Thomas C. Baker

Distinguished Professor of Entomology and Chemical Ecology

Department of Entomology
Center for Chemical Ecology
Penn State University
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University Park, PA 16802

ACADEMIC RECORD

B.S.	Entomology	Cornell University	1972
M.S.	Entomology	Cornell University	1975
Ph.D.	Entomology	Michigan State University	1979

EMPLOYMENT HISTORY

Assistant Professor
Department of Entomology
University of California, Riverside, CA
1979-1983

Associate Professor
Department of Entomology
University of California
Riverside, CA
1983-1988

Professor
Department of Entomology
University of California, Riverside, CA
1988-1992

Professor
Department of Entomology
Iowa State University, Ames, Iowa
1992 - 2003

Head
Division of Toxicology and Physiology
University of California, Riverside, CA
1986-1988

Chair
Department of Entomology
University of California, Riverside, CA
1988-1992

Chair
Department of Entomology
Iowa State University, Ames, IA
1992-1999

Professor
Department of Entomology
Huck Institutes for the Life Sciences
Penn State University
2003 - 2010

University Distinguished Professor
Department of Entomology
Huck Institutes for the Life Sciences
Penn State University
University Park, Pennsylvania
2010 -

RESEARCH/PROFESSIONAL ACTIVITY

Editorial Boards

Member, Editorial Board, Physiological Entomology 1983-Present
Member, Editorial Board, Journal of Chemical Ecology 1983-1998
Member, Editorial Board, Annual Review of Entomology 1995-2000
Member, Editorial Board, Journal of Asia-Pacific Entomology 1998-Present

Professional Society Memberships

Entomological Society of America
International Society of Chemical Ecology
Association for Chemoreception Sciences
Fellow, American Association for the Advancement of Science
Councilor, Asia-Pacific Association for Chemical Ecology (APACE)

Awards and Honors

Awarded the title, "University Distinguished Professor" by Penn State University 2010
Elected Fellow, Entomological Society of America, 2009
President, International Society of Chemical Ecology (2003-2004)
Recipient of Silverstein-Simeone Award (2001-2002) from the International Society of Chemical Ecology
Elected Fellow, American Association for the Advancement of Science. 1999.
Excellence in Pest Management Award, North Central Branch of the Entomological Society of America, 1996.
Bussart Award, Pacific Branch of ESA, 1988, 1990, 1991
Distinguished Teaching Award, Pacific Branch of the Entomological Society of America, 1983, 1984.
Silverstein-Simeone Plenary Lecture, International Society of Chemical Ecology, Hamburg, Germany
MacCarthy Lecturer in Integrated Pest Management, Simon Fraser University and University of British Columbia. October 1996.
Plenary Lecturer, Plenary Session of the ESA National Meeting, Reno, NV, 1991. Title: "Learning the Language of Insects, and How to Talk Back"
Plenary Lecturer, Asia-Pacific Association of Chemical Ecologists. 2007, Tsukuba, Japan
Plenary Lecturer, Korean Society for Applied Entomology Annual Meeting, Seoul, Korea 1997
Plenary Lecturer (Banquet Speech), Eastern Branch Meeting of the ESA, Harrisburg, PA, March 21, 2005.
Plenary Lecturer, Asia-Pacific Association of Chemical Ecology, Shanghai, China. November 1, 1999

Plenary Lecturer, Entomological Society of Manitoba, Winnipeg, Canada. November 5, 1992

Plenary Lecturer, 2nd Australia/New Zealand (CSIRO/DSIR) Pheromone Conference, Canberra, Australia, July 12, 1988

