin, K.H. & Denlinger, D.L. 1995. Cryobiology of the freeze-tolerant gall fly *Eurosta solidaginis*, overwintering energetics and heat shock proteins. *Climatic Research* **5**, 61-67.
- Lehmann, F-O., Dickinson, M.H. & Staunton, J. 2000. The scaling of carbon dioxide release and respiratory water loss in flying fruit flies (*Drosophila* spp.). *Journal of Experimental Biology* **203**, 1613-1624.

- Levy, R.I. & Schneiderman, H.A. 1966. Discontinuous respiration in insects. II. The direct measurement and significance of changes in tracheal gas composition during the respiratory cycle of silkworm pupae. *Journal of Insect Physiology* **12**, 83-104.
- Levy, R.I. & Schneiderman, H.A. 1966. Discontinuous respiration in insects. III. The direct measurement and significance of changes in tracheal gas composition during the respiratory cycle of silkworm pupae. *Journal of Insect Physiology* **12**, 105-121.
- Levy, R.I. & Schneiderman, H.A. 1966. Discontinuous respiration in insects. IV. Changes in intratracheal pressure during the respiratory cycle of silkworm pupae. *Journal of Insect Physiology* **12**, 465-492.
- Lewis, L.C., Mutchmor, J.A. & Lynch, R.E. 1971. Effect of *Perezia pyraustae* on oxygen consumption by the European corn borer, *Ostrinia nubilalis*. *Journal of Insect Physiology* **17**, 2457-2468.
- Lighton, J.R.B. 1985. Minimum cost of transport and ventilatory patterns in three African beetles. *Physiological Zoology* **58**, 390-399.
- Lighton, J.R.B. 1987. Cost of tokking, The energetics of substrate communication in the tok-tok beetle, *Psammodes striatus*. *Journal of Comparative Physiology B* **157**, 11-20.
- Lighton, J.R.B. 1988a. Simultaneous measurement of oxygen uptake and carbon dioxide emission during discontinuous ventilation in the tok-tok beetle, *Psammodes striatus*. *Journal of Insect Physiology* **34**, 361-367.
- Lighton, J.R.B. 1988b. Discontinuous CO₂ emission in a small insect, the formicine ant *Camponotus vicinus*. *Journal of Experimental Biology* **134**, 363-376.
- Lighton, J.R.B. 1989. Individual and whole-colony respiration in an African formicine ant. *Functional Ecology* **3**, 523-530.
- Lighton, J.R.B. 1990. Slow discontinuous ventilation in the Namib Dune-sea ant *Camponotus detritus* (Hymenoptera: Formicidae). *Journal of Experimental Biology* **151**, 71-82.
- Lighton, J.R.B. 1991. Ventilation in Namib desert Tenebrionid beetles: mass scaling and evidence of a novel quantized flutter-phase. *Journal of Experimental Biology* **159**, 249-268.
- Lighton, J.R.B. 1992. Direct measurement of mass loss during discontinuous ventilation in two species of ants. *Journal of Experimental Biology* **173**, 289-293.
- Lighton, J.R.B. 1994. Discontinuous ventilation in terrestrial insects. *Physiological Zoology* **67**, 142-162.
- Lighton, J.R.B. & Bartholomew, G.A. 1988. Standard energy metabolism of a desert harvester ant, *Pogonomyrmex rugosus*, Effects of temperature, body mass, group size and humidity. *Proceedings of the National Academy of Science* **85**, 4765-4769.
- Lighton, J.R.B., Bartholomew, G.A. & Feener, D.H. 1987. Energetics of locomotion and load carriage and a model of the energy cost of foraging in the leaf-cutting ant *Atta columbica* Guer. *Physiological Zoology* **60**, 524-537.
- Lighton, J.R.B. & Berrigan, D. 1995. Questioning paradigms, Caste-specific ventilation in harvester ants, *Messor pergandei* and *M. julianus* (Hymenoptera: Formicidae). *Journal of Experimental Biology* **198**, 521-530.
- Lighton, J.R.B. & Feener, D.H. 1989. A comparison of energetics and ventilation of desert ants during voluntary and forced locomotion. *Nature* **342**, 174-175.
- Lighton, J.R.B., Fukushi, T. & Wehner R. 1993. Ventilation in *Cataglyphis bicolor*: regulation of Carbon dioxide release from the thoracic and abdominal spiracles. *Journal of Insect Physiology* **39**, 687-699.
- Lighton, J.R.B., Garrigan, D.A., Duncan, F.D. & Johnson, R.A. 1993. Spiracular control of respiratory water loss in female alates of the harvester ant *Pogonomyrmex rugosus*. *Journal of Experimental Biology* **179**, 233-244.
- Lighton, J.R.B. & Gillespie, R.G. 1989. The energetics of mimicry, the cost of pedestrian transport in a formicine ant and its mimic, a clubionid spider. *Physiological Entomology* **14**, 173-177.
- Lighton, J.R.B. & Lovegrove, B.G. 1990. A temperature induced switch from diffusive to convective ventilation in the honeybee. *Journal of Experimental Biology* **154**, 509-516.
- Lighton, J.R.B. & Wehner, R. 1993. Ventilation and respiratory metabolism in the thermophilic desert ant, *Cataglyphis bicolor* (Hymenoptera: Formicidae). *Journal of Comparative Physiology B* **163**, 11-17.
- Lighton, J.R.B. Weier, J.A. & Feener, D.H. 1993. The energetics of locomotion and load carriage in the desert harvester ant *Pogonomyrmex rugosus*. *Journal of Experimental Biology* **181**, 49-61.



- Lincoln, D.C.R. 1961. The oxygen and water requirements of the egg of *Ocyptus olens* Muller (Staphylinidae, Coleoptera). *Journal of Insect Physiology* **7**, 265-272.
- Llewellyn, M. & Hargreaves, C.E.M. 1984. The biology and energetics of the potato aphid *Macrosiphum euphorbiae*, living in galls of the apple aphid *Dysaphis devectora* and *Aphis pomi*. *Entomologia Experimentalis et Applicata* **35**, 147-158.
- Louw, G. N. & Hadley, N.F. 1985. Water economy of the honeybee: a stoichiometric accounting. *Journal of Experimental Zoology* **235**, 147-150.
- Louw, G.N. & Nicolson, S.W. 1983. Thermal, energetic and nutritional considerations in the foraging and reproduction of the carpenter bee *Xylocopa capitata*. *Journal of Entomological Society of Southern Africa* **46**, 227-240.
- Louw, G.N., Nicolson, S.W. & Seely, M.K. 1986. Respiration beneath desert sand: Carbon dioxide diffusion and respiratory patterns in a Tenebrionid beetle. *Journal of Experimental Biology* **120**, 443-447.
- Loveridge, J.P. & Bursell, E. 1975. Studies on the water relations of adult locusts (Orthoptera: Acrididae). I. Respiration and the production of metabolic water. *Bulletin of Entomological Research* **65**, 13-20.
- Lucas, J.R. 1985. Metabolic rates and pit-construction costs of two antlion species. *Journal of Animal Ecology* **54**, 295-309.
