

Florida Preying Mantids

Insecta - Mantodea



Stagmomantis carolina (Johannson) female- photo by P. M. Choate

Florida Mantids - Key to Species
Diagnostic Key to species of Florida Mantids
Insecta - Mantodea

(this key was originally generated from an Insect Classification exercise, and has since been tested and modified by several groups of students)

Species of Mantids that may occur in Florida

Fam. Mantoididae

Mantoida maya Saussure & Zehntner - Little Yucatan mantid; adults Jun-Sept, open pinelands, scrub (resemble wasps)

= *Callimantis floridana* Scudder 1896 (smaller Florida mantid)

Fam. Mantidae

Brunneria borealis Scudder - Brunner's mantid

Litaneutria minor (Scudder) - Minor ground mantid (possible)

Gonatista grisea (Fab.) - Grizzled mantid (lichen mimic)

Thesprotia graminis (Scudder) - Grass-like mantid

Oligonicella scudderi (Saussure) - Scudder's mantid

Mantis religiosa L. - European mantid (introduced)

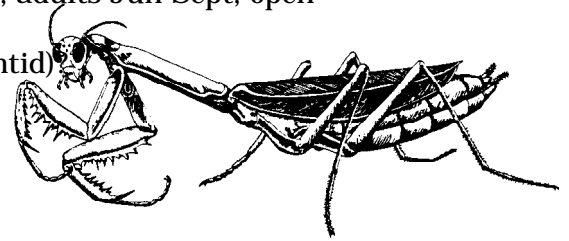
Tenodera angustipennis Saussure - Narrow-winged mantid

Tenodera aridifolia Saussure - Chinese mantid (introduced), largest mantid in US.

Stagmomantis floridensis Davis - Larger Florida mantid - Dunedin (Oct), restricted to Florida

Stagmomantis carolina (Johannson) - Carolina mantid

Phyllovates chlorophaea (Blanchard) - (record from Blatchley, 1920)



**Dichotomous Key to Species of Mantids
that may occur in Florida**

1. Pronotum distinctly longer than wide; size normally much larger than 30mm 2
 - Pronotum almost square, about as long as wide; small species, 30mm. *Mantoida maya* S. and Z.
2. Posterior tibia carinate on upper surface; head with dorsal projection between eyes *Phyllovates chlorophaea* (Blanchard)
 - Posterior tibia with dorsal surface rounded, smooth; head without projection 3
3. Antennae thin, threadlike; body shape varied (Fig. 1) 4
 - Antennae thick, especially at base; (Fig. 2) body elongate, narrow body (Fig. 3) *Brunneria borealis* Scudder
4. Larger, 36mm or more in length; OR front tibia with one or more dorsal teeth; pronotum usually much longer than front coxa 5
 - Small, 32mm or less in length; front tibia with no dorsal tooth; pronotum equal in length or slightly longer than front coxa. *Litaneutria minor* (Scudder)
5. Pronotum distinctly narrowed ahead of point at which front legs are attached; form narrower 6
 - Pronotum not narrowed ahead of point at which front legs are attached (Figs. 4, 5) *Gonatista grisea* (Fab.)
6. Front tibia with few teeth, with at least one dorsal tooth, and measuring less than 1/2 as long as front femur 7

- Front tibia with several teeth, no dorsal tooth, and measuring more than ½ as long as front femur 8
- 7. Hind portion of pronotum less than 3 times as long as front portion *Oligonicella scudderi* (Saussure)
- Hind portion of pronotum three or four times as long as front portion *Thesprotia graminis* (Scudder)
- 8. Facial shield (plate below antennal insertion) more than twice as wide as high (Fig. 6) 11
- Facial shield (plate below antennal insertion) less than twice as wide as high 9
- 9. Front coxa with a large black-ringed spot near base, beneath; green color of tegmen not sharply confined to costal area *Mantis religiosa* L.
- Front coxa with no large spot; green color of termina usually sharply confined to costal area 10
- 10. Smaller (70-75mm); hind wing narrower from front to rear, lightly marbled *Tenodera angustipennis* Saussure
- Larger (77-103mm); hind wing broader from front to rear, heavily marbled; Chinese Mantid *Tenodera aridifolia sinensis* Saussure
- 11. Larger (58mm or more); form more elongate, abdomen of female nearly parallel-sided, **tegmina narrower, reaching only middle of abdomen**; stigmatic patch pale, inconspicuous, or obsolete *Stagmomantis floridensis* Davis
- Smaller (57mm or less); form less elongate, abdomen of female strongly widened at middle, **tegmina broad, reaching apical third of abdomen; stigmatic patch black**, conspicuous (cover photo) *Stagmomantis carolina* (Johannson)