Patents Awarded

1. U.S. Patent No. 3,917,711. 1975. "Novel Attractant Components for Males of the Tobacco Budworm Moth". W. L. Roelofs, A. S. Hill, T. C. Baker, and R. T. Cardé, Inventors.
2. U. S. Patent No. 3,952,093. April 20, 1976. "Novel Attractant Components for Males of the Tobacco Budworm Moth". W. L. Roelofs, A. S. Hill, and T. C. Baker, Inventors.
3. U. S. Patent No. 5,104,654. April 14, 1992. "Ovipositional Disruption of the Navel Orangeworm With Fatty Acids." T. C. Baker and P. L. Phelan, Inventors.
4. U. S. Patent No. 5,128,333. July 7, 1992. "Phosphates and Phosphonates as Disruptants of Moth Sex Pheromone-Mediated Behavior." T. R. Fukuto, T. C. Baker, M. Malik, and R. S. Vetter, Inventors.
5. U. S. Patent No. 6,106,821 August 22, 2000. "Fly Attractant Compositions" . T. C. Baker and A. A. Cossé, Inventors.
6. U.S. Patent No. 6,524,605. "Biorational Repellents Obtained from Terpenoids for use Against Arthropods".J.R. Coats, C. Peterson, J.W. Zhu, T. C. Baker, Inventors.
7. U.S. Patent No. 6,543,181. "Attractant Blend for Drosophila Fruit Flies". T. C. Baker, J.W. Zhu, K.C. Park, Inventors.
8. U.S. Patent No. 6,562,332. "Attractants of Beneficial Insects" T.C. Baker, J. J. Obrycki, J.W. Zhu, Inventors.

LIST OF PUBLICATIONS

Refereed, Scientific Journal Articles

1. Roelofs, W.L., A.S. Hill, R.T. Cardé and T.C. Baker. 1974. Two sex pheromone components of the tobacco budworm moth, *Heliothis virescens*. **Life Sci**. 14:1555-1562.

2. Baker, T.C. and G.C. Eickwort. 1975. Development and bionomics of *Chrysomelobia labidomerae* (Acari:Tarsonemina; Podapolipidae), a parasite of the milkweed leaf beetle (Coleoptera:Chrysomelidae). **Can. Entomol**. 107:627-638.

3. Cardé, R.T., A. Comeau, T.C. Baker and W.L. Roelofs. 1975. Moth mating periodicity: Temperature regulates the circadian gate. **Experientia** 31:46-48.

4. Cardé, R.T., T.C. Baker and W.L. Roelofs. 1975. Behavioral role of individual components of a multichemical attractant system in the oriental fruit moth. **Nature** 253:348-349.

5. Cardé, R.T., T.C. Baker and W.L. Roelofs. 1975. Ethological function of components of a sex attractant system for oriental fruit moth males, *Grapholitha molesta* (Lepidoptera:Tortricidae). **J. Chem. Ecol**. 1:475-491.

6. Cardé, R.T., T.C. Baker and W.L. Roelofs. 1976. Sex attractant responses of male oriental fruit moths to a range of component ratios: Pheromone polymorphism? **Experientia** 32:1406-1407.

7. Baker, T.C., R.T. Cardé and W.L. Roelofs. 1976. Behavioral responses of male *Argyrotaenia velutinana* (Lepidoptera:Tortricidae) to components of its sex pheromone. **J. Chem. Ecol**. 2:333-352.

8. Baker, T.C. and W.L. Roelofs. 1976. Electroantennogram responses of the male moth, *Argyrotaenia velutinana* to mixtures of sex pheromone components of the female. **J. Insect Physiol**. 22:1357-1364.

9. Miller, J.R., T.C. Baker, R.T. Cardé and W.L. Roelofs. 1976. Reinvestigation of oak leaf roller sex pheromone components and the hypothesis that they vary with diet. **Science** 192:140-143.

10. Cardé, R.T., T.C. Baker and P.J. Castrovillo. 1977. Disruption of sexual communication in *Laspeyresia pomonella* (codling moth), *Grapholitha molesta* (oriental fruit moth) and *G. prunivora* (lesser appleworm) with hollow fiber attractant sources. **Entomol. exp. et Appl**. 22:280-288.

11. Cardé, R.T., C.C. Doane, T.C. Baker, S. Iwaki and S. Marumo. 1977. Attractancy of optically active pheromone for male gypsy moths**. Environ. Entomol**. 6:768-772.

12. Baker, T.C. and R.T. Cardé. 1978. Disruption of gypsy moth male sex pheromone behavior by high frequency sound. **Environ. Entomol**. 7:45-52.

13. Cardé, A.M., T.C. Baker and R.T. Cardé. 1979. Identification of a four-component sex pheromone of the female oriental fruit moth, *Grapholitha molesta* (Lepidoptera:Tortricidae). **J. Chem. Ecol**. 5:423-427.

14. Baker, T.C. and R.T. Cardé. 1979. Courtship behavior of the oriental fruit moth (*Grapholitha molesta*): Experimental analysis and consideration of the role of sexual selection in the evolution of courtship pheromones in the Lepidoptera. **Ann. Entomol. Soc. Am.** 72:173-188.

