

## Russell H. Messing

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**Education** B.A. Biological Science  
Rutgers University, New Brunswick, New Jersey

M.S. Entomology; Ph.D. Entomology  
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**Professional History** Professor and Entomologist  
Dept. of Plant and Environmental Protection Science  
University of Hawaii, Kauai Agric. Research Center. 1999-present.

Associate Entomologist, Dept. of Entomology,  
University of Hawaii, Kauai Agric. Research Center. 1993-1998.

Assistant Entomologist, Dept. of Entomology,  
University of Hawaii, Kauai Agric. Research Center. 1989-1993.

Research Associate, Dept. of Entomology,  
Oregon State University, Corvallis, Oregon. 1988-1989.

Postdoctoral Research Fellow, *I.N.R.A. Station de Zoologie  
et de Lutte Biologique*, Antibes, France. 1986-1987.

Research Assistant, Dept. of Entomology, Oregon State  
University, Corvallis, Oregon. 1980-81 & 1983-1985.

Assistant Extension Pest Management Specialist  
Extension Entomology, Corvallis, Oregon. 1982-1983.

Teaching Assistant, Dept. of General Science  
Oregon State University, Corvallis, Oregon. 1978-1979.

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## Publications in peer-reviewed journals:

- Mondor, E. B., M. N. Tremblay & R. H. Messing. Direct vs. inclusive fitness in the evolution of aphid cornicle length. *Journal of Evolutionary Biology*, *in review*.
- Sime, K. R., K.M. Daane, R. H. Messing & M. W. Johnson. Comparison of two laboratory cultures of *Psytalia concolor* (Hymenoptera: Braconidae), as a parasitoid of the olive fruit fly. *Biological Control*, *in press*.
- Sime, K. R., K.M. Daane, A. Kirk, J. W. Andrews, M. W. Johnson & R. H. Messing *Psytalia ponerophaga* (Hymenoptera: Braconidae) as a potential biological control agent for the olive fruit fly in California. *Bulletin of Entomological Research*, *submitted*.
- Mondor, E. B., M. N. Tremblay & R. H. Messing. 2006. Morphological and ecological traits promoting aphid colonization of the Hawaiian Islands. *Biological Invasions*, *in press*.
- Messing, R. H. & M. G. Wright. 2006. Biological control of invasive species: solution or pollution. *Frontiers in Ecology and the Environment* 4: 132-140.
- Mondor, E. B., M. N. Tremblay & R. H. Messing. 2006. Extrafloral nectary production in *Vicia faba* is both damage and resource-dependent. *Biology Letters*, *in review*.
- Sime, K.R., K. M. Daane, J. W. Andrews, K. Hoelmer, C. H. Pickett, H. Nadel, M. W. Johnson, R. H. Messing. The biology of *Bracon celer*, as a parasitoid of the olive fruit fly. *BioControl*, *in press*.
- Bokonon-Ganta, A. H. & R. H. Messing. Biological control of tephritid fruit flies in Hawaii with reference to the newly discovered egg-larval parasitoid, *Fopius ceratitivorus* (Wharton). *Proceedings of the Hawaiian Entomological Society*, *in press*.
- Messing, R. H., R. Footitt & K. Pike. New records of invasive aphids in Hawai'i. 2006. Bishop Museum Occasional Papers, *in press*.
- Sime, K. R., K. M. Daane, H. Nadel, C. S. Funk, R. H. Messing, J. W. Andrews Jr., M. W. Johnson, C. H. Pickett. 2005. *Diachasmimorpha longicaudata* and *D. kraussii* (Hymenoptera: Braconidae) potential parasitoids of the olive fruit fly. *Biocontrol Science & Technology* 16: 169-179.
- Messing, R. H. Alien invaders in Hawaii: Prospects for remediation using biological control. *Proceedings of the Hawaiian Entomological Society*, *in press*.
- Wang, X. G., E. A. Jarjees, B. K. McGraw, A. H. Bokonon-Ganta, R. H. Messing & M. W. Johnson. 2005. Effects of spinosad-based fruit fly bait GF-120 on tephritid fruit fly and aphid parasitoids. *Biological Control* 35: 155-162.
- Rhains, M. & R. Messing. 2005. Spatial and temporal density dependence in a population of melon aphid, *Aphis gossypii* Glover (Homoptera: Aphididae), on established and sentinel taro plants. *Applied Entomology and Zoology* 40: 273-282.
- Bokonon-Ganta, A. H., Ramadan, M. M., Wang, X. G. & Messing, R. H. 2005. Biological performance and potential of *Fopius ceratitivorus* (Hymenoptera: Braconidae), an egg-pupal parasitoid of tephritid fruit flies, newly imported to Hawaii. *Biological Control* 33: 238-247.
- Wang, X. G., A. H. Bokonon-Ganta, M. M. Ramadan & R. H. Messing. 2004. Egg-larval parasitoids (Hym., Braconidae) of tephritid fruit fly pests do not attack the flowerhead feeder *Trupanea dubautiae* (Dipt., Tephritidae). *Journal of Applied Entomology* 128: 716-722.