Fig. 1. Male *Stagmomantis carolina*, thin antenna

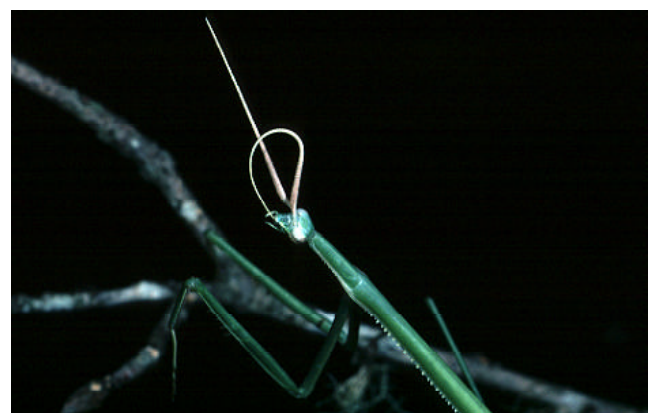


Fig. 2. *Brunneria*, thick antenna

Florida Mantids - Key to Species



Fig. 3. *Brunneria borealis*



Fig. 4. *Gonatista pronotum*

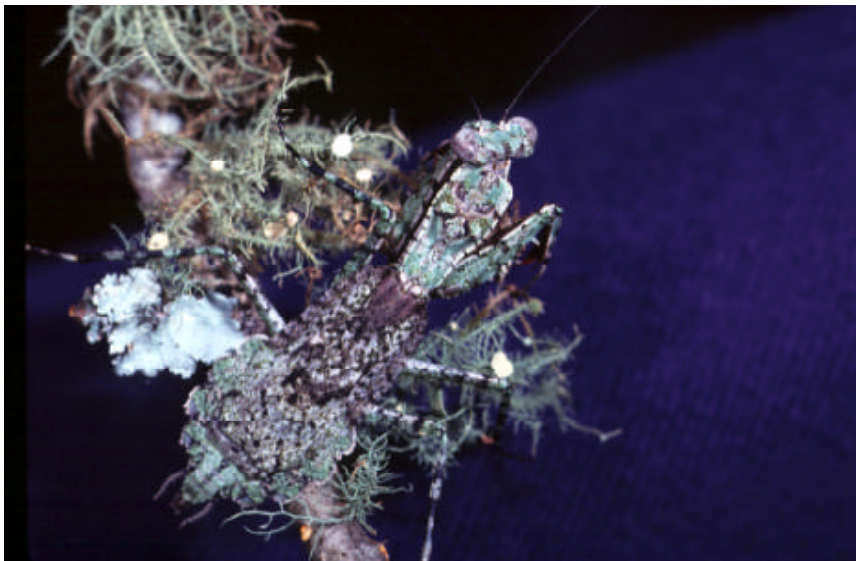


Fig. 5. *Gonatista grisea* female

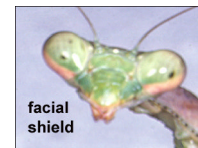


Fig. 6. Face of *Stagmomantis*

Selected References - Mantodea

- Ahmad, M., Vijayachandran, S. N., Choudhuri, J. C. B. 1985. Biology of *Hestiasula brunneriana* (Dictyoptera: Mantidae). Indian Forester. 111(5):333-338.
- Balderson, J. 1984. Catalog of Australian Mantodea. Australia Commonwealth Scientific and Industrial Research Organization Division of Entomology Technical Paper(23):1-18.
- Barrows, E. M. 1984. Perch sites and food of adult Chinese mantids (Dictyoptera: Mantidae). Proceedings of the Entomological Society of Washington. 86(4):898-901.
- Bartley, J. A. 1982. Movement patterns in adult male and female mantids, *Tenodera aridifolia sinensis* (Orthoptera: Mantodea). Environmental Entomology. 11(5):1108-1111.
- Bazyluk, W. 1993a. Blattodea, Mantodea, and Ensifera (Orthoptera) from Mongolia. Annales Zoologici. 44(1-7):3-15.
- Bazyluk, W. 1993b. Blattodea, Mantodea, and Ensifera (Orthoptera) from Mongolia. Annales Zoologici. 44(1-7):3-15.
- Bennett, B. G. 1984. Blue, red and yellow insects. New Zealand Entomologist. 8:88-90.
- Blatchley, W. S. 1920. Orthoptera of Northeastern America. Indianapolis: Nature. 785 p.
- Brunner, D., Gandolfo, D. 1990. Morphological adaptations to an unusual defensive strategy in the mantid *Orthoderella ornata* (Insecta: Mantidae). Journal of Zoology. 222(1):129-136.
- Cannings, R. A. 1987. The ground mantis, *Litaneutria minor* (Dictyoptera: Mantidae), in British Columbia (Canada). Journal of the Entomological Society of British Columbia. 84:64-65.
- Carlberg, U. 1987. Chemical defense in Phasmida vs. Mantodea (Insecta). Zoologischer Anzeiger. 218(5-6):369-373.
- Chadwick, C. E., Nikitin, M. I. 1985. Records of parasitism by members of the family Tachinidae (Diptera: Tachinidae). Australian Zoologist. 21(6-7):587-598.
- Coombs, M. 1994. Seasonality and Host Relationships of Insects Associated with Oothecae of *Archimantis latistyla* (Serville) (Mantodea: Mantidae). Journal of the Australian Entomological Society. 33(3):295-298.