15. Baker, T.C. and R.T. Cardé. 1979. Analysis of pheromone-mediated behaviors in male *Grapholitha molesta*, the oriental fruit moth (Lepidoptera:Tortricidae). **Environ. Entomol**. 8:956-968.

16. Baker, T. C. and R. T. Cardé. 1979. Endogenous and exogenous factors affecting periodicities of female calling and male sex pheromone response in *Grapholitha molesta* (Busck). **J. Insect. Physiol**. 25:943-950.

17. Baker, T.C., R.T. Cardé and B.A. Croft. 1980. Relationship between pheromone trap capture and emergence of adult oriental fruit moths, *Grapholitha molesta* (Lepidoptera:Tortricidae). **Can. Entomol**. 112:11-15.

18. Baker, T.C., R.T. Cardé and J.R. Miller. 1980. Oriental fruit moth pheromone component emisson rates measured after collection by glass-surface adsorption. **J. Chem. Ecol**. 6:749-758.

19. Baker, T.C. and W.L. Roelofs. 1981. Initiation and termination of oriental fruit moth male response to pheromone concentrations in the field. **Environ. Entomol**. 10:211-218.

20. Kuenen, L.P.S. and T.C. Baker. 1981. Habituation versus sensory adaptation as the cause of reduced attraction following pulsed and constant sex pheromone pre-exposure in *Trichopolusia ni*. **J. Insect Physiol**. 27:721-726.

21. Van Vorhis Key, S.E., L.K. Gaston and T.C. Baker. 1981. Effects of gaster extract trail concentration on the trail following behavior of the Argentine ant, *Iridomyrmex humilis* (Mayr). **J. Insect Physiol**. 27:363-370.

22. Persoons, C.J., C. van der Kraan, W.J. Nooijen, F.J. Ritter, S. Voerman and T.C. Baker. 1981. Sex pheromone of the beet armyworm, *Spodoptera exigua*: Isolation, identification and preliminary field evaluation. **Ent. exp. et Appl**. 30:98-99.

23. Baker, T.C., W. Meyer and W.L. Roelofs. 1981. Sex pheromone dosage and blend specificity of response by oriental fruit moth males. **Entomol. exp. et Appl**. 30:269-279.

24. Baker, T.C., R. Nishida and W.L. Roelofs. 1981. Close-range attraction of female oriental fruit moths to herbal scent of male hairpencils. **Science** 214:1359-1361.

25. Baker, T.C., L.K. Gaston, M.M. Pope, L.P.S. Kuenen and R.S. Vetter. 1981. A high-efficiency collection device for quantifying sex pheromone volatilized from female glands and synthetic sources. **J. Chem. Ecol**. 7:961-968.

26. Van Vorhis Key, S.E. and T.C. Baker. 1981. Trail-following responses of the Argentine ant, *Iridomyrmex humilis* (Mayr), to a synthetic trail pheromone component and analogs. **J. Chem. Ecol**. 8:3-14.

27. Baker, T.C. and L.P.S. Kuenen. 1982. Pheromone source location by flying moths: A supplementary non-anemotactic mechanism. **Science** 16:424-427.

28. Pope, M.M., L.K. Gaston and T.C. Baker. 1982. Composition, quantification, and periodicity of sex pheromone gland volatiles from individual *Heliothis virescens* females. **J. Chem. Ecol**. 8:1043-1055.

29. Nishida, R., T.C. Baker and W.L. Roelofs. 1982. Hairpencil pheromone components of male oriental fruit moths, *Grapholitha molesta*. **J. Chem. Ecol**. 8:947-959.

30. Kuenen, L.P.S. and T.C. Baker. 1982. Optomotor regulation of ground velocity in moths during flight to sex pheromone at different heights. **Physiol. Entomol**. 7:193-202.

31. Van Vorhis Key, S.E. and T.C. Baker. 1982. Specificity of laboratory trail following by the Argentine ant, *Iridomyrmex humilis* (Mayr), to (Z)-9-hexadecenal, analogs and gaster extract. **J. Chem. Ecol**. 8:1057-1063.

32. Kuenen, L.P.S. and T.C. Baker. 1982. The effects of pheromone concentration on the flight behavior of the oriental fruit moth, *Grapholitha molesta*. **Physiol. Entomol**. 7:423-434.