- Wang, X. G. & R. H. Messing. 2004. Fitness consequence of body size-dependent host species selection in a generalist ectoparasitoid. *Behavioral Ecology and Sociobiology* 56: 513-522.
- Wang, X. G. & R. H. Messing. 2004. Two different life history strategies determine the competitive outcome between *Dirhinus giffardi* (Chalcididae) and *Pachycrepoideus vindemmia* (Pteromalidae), ectoparasitoids of cyclorrhaphous Diptera. *Bulletin of Entomological Research* 94: 473-480.
- Wang, X. G. & R. H. Messing. 2004. Potential interactions among pupal and egg-or-larval-pupal parasitoids of tephritid fruit flies. *Environmental Entomology* 33: 1313-1320.
- Wang, X. G. & R. H. Messing. 2004. The ectoparasitic pupal parasitoid, *Pachycrepoideus vindemmiae* (Hymenoptera: Pteromalidae) attacks other primary tephritid fruit fly parasitoids: host expansion and non-target impact. *Biological Control* 31: 227-236.
- Alyokhin, A. V., P. Yang & R. H. Messing. 2004. Oviposition of the invasive two-spotted leafhopper on an endemic tree: effects of an alien weed, foliar pubescence and habitat humidity. *Journal of Insect Science* 4:13.
- Wang, X. G. & R. H. Messing. 2003. Foraging behavior and patch time allocation by *Fopius arisanus*, an egg-larval parasitoid of tephritid fruit flies. *Journal of Insect Behavior* 16: 593-612.
- Wang, X. G. & R. H. Messing. 2003. Egg maturation in the parasitoid *Fopius arisanus* (Hymenoptera: Braconidae): Do host associated stimuli promote ovarian development? *Annals of the Entomological Society of America* 96: 571-578.
- Wang, X. G., R. H. Messing & R. C. Bautista. 2003. Competitive superiority of early acting species: a case study of opine fruit fly parasitoids. *Biocontrol Science and Technology* 13: 391-402.
- Messing, R. H., A. V. Alyokhin, L. Quan, C. Yiqun & F. Xiong-Xi. 2003. Parasitoids of *Sophonia* leafhoppers in southern China. *Proc. Haw. Entomol. Society* 36: 111-114.
- Wang, X. G. & R. H. Messing. 2003. Intra- and inter-specific competition by *Fopius arisanus* and *Diachasmimorpha tryoni* (Hymenoptera: Braconidae), parasitoids of the Mediterranean fruit fly *Ceratitis capitata* (Diptera: Tephritidae) in Hawaii. *Biological Control* 27: 251-259.
- Alyokhin, A. V. & R. H. Messing. 2003. Parasitism of Hawaiian non-frugivorous fruit flies (Diptera: Tephritidae) by an exotic parasitoid *Eurytoma tephritidis* Fullaway (Hymenoptera: Eurytomidae). *Proc. Haw. Entomol. Soc.* 36: 29-37.
- Ramadan, M. M. & R. H. Messing. 2003. A survey for potential biocontrol agents of *Bactrocera cucurbitae* (Diptera: Tephritidae) in Thailand. *Proc. Haw. Entomol. Soc.* 36: 115-122.
- Wang, X. G. & R. H. Messing. 2002. Newly imported larval parasitoids pose minimal competitive risk to extant egg-larval parasitoid of tephritid fruit flies in Hawaii. *Bulletin Entomol. Research* 92: 423-429.
- Messing, R. H. & L. M. Klungness. A two-year survey of the melon aphid, *Aphis gossypii* Glover (Homoptera: Aphididae) on crop plants in Hawaii. *Proc. Haw. Entomol. Soc.* 35: 101-111.
- Alyokhin, A. V., R. H. Messing & J. J. Duan. 2002. Infestation of *Elephantopus mollis* (Asteraceae) flowerheads by *Tetreuaresta obscuriventris* (Diptera: Tephritidae) on Kauai, Hawaiian Islands. *Entomological News* 113: 247-252.
- Yang, P., D. Foote, A. V. Alyokhin, L. Lenz & R. H. Messing. 2002. Distribution and abundance of mymarid parasitoids (Hymenoptera: Mymaridae) of *Sophonia rufofascia* (Homoptera: Cicadellidae) in Hawaii. *Biological Control* 23: 237-244