- Crosby, T. K. 1984. Observations on the winter survival of the praying mantis, *Orthodera ministralis* (Mantodea: Mantidae), in Auckland (New Zealand). New Zealand Entomologist. 8:90-96.
- Cukier, M., Cuerrero, C. A., Maggese, M. C. 1979. Parthenogenesis in *Coptopteryx viridis*, (Dictyoptera, Mantidae). Biological Bulletin. 157(3):445-452.
- Cukier, M., Guerrero, G. A. 1980. Morphologic variations of the genitalia during the development of 2 species of the genus *Coptopteryx* (Dictyoptera, Mantidae). Revista Brasileira de Biologia. 40(1):31-38.
- Cukier, M., Guerrero, G. A., Maggese, M. C. 1986. Oogenesis in *Coptopteryx viridis* (Dictyoptera, Mantidae): I. Characteristics of the mature oocyte envelopes. Revista Brasileira De Biologia. 46(1):3-10.
- Daniels, R. J. R., Hegde, M., Vinutha, C. 1989. Observations on the biology of the praying mantis *Creobater urbana* Fabr. (Orthoptera: Mantidae). Journal of the Bombay Natural History Society. 86(3):329-332.
- Dubois, A. 1980. Replacement name for a Ranidae genus of Madagascar (Amphibia, Anura). Bulletin du Museum National d'Histoire Naturelle Section A Zoologie Biologie et Ecologie Animales. 2(1):349-351.
- Edmunds, M. 1986. The phenology and diversity of praying mantids in Ghana. Journal of Tropical Ecology. 2(1):39-50.
- Eisenberg, R. M., Hurd, L. E. 1990. Egg dispersion in two species of praying mantids (Mantodea: Mantidae). Proceedings of the Entomological Society of Washington. 92(4):808-810.
- Eisenberg, R. M., Hurd, L. E. 1993. Relative egg success and implications for distribution of three sympatric mantids (Mantodea: Mantidae). Proceedings of the Entomological Society of Washington. 95(2):271-277.
- Eisenberg, R. M., Hurd, L. E., Fagan, W. F., Tilmon, K. J., Snyder, W. E., Vandersall, K. S., Datz, S. G., Welch, J. D. 1992a. Adult dispersal of *Tenodera aridifolia sinensis* (Mantodea: Mantidae). Environmental Entomology. 21(2):350-353.
- Eisenberg, R. M., Pilchik, E., Bedwell, L. L., Winram, S., Rodgers, M., McFalls, S., Kessler, C. T., Gross, M., Walter, A., et al. 1992b. Comparative egg ecology of two sympatric mantids (Mantodea: Mantidae). Proceedings of the Entomological Society of Washington. 94(3):366-370.