33. Baker, T. C. 1983. Variations in male oriental fruit moth courtship patterns due to male competition. **Experientia** 39:112-114.

34. Van Vorhis Key, S.E. and T.C. Baker. 1982. Trail pheromone-conditioned anemotaxis by the Argentine ant. *Iridomyrmex humilis*. **Entomol. exp. et Appl**. 32:232-237.

35. Vetter, R.S. and T.C. Baker. 1983. Behavioral responses of male *Heliothis virescens* in a sustained-flight tunnel to combinations of seven compounds identified from female sex pheromone glands. **J. Chem. Ecol**. 9:747-759.

36. Kuenen, L.P.S. and T.C. Baker. 1983. A non-anemotactic mechanism used in pheromone source location by flying moths. **Physiol. Entomol**. 8:277-289.

37. Haynes, K.F., L.K. Gaston, M.M. Pope and T.C. Baker. 1983. Rate and periodicity of pheromone release from individual female artichoke plume moths, *Platyptilia carduidactyla* (Lepidoptera:Pterophoridae). **Environ. Entomol**. 12:1597-1600.

38. Vetter, R.S. and T.C. Baker. 1984. Behavioral responses of male *Heliothis zea* moths in sustained-flight tunnel to combinations of 4 compounds identified from female sex pheromone glands. **J. Chem. Ecol**. 10:193-202.

39. Willis, M.A. and T.C. Baker. 1984. Effects of intermittent and continuous pheromone stimulation on the flight behaviour of the oriental fruit moth, *Grapholitha molesta*. **Physiol. Entomol**. 9:341-589.

40. Baker, T.C., M.A. Willis and P.L. Phelan. 1984. Optomotor anemotaxis polarizes self-steered zigzagging in flying moths. **Physiol. Entomol**. 9:365-376.

41. Haynes, K.F., L.K. Gaston, M.M. Pope and T.C. Baker. 1984. Potential for evolution of resistance to pheromones: Interindividual and interpopulational variation in chemical communication system of pink bollworm moth**. J. Chem. Ecol.** 10:1551-1565.

42. Trumble, J.T. and T.C. Baker. 1984. Flight phenology and pheromone trapping of *Spodoptera exigua* (Hübner) (Lepidoptera:Noctuidae) in southern coastal California. **Environ. Entomol**. 13:1278-1282.

43. Pope, M.M., L.K. Gaston and T.C. Baker. 1984. Composition, quantification, and periodicity of sex pheromone volatiles from individual *Heliothis zea* females. **J. Insect Physiol.** 30:943-945.

44. Haynes, K.F. and T.C. Baker. 1985. Sublethal effects of permethrin on the chemical communication system of pink bollworm moth, *Pectinophora gossypiella*. **Arch. Insect Biochem. Physiol**. 2:283-293.

45. Baker, T.C., S.E. Van Vorhis Key and L.K. Gaston. 1985. Bait-preference tests for the Argentine ant (Hymenoptera:Formicidae)**. J. Econ. Entomol**. 78:1083-1088.

46. Van Vorhis Key, S.E. and T.C. Baker. 1985. Observations on the trail deposition and recruitment behaviors of the Argentine ant, *Iridomyrmex humilis* (Hymenoptera:Formicidae). **Ann. Ent. Soc. Am**. 79:283-288.

47. Baker, T.C., M.A. Willis, K.F. Haynes and P.L. Phelan. 1985. A pulsed cloud of sex pheromone elicits upwind flight in male moths. **Physiol. Entomol**. 10:257-265.

48. Phelan, P.L., P.J. Silk, C.J. Northcostt, S.H. Tan and T.C. Baker. 1986. Chemical identification and behavioral characterization of male wing pheromone of *Ephestia elutella* (Pyralidae). **J. Chem. Ecol**. 12:135-146.

49. Li, W., K.F. Haynes and T.C. Baker. 1986. Sensory and behavioral effects of gossyplure alcohol on sex pheromone response of male pink bollworm moths, *Pectinophora gossypiella*. **J. Chem. Ecol**. 12:25-38.

50. Phelan, P.L. and T.C. Baker. 1986. Cross-attraction of five species of stored-product Phycitinae (Lepidoptera:Pyralidae) in a wind tunnel. **Environ. Entomol**. 15:369-372.