- Alyokhin, A. V., R. H. Messing & J. J. Duan. 2001. Abundance and mating behavior of Oriental fruit flies in the vicinity of methyl eugenol-baited traps. *Pan-Pacific Entomologist* 77: 161-167.
- Yang, P., A. V. Alyokhin & R. H. Messing. 2001. Patterns of oviposition and parasitism of eggs of *Kallitaxila granulata* (Homoptera: Tropiduchidae), a newly invasive planthopper in Hawaii. *Proc. Haw. Entomol. Soc.* 35: 77-83.
- Messing, R. H. 2001. Centrifugal phylogeny as a basis for non-target host testing in biological control: is it relevant for parasitoids? *Phytoparasitica* 29: 187-190.
- Alyokhin, A. V., P. Yang, & R. H. Messing. 2001. Distribution and parasitism of *Sophonia rufofascia* eggs (Homoptera: Cicadellidae) in Hawaii. *Annals Entomol. Soc. Am.* 94: 664-669.
- Alyokhin, A. V. & R. H. Messing. 2001. Association of *Trupanea dubautiae* (Diptera: Tephritidae) with *Dubautia laxa* (Asteraceae) in Mt. Ka'ala National Area Reserve on Oahu. *Proceedings of the Hawaiian Entomological Society* 35: 137-139.
- Alyokhin, A. V., C. G. Mille, R. H. Messing & J. J. Duan. 2001. Selection of pupation habitat by Oriental fruit fly larvae in the laboratory. *J. Insect Behavior* 14: 57-68.
- Alyokhin, A. V., R. H. Messing & J. J. Duan. 2001. Utilization of the exotic weed *Pluchea odorata* (Asteraceae) and related plants by the introduced biological control agent *Acinia picturata* (Diptera: Tephritidae) in Hawaii. *Biocontrol Science and Technology* 11: 703-710.
- Cornelius, M. L., J. J. Duan & R. H. Messing. 2001. Distribution and abundance of female oriental fruit flies near methyl eugenol-baited traps. *Journal of Entomological Science* 36: 259-267.
- Wharton, R., M. Trostle, R. Messing, R. Copeland, S. Kimani-Njogu, S. Lux, P. Nderitu, & S. Mohammed. 2000. Parasitoids of medfly and related tephritids in Kenyan coffee: a predominantly koinobiont assemblage. *Bull. Entomol. Research* 90: 517-526.
- Duan, J. J. & R. H. Messing. 2000. Mating, oviposition, and development of *Sophonia rufofascia* (Homoptera: Cicadellidae) in Hawaii. *Annals Entomological Society America* 93: 554-558.
- Follett, P. A., J. J. Duan, R. H. Messing & V. P. Jones. 2000. Parasitoid drift after biocontrol introductions: re-examining Pandora's Box. *American Entomologist* 46: 82-94.
- Duan, J. J., R. H. Messing & R. Dukas. 2000. Host selection of *Diachasmimorpha tryoni*: comparative response to fruit-infesting and gall-forming tephritid flies. *Environmental Entomology* 29: 838-845.
- Jang, E. B., R. H. Messing, L. M. Klungness & L. A. Carvalo. 2000. Flight tunnel responses of *Diachasmimorpha longicaudata* (Ashmead) (Hym.: Braconidae) to olfactory and visual stimuli. *Journal of Insect Behavior* 13: 525-538.
- Cornelius, M. L., J. J. Duan & R. H. Messing. 2000. Volatile host fruit odors as attractants for the Oriental fruit fly (Diptera: Tephritidae). *J. Econ. Entomol.* 93: 93-100.
- Cornelius, M. L., L. Nergel, J. J. Duan & R. H. Messing. 2000. Responses of female oriental fruit flies to protein and host fruit odors in field cage and open field tests. *Environ. Entomol.* 29: 14-19.
- Duan, J. J. & R. H. Messing. 2000. Effects of host substrate and vibration cues on ovipositor-probing behavior in two larval parasitoids of tephritid fruit flies. *Journal of Insect Behavior* 13: 175-186.

- Alyokhin, A. V., R. H. Messing & J. J. Duan. 2000. Visual and olfactory stimuli and fruit maturity affect trap captures of oriental fruit flies (Diptera: Tephritidae). *Journal of Economic Entomology* 93: 644-649.
- Duan, J. J. & R. H. Messing. 2000. Effect of *Diachasmimorpha tryoni* on two non-target flowerhead-feeding tephritids. *BioControl* 45: 113-125.
- Duan, J. J. & R. H. Messing. 2000. Response of *Diachasmimorpha kraussii* (Hymenoptera: Braconidae), a newly-introduced opiine fruit fly parasitoid, to Hawaiian nontarget tephritids. *Biological Control* 19: 28-34.
- Cornelius, M., J. J. Duan & R. H. Messing. 1999. Visual stimuli and the response of female oriental fruit flies to fruit-mimicking traps. *Journal of Economic Entomology* 92: 121-129.
- Cornelius, M., J. J. Duan & R. H. Messing. 1999. Capture of oriental fruit flies (Diptera: Tephritidae) by protein-baited traps and fruit-mimicking visual traps in a guava orchard. *Environmental Entomology* 28: 1140-1144.
- Duan, J. J. & R. H. Messing. 1999. Effects of origin and experience on patterns of host acceptance by the parasitoid *Diachasmimorpha tryoni*. *Ecological Entomology* 24: 284-291.
- Papaj, D. R. & R. H. Messing. 1998. Asymmetries in physiological state as a possible cause of resident advantage in contests. *Behaviour* 135: 1013-1030.
- Jones, V., P. Follett, R. Messing, W. Borth, J. Hu & D. Ullman. 1998. Effect of *Sophonia rufofascia* on guava production in Hawaii. *Journal of Economic Entomology* 91: 693-698.
- Purcell, M. F., J. C. Herr, R. H. Messing & T.T.Y. Wong. 1998. Interactions between augmentatively released *Diachasmimorpha longicaudata* and a complex of opiine parasitoids in a commercial guava orchard. *Biocontrol Science and Technology* 8: 139-151.
- Duan, J. J. & R. H. Messing. 1998. Effect of *Tetrastichus giffardianus* (Hymenoptera: Eulophidae) on nontarget flowerhead-feeding tephritids (Diptera: Tephritidae). *Environ. Entomol.* 27: 1022-1028.
- Duan, J. J., R. H. Messing & M. F. Purcell. 1998. Association of the opiine parasitoid *Diachasmimorpha tryoni* (Hymenoptera: Braconidae) with the lantana gall fly (Diptera: Tephritidae) on Kauai. *Environ. Entomology* 27: 419-426.
- Duan, J. J. & R. H. Messing. 1997. Biological control of fruit fly pests: Estimating non-target effects of introduced opine parasitoids. *Recent Res. Develop. in Entomol.* 1: 231-241.
- Messing, R. H., L. M. Klungness, & E. B. Jang. 1997. Effects of wind on movement of *Diachasmimorpha longicaudata*, a parasitoid of tephritid fruit flies, in a laboratory flight tunnel. *Entomologia Experimentalis et Applicata* 82: 147-152.
- Duan, J. J., K. Joshi, M. Ahmad & R. H. Messing. 1997. Evaluation of the impact of the fruit fly parasitoid *Diachasmimorpha longicaudata* (Hymenoptera: Braconidae) on a non-target tephritid, *Eutreta xanthochaeta* (Diptera: Tephritidae). *Biological Control* 8: 58-64.
- Duan, J. J., & R. H. Messing. 1997. Effect of two opiine parasitoids (Hymenoptera: Braconidae) introduced for fruit fly control on a native Hawaiian tephritid *Trupanea dubautiae* (Diptera: Tephritidae). *Biological Control* 8: 177-184.
- Purcell, M. F., J. J. Duan & R. H. Messing. 1997. Response of three hymenopteran parasitoids introduced for fruit fly control to a gall-forming tephritid, *Procecidochares alani*. *Biological Control* 9: 193-200.