Florida Mantids - Key to Species

- Fagan, W. F., Hurd, L. E. 1991. Late season food level, cannibalism, and oviposition in adult mantids (Orthoptera: Mantidae): Sources of variability in a field experiment. *Proceedings of the Entomological Society of Washington*. 93(4):956-961.
- Fagan, W. F., Hurd, L. E. 1994. Hatch density variation of a generalist arthropod predator: Population consequences and community impact. *Ecology*. 75(7):2022-2032.
- Flechtmann, C. A. H., Rodrigues, S. R. 1994. Biological aspects of *Thesprotia macilenta* Sauss. and *Zhnt.* and *Tithrone major* Piza (Mantodea). *Anais da Sociedade Entomologica do Brasil*. 23(3):479-486.
- Gade, G. 1991. The adipokinetic neuropeptide of Mantodea: Sequence elucidation and evolutionary relationships. *Biological Chemistry Hoppe Seyler*. 372(3):193-202.
- Guerrero, G. A., Cukier, M. 1981. Comparative population study of 3 species of the genus *Coptopteryx* (Dictyoptera, Mantidae). *Revista Brasileira de Biologia*. 41(1):103-110.
- Guerrero, G. A., Maggese, M. C., Cukier, M. 1990a. Ovaric development and diet in *Coptopteryx viridis* (Dictyoptera-Mantidae). *Comunicaciones Biologicas*. 8(3):295-308.
- Guerrero, G. A., Rey Vasquez, G., Maggese, M. C. 1990b. Ultrastructural features of *Coptopteryx viridis* (Dictyoptera: Mantidae) eggshell layers and regions. *Revista Brasileira De Biologia*. 50(2):475-486.
- Gurney, A. B. 1951. Praying Mantids of the United States. *Smithsonian Inst Rept for 1950*(339-362).
- Hebard, M. 1934. The Dermaptera and Orthoptera of Illinois. *Illinois Nat Hist Surv Bull*. 20:125-179.
- Helfer, J. R. 1972. How to know the grasshoppers, cockroaches, and their allies (2nd ed.). Dubuque, Iowa: Wm. C. Brown. 359 p.
- Hua, L. 1984. A new species of the genus *Kishinouyeum* (Mantodea: Mantidae: Vatinae). *Entomotaxonomia*. 6(1):29-30.
- Hurd, L. E. 1988. Consequences of divergent egg phenology to predation and coexistence in two sympatric, congeneric mantids (Orthoptera: Mantidae). *Oecologia*. 76(4):549-552.
- Hurd, L. E. 1991. Growth efficiency in juvenile mantids: Absence of selection for optimization in a food-limited environment (Orthoptera: Mantidae). *Proceedings of the Entomological Society of Washington*. 93(3):748-750.
- Hurd, L. E., Eisenberg, R. M. 1984a. Experimental density manipulations of the predator *Tenodera sinensis* (Orthoptera: Mantidae) in an old-field community: 1. Mortality, development and dispersal of juvenile mantids. *Journal of Animal Ecology*. 53(1):269-282.
- Hurd, L. E., Eisenberg, R. M. 1984b. Experimental density manipulations of the predator *Tenodera sinensis* (Orthoptera: Mantidae) in an old-field community: 2. The influence of mantids on arthropod community structure. *Journal of Animal Ecology*. 53(3):955-968.
- Hurd, L. E., Eisenberg, R. M. 1989a. A mid-summer comparison of sizes and growth rates among nymphs of three sympatric mantids (Mantodea: Mantidae) in two old-field habitats. *Proceedings of the Entomological Society of Washington*. 91(1):51-54.
- Hurd, L. E., Eisenberg, R. M. 1989b. Temporal distribution of hatching times in three sympatric mantids (Mantodea: Mantidae) with implications for niche separation and coexistence. *Proceedings of the Entomological Society of Washington*. 91(1):55-58.
- Hurd, L. E., Eisenberg, R. M., Moran, M. D., Ronney, T. P., Gangloff, W. J., Case, V. M. 1995. Time, temperature, and food as determinants of population persistence in the temperate mantid *Tenodera sinensis* (Mantodea: Mantidae). *Environmental Entomology*. 24(2):348-353.
- Hurd, L. E., Marinari, P. E., Eisenberg, R. M. 1989. Influence of temperature and photoperiod on early developmental rate of *Tenodera sinensis* Saussure (Mantodea: Mantidae). *Proceedings of the Entomological Society of Washington*. 91(4):529-533.
- Iwasaki, T. 1992. Stage duration, size and coloration of two praying mantises, *Tenodera aridifolia* (Stoll) and *Tenodera angustipennis* Saussure (Mantodea, Mantidae). *Japanese Journal of Entomology*. 60(3):551-557.
- Iwasaki, T. 1996. Comparative studies on the life histories of two praying mantises, *Tenodera aridifolia* (Stoll) and *Tenodera angustipennis* Saussure (Mantodea: Mantidae): I. Temporal pattern of egg hatch and nymphal development. *Applied Entomology and Zoology*. 31(3):345-356.
- Jantsch, L. J. 1984. Localization of oothecae of some praying mantises in Rio Grande do Sul (Mantodea). *Revista Brasileira De Entomologia*. 28(4):415-416.
- Jantsch, L. J. 1986. Descriptions of 2 new species of Acontiothespini (Mantodea, Hymenopodidae, Acromantidae). *Revista Brasileira De Entomologia*. 30(1):13-16.
- Jantsch, L. J. 1991. New species of *Eumiopteryx* from Para (Mantodea, Mantidae, Pseudomiopteryginae). *Revista Brasileira De Entomologia*. 35(3):577-578.