51. Phelan, P.L. and T.C. Baker. 1986. Male-size-related courtship success and intersexual selection in the tobacco moth, *Ephestia elutella*. **Experientia** 42:1291-1293.

52. Haynes, K.F., T.A. Miller, R.T. Staten, W.-G. Li and T.C. Baker. 1986. Monitoring insecticide resistance with insect pheromones. **Experientia** 42:1293-1295.

53. Haynes, K.F., W.-G. Li and T.C. Baker. 1986. Control of pink bollworm moth (Lepidoptera:Gelechiidae) with insecticides and pheromones (attracticide): Lethal and sublethal effects. **J. Econ. Entomol**. 79:1466-1471.

54. Phelan, P.L. and T.C. Baker. 1987. Evolution of male pheromones in moths: Reproductive isolation through sexual selection? **Science** 235:205-207.

55. Haynes, K.F., T.A. Miller, R.T. Staten, W.-G. Li and T.C. Baker. 1987. Pheromone trap for monitoring insecticide resistance in the pink bollworm moth (Lepidoptera:Gelechiidae): New tool for resistance management. **Environ. Entomol.** 16:84-89.

56. Baker, T.C. and K.F. Haynes. 1987. Manoeuvres used by flying male oriental fruit moths to relocate a sex pheromone plume in an experiementally shifted wind-field. **Physiol. Entomol**. 12:263-279.

57. Willis, M.A. and T.C. Baker. 1987. Comparison of manoeuvres used by walking versus flying *Grapholitha molesta* males during pheromone-mediated upwind movement. **J. Insect Physiol**. 33:875-883.

58. Phelan, P.L. and T.C. Baker. 1987. An attracticide for control of *Amyelois transitella* (Lepidoptera:Pyralidae) in almonds. **J. Econ. Entomol**. 80:779-783.

59. Haynes, K.F. and T.C. Baker. 1987. Potential for evolution of resistance to pheromones: World-wide and local variation in chemical communication system of pink bollworm moth, *Pectinophora gossypiella*. **J. Chem. Ecol**. 14:1547-1560.

60. Willis, M.A. and T.C. Baker. 1988. Effects of varying sex pheromone component ratios on the zigzagging flight movements of the oriental fruit moth, *Grapholitha molesta*. **J. Insect Behav**. 1:357-371.

61. Baker, T.C. and R.G. Vogt. 1988. Measured behavioural latency in response to sex-pheromone loss in the large silk moth *Antheraea polyphemus*. **J. Exp. Biol**. 137:29-38.

62. Baker, T.C., B.S. Hansson, C. Löfstedt and J. Löfqvist. 1988. Adaptation of antennal neurons in moths is associated with cessation of pheromone-mediated upwind flight. **Proc. Natl. Acad. Sci**. 85:9826-9830.

63. Baker, T.C. and K.F. Haynes. 1989. Field and laboratory electroantennographic measurements of pheromone plume structure correlated with oriental fruit moth behaviour. **Physiol. Entomol**. 14:1-12.

64. Baker, T.C., W. Francke, C. Löfstedt, B.S. Hansson, J.-W. Du, P.L. Phelan, R.S. Vetter and R. Youngman. 1989. Isolation, identification and synthesis of sex pheromone components of the carob moth, *Ectomyelois ceratoniae*. **Tetrahedron Lett.** 30:2901-2902.

65. Youngman, R.R. and T.C. Baker. 1989. Host odor mediated response of female navel orangeworm moths (Lepidoptera:Pyralidae) to black and white sticky traps. **J. Econ. Entomol**. 82:1339-1343.

66. Löfstedt, C., N.J. Vickers, W.L. Roelofs and T.C. Baker. 1989. Diet related courtship success in the oriental fruit moth, *Grapholitha molesta* (Tortricidae). **Oikos** 55:402-408.

67. Haynes, K.F. and T.C. Baker. 1989. An analysis of anemotactic flight in female moths stimulated by host odour and comparison with the males' response to sex pheromone. **Physiol. Entomol**. 14:279-289.

68. Vetter, R.S., R.M. Esposito II and T.C. Baker. 1989. Mass rearing of the oriental fruit moth (Lepidoptera:Tortricidae). **J. Econ. Entomol**. 82:1825-1829.