- Ludwig, D. 1937. The effect of different relative humidities on respiratory metabolism and survival of the grasshopper *Chortophaga viridifasciatus* De Geer. *Physiological Zoology* **10**, 342-351.
- MacKay, W.P. 1982. An altitudinal comparison of oxygen consumption rates in three species of *Pogonomyrmex harvester* ants (Hymenoptera: Formicidae). *Physiological Zoology* **55**, 367-377. 35.
- MacKay, W.P. & Sassaman, C.A. 1984. Paradoxical acclimation and seasonal comparisons of oxygen consumption rates in three species of *Pogonomyrmex harvester* ants (Hymenoptera: Formicidae). *Journal of Comparative Physiology B* **154**, 399-407.
- MacNally, R. & Doolan, J.M. 1982. Comparative reproductive energetics of the sexes in the cicada *Cystosoma saundersii*. *Oikos* **39**, 179-186.
- MacNally, R. & Young, D. 1981. Song energetics of the bladder cicada, *Cystosoma saundersii*. *Journal of Experimental Biology* **83**, 79-94.
- Maldaque, M.E., Hardy, Y. & Demers, J. 1967. Influence de la temperature sur la consommation d'oxygene chez differentes especes de Fourmis. *Pedobiologia* **7**, S247-258.
- Manga, N. 1972. Population metabolism of *Nebria brevicollis* (F.) (Coleoptera: Carabidae). *Oecologia* **10**, 223-242.
- Martin, M.M. & Van't Hof, H.M. 1988. The cause of reduced growth of *Manduca sexta* larvae on a low-water diet: increased metabolic processing costs or nutrient limitation. *Journal of Insect Physiology* **34**, 515-525.
- Martin, P.J. 1991. Respiration of the ant *Leptothorax unifasciatus* (Hymenoptera: Formicidae) at individual and society levels. *Journal of Insect Physiology* **37**, 311-318.
- Massion, D.D. 1983. An altitudinal comparison of water and metabolic relations in two acridid grasshoppers (Orthoptera). *Comparative Biochemistry and Physiology* **74A**, 101-105.
- Matsumoto, T. 1976. The role of termites in an equatorial rain forest ecosystem of West Malaysia. *Oecologia* **22**, 153-178.
- Matsura, T. 1981. Responses to starvation in a mantis, *Paratenodera angustipennis* (S.). *Oecologia* **50**, 291-295.
- May, M.L. 1979. Energy metabolism of dragonflies (Odonata: Anisoptera) at rest and during endothermic warm-up. *Journal of Experimental Biology* **83**, 79-94.
- May, M.L., Pearson, D.L. & Casey, T.M. 1986. Oxygen consumption of active and inactive adult tiger beetles. *Physiological Entomology* **11**, 171-179.
- McCabe, C.T. & Bursell, E. 1975. Metabolism of digestive products in the tsetsefly, *Glossina morsitans*. *Insect Biochemistry* **5**, 769-779.
- McComie, L.D. & Dhanarajan, G. 1990. Respiratory rate and energy utilization by *Macrotermes carbonarius* (Hagan) (Isoptera: Termitidae, Macrotermitinae) in Penang, Malaysia. *Insect Science and its Application* **11**, 197-204.
- McDiffett, W.F. 1970. The transformation of energy by a stream detritivore, *Pteronarcys scotti* (Plecoptera). *Ecology* **51**, 975-988.

- McEvoy, P.B. 1984. Increase in respiratory rate during feeding in larvae of the cinnabar moth *Tyria jacobaeae*. *Physiological Entomology* **9**, 191-195.
- Meidell, E.-M. 1983. Diapause, aerobic and anaerobic metabolism in alpine, adult *Melasoma colaris* (Coleoptera). *Oikos* **41**, 239-244.
- Mellanby, K. 1932. The effect of atmospheric humidity on the metabolism of the fasting mealworm *Tenebrio molitor* L. (Coleoptera). *Proceedings of the Royal Society of London B* **111**, 376-390.
- Mellanby, K. 1942. Metabolic water and desiccation. *Nature* **150**, 21.
- Mellanby, K. 1958. Water content and insect metabolism. *Nature* **181**, 1403.
- Menhinick, E.F. 1967. Structure, stability, and energy flow in plants and arthropods in a *Sericea lespedeza* stand. *Ecological Monograph* **37**, 255-272.
- Miller, P.L. 1960. Respiration in the desert locust. I. The control of ventilation. *Journal of Experimental Biology* **37**, 224-236.
- Miller, P.L. 1966. The supply of oxygen to the active flight muscles of some large beetles. *Journal of Experimental Biology* **45**, 285-304.
- Mispagel, M.E. 1978. The ecology and bioenergetics of the Acridid grasshopper, *Boottettix punctatus* on creosotebush, *Larrea tridentata*, in the northern Mojave desert. *Ecology* **59**, 779-788.
- Mispagel, M.E. 1981. Relation of oxygen consumption to size and temperature in desert arthropods. *Ecological Entomology* **6**, 423-431.
- Morgan, K.R. 1987. Temperature regulation, energy metabolism and mate-searching in rain beetles (*Pleocoma* spp.), winter-active, endothermic Scarabs (Coleoptera). *Journal of Experimental Biology* **128**, 107-122.
- Morgan, K.R. & Bartholomew, G.A. 1982. Homeothermic response to reduced ambient temperature in a scarab beetle. *Science* **216**, 1409-1410.
- Morgan, K.R., Shelly, T.E. & Kimsey, L.S. 1985. Body temperature regulation, energy metabolism, and foraging in light-seeking and shade-seeking robber flies. *Journal of Comparative Physiology B* **155**, 561-70.
- Nayar, J.K. & van Handel, E. 1971. Flight performance and metabolism of the moth *Spodoptera frugiperda*. *Journal of Insect Physiology* **17**, 2475-2479.
- Nicolson, S.W. & Louw, G.N. 1982. Simultaneous measurement of evaporative water loss, oxygen consumption, and thoracic temperature during flight in a carpenter bee. *Journal of Experimental Zoology* **222**, 287-296.
- Nielsen, M.G. 1972. An attempt to estimate energy flow through a population of workers of *Lasius alienus* (Forst.) (Hymenoptera: Formicidae). *Natura Jutlandica* **16**, 99-107.
- Nielsen, M.G. 1986. Respiratory rates of ants from different climatic areas. *Journal of Insect Physiology* **36**, 125-131.
- Nielsen, M.G. & Baroni-Urbani, C. 1990. Effects and foraging behaviour of the European seed harvesting ant *Messor capitatus*. I. Respiratory metabolism and energy consumption of unloaded and loaded workers during locomotion. *Physiological Entomology* **15**, 441-448.
- Nielsen M.G., Elmes, G.W. & Kipyatkov, V.E. 1999. Respiratory Q_{10} varies between populations of two species of *Myrmica* ants according to the latitude of their sites. *Journal of Insect Physiology* **45**, 559-564.
- Nielsen M.G. & Jensen T.F. 1977. Measurement of metabolism of worker ants by using the elimination of Caesium-134. *Oecologia* **30**, 209-214.
- Nielsen M.G., Jensen T.F. & Holm-Jensen I. 1982. Effect of load carriage on the respiratory metabolism of running worker ants of *Camponotus herculeanus* (Formicidae). *Oikos* **39**, 137-142.