- Jantsch, L. J. 1992. Description of males of *Phyllovates iheringi* and *Phyllovates brevicornis* (Mantodea, Mantidae, Vatininae, Vatinini). *Revista Brasileira De Entomologia*. 36(1):79-83.
- Jantsch, L. J., Corseuil, E. 1988. Species of praying mantis (Insecta, Mantodea) in Rio Grande do Sul, Brazil. *Revista Brasileira De Zoologia*. 5(2):221-244.
- Jantsh, L. J. 1985. Description of 2 Neotropical praying mantis species (Mantodea, Mantidae, Mantinae, Mantini). *Revista Brasileira De Entomologia*. 29(2):315-316.
- Jones, T. H., Moran, M. D., Hurd, L. E. 1997. Cuticular extracts of five common mantids (Mantodea: Mantidae) of the Eastern United States. *Comparative Biochemistry and Physiology B*. 116(4):419-422.
- Kaltenbach, A. 1978. The Mantodea of the Canary Islands (Spain): A critical review and supplementary descriptions. *Annalen des Naturhistorischen Museums in Wien*. 82:517-532.
- Kaltenbach, A. 1979. Results of some collecting trips to western Asia: 7. Mantodea and Saltatoria. *Annalen des Naturhistorischen Museums in Wien*. 83:575-584.
- Kaltenbach, A. 1987. New species and synonymies of east and central African Amelinae (Mantodea, Mantidae). *Annalen Des Naturhistorischen Museums in Wien Serie B Botanik Und Zoologie*. 91:93-98.
- Kaltenbach, A. 1994a. *Bisanthe menyharthi* (Brancsik, 1895): Clinal variation, subspecies formation and geographical distribution (Insecta: Mantodea: Mantidae). *Annalen des Naturhistorischen Museums in Wien Serie B Botanik und Zoologie*. 96:59-67.
- Kaltenbach, A. 1994b. A new species of the genus *Gonypeta* Saussure from Thailand (Insecta: Mantodea: Mantidae). *Annalen des Naturhistorischen Museums in Wien Serie B Botanik und Zoologie*. 96:69-73.
- Kaltenbach, A. P. 1996. Records for a monograph on Mantodea of Southern Africa: 1. Species inventory, geographical distribution, and distribution limits (Insecta: Mantodea). *Annalen des Naturhistorischen Museums in Wien Serie B Botanik und Zoologie*. 98:193-346.
- Karuppanan, U. 1993. Growth of antennae in the nymphs and adults of a mantid, *Euantissa pulchra* (Fab.) (Dictyoptera: Mantidae). *Journal of Insect Science*. 6(1):102-103.
- Kaushik, R. K. 1985. Dual pattern in the mating behavior of the mantid *Humbertiella similis* (Mantodea, Mantidae). *Entomon*. 10(4):335-338.
- Kevan, D. K. M. 1989. Ms. Taylor's walking-sticks: "Queen Bess" and odd "orthopterians" of 1862 (Mantodea, Phasmatodea, Dermaptera, a reduviid hemipteran and mantispid Neuroptera). *Proceedings of the Entomological Society of Ontario*. 120:1-12.
- Koehler, G. 1988. Notes about the orthopteran fauna of the Delta of Danube (Romania). *Entomologische Nachrichten Und Berichte*. 32(4):175-178.
- Koehler, G., Sander, F. W. 1984. Contributions to the knowledge of the entomological fauna of Bulgaria: Orthoptera. *Entomologische Nachrichten Und Berichte*. 28(6):259-265.
- Kopaneva, L. M., Nadvornyi, V. G. 1981. Orthopteroid insects (Blattoptera, Mantoptera, Orthoptera, Dermaptera) of the floodplain of the Dnieper River and its tributaries, USSR. *Entomologicheskoe Obozrenie*. 60(2):290-301.
- Kukalova Peck, J., Peck, S. B. 1993. Zoraptera wing structures: Evidence for new genera and relationship with the blattoid orders (Insecta: Blattoneoptera). *Systematic Entomology*. 18(4):333-350.
- La Greca, M., Lombardo, F. 1987. Revision of the *Sphodromantis* Stahl, 1871 (Insecta, Mantodea) of east Africa: Publications of the Study Center for Tropical Fauna and Ecology of the National Research Council: CCCV. *Monitore Zoologico Italiano Supplemento*. 22(1-21):193-234.
- Liebenberg, H., Fossey, A., Jacobs, D. H. 1991. An unexpected sex chromosome mechanism in a south African mantid *Polyspilota aeruginosa* Goeza. *Caryologia*. 44(2):195-200.
- Lindt, I. I. 1980a. New *Rivetina* spp. (Mantodea, Mantidae) from Khazratishokh Mountain range, Tadzhik SSR, USSR. *Izvestiya Akademii Nauk Tadzhikskoi SSR Otdelenie Biologicheskikh Nauk*(2):58-62.
- Lindt, I. I. 1980b. Taxonomy of *Rivetina beybienkoi* (Mantodea, Mantidae) with a description of *Rivetina beybienkoi meridionale*, new subspecies. *Izvestiya Akademii Nauk Tadzhikskoi SSR Otdelenie Biologicheskikh Nauk*(4):44-48.
- Lombardo, F. 1986. On some Mantodea of Libya and description of a new species of *Ameles*. *Annali Del Museo Civico Di Storia Naturale 'Giacomo Doria'*. 86:265-272.
- Lombardo, F. 1991a. Collection of mantids of the Museo Civico di Storia Naturale di Milano. *Atti della Societa Italiana di Scienze Naturali e del Museo Civico di Storia Naturale di Milano*. 132(26):378-380.