- Duan, J. J., M. F. Purcell & R. H. Messing. 1997. Ovipositional responses of three opiine fruit fly parasitoids to gall forming tephritids. *Biological Control* 9: 81-88.
- Duan, J. J. & R. H. Messing. 1996. Risk analysis and decision-making in biological control - A case study with fruit fly parasitoids. *Journal of Agriculture and Human Values* 13: 1-10.
- Messing, R. H., L. M. Klungness, E. B. Jang & K. A. Nishijima. 1996. Response of the melon fly parasitoid *Psytallia fletcheri* to host-habitat stimuli. *J. Insect Behavior* 9: 933-945.
- Duan, J. J., M. F. Purcell & R. H. Messing. 1996. Parasitoids of non-target tephritid flies in Hawaii: Implications for biological control of fruit fly pests. *Entomophaga* 41: 245-256.
- Duan, J. J. & R. H. Messing. 1996. Response of two opiine fruit fly parasitoids (Hymenoptera: Braconidae) to the lantana gall fly (Diptera: Tephritidae). *Environ. Entomol.* 25: 1428-1437.
- Purcell, M. F. & R. H. Messing. 1996. Ripeness effects of three vegetable crops on abundance of augmentatively released *Psytallia fletcheri*: improved sampling and release methods. *Entomophaga* 41: 105-116.
- Messing, R. H., A. Asquith & J. Stark. 1995. Effects of malathion sprays on non-target insects associated with corn in western Kauai, Hawaii. *Journal of Agricultural Entomology* 12: 255-265.
- Papaj, D. R. & R. H. Messing. 1995. Functional shifts in the use of parasitized hosts by a tephritid fly: the role of host quality. *Behavioral Ecology* 7: 235-241.
- Messing, R. H., M. F. Purcell & L. M. Klungness. 1995. Short range dispersal of mass-reared *Psytallia fletcheri* (Hym.: Braconidae), parasitoids of the melon fly, *Bactrocera cucurbitae* (Diptera: Tephritidae). *Environ. Entomol.* 24: 1338-1343.
- Ramadan, M. M., T.T.Y. Wong & R. H. Messing. 1995. Reproductive biology of *Biosteres vandenboschi* (Hymenoptera: Braconidae), a parasitoid of early instar Oriental fruit fly. *Ann. Entomol. Soc. Am.* 88: 189-195.
- Messing, R. H., M. F. Purcell & L. M. Klungness. 1994. Short range field dispersal of mass-reared *Diachasmimorpha longicaudata* and *D. tryoni* (Hym.: Braconidae), parasitoids of tephritid fruit flies. *J. Econ. Entomol.* 87: 975-985.
- Purcell, M. F., J. Stark & R. H. Messing. 1994. Insecticide effect on three tephritid fruit flies and associated parasitoids in Hawaii. *J. Econ. Ent.* 87: 1455-1462.
- Messing, R. H. & J. M. Rabasse. 1994. Oviposition behavior of *Aphidius colemani* (Viereck) (Hym.:Braconidae). *Agriculture, Ecosystems & Environment* 52: 13-17.
- Purcell, M. F., K. M. Daniels, R. H. Messing & L. C. Whitehand. 1994. Improvement of quality control methods for augmentative releases of the fruit fly parasitoids *Diachasmimorpha longicaudata* and *Psytallia fletcheri* (Hym.:Braconidae). *Biocontrol Sci. Tech.* 4: 155-166.
- Hollingsworth, R. G., D. E. Ullman, B. E. Tabashnik, M. W. Johnson & R. H. Messing. 1994. Resistance of *Aphis gossypii* to insecticides in Hawaii: spatial patterns and relation to insecticide use. *J. Econ. Entomol.* 87: 293-300.
- Messing, R. H., T.T.Y. Wong & L. M. Klungness. 1993. Quality-control parameters of mass-reared opiine parasitoids used in augmentative biological control of fruit flies in Hawaii. *Biol. Control* 2: 140-147.