- Nielsen, M.G., Skyberg, N. & Peakin, G. 1985. Respiration in the larvae of the ants *Myrmica scabrinodis*. *Physiological Entomology* **10**, 205-214.
- Nielsen, M.G., Skyberg, N. & Peakin, G. 1985. Respiration in the sexuals of the ant *Lasius flavus*. *Physiological Entomology* **10**, 199-204.
- Nunes, L., Bignell, D.E. Lo, N. & Eggleton, P. 1997. On the respiratory quotient (RQ) of termites (Insecta, Isoptera). *Journal of Insect Physiology* **43**, 749-758.
- Nuttall R.M. 1970. The effect of acclimation upon the survival of *Pinus tectus* and *Tenebrio molitor* when exposed to low temperatures. *Entomologia Experimentalis et Applicata* **13**, 217-228.



- Nylund, L. 1991. Metabolic rates of *Calathus melanocephalus* (L.) (Coleoptera: Carabidae) from alpine and lowland habitats (Jeloy and Finse, Norway and Drenthe, the Netherlands). *Comparative Biochemistry and Physiology* **100A**, 853-862.
- Oertli, J.J. & Oertli, M. 1990. Energetics and thermoregulation of *Popillia japonica* Newman (Scarabaeidae: Coleoptera) during flight and rest. *Physiological Zoology* **63**, 921-937.
- Park, T. 1936. Studies in population physiology. v. The oxygen consumption of the flour beetle, *Tribolium confusum* Duval. *Journal of Cellular Comparative Physiology* **7**, 313-323.
- Parry, W. H. 1980. Overwintering of *Aphidecta oblitterata* (L.) (Coleoptera: Coccinellidae) in north east Scotland. *Acta Ecologia* **1**, 307-316.
- Peakin, G., Nielsen, M.G. & Skyberg, N. & Pedersen, J. 1985. Respiration in the larvae of the ants *Myrmica scabrinodis* and *Lasius flavus*. *Physiological Entomology* **10**, 205-214.
- Peakin, G., Nielsen, M.G. & Skyberg, N. 1989. Respiration during metamorphosis of sexuals in *Lasius flavus* (Hymenoptera: Formicidae). *Physiological Entomology* **14**, 203-210.
- Penttinen, O-P. & Holopainen, I.J. 1995. Physiological energetics of a midge, *Chironomus riparius* Meigen (Insecta: Diptera), normoxic heat output over the whole life cycle and response of larva to hypoxia and anoxia. *Oecologia* **103**, 419-424.
- Petitpre, M.F. & Knight, A.W. 1970. Oxygen consumption of the dragonfly, *Anax junius*. *Journal of Insect Physiology* **16**, 449-459.
- Porter, S.D. 1986. Revised respiration rates for the southern harvester ant, *Pogonomyrmex badius*. *Comparative Biochemistry and Physiology* **83A**, 197-198.
- Prange, H.D. 1990. Temperature regulation by respiratory evaporation in grasshoppers. *Journal of Experimental Biology* **154**, 463-474.
- Prestwich, K.N. & Walker, T.J. 1981. Energetics of singing in crickets, effect of temperature in three trilling species (Orthoptera: Gylliidae). *Journal of Comparative Physiology B* **143**, 199-212.
- Pullin, A.S. 1992. Diapause metabolism and changes in carbohydrates related to cryoprotection in *Pieris brassicae*. *Journal of Insect Physiology* **38**, 319-327.
- Quinlan M.C. & Hadley N.F. 1982. A new system for concurrent measurement of respiration and water loss in arthropods. *Journal of Experimental Zoology* **222**, 255-263.
- Quinlan, M.C. & Hadley, N.F. 1993. Gas exchange, ventilatory patterns, and water loss in two lubber grasshoppers, Quantifying cuticular and respiratory transpiration. *Physiological Zoology* **66**, 628-642.
- Randolph, P.A., Randolph, J.C. & Barlow, C.A. 1975. Age-specific energetics of the pea aphid, *Acyrtosiphon pisum*. *Ecology* **56**, 359-369.
- Reichle, D.E. 1968. Relation of body size to food intake, oxygen consumption, and trace element metabolism in forest floor arthropods. *Ecology* **49**, 538-542.
- Richards, A.G. 1963. The effect of temperature on the rate of oxygen consumption and on the oxidative enzymes in the cockroach *Periplaneta americana*. *Annals of the Entomological Society of America* **56**, 355-357.
- Roe M.R., Clifford C.W. & Woodring J.P. 1980. The effect of temperature on feeding, growth, and metabolism during the last larval stadium of the female house cricket, *Acheta domesticus*. *Journal of Insect Physiology* **26**, 639-644.
- Rogers, L., Lavigne, R. & Miller, J.L. 1972. Bioenergetics of the western harvester ant in the shortgrass plains ecosystem. *Environmental Entomology* **1**, 763-768.
- Rojas, R.R., Charlet, L.D. & Leopard, R.A. 1991. Biochemistry and physiology of overwintering in the mature larva of the red sunflower seed weevil, *Smicronyx fulvus* Leconte (Coleoptera: Curculionidae). *Journal of Insect Physiology* **37**, 489-496.
- Ross, R.E. 2000. Age-specific decrease in aerobic efficiency associated with increase in oxygen free radical production in *Drosophila melanogaster*. *Journal of Insect Physiology* **46**, 1477-1480.
- Rothe, U. & Nachtigall, W. 1989. Flight of the honey bee. *Journal of Comparative Physiology B* **158**, 739-749.
- Rumbo, E.R. 1979. Oxygen requirements of *Lucilia cuprina* during development within the puparium. *Entomologia Experimentalis et Applicata* **26**, 67-73.
- Salvucci, M.E. & Crafts-Brandner, S.J. 2000. Effects of temperature and dietary sucrose concentration on respiration in the silverleaf whitefly, *Bemisia argentifolii*. *Journal of Insect Physiology* **46**, 1461-1467.



- Salvucci, M.E., Hendrix, D.H. & Wolfe, G.R. 1999. Effects of high temperature on the metabolic processes affecting sorbitol synthesis in the silverleaf whitefly, *Bemisia argentifolii*. *Journal of Insect Physiology* **45**, 21-27.
- Salvucci, M.E. & Wolfe, G.R. Hendrix, D.H. 1997. Effect of sucrose concentration on carbohydrate metabolism in *Bemisia argentifolii*, biochemical mechanism and physiological role for trehalose synthesis in the silverleaf whitefly. *Journal of Insect Physiology* **43**, 457-464.
- Smalley, A.E. 1960. Energy flow of a salt marsh grasshopper population. *Ecology* **41**, 672-677.
- Schneiderman, H.A. & Schechter, A.N. 1966. Discontinuous respiration in insects. V. Pressure and volume changes in the tracheal systems of silkworm pupae. *Journal of Insect Physiology* **12**, 1143-1170.
- Schultz, T.D., Quinlan, M.C. & Hadley, N.F. 1992. Preferred body temperature, metabolic physiology, and water balance of adult *Cicindela longilabris*: A comparison of populations from aboreal habitats and climatic refugia. *Physiological Zoology* **65**, 226-242.