Florida Mantids - Key to Species

- Lombardo, F. 1991b. Remarks on the genus *Severinia* Finot 1902 and a description of two new genera of Oxyothespinae (Insecta, Mantodea). *Tropical Zoology*. 4(2):203-208.
- Lombardo, F. 1993. Studies on the Mantodea of Nepal (Insecta). *Spixiana*. 16(3):193-206.
- Lombardo, F. 1995. *Parahestiasula obscura*, gen. nov., spec. nov. from Nepal (Insecta, Mantodea, Hymenopodidae). *Spixiana*. 18(1):11-14.
- Lombardo, F. 1995. A review of the genus *Popa* Stal 1856 (Insecta Mantodea). *Tropical Zoology*. 8(2):257-267.
- Londei, T. 1992. A submediterranean population of *Empusa pennata* (Thunberg) (Mantodea Empusidae). *Atti della Societa Italiana di Scienze Naturali e del Museo Civico di Storia Naturale di Milano*. 133(8):97-100.
- Loxton, R. G., Nicholls, I. 1979. The functional morphology of the praying mantis (*Hierodula membranacea*) forelimb (Dictyoptera, Mantodea). *Zoological Journal of the Linnean Society*. 66(2):185-203.
- Milledge, G. A. 1989. *Scolodera pardalotus*, new genus new species (Mantodea, Mantidae) from northern Queensland, Australia. *Records of the Australian Museum*. 41(2):107-110.
- Milledge, G. A. 1990. Revision of the genus *Nesoxypilus* Beier (Mantodea: Amorphoscelidae: Paraoxypilinae). *Memoirs of the Museum of Victoria*. 50(2):347-356.
- Moran, M. D. 1995. Intraguild predation between sympatric species of mantids (Mantodea: Mantidae). *Proceedings of the Entomological Society of Washington*. 97(3):634-638.
- Mukherjee, T. K., Hazra, A. K. 1985a. New record of a deserticolous mantid family (Mantodea: Eremiaphilidae) from India. *Entomon*. 10(3):245-246.
- Mukherjee, T. K., Hazra, A. K. 1985b. On some little known and a new praying mantid (Mantodea) from Mulla-Periyar tiger reserve, Kerala, India. *Entomon*. 10(4):255-260.
- Mukherjee, T. K., Hazra, A. K., Ghosh, A. K. 1995. The mantid fauna of India (Insecta: Mantodea). *Oriental Insects*. 29:185-358.
- Muthukrishnan, J. 1987. Effect of temperature on the energy balance of *Mantis religiosa* (Dictyoptera: Mantidae). *Journal of the Singapore National Academy of Science*. 16:51-54.
- Naeem, M., Yousuf, M. 1996. Mantodea (Dictyoptera) from the Punjab Province of Pakistan. *Entomologist's Monthly Magazine*. 132(1588-1591):281-284.
- Nel, A., Roy, R. 1996. Revision of the fossil "mantid" and "ephemerid" species described by Piton from the Palaeocene of Menat (France) (Mantodea: Chaeteessidae, Mantidae, Ensifera: Tettigonioidea). *European Journal of Entomology*. 93(2):223-234.
- Newton, A. F. J., Thayer, M. K. 1992. Current classification and family-group names in Staphyliniformia (Coleoptera). *Fieldiana Zoology*(67):1-92.
- Nickle, D. A. 1987. Order Mantodea. In: Stehr, F. W., editor. *Immature Insects*. Dubuque, Iowa: Kendall/Hunt. p 754.
- Orozco, J. C., Pretel, A., Cano, J. 1994. Supernumerary chromosomes in Mantodea. *Cytobios*. 79(316):7-13.
- Paradise, C. J., Stamp, N. E. 1991a. Abundant prey can alleviate previous adverse effects on growth of juvenile praying mantids (Orthoptera: Mantidae). *Annals of the Entomological Society of America*. 84(4):396-406.
- Paradise, C. J., Stamp, N. E. 1991b. Prey recognition time of praying mantids (Dictyoptera: Mantidae) and consequent survivorship of unpalatable prey (Hemiptera: Lygaeidae). *Journal of Insect Behavior*. 4(3):265-274.
- Paradise, C. J., Stamp, N. E. 1993. Episodes of unpalatable prey reduce consumption and growth of juvenile praying mantids. *Journal of Insect Behavior*. 6(2):155-166.
- Peck, S. B., Beninger, C. 1989. A survey of insects of the Florida Keys (USA): Cockroaches (Blattodea), mantids (Mantodea), and walking sticks (Phasmatodea). *Florida Entomologist*. 72(4):612-617.
- Petryszak, A., Fudalewicz Niemczyk, W. 1992. External proprioceptors in legs of various functions of insects of lower orders. *Acta Biologica Cracoviensia Series Zoologia*. 34-35:1-11.
- Pike, E. M. 1994. Historical changes in insect community structure as indicated by hexapods of Upper Cretaceous Alberta (Grassy Lake) amber. *Canadian Entomologist*. 126(3):695-702.
- Prete, F. R., Lum, H., Grossman, S. P. 1992. Non-predatory ingestive behaviors of the praying mantids *Tenodera aridifolia sinensis* (Sauss.) and *Sphodromantis lineola* (Burr.). *Brain Behavior and Evolution*. 39(2):124-132.
- Prete, F. R., Mahaffey, R. J. 1993. A chamber for mass hatching and early rearing of praying mantids (Orthoptera: Mantidae). *Entomological News*. 104(1):47-52.