- Asquith, A. & R. H. Messing. 1993. Contemporary Hawaiian insect fauna of a lowland agricultural area on Kauai: implications for local and island-wide fruit fly eradication programs. *Pacific Science* 47: 1-16.
- Asquith, A. & R. H. Messing. 1993. Annotated insect distribution records for the island of Kauai. *Proc. Haw. Entomol. Soc.* 31: 151-156.
- Messing, R. H. & S. J. Seiler. 1993. Malathion leakage from fruit fly male-annihilation traps on Kauai, Hawaii. *Bulletin of Environmental Contamination and Toxicology* 51: 193-195.
- Croft, B. A., J. E. Dunley, R. H. Messing, W. B. Strong & M. B. Croft. 1993. Effects of humidity on eggs and nymphs of *Neoseiulus fallacis*, *Amblyseius andersoni*, *Metaseiulus occidentalis*, and *Typhlodromus pyri*: implications for biological control on apple, caneberry, strawberry, and hops. *Experimental and Applied Acarology* 17: 451-459.
- Messing, R.H. 1992. Biological control in island ecosystems: cornerstone of sustainable agriculture or threat to biological diversity. *Pacific Science* 46: 387-388.
- Messing, R. H. & E. B. Jang. 1992. Response of the fruit fly parasitoid *Diachasmimorpha longicaudata* (Hym.: Braconidae) to host fruit stimuli. *Environ. Entomol.* 21: 1189-1195.
- Asquith, A. & R. H. Messing. 1992. An examination of the Hawaiian insect fauna of a lowland agricultural area on Kauai: implications for fruit fly eradication programs. *Pacific Science* 47: 1-16.
- Messing, R. H. & T.T.Y. Wong. 1992. An effective trapping method for field studies of opiine braconid parasitoids of tephritid fruit flies. *Entomophaga* 37: 391-396.
- Asquith, A. & R. H. Messing. 1992. Attraction of Hawaiian ground-dwelling invertebrates to protein hydrolysate bait. *Environ. Entomol.* 21: 1022-1028.
- Stark, J. D., R. I. Vargas, R. H. Messing & M. F. Purcell. 1992. Effects of cyromazine and diazinon on three economically important Hawaiian tephritid fruit flies and their endoparasitoids. *Environ. Entomol.* 85: 1687-1694.
- Messing, R. 1991. Status of beekeeping in the Hawaiian Islands. *Bee World* 72: 147-160.
- Messing, R. H. & B. A. Croft. 1991. Biosystematics of *Amblyseius andersoni* and *A. potentillae*: implications for biological control. *Experimental and Applied Acarology* 10: 267-278.
- Messing, R. H. & M. T. AliNiazee. 1991. Thermal requirements for egg development of the filbert aphid, *Myzocallis coryli*. *Journal of Applied Entomology* 111: 391-396.
- Dunley, J. E., R. H. Messing & B. A. Croft. 1991. Levels and genetics of organophosphate resistance in Oregon and Italian biotypes of *Amblyseius andersoni* (Chant). *J. Econ. Entomol.* 84: 750-755.
- Messing, R. H. & B. A. Croft. 1989. Assessing pesticide risk to arthropod natural enemies using expert system technology. *AI Applications in Natural Resource Management* 3: 1-11.
- Messing, R. H. & B. A. Croft. 1989. NERISK: An expert system to enhance the integration of pesticides with arthropod biological control. *Acta Horticulture* 276: 15-20.
- Messing, R. H., M. T. AliNiazee & J. C. Calkin. 1988. Indirect effects of carbaryl on populations of the filbert aphid, *Myzocallis coryli* (Goetze). *Journal of Applied Entomology* 106: 72-78.
- Messing, R. H. & M. T. AliNiazee. 1988. Importation and establishment of *Trioxys pallidus* (Hym.: Aphidiidae) on filbert aphid, *Myzocallis coryli* (Hom.: Aphididae) in western Oregon, U.S.A. *Entomophaga* 34: 153-163.

- Messing, R. H. & M. T. AliNiasee. 1988. Hybridization and host-suitability for two biotypes of *Trioxys pallidus* (Haliday). *Annals of the Entomological Society of America* 81: 6-9.
- Messing, R. H. & M. T. AliNiasee. 1986. Impact of predators on populations of the filbert aphid, *Myzocallis coryli*, in western Oregon. *Environ. Entomol.* 15: 1037-1041.
- Messing, R. H. & M. T. AliNiasee. 1985. Natural enemies of *Myzocallis coryli* in Oregon hazelnut orchards. *J. Entomol. Soc. Brit. Columbia* 82: 14-18.
- Lattin, J. D. & R. H. Messing. 1984. *Compsidolon (Coniortodes) salicellum* (Hemiptera: Miridae): A predaceous plant bug, new to the United States, found on filbert. *Journal N.Y. Entomol. Soc.* 92: 179-183.