- Slama, K. 1960. Oxygen consumption during the postembryonic development of *Pyrrhocoris apterus* (Heterometabola, Heteroptera) and its comparison with that of holometabola. *Annals of the Entomological Society of America* **53**, 606-610.
- Somme, L., Ring, R.A., Block, W. & Worland, M.R. 1989. Respiratory metabolism of *Hydromedion sparsutum* and *Perimylops antarcticus* (Coleoptera: Perimylopidae) from South Georgia. *Polar Biology* **10**, 135-139.
- Sonobe, H., Matsumoto, A., Fukuzaki, Y. & Fujiwara, S. 1979. Carbohydrate metabolism and restricted oxygen supply in the eggs of the silkworm, *Bombyx mori*. *Journal of Insect Physiology* **25**, 381-388.
- Southwick, E.E. 1982. Metabolic energy of intact honey bee colonies. *Comparative Biochemistry and Physiology* **71A**, 277-281.
- Southwick, E.E. 1987. Cooperative metabolism in honey bees: An alternative to antifreeze and hibernation. *Journal of Thermal Biology* **12**, 155-158.
- Stevens, E.D. & Josephson, R.K. 1977. Metabolic rate and body temperature in singing katydids. *Physiological Zoology* **50**, 31-42.
- Stevenson, E. 1968a. Carbohydrate metabolism in the flight muscle of the southern armyworm moth, *Prodenia eridania*. *Journal of Insect Physiology* **14**, 179-198.
- Stenton-Dozey, J. & Griffiths, C.L. 1980. Growth, consumption and respiration by larvae of the kelp-fly *Fucellia capensis* (Diptera: Anthomyiidae). *South African Journal of Zoology* **15**, 280-283.
- Storey, K. B. Baust, J.G. & Storey, J. M. 1981. Intermediary metabolism during low temperature acclimation in the overwintering gall fly larva, *Eurosta solidaginis*. *Journal of Comparative Physiology* **144**, 183-190.
- Stromme, J.A., Ngari, T.W. & Zachariassen, K.E. 1986. Physiological adaptations in Coleoptera on Spitsbergen. *Polar Research* **4**, 199-204.
- Tanaka, S., Wolda, H. & Delinger, D.L. 1988. Group size affects the metabolic rate of a tropical beetle. *Physiological Entomology* **13**, 239-241.
- Taylor, I.R. & Steinback, H.B. 1931. Respiratory metabolism during pupal development of *Galleria mellonella* (bee moth). *Physiological Zoology* **4**, 604-619.
- Todd, C.M. 1997. Respiratory metabolism in two species of carabid beetle from the sub- Antarctic island of South Georgia. *Polar Biology* **18**, 166-171.
- Tombes, A.S. 1964. Respiratory and compositional study on the aestivating insect, *Hypera postica* (Gyll.) (Curculionidae). *Journal of Insect Physiology* **10**, 997-1003.
- Van Hook, R.I. 1971. Energy and nutrient dynamics of spider and orthopteran populations in a grassland ecosystem. *Ecological Monographs* **41**, 1-26.
- Van der Horst, D.J., Houben, N.M.D. & Beenackers, A.M.TH. 1980. Dynamics of energy substrates in the haemolymph of *Locusta migratoria* during flight. *Journal of Insect Physiology* **26**, 441-448.
- Van Zyl, A., van der Linde, T.C. De K. & Grimbeek, R.J. 1997. Metabolic rates of pitbuilding and non-pitbuilding antlion larvae (Neuroptera: Myrmeleontidae) from southern Africa. *Journal of Arid Environment* **37**, 355-365.
- Vogt, J.T. & Appel, A.G. 1999. Standard metabolic rate of the fire ant, *Solenopsis invicta* Buren, effects of temperature, mass, and caste. *Journal of Insect Physiology* **45**, 655-666.



- Waku, Y. 1960. Studies on the hibernation and diapause of insects. V. Respiratory metabolism and enzyme activity in the diapause and non-diapause larvae of the Indian meal moth, *Plodia interpunctella*. *Science Reports of the Tohoku University Series B* **26**, 341-352.
- Walshe, B.M. 1948. The oxygen requirements and thermal resistance of chironomid larvae from flowing and from still waters. *Journal of Experimental Biology* **25**, 35-44.
- Weeda, E., & Kort, C.A.D. De. 1979. Fuels for energy metabolism in the Colorado potato beetle, *Leptinotarsa decemlineata* Say. *Journal of Insect Physiology* **25**, 951-955.
- Weis-Fogh, T. 1964. Diffusion in insect wing muscle, the most active tissue known. *Journal of Experimental Biology* **41**, 229-256.
- Weis-Fogh, T. 1967. Respiration and tracheal ventilation in locusts and other flying insects. *Journal of Experimental Biology* **47**, 561-587.
- Weis-Fogh, T. 1972. Energetics of hovering flight in hummingbirds and in *Drosophila*. *Journal of Experimental Biology* **56**, 79-104.
- Wheeler, G.S., Tokoro, M., Scheffrahn, R.H. & Su, N.Y. 1996. Comparative respiration and methane production rates in Nearctic termites. *Journal of Insect Physiology* **42**, 799-806.
- Wiegert, R.G. 1964. Population energetics of meadow spittlebugs (*Philaenus spumarius* L.) as affected by migration and habitat. *Ecological Monograph* **34**, 217-241.
- Wiegert, R.G. 1965. Energy dynamics of the grasshopper populations in old field and alfalfa field ecosystems. *Oikos* **16**, 161-176.
- Wight, E.G. 1978. Energetics and consumption rates of Alpine grasshoppers (Orthoptera: Acrididae) in New Zealand. *Oecologia* **33**, 17-44.
- Wilkens, M.B. 1960. A temperature-dependent endogenous rhythm in the rate of carbon dioxide output of *Periplaneta americana*. *Nature* **185**, 481-482.
- Wipking, W., Viebahn, M. & Neumann, D. 1995. Oxygen consumption, water, lipid and glycogen content of early and late larvae of the Burnet moth *Zygaena trifolii*. *Journal of Insect Physiology* **41**, 47-56.
- Withers, P.C. 1981. The effects of ambient air pressure on oxygen consumption of resting and hovering honey-bees. *Journal of Comparative Physiology* **141**, 433-437.
- Wolf, T-H. J., Schmid-Hempel, P., Ellington, C.P. & Stevenson, R.D. 1989. Physiological correlates of foraging efforts in honey-bees oxygen consumption and nectar load. *Functional Ecology* **3**, 417-424.
- Woodworth, C.E. 1932. Some aspects of reduced atmospheric pressure upon honeybee respiration. *Journal of Economic Entomology* **25**, 1036-1042.
- Wright, J.E. 1971. Oxygen consumption by diapausing and nondiapausing pupae of the horn fly. *Annals of the Entomological Society of America* **64**, 1462-1463.
- Yaginuma T. & Yamashita O. 1999. Oxygen consumption in relation to sorbitol utilization at the termination of diapause in eggs of the silkworm, *Bombyx mori*. *Journal of Insect Physiology* **45**, 621-627.