- Prost, A., Roy, R. 1983. The mantises of Burkina Faso (ex-republic of Upper Volta). Bulletin De L'Institut Fondamental D'Afrique Noire Serie a Sciences Naturelles. 45(1-2):66-117.
- Ramsay, G. W. 1984. *Miomantis caffra*, new record a new mantid record (Mantodea: Mantidae) for New Zealand. New Zealand Entomologist. 8:102-104.
- Ramsay, G. W. 1990. Mantodea (Insecta), with a review of aspects of functional morphology and biology. Fauna of New Zealand(19):3-96.
- Rehn, J. A., Hebard, M. 1912. On the Orthoptera found on the Florida keys and in extreme southern Florida. I. Proc Acad Nat Sci Philadelphia. 64:373-412.
- Rehn, J. A., Hebard, M. 1914a. On the Orthoptera found on the Florida Keys and in extreme southern Florida. II. Proc Acad Nat Sci Philadelphia. 66:373-412.
- Rehn, J. A., Hebard, M. 1914b. Records of Dermaptera and Orthoptera from west central and southwestern Florida. J new York Entomol Soc. 22:96-116.
- Reitze, M., Nentwig, W. 1991. Comparative investigations into the feeding ecology of six Mantodea species. Oecologia. 86(4):568-574.
- Roger, R. 1996. *Reticulimantis* Roy, 1973, new synonym of *Pseudostagmatoptera* Beier, 1931 (Dict. Mantidae). Bulletin de la Societe Entomologique de France. 101(3):234.
- Room, P. M. 1979. Parasites and predators of *Heliothis* spp. (Lepidoptera: Noctuidae) in cotton in the Namoi Valley, New South Wales, Australia. Journal of the Australian Entomological Society. 18(3):223-228.
- Rooney, T. P., Smith, A. T., Hurd, L. E. 1996. Global warming and the regional persistence of a temperate-zone insect (*Tenodera sinensis*). American Midland Naturalist. 136(1):84-93.
- Roy, R. 1978. Additions to knowledge of the genera *Anasigerpes* and *Junodia* (Mantodea, Hymenopodidae). Bulletin de l'Institut Fondamental d'Afrique Noire Serie A Sciences Naturelles. 40(1):80-99.
- Roy, R. 1984. A new species of *Amorphoscelis*, formerly confused with *Amorphoscelis laxereticis* (Mantodea, Amorphoscelidae). Revue Francaise d'Entomologie. 6(2):75-78.
- Roy, R. 1991. Rehabilitation of the genus *Calospilota* Giglio-Tos, 1917, and description of a new species: *Calospilota pulchra*, new species (Mantodea, Mantidae). Revue Francaise D'Entomologie. 13(3):97-100.
- Roy, R. 1995a. Contribution to the knowledge of the genus *Macracanthopus* Uvarov, with the distinction of new species, *M. seydeli* (Mantodea, Mantidae, Amelinae). Journal of African Zoology. 109(3):239-246.
- Roy, R. 1995b. A review of the genus *Tismomorpha* Roy, 1973 (Dictyoptera, Mantodea, Mantidae). Revue Francaise d'Entomologie. 17(1):23-26.
- Roy, R. 1996. Revision of the Sibyllinae (Mantodea). Bulletin du Museum National d'Histoire Naturelle Section A Zoologie Biologie et Ecologie Animales. 18(1-2):69-138.
- Sanz De Bremond, M. C., Peinado, M. V. 1993. Contribution to the knowledge of the mantids of the Iberian Peninsula: Description of the female and redescription of the male of *Pseudoyersinia paui* (Bolivar, 1898) (Insecta, Mantodea). Boletin De La Real Sociedad Espanola De Historia Natural Seccion Biologica. 89(1-4):125-134.
- Sanz De Bremond, M. C., Peinado, V. 1991. Comparative study of the female genitalia of four mantid species from the Iberian Peninsula (Mantodea, Mantidae, Empusidae). Nouvelle Revue D'Entomologie. 8(4):347-362.
- Scudder, S. H. 1896. Index to the Mantidae of North America north of Mexico. Canadian Entomologist. XXVII:207-215.
- Sellenschlo, U. 1982. Larval development of the Mantidae parasite *Podagrion pachymerum* (Hymenoptera: Torymidae). Neue Entomologische Nachrichten(3):3-6.
- Sidhu, R. K., Misra, S. D. 1980. Consumption and utilization of *Drosophila* flies by *Humbertiella similis* (Dictyoptera: Mantidae). Entomon. 5(3):215-218.
- Southcott, R. V. 1991. A further revision of *Charletonia* (Acarina: Erythraeidae) based on larvae, protonymphs and deutonymphs. Invertebrate Taxonomy. 5(1):61-132.
- Suckling, D. M. 1984. Laboratory studies on the praying mantis *Orthodera ministralis* (Mantodea: Mantidae). New Zealand Entomologist. 8:96-101.
- Tanasiichuk, V. N. 1981. Materials for the Red Book of the USSR on insects. Entomologicheskoe Obozrenie. 60(3):699-711.
- Tavella, L., Arizone, A. 1987. Investigations of the natural enemies of *Corythucha ciliata* (Say) (Rhynchota, Heteroptera). Redia. 70:443-458.