### Book Chapters:

- Messing, R. H., B. Roitberg & J. Brodeur. 2005. Measuring and predicting indirect impacts of biological control: Competition, displacement, and secondary interactions. *in: Environmental Impact of Invertebrates for Biological Control of Arthropods: Methods and Risk Assessment*. F. Bigler, U. Kuhlmann, D. Babendreier, eds. CABI Publishing.
- Messing, R. H. & M. F. Purcell. 2001. Regulatory constraints to the practice of biological control in Hawaii. *in: Balancing Nature: Assessing the Impact of Importing Non-Native Biological Control Agents*. J. Lockwood, F. Howarth, & M. F. Purcell, eds. Thomas Say Publications, Entomol. Soc. Am.
- Messing, R. H. 2000. The impact of non-target concerns on the practice of biological control. *in: Non-target Effects of Biological Control*. P. Follett & J. Duan, eds. Kluwer Academic Publishers, Norwell, MA.
- Duan, J. J. & R. H. Messing. 2000. Development of approaches to evaluating non-target impacts of introduced fruit fly parasitoids in Hawaii. *in: Non-target Effects of Biological Control*. P. Follett & J. Duan, eds. Kluwer Academic Publishers, Norwell, MA.
- Messing, R. H. & M. M. Ramadan. 2000. Host range and reproductive output of *Diachasmimorpha kraussii* (Hymenoptera: Braconidae), a parasitoid of tephritid fruit flies newly imported to Hawaii. *in: Area-wide Control of Fruit Flies and Other Insect Pests*, K. H. Tan, ed., University Sains Malaysia, Penang.
- Messing, R.H. 1996. Status and needs of biological control research for tephritid flies. *in: Economic Fruit Flies: A World Assessment of Their Biology and Management*. B. McPherson & G. Steck, eds. St. Lucie Press, Delray Beach, FL.
- Messing, R. H. & B. A. Croft. 1996. Pesticide resistance in eriophyid mites, their competitors and predators. *in: Eriophyid Mites: their Biology, Natural Enemies and Control*. E. E. Lindquist, M. W. Sabelis & J. Bruin, eds. Elsevier Science B.V.
- Unruh, T. R. and R. H. Messing. 1993. Intra-specific biodiversity in Hymenoptera: Theory and implications for the practice of biological control. *in: Hymenoptera and Biodiversity*, J. LaSalle and I. D. Gauld, eds. CAB International.
- Messing, R. H. and B. A. Croft. 1990. Sub-lethal effects of pesticides on arthropod natural enemies. *in: Pesticides and Arthropod Biological Control Agents*, B. A. Croft, ed. Wiley-Interscience, N.Y.
- Messing, R. H. and B. A. Croft. 1990. Ecological effects of pesticides. *in: Pesticides and Arthropod Biological Control Agents*, B. A. Croft, ed. Wiley-Interscience, N.Y.



### Other publications and published abstracts:

Messing, R. H. 2005. Hawaii as a role model for comprehensive U.S. biocontrol legislation: the best and the worst of it. *Proc. Intntl. Symp. Biological Control of Arthropods*, M. Hoddle, ed.

Messing, R. H. 2005. Featured Insect: *Rhopalosiphum nymphaeae*. *American Entomologist* 51: 140.

Wang, X.G. and Messing, R.H. 2003. Interspecific competition between *Fopius arisanus* and *Diachasmimorpha tryoni* in the medfly, *Ceratitis capitata* (Diptera: Tephritidae). *in: Proc. Intntl. Symp. Biological Control of Arthropods*, R. van Driesche, ed. Honolulu, Hawaii, USDA Forest Service, Morgantown, WV.

Messing, R. H. 2002. Biological control: nature's pest management. *Agriculture Hawaii* 3: 29.

Messing, R. H. & X. G. Wang. 2001. Competition between egg and larval-attacking parasites of tephritid fruit flies in Hawaii. *Egg Parasitoid News* 13: 11.

J. Ball, C. H. Pickett & R. H. Messing. 2000. Introduction of an olive fruit fly parasitoid into Southern California. *in: Biological Control Program Annual Summaries for 1999, 2000, 2001*. D. M. Woods, ed. CDFA Plant Health & Prevention Services, Sacramento, CA.

Messing, R. H. 1999. Managing Fruit Flies on Farms in Hawaii (Insect Pest Series, CTAHR Cooperative Extension, IP-4).

Messing, R. H. & J. J. Duan 1998. Effects of introduced fruit fly parasitoids on non-target tephritids in Hawaii. *in: Proc. Australasian Appl. Entomol. Res. Conf.*, Brisbane, Australia.

Klungness, L. M., Messing, R. H. & M. F. Purcell. 1993. Improving quality control of mass reared opiine parasitoids for augmentation against tephritid fruit flies in Hawaii. *in: Proc. Global IOBC Workshop*, Rimini, Italy.

Daniels, K.M., Messing R. H. & M. F. Purcell. 1993. Mating propensity of *Diachasmimorpha longicaudata*. *in: Proc. Global IOBC Workshop*. Rimini, Italy.

Messing, R.H. 1987. Diapause and post-diapause developmental characteristics in relation to synchrony of emergence for overwintering *Trioxys pallidus* and its host *Myzocallis coryli*. *in: Parasitoid Insects*, Lyon, France.

### Editorial boards:

- ◆ Biological Control: Theory and Application in Pest Management
- ◆ BioControl: Journal of the International Organization for Biological Control (1994-1997)

### Invited presentations:

Biological control: last best hope for saving *Erythrina* trees in Hawaii. Science in the Garden Lecture Series, National Tropical Botanical Garden, Kalaheo, Hawaii. June 2006.