- Yoder, J.A., Denlinger, D.L. & Wolda, H. 1992. Aggregation promotes water conservation during diapause in the tropical fungus beetle, *Stenotarsus rotundus*. *Entomologia Experimentalis et Applicata* **63**, 203-205.
- Yurkiewicz, W.J. & Smyth, T. 1966. Effects of temperature on oxygen consumption and fuel utilization by the sheep blowfly. *Journal of Insect Physiology* **12**, 403-408.
- Zachariassen, K.E., Andersen, J., Kamau, J.M.Z. & Maloiy, G.M.O. 1988. Water loss in insects from arid and humid habitats in East Africa. *Acta Entomologica Bohemoslovaca* **85**, 81-93.
- Zachariassen, K.E., Andersen, J., Maloiy, G.M.O. & Kamau, J.M.Z. 1987. Transpiratory water loss and metabolism of beetles from arid areas in East Africa. *Comparative Biochemistry and Physiology* **86A**, 403-408.
- Zachariassen, K.E., Hammel, H. T. & Schmidek, W. 1979. Studies on freezing injuries in *Eleodes blanchardi* beetles. *Comparative Biochemistry and Physiology* **63A**, 199-202.
- Zebe, E. Gade, G. 1993. Flight metabolism in the African fruit beetle, *Pachnoda sinuate*. *Journal of Comparative Physiology B* **163**, 107-112.
- Zhou, S., Criddle, R.S. & Mitcham, E.J. 2000. Metabolic response of *Platynota stultana* pupae to controlled atmospheres and its relation to insect mortality response. *Journal of Insect Physiology* **46**, 1375-1385.
- Ziegler, R. 1991. Changes in lipid and carbohydrate metabolism during starvation in adult *Manduca sexta*. *Journal of Comparative Physiology* **161**, 125-131.

Ziegler, R. & Schulz, M. 1986. Regulation of carbohydrate metabolism during flight in *Manduca Sexta*. *Journal of Insect Physiology* **32**, 997-1001.

6. Thermoregulation

- Adams, P.A. & Heath, J.E. 1964. Temperature regulation in the sphinx moth, *Celerio lineata*. *Nature* **201**, 20-22.
- Baird, J.M. 1986. A field study of thermoregulation in the carpenter bee *Xylocopa virginica* (Hymenoptera: Anthophoridae). *Physiological Zoology* **59**, 157-168.
- Bartholomew, G.A. & Casey, T.M. 1973. Effects of ambient temperature on warm-up in the moth *Hyalophora cecropia*. *Journal of Experimental Biology* **58**, 503-507.
- Bartholomew, G.A. & Casey, T.M. 1977. Body temperature and oxygen consumption during rest and activity in relation to body size in some tropical beetles. *Journal of Thermal Biology* **2**, 173-176.
- Bartholomew, G.A. & Casey, T.M. 1977. Endothermy during terrestrial activity in large beetles. *Science* **195**, 882-883.
- Bartholomew, G.A. & Casey, T.M. 1978. Oxygen consumption of moths during rest, pre-flight warm-up, and flight in relation to body size and wing morphology. *Journal of Experimental Biology* **76**, 11-25.
- Bartholomew, G.A. & Epting, R.S. 1975. Allometry of post flight cooling rates in moths: a comparison with vertebrate homotherms. *Journal of Experimental Biology* **63**, 603-613.
- Bartholomew, G.A. & Heinrich, B. 1978. Endothermy in African dung beetles during flight, ball making and balance. *Journal of Experimental Biology* **73**, 65-83.
- Bartholomew, G.A. & Lighton, J.R.B. 1986. Endothermy and energy metabolism of giant tropical fly, *Pantophthalmus tabaninus* Thunberg. *Journal of comparative Physiology B* **156**, 461-467.
- Bartholomew, G.A., Lighton, J.R.B., & Feener, D.H. 1988. Energetics of trail running, load carriage, and emigration in the column-raiding army ant *Eciton hamatum*. *Physiological Zoology* **61**, 57-68.
- Bartholomew, G.A., Vleck, D. & Vleck, C.M. 1981. Instantaneous measurements of oxygen consumption during pre-flight warm-up and post-flight cooling in sphingid and saturniid moths. *Journal of Experimental Biology* **90**, 17-32.
- Bolwig, N. 1957. Experiments on the regulation of the body temperature of certain tenebrionid beetles. *Journal of Entomological Society of Southern Africa* **20**, 454-458.
- Cahill, K. & Lustick, S. 1976. Oxygen consumption and thermoregulation in *Apis mellifera* workers and drones. *Comparative Biochemistry and Physiology* **55A**, 355-357.
- Casey, T.M. 1976. Flight energetics of sphinx moths: Power output during hovering flight. *Journal of Experimental Biology* **64**, 529-543.
- Casey, T.M. 1976. Flight energetics of sphinx: heat production and heat loss in *Hyles lineata* during free flight. *Journal of Experimental Biology* **64**, 545-560.
- Casey, T.M. 1980. Flight energetics and heat exchange of gypsy moths in relation to air temperatures. *Journal of Experimental Biology* **88**, 133-145.
- Casey, T.M. 1981. Energetics and thermoregulation of *Malacosoma americanum* (Lepidoptera: Lasiocampidae) during hovering flight. *Physiological Zoology* **54**, 362-371.
- Casey, T.M. 1988. Thermoregulation and heat exchange. *Advances of Insect Physiology* **20**, 119-146.
- Casey, T.M., Joos, T.D., Fitzgerald, M.E., Yurlina, M.E. & Young, P.A. 1988. Synchronized group of foraging, thermoregulation and growth of eastern tent caterpillars. *Physiological Zoology* **61**, 372-377.
- Casey, T.M., & Knapp, R. 1987. Caterpillar thermal adaptation: behavioural differences reflect metabolic thermal sensitivities. *Comparative Biochemistry and Physiology* **86A**, 679-682.
- Casey, T.M., May, M.L. & Morgan, K.R. 1985. Flight energetics of euglossine bees in relation to morphology and wing stroke frequency. *Journal of Experimental Biology* **116**, 271-289.
- Cayhill, K. & Lusic, S. 1976. Oxygen consumption and thermoregulation in *Apis mellifera* workers and drones. *Comparative Biochemistry and Physiology* **55A**, 355-357.
- Chai, P. & Srygley, R.B. 1986. Associations of flight patterns and thermal biology of butterflies to their palatability. *American Zoologist* **24**, 98A.

- Chai, P. & Srygley, R.B. 1989. Predation and the flight morphology, temperature of neotropical rainforest butterflies. *American Naturalist* **135**, 748-765.
- Chappell, M.A. 1982. Temperature regulation of carpenter bee (*Xylocopa californica*) foraging in the Colorado desert of southern California. *Physiological Zoology* **55**, 267-280.
- Chappell, M.A. 1983. Metabolism and thermoregulation in desert and montane grasshoppers. *Oecologia* **56**, 126-131.
- Chappell, M.A. 1984. Temperature regulation and energetics of the solitary bee *Centris pallida* during foraging and intermale mate competition. *Physiological Zoology* **57**, 215-225.
- Chappell, M.A. 1984. Thermoregulation and energetics of the green fig beetle (*Cortinus texana*) during flight and foraging behaviour. *Physiological Zoology* **57**, 581-589.