Florida Mantids - Key to Species

- Terra, P. S. 1980. Ontogenesis of raptorial legs in praying mantis (Mantodea): A comparative study of allometry. *Revista Brasileira de Entomologia*. 24(2):117-122.
- Terra, P. S. 1982. New genera and new species of South American mantids (Mantodea, Mantidae). *Revista Brasileira de Entomologia*. 26(3-4):327-332.
- Terra, P. S. 1991. New species of *Xystropeltis* Rehn (Mantodea, Vatiidae). *Revista Brasileira De Entomologia*. 35(3):579-582.
- Terra, P. S. 1992. Maternal care in *Cardioptera brachyptera* (Mantodea, Vatiidae, Photininae). *Revista Brasileira De Entomologia*. 36(3):493-503.
- Terra, P. S. 1995. Systematics of the neotropical genera of praying mantis (Mantodea). *Revista Brasileira de Entomologia*. 39(1):13-94.
- Terra, P. S. 1996a. Maternal care in *Photina amplipennis* Stal. (Mantodea, Vatiidae). *Revista Brasileira de Entomologia*. 40(1):9-10.
- Terra, P. S. 1996b. Sexual behaviour of *Cardioptera brachyptera* (Mantodea). *Revista Brasileira de Entomologia*. 40(1):3-7.
- Thorne, B. L., Carpenter, J. M. 1992. Phylogeny of the dictyoptera. *Systematic Entomology*. 17(3):253-268.
- Vickery, V. R., Kevan, D. K. M. 1985. The grasshoppers, crickets, and related insects of Canada and adjacent regions: Ulonata: Dermaptera, Cheleutoptera, Notoptera, Dictuoptera, Grylloptera, and Orthoptera. Ottawa: Canadian Govt. Publ. Centre. 918 p.
- Villar, J. L., Barranco, P. 1994. *Pseudoyersinia paui* (Bolivar, 1898): A new mantis for the Andalusian fauna (Mantodea, Amelinae). *Graellsia*. 50:173.
- Wang, T. 1995. Research on the Chinese *Tenodera* (Mantodea: Mantidae). *Acta Entomologica Sinica*. 38(2):191-195.
- Wang, T., Liu, X., Yin, H. 1994. A new species of *Hymenopus* (Mantodea: Hymenopodidae: Hymenopodinae) from China. *Entomotaxonomia*. 16(2):79-81.
- Yager, D. D. 1990. Sexual dimorphism of auditory function and structure in praying mantises (Mantodea: Dictyoptera). *Journal of Zoology*. 221(4):517-538.
- Yager, D. D. 1996a. Nymphal development of the auditory system in the praying mantis *Hierodula membranacea* Burmeister (Dictyoptera, Mantidae). *Journal of Comparative Neurology*. 364(2):199-210.
- Yager, D. D. 1996b. Serially homologous ears perform frequency range fractionation in the praying mantis, *Creobroter* (Mantodea, Hymenopodidae). *Journal of Comparative Physiology A Sensory Neural and Behavioral Physiology*. 178(4):463-475.
- Yaseen, A. E., Mostafa, F. M., Kawashti, I. S. 1996. Karyological studies on five Egyptian species of Dictyoptera (Pterygota: Insecta). *Cytologia*. 61(3):285-295.
- Zach, P., Patocka, J., Kulfan, J., Kristin, A., Suslik, V. 1995. Forest zonation and faunal assemblages of the Pol'ana Biosphere Reserve UNESCO. *Ekologia*. 14(4):353-365.
- Zanuncio, J. C., Pereira, J. M. M., Nascimento, E. C. D., Zanuncio, T. V. 1992. Methodology for biological studies of Mantodea in laboratory conditions. *Anais Da Sociedade Entomologica Do Brasil*. 21(2):233-238.
- Zheng, J. Z. 1989. Three new species of *Odontomantis* Saussure from China (Mantodea: Hymenopodinae). *Acta Zootaxonomica Sinica*. 14(2):186-189.