- Prospects for biological control of tephritid fruit flies. Temperate Fruit Fly Workshop, Washington State Tree Fruit Commission, Yakima, WA. August 2006
- The *Erythrina* gall wasp: dark cloud with a silver lining. Pacific Branch Meeting of the Entomological Society of America, Maui, HI, March 2006.
- Interference between weed and arthropod biological control. Annual Meeting of Western Regional Research Project W-1185: Biological Control in Pest Management Systems. Cloudcroft, New Mexico, October 2005.
- Hawaii as a role model for comprehensive U.S. biocontrol legislation: the best and the worst of it. International Symposium on Biological Control of Arthropods, Davos, Switzerland, Sept. 2005.
- Measuring and predicting indirect impacts of biological control: competition, displacement and secondary interactions. International Workshop on Evaluating Risk of Biological Control. Engelberg, Switzerland, June 2004.
- Conflict between biological control agents: can we avoid problems before they occur in actual management systems? USDA-ARS Conference on Science and Decision-Making in Biological Weed Control. Denver, Colorado, January 2004
- The status of biological control in the Hawaiian Islands. Annual Meeting of Western Regional Research Project W-1185: *Biological Control in Pest Management Systems*. Pacific Grove, California, October 2003.
- Centrifugal phylogeny as a basis for non-target prioritization: does it work for parasitoids? Annual Meeting of Western Regional Project W-185: Biological Control in Pest Management Systems. San Diego, California, October 2000.
- Progress in the search for medfly parasitoids in Kenya. Fifth Annual Exotic Fruit Fly Symposium, Riverside, California, March 2000.
- The incursion of exotic arthropod species into Hawaii, and why we need more. Pacific Branch Meeting of the Entomological Society of America, Eugene, Oregon. 1999.
- Newly imported parasitoids of the Malaysian fruit fly in Hawaii. International Symposium on Fruit Flies of Economic Importance. Penang, Malaysia. 1998.
- Biological control on the ropes: a case study from Hawaii. International Congress of Entomology, Florence, Italy. 1996.
- The apiculture industry in Hawaii. Annual Meeting of the Western Apiculture Society, Sacramento, California. 1995.
- Eradication of fruit flies in Hawaii: facts and fantasies. Proc. CTAHR Conf. Haw. Agric., Honolulu, Hawaii. 1995.
- The role of parasitoids in native and managed ecosystems in Hawaii. Pacific Entomology Conference, Honolulu, Hawaii. 1993.
- Oviposition behavior of *Aphidius colemani* (Viereck). IOBC Symposium on Ecology of Aphidophagous Insects, La-Colle-sur-Loup, France. 1993.
- Quality-control of mass-reared opiine braconid parasitoids of fruit flies in Hawaii: room for improvement. IOBC Symposium on Quality Control of Mass-reared Arthropods, Rimini, Italy. 1993.

Factors affecting parasitoid impact on tephritid fruit flies in Hawaii. Pacific Branch Meeting of Entomol. Soc. Am, Kona, HI. 1992.

Regulation of dacine pests by parasitoids in Hawaii. Intntl. Congress of Entomology, Beijing, China. 1992.

Oviposition behavior of opiine fruit fly parasitoids: implications for mass-rearing and augmentative release. International Congress of Entomology, Beijing, China. 1992.

Biological control in island ecosystems: cornerstone of sustainable agriculture or threat to biological diversity? XVII Pacific Science Congress, Honolulu, HI. 1991.

Classical biological control of filbert aphid in western Oregon. Hawaiian Entomol. Society, Honolulu, HI. 1991.

Pesticides and arthropod biological control agents: introduction and historical overview. First Annual Meeting Hawaiian Entomol. Soc., Honolulu, HI. 1991.

Prospects for biological control of spider mites in Oregon pear orchards. Southern Oregon Experiment Station Annual Growers Field Day, Jacksonville, OR. 1989.

Significance of host-specific biotypes in parasitoids used for aphid biological control. Institut Nationale de la Recherche Agronomique, Antibes, France. 1987.

Parasites of the filbert aphid established in Oregon. Annual Meeting of the Nut Growers Soc. of Oregon, Washington, and British Columbia. 1985,

#### **Honors and Awards:**

- Rutgers University Alumni Scholarship
- Oregon State University Bowerman Fund Graduate Fellowship
- Sigma-Xi Grant-in-Aid of Research, and Graduate Student Travel Award
- *Institut Nationale de la Recherche Agronomique* Postdoctoral Research Fellowship
- *Chateaubriand* Postdoctoral Research Fellowship (from French Embassy to the U.S.)
- University of Hawaii Faculty Travel Awards (1991, 1993, 1996, 2005)
- Hawaii Institute of Tropical Agriculture "Vision" Grant
- Friend of the Small Farmer Award (*Growing for Market* Magazine)
- Gamma Sigma Delta Award for Outstanding Researcher in the University of Hawaii  
College of Tropical Agriculture and Human Resources

#### **Departmental Seminars:**

Biological control in Hawaii: cornerstone of sustainable agriculture or threat to biodiversity? University of Florida at Gainesville, 2001.

Ecological factors influencing risk to non-target species: a case study from a fruit fly biological control program in Hawaii. National Agronomic Research Institute, Antibes, France, 2000.

Non-target impacts of biological control: factors influencing host shift in a parasitoid of Mediterranean fruit fly in Hawaii. Oregon State University, Dept. of Entomology, Corvallis, Oregon, 2000.

Biological control in pesticide-structured agro-ecosystems. Cornell University, Geneva Research Station, Geneva, N.Y. 1994.

Improving biological control in pesticide-treated tree fruit systems of the Northwest. Washington State Univ. Tree Fruit Research Center, Wenatchee, WA. 1994.

Fruit fly eradication in Hawaii: facts and fantasies. Dept. of Entomology, University of Hawaii, Honolulu, HI. 1992.

Practical considerations in classical biological control. Dept. of Entomology, University of Hawaii, Honolulu. 1992.

Natural enemy / pesticide interactions in agricultural ecosystems. Dept. of Entomology, University of Hawaii, Honolulu. 1989.

The use of expert systems and database technology in estimating MPCA risk to non-target arthropods. US-EPA Environmental Research Lab., Corvallis, OR. 1989.