- Chappell, M.A. & Morgan, K.R. 1987. Temperature regulation, endothermy, resting metabolism, and flight energetics of Tachnid flies (*Nowickia* sp.). *Physiological Zoology* **60**, 550-559.
- Clench, H.K. 1966. Behavioral thermoregulation in butterflies. *Ecology* **47**, 1021-1034.
- Chown, S.L. & Scholtz, C.H. 1993. Temperature regulation in the nocturnal melolonthine *Sparrmannia flava*. *Journal of Thermal Biology* **18**, 25-33.
- Church, N.S. 1960. Heat loss and the body temperatures of flying insects. II. Heat conduction within the body and its loss by radiation and convection. *Journal of Experimental Biology* **37**, 186-212.
- Cooper, P., Shaffer, W.M., & Buchmann, S.L. 1985. Temperature regulation of honeybees (*Apis mellifera*) foraging in the Sonoran desert. *Journal of Experimental Biology* **114**, 1-15.
- Dresig, H. 1980. Daily activity, thermoregulation and water loss in the tiger beetle *Cicindela hybrida*. *Oecologia* **44**, 376-389.
- Dresig, H. 1990. Thermoregulatory stiltling in tiger beetles, *Cicindela hybrida*. *Journal of Arid Environment* **19**, 297-302.
- Doherty, J.A. 1985. Temperature coupling and trade-off phenomena in the acoustic communication system of the cricket, *Gryllus bimaculatus* De Geer (Gryllidae). *Journal of Experimental Biology* **114**, 17-35.
- Edney, E.B. & Barrass, R. 1962. The body temperature of the tsetsefly, *Glossina moritans* Westwood (Diptera: Muscidae). *Journal of Insect Physiology* **8**, 469-481.
- Esch, H. 1988. The effect of temperature on flight muscle potentials in honeybees and cucullinid winter moths. *Journal of Experimental Biology* **135**, 109-117.
- Feder, M.E., Roberts, S.P. & Bordelon, A.C. 2000. Molecular thermal telemetry of free-ranging adult *Drosophila melanogaster*. *Oecologia* **123**, 460-465.
- Fields, P.G. & McNeil, J.N. 1988. The importance of seasonal variation in hair coloration for thermoregulation of *Ctenucha virginica* larvae (Lepidoptera: Artiiidae) *Physiological Zoology* **13**, 165-175.
- Frears, S.L., Chown, S.L. & Webb, P.I. 1997. Behavioral thermoregulation in the mopane worm (Lepidoptera). *Journal of Thermal Biology* **22**, 325-330.
- Free, J.B. & Spencer-Booth, Y. 1958. Observations on the temperature regulation and food consumption of honeybees (*Apis mellifera*). *Journal of Experimental Biology* **35**, 30-37.
- Gilbert, F.S. 1984. Thermoregulation and the structure of swarms in *Syrphus ribesii* (Syrphidae). *Oikos* **42**, 249-255.
- Gilchrist, G.W., Huey, R.B. & Partridge, L. 1997. Thermal sensitivity of *Drosophila melanogaster*. Evolutionary responses of adults and eggs to laboratory natural selection at different temperatures. *Physiological Zoology* **70**, 403-414.
- Hadley, N.F., Quinlan, M.C. & Kennedy, M.L. 1991. Evaporative cooling in the desert cicada: thermal efficiency and water/metabolic costs. *Journal of Experimental Biology* **159**, 269-283.
- Hagel, J.L. & Casey, T.M. 1982. Thermoregulation and control of head temperature in the sphinx moth, *Manduca sexta*. *Journal of Experimental Biology* **101**, 1-15.
- Hamilton, A.G. 1950. Further studies on the relation of humidity and temperature to the development of two species of African locusts, *Locusta migratoria migratoroides* (R. & F.) and *Schistocerca gregaria* (Forsk.) *Transactions of the Royal Entomological Society of London* **101**, 1-58.
- Hanegan, J.L. & Heath, J.E. 1970a. Mechanisms for the control of body temperature in the moth, *Hyalophora cecropia*. *Journal of Experimental Biology* **53**, 349-362.
- Heath, J.D. & Adams, P.A. 1965. Temperature regulation in the sphinx moth during flight. *Nature* **205**, 309-310.



- Heath, J.D. & Adams, P.A. 1967. Regulation of heat production by large moths. *Journal of Experimental Biology* **47**, 21-33.
- Heinrich, B. 1971. Temperature regulation of the sphinx moth, *Manduca sexta*. II. Regulation of heat loss by control of blood circulation. *Journal of Experimental Biology* **54**, 153-166.
- Heinrich, B. 1971. Temperature regulation of the sphinx moth, *Manduca sexta*. II. Flight energetics and body temperature during free and tethered flight. *Journal of Experimental Biology* **54**, 141-152.
- Heinrich, B. 1972. Energetics of temperature regulation and foraging in a bumblebee, *Bombus terricola* Kirby. *Journal of Experimental Biology* **77**, 49-64.
- Heinrich, B. 1974. Thermoregulation in bumblebees. I. Brood incubation by *Bombus vosnesenskii* queens. *Journal of Comparative Physiology* **88**, 129-140.
- Heinrich, B. 1974. Thermoregulation in endothermic insects. *Science* **185**, 747-756.
- Heinrich, B. 1975. Thermoregulation in bumblebees. II. Energetics of warm-up and free flight. *Journal of Comparative Physiology* **96**, 155-166.
- Heinrich, B. 1976. Heat exchange in relation to blood flow between thorax and abdomen in bumblebees. *Journal of Experimental Biology* **64**, 561-585.
- Heinrich, B. 1977. Why have some animals evolved to regulate a high body temperature? *American Naturalist* **111**, 623-640.
- Heinrich, B. 1979. Keeping a cool head: honeybee thermoregulation. *Science* **205**, 1269-1271.
- Heinrich, B. 1980. Mechanisms of body-temperature regulation in honeybees, *Apis mellifera*. II. Regulation of thoracic temperature at high ambient temperatures. *Journal of Experimental Biology* **85**, 73-87.
- Heinrich, B. 1984. Strategies of thermoregulation and foraging in two vespid wasps, *Dolichovespula maculata* and *Vespa vulgaris*. *Journal of Comparative Physiology B* **154**, 175-180.
- Heinrich, B. 1986. Comparative thermoregulation of four montane butterflies of different mass. *Physiological Zoology* **59**, 616-626.
- Heinrich, B. 1987. Thermoregulation by winter-flying endothermic moths. *Journal of Experimental Biology* **127**, 313-332.
- Heinrich, B. & Bartholomew, G.A. 1979. Roles of endothermy and size in inter- and intraspecific competition for elephant dung in an African dung beetle, *Scarabaeus larvistratus*. *Physiological Zoology* **52**, 485-498.
- Heinrich, B. & Buchmann, S.L. 1986. Thermoregulatory physiology of the carpenter bee. *Journal of Comparative Physiology B* **156**, 557-562.
- Heinrich, B. & Heinrich, M.J.E. 1983. Size and caste in temperature regulation by bumblebees. *Physiological Zoology* **56**, 552-562.