69. Vetter, R.S. and T.C. Baker. 1990. Sterile pink bollworm moth (Lepidoptera: Gelechiidae) pheromone emission and courtship success. **Environ. Entomol**. 19:21-25.

70. Baker, T.C., B.S. Hansson, C. Löfstedt and J. Löfqvist. 1989. Adaptation of male moth antennal neurons in a pheromone plume is associated with cessation of pheromone-mediated flight. **Chem. Senses** 14:439-448.

71. Phelan, P.L. and T.C. Baker. 1990. Information transmission during intra- and interspecific courtship in *Ephestia elutella* and *Cadra figulilella*. **J. Insect Behav**. 3:589-602.

72. Phelan, P.L. and T.C. Baker. 1990. Comparative study of courtship in twelve phycitine moths (Lepidoptera:Pyralidae). **J. Insect Behav**. 3:303-326.

73. Wiesenborn, W.D. and T.C. Baker. 1990. Upwind flight to cotton flowers by *Pectinophora gossypiella* (Lepidoptera:Gelechiidae). **Environ. Entomol.** 19:490-493.

74. Löfstedt, C., N.J. Vickers and T.C. Baker. 1990. Courtship, pheromone titre and determination of the male mating success in the Oriental fruit moth, *Grapholitha molesta* (Lepidoptera:Tortricidae). **Entomol. Gener.** 15(2):121-125.

75. Phelan, P.L., C.J. Roelofs, R. Youngman and T.C. Baker. 1991. Characterization of chemicals mediating ovipositional host-plant finding by *Amyelois transitella* females. **J. Chem. Ecol.** 17:599-613.

76. Malik, M.S., R.S. Vetter, T.C. Baker and T.R. Fukuto. 1991. Dialkyl phosphorofluoridates and alkyl methylphosphonofluoridates as disruptants of moth sex pheromone-mediated behavior. **Pestic. Sci**. 32:35-46.

77. Baker, T.C., W. Francke, J.G. Millar, C. Lofstedt, B. Hansson, J.W. Du, P.L. Phelan, R.S. Vetter, R. Youngman and J.L. Todd. 1991. Identification and bioassay of sex pheromone components of carob moth, *Ectomyelois ceratoniae* (Zeller). **J. Chem. Ecol**. 17:1973-1988.

78. Vickers, N.J. and T.C. Baker. 1991. The effects of unilateral antennectomy on the flight behaviour of male *Heliothis virescens* in a pheromone plume. **Physiol. Entomol.** 16:497-506.

79. Hansson, B.S. and T.C. Baker. 1991. Differential adaptation rates in a male moth's sex pheromone receptor neurons. **Naturwissenschaften** 78:517-520.

80. Vickers, N.J., T.A. Christensen, H. Mustaparta and T.C. Baker. 1991. Chemical communication in heliothine moths III. Flight behavior of male *Helicoverpa zea* and *Heliothis virescens* in response to varying ratios of intra- and interspecific sex pheromone components. **J. Comp. Physiol. A**. 169:275-280.

81. Vickers, N.J. and T.C. Baker. 1992. Male *Heliothis virescens* sustain upwind flight in response to experimentally pulsed filaments of their sex-pheromone. J. **Insect Behav**. 5:669-687.

82. Todd, J.L., K.F. Haynes and T.C. Baker. 1992. Antennal neurons specific for redundant pheromone components discovered in normal and mutant *Trichoplusia ni* males. **Physiol. Entomol**. 17:183-192.

83. Figueredo, A.J. and T.C. Baker. 1992. Reduction of response to sex pheromone in the oriental fruit moth following successive pheromonal exposures**. J. Insect Behav**. 5:347-363.

84. Bartelt, R.J., P.F. Dowd, R.S. Vetter, H.H. Shorey and T.C. Baker. 1992. Responses to synthetic pheromone and host-related coattractants by *Carpophilus hemipterus* (Coleoptera:Nitidulidae) in California field tests. **Environ. Entomol**. 21:1-11.

85. Todd, J.L., J.G. Millar, R.S. Vetter and T.C. Baker. 1992. Behavioral and electrophysiological activity of (Z,E) -7,9,11-dodecatrienyl formate, a mimic of the major sex pheromone component of carob moth, *Ectomyelois ceratoniae*. **J. Chem. Ecol.** 18:2331-2351.

86. Bartelt, R.J., D.G. Carlson, R