Importation of parasitoids for control of aphid pests: a comparison of two approaches. Dept. of Entomology, University of California, Berkeley, CA. 1988.

#### **Professional Societies:**

Entomological Society of America  
Hawaiian Entomological Society  
International Organization for Biological Control (IOBC)  
IOBC Working Group: Fruit Flies of Western Hemisphere  
IOBC Working Group: Ecology of Aphidophagous Insects  
Pacific Science Association

#### **Graduate Student Committees:**

Adam Vorsino, PhD. Univ. of Hawaii, Dept. of Plants and Environ. Protection Sciences  
Leyla Valdivia, PhD. Univ. of Hawaii, Dept. of Plants and Environ. Protection Sciences  
Cheryl Young, MS, Univ. of Hawaii, Dept. of Plants and Environ. Protection Sciences  
Peter Shearer, Ph.D., Univ. of Hawaii, Dept. of Entomology.  
Hong Chen, Ph.D., Univ. of Hawaii, Dept. of Entomology.  
Jennifer Carder, Ph.D., Univ. of Hawaii, Dept. of Entomology.

#### **International internships supervised:**

|                 |   |
|-----------------|---|
| Christian Mille | Ecole Nationale Superieure Agronomique, Montpellier, France |
| Remy Frissant   | Experience International, Avignon, France                   |
| Laurent Nergel  | Universite de Pau et des Pays de l'Adour, Pau, France       |
| Mukhtar Ahmad   | Forest Research Institute, Dehra Dun, India                 |
| Kailash Joshi   | Forest Research Institute, India                            |

#### **Meetings and Workshops:**

USDA-ARS Area-Wide Fruit Fly Control Meeting, 2003, 2004, 2005

National Working Group meeting on pesticide registration for fruit fly control and eradication, Kapaa, HI. 1993.

U.H. College of Tropical Agriculture and Human Resources (CTAHR) workshop on establishing a Tropical Pest Biology Center, Honolulu, HI. 1992.

International Chemoreception Workshop for Insects (ICWI), Poipu, HI. 1991.

National Fruit Fly Research Action Plan meeting, San Fransisco, CA. 1991.

International Vedalia Symposium on Biological Control, Riverside CA. 1989

Biology and control of pear psylla. Hood River, OR. 1988.

Cereal aphid ecology and biological control. IOBC, Antibes, France. 1988.

Tree-fruit insects and diseases of the Pacific Northwest. Washington Tree Fruit Research and Extension Center, Wenatchee, WA. 1986.

Systematics of the Ichnumonoidea, taught by Drs. Henry Townes and Paul Marsh, Corvallis, OR. 1983.

Biology of the Aphididae, taught by Dr. D. Hille Ris Lambers. Corvallis, OR. 1982.

**Department, College, and University Service:**

U.H. College of Tropical Agriculture representative to Western Regional Research Meetings on Biological Control in Pest Management Systems.

U.H. College of Tropical Agriculture representative to Western Regional Coordinating Committee on Low Input Sustainable Agriculture (LISA; WRCC-67), Portland, OR.

U.H. College of Tropical Agriculture representative to Western Regional Coordinating Committee on Biological Control (W- 185), Honolulu, HI, & Lake Tahoe, CA.

U.H. representative: Eradication and Environmental Task Force, Hawaii Fruit Fly Committee: 1990-1994.

U.H. Entomology Quarantine Committee, Personnel Committee, Research Review Committee, Diagnostic Exam Committee, Awards Committee, Seminar Committee, Long-range Planning Committee.

Member of Hawaii Governor's Agricultural Coordinating Committee (GACC) Sustainable Agriculture Resource Committee.

CTAHR Steering Committee for planning a college-wide agriculture conference.

CTAHR Travel Grant Review Committee.

Member of Hawaii Farm Bureau LISA Committee on Hawaii and the National Organic Standards Board.

Advisor to Hawaii Farm Bureau LISA Committee on Establishment of a Commercial

Member of Yellow Sugarcane Aphid Inter-agency Task Force.

Member of U.H. College of Tropical Agriculture Sustainable Agriculture Planning Group.

Produced, wrote, and distributed *The Hawaii Fruit Fly Newsletter*.

**Professional Service:**

Secretary (1997) and Chairman (1998) of Western Regional Research Project W-185: *Biological Control in Pest Management Systems*.

President, Western Apiculture Society 1995-96. Organized 1996 Annual Conference.

Merit Reviewer of USDA-ARS research projects: Honolulu, Hilo and Gainesville Laboratories.

Reviewer for National Science Foundation, USDA-CSREES-NRI, and US-Israel BARD Grant Programs.

Reviewer for journals: Environ. Entomology J. Economic Entomology, Entomophaga, Biological Control, Proc. Haw. Entomol. Society, BioControl, Annals of the Entomol. Soc. Am.

Organized symposium for Hawaiian Entomol. Soc. Conference entitled: *Biological control in the 1990's: forging inroads into pesticide dominated agro-ecosystems*.

Served on Program Committee for Entomological Society of America Pacific Branch Meeting, Kona, HI, 1992.  
Organized symposium: *Comparative ecology of tropical and temperate tephritid fruit flies*.

Served on Organizing Committee for college conference on *Hawaii Agriculture: Positioning for Growth*.  
Organized and moderated a symposium within the conference on eradication of fruit flies in Hawaii.

**Community Service:**

Supervised independent research projects for Kauai Community College biology students.

Supervised independent research projects for Kauai High School honors science students.