- Heinrich, B. & Heinrich, M.J.E. 1983. Heterothermia in foraging workers and drones of the bumblebee *Bombus terricola*. *Physiological Zoology* **56**, 563-567.
- Heinrich, B. & Kammer, A.E. 1973. Activation of the fibrillar muscles in the bumblebee during warm-up, stabilization of thoracic temperature and flight. *Journal of Experimental Biology* **58**, 677-688.
- Heinrich, B. & McClain, E. 1986. "Laziness" and hypothermia as a foraging strategy in flower scarabs (Coleoptera: Scarabaeidae). *Physiological Zoology* **59**, 273-282.
- Heinrich, B., & Pantle, C. 1975. Thermoregulation in small flies (*Syrphus* sp.): Basking and shivering. *Journal of Experimental Biology* **62**, 599-610.
- Heinrich, B. & Vogt, F.D. 1993. Abdominal temperature regulation by Arctic bumblebees. *Physiological Zoology* **66**, 257-269.
- Henwood, K. 1975. A field tested thermoregulation model for two diurnal Namib desert tenebrionid beetles. *Ecology* **56**, 1329-1342.
- Higel, J. & Casey, T. 1982. Thermoregulation and control of head temperature in sphinx moth, *Manduca sexta*. *Journal of Experimental Biology* **101**, 1-15.
- Janiszewski, J. 1984. The temperature of the head, thorax and abdomen of *Periplaneta americana* during rest and flight and high ambient temperatures. *Journal of Thermal Biology* **9**, 177-181.
- Joos, B. 1983. Carbohydrate metabolism during pre-flight warm-up in the tobacco hornworm moth, *Manduca sexta*. *American Zoologist* **23**, 501.
- Joos, B., Casy, T.M., Fitzgerald, T.D. & Buttemer, W.A. 1988. Roles of the tent behavior in behavioural thermoregulation of eastern tent caterpillars. *Ecology* **69**, 2004-2011.

- Kaser, S.A. & Hastings, J. 1981. Thermal physiology of the cicada *Tibicen duryi*. *American Zoologist* **21**, 1016.
- Kavallars, M. 1981. Rhythmical thermoregulation in larval of crenefly (Diptera: Tipulidae). *Canadian Journal of Zoology* **59**, 555-558.
- Kemp, W.P. 1986. Thermoregulation in three rangeland grasshopper species. *Canadian Entomologist* **118**, 335-343.
- Kenagy, G.J., & Stevenson, R.D. 1982. Role of body temperature in the seasonality of daily activity in tenebrionid beetles of eastern Washington. *Ecology* **63**, 1491-1503.
- Kimura, M.T. 1988. Adaptations to temperate climates and evolution of overwintering strategies in the *Drosophila melanogaster* species group. *Evolution* **42**, 1288-1297.
- Kingslover, J.G. 1983. Thermoregulation and flight in *Colias* butterflies: elevational patterns and mechanistic limitations. *Ecology* **61**, 345-357.
- Kingslover, J.G. 1985. Thermal ecology of *Pieris* butterflies (Lepidoptera: Pieridae): a new mechanism of behavioural thermoregulation. *Oecologia* **66**, 540-545.
- Kingslover, J.G. 1985. Thermoregulatory significance of wing melanization in *Pieris* butterflies (Lepidoptera: Pieridae), physics, posture, pattern. *Oecologia* **66**, 546-553.
- Kingslover, J.G. 1987. Evolution and coadaptation of thermoregulatory behavior and wing pigmentation pattern in pierid butterflies. *Evolution* **41**, 472-490.
- Kingslover, J.G. 1987. Predation, thermoregulation, and wing color in pierid butterflies. *Oecologia* **73**, 301-306.
- Kingslover, J.G. 1988. Thermoregulation, flight, and the evolution of wing pattern in pierid butterflies: the topography of adaptive landscapes. *American Zoologist* **28**, 899-912.
- Kingslover, J.G. & Koel, M.A.R. 1985. Aerodynamics, thermoregulation, and insect wings: differential scaling and evolutionary change. *Evolution* **39**, 488-504.
- Kingslover, J.G. & Moffat, A.K. 1982. Thermoregulation and the determinants of heat transfer in *Colias* butterflies. *Oecologia* **53**, 27-33.
- Kingslover, J.G. & Watt, W.B. 1983. Thermoregulatory strategies in *Colias* butterflies: thermal stress and the limits to adaptations in temporally varying environments. *American Naturalist* **121**, 32-55.
- Knapp, R. & Casey, T.M. 1986. Thermal ecology, behaviour, and growth of gypsy moth and eastern tent caterpillars. *Ecology* **67**, 598-608.
- Kukal, O. & Dawson, T.E. 1989. Temperature and food quality influences feeding behavior, assimilation efficiency and growth rate of Arctic woolly bear caterpillars. *Oecologia* **79**, 526-532.
- Louw, G.D. & Nicolson, S.W. 1983. Thermal, energetic and nutritional considerations in the foraging and reproduction of the capenter bee, *Xylocopa capitata*. *Journal of Entomological Society of Southern Africa* **46**, 227-240.
- Marden, J.H. 1989. Effects of load-lifting constraints on the mating system of a dance fly. *Ecology* **70**, 496-502.
- Marsh, A.C. 1985. Thermal responses and temperature tolerance in a diurnal desert ant, *Ocymyrmex barbiger*. *Physiological Zoology* **58**, 629-636.
- Marsh, A.C. 1987. The foraging ecology of two Namib desert harvester ant species. *South African Journal of Zoology* **22**, 130-136.
- Marsh, A.C. 1987. Thermal response and temperature tolerance of a desert ant-lion larva. *Journal of Thermal Biology* **12**, 295-300.
- Marsh, A.C. 1988. Activity patterns of some Namib desert ants. *Journal of Arid Environment* **14**, 61-73.
- Masters, A.R., Malcom, S.B. & Brower, 1988. Monarch butterfly (*Danaus plexippus*) thermoregulatory behavior and adaptations for overwintering in Mexico. *Ecology* **69**, 458-467.
- May, M.L. 1976. Thermoregulation and adaptation to temperature in dragonflies (Odonata: Anisoptera). *Ecological Monograph* **46**, 1-32.
- May, M.L. 1979. Energy metabolism of dragonflies (Odonata: Anisoptera) at rest and during endothermic warm-up. *Journal of Experimental Biology* **83**, 79-94.
- May, M.L. 1979. Insect thermoregulation. *Annual Review of Entomology* **24**, 313-349.
- May, M.L. 1981. Wingstroke frequency of dragonflies (Odonata: Anisoptera) in relation of temperature and body size. *Journal of Comparative Physiology* **144**, 229-240.



- May, M.L. 1982. Body temperature and thermoregulation of the Colorado potato beetle, *Leptinotarsa decemlineata*. *Entomologia Experimentalis et Applicata* **31**, 413-420.
- May, M.L. 1982. Heat exchange and endothermy in Protoodonata. *Evolution* **36**, 1051-1058.
- May, M.L. & Casey, T. 1983. Thermoregulation and heat exchange in euglossine bees. *Physiological Zoology* **58**, 541-551.
- McCrea, M.J. & Heath, J.E. 1971. Dependence of flight on temperature regulation in the moth, *Manduca sexta*. *Journal of Experimental Biology* **54**, 415-435.
- Morgan, K.R. 1985. Body temperature regulation and terrestrial activity in the *Cicindela transquebarica*. *Physiological Zoology* **58**, 29-37.
- Morgan, K.R. 1987. Temperature regulation, energy metabolism and mate-searching in rain beetles (*Pleocomma spp.*), winter-active endothermic scarabs (Coleoptera). *Journal of Experimental Biology* **128**, 107-122.
- Morgan, K.R., Shelly, T.D. & Kimsey, L.S. 1985. Body temperature regulation, energy metabolism, and foraging in light-seeking and shade-seeking robber flies. *Journal of Comparative Physiology B* **155**, 561-570.
- Nachtigall, W., Rothe, U., Feller, P. & Jungmann, R. 1989. Flight of the honeybee. III. Flight metabolic power calculated from gas analysis thermoregulation and fuel consumption. *Journal of Comparative Physiology B* **158**, 729-737.
- Nicolson, S.W., Bartholomew, G.A., & Seely, M.K. 1984. Ecological correlates of locomotion speed, morphometrics and body temperature in three Namib desert tenebrionid beetles. *South African Journal of Zoology* **19**, 131-134.
- Nicolson, S.W. & Louw, G.N. 1980. Preflight thermogenesis, conductance and thermoregulation in the Protea beetle, *Trichostella fascicularis* (Scarabaeidae: Cetoniinae). *South African Journal of Science* **76**, 124-126.
- Nicolson, S.W. & Louw, G.N. 1982. Simultaneous measurement of evaporative water loss, oxygen consumption, thoracic temperature during flight in a carpenter bee. *Journal of Experimental Zoology* **222**, 287-296.
- Oertli, J.J. & Oertli, M. 1990. Energetics and thermoregulation of *Popillia japonica* Newman (Scarabaeidae, Coleoptera) during flight and rest. *Physiological Zoology* **63**, 921-937.
- O'Neill, K.M., Kemp, W.P. & Johnson, K.A. 1990. Behavioural thermoregulation in three species of robber flies (Diptera, Asilidae: *Efferia*). *Animal Behaviour* **39**, 181-191.
- O'Neil, K.M. & O'Neil, R.P. 1988. Thermal stress and microhabitat selection in territorial males of the digger wasp *Philanthus psyche* (Hymenoptera: sphecidae). *Journal of Thermal Biology* **13**, 15-20.
- Oosthuizen, M.J. 1939. The body temperature of *Samia cecropia* Linn. (Lepidoptera: Saturniidae) as influenced by muscular activity. *Journal of Entomological Society of Southern Africa* **2**, 63-73.
- Parker, M.A. 1982. Thermoregulation by diurnal movement in the barberpole grasshopper (*Dactyloctenium bicolor*). *American Midland Naturalist* **107**, 228-237.
- Ploye, H. 1979. Endothermy and partial thermoregulation in the silkworm moth, *Bombyx mori*. *Journal of Comparative Physiology* **129**, 315-318.
- Polcyn, D.M. & Chappell, M.A. 1986. Analysis of heat transfer in *Vanessa* butterflies: Effect of wing position and orientation to wind and light. *Physiological Zoology* **59**, 706-716.
- Porter, K. 1982. Basking behavior in larvae of the butterfly *Euphydryas aurinia*. *Oikos* **38**, 308-312.
- Prange, H.D. 1990. Temperature regulation by respiratory evaporation in grasshoppers. *Journal of Experimental Biology* **154**, 463-474.
- Roberts, C.S., Seely, M.K., Ward, D., Mitchell, D. & Campbell, J.D. 1991. Body temperatures of Namib desert tenebrionid beetles: their relationship in laboratory and field. *Physiological Entomology* **16**, 463-475.
- Roland, J. 1982. Melanism and diel activity of alpine *Colias* (Lepidoptera: Pieridae). *Oecologia* **53**, 214-221.
- Schmaranzer, S. 2000. Thermoregulation of water collecting honey bees (*Apis mellifera*). *Journal of Insect Physiology* **46**, 1187-1194.
- Schultz, T.D. & Hadley, N.F. 1987. Microhabitat segregation and physiological differences in co-occurring tiger beetle species, *Cicindela oregona* and *Cicindela tranquebarica*. *Oecologia* **73**, 363-370.



- Schultz, T.D. & Hadley, N.F. 1987. Structural colors of tiger beetles and their role in heat transfer through the intergument. *Physiological Zoology* **60**, 737-745.
- Schultz, T.D., Quilan, M.C. & Hadley, N.F. 1992. Preferred body temperature, metabolic physiology, and water balance of adult *Cicindela lingilabris*: a comparison of populations from boreal habitats and climatic refugia. *Physiological Zoology* **65**, 226-242.
- Seely, M.K., Roberts, C.S. & Mitchell, D. 1988. High body temperatures of Namib dune tenebrionids-why? *Journal of Arid Environments* **14**, 135-143.
- Shelly, T.E. 1982. Comparative foraging behavior of light versus shade-seeking adult damselflies in a lowland neotropical forest (Odonata: Zygoptera). *Physiological Zoology* **55**, 335-343.
- Sherman, P.W. & Watt, W.B. 1973. The thermal ecology of some *Colias* butterfly larvae. *Journal of Comparative Physiology* **83**, 25-40.
- Stevenson, R.D. & Josephson, R.K. 1990. Effects of operating frequency and temperature on mechanical output from moth flight muscles. *Journal of Experimental Biology* **149**, 61-78.
- Stone, B. & Willmer, P.G. 1989. Endothermy and temperature regulation in bees: a critique of "grab and stab" measurement of body temperature. *Journal of Experimental Biology* **143**, 211-223.
- Toolson, E.C. 1987. Water profligacy as an adaptation to hot deserts: water loss rates and evaporative cooling in the Sonoran desert cicada, *Diceroprocta apache* (Hymenoptera: Cicadidae). *Physiological Zoology* **60**, 379-385.
- Vogt, F.D. 1986. Thermoregulation in bumblebee colonies. I. Thermoregulatory versus brood-maintenance behaviours during acute changes in ambient temperature. *Physiological Zoology* **59**, 55-59.
- Vogt, F.D. 1986. Thermoregulation in bumblebee colonies. II. Behavioural and demographic variation throughout the colony cycle. *Physiological Zoology* **59**, 60-68.
- Vogt, D. & Heinrich, B. 1983. Thoracic temperature variations in the onset of flight in dragonflies (Odonata: Anisoptera). *Physiological Zoology* **56**, 236-241.
- Wasserthal, L.T. 1975. The role of butterfly wings in regulation of body temperature. *Journal of Insect Physiology* **21**, 1921-1930.
- Whitman, D.W. 1987. Thermoregulation and daily activity patterns in a black desert grasshopper *Taeniopoda eques*. *Animal Behaviour* **35**, 1814-1826.
- Whitman, D.W. 1988. Function and evolution of thermoregulation in the desert grasshopper *Taeniopoda eques*. *Journal of Animal Ecology* **57**, 369-383.
- Willmer, P.G. 1982. Thermoregulatory mechanisms in *Sarcophaga*. *Oecologia* **53**, 382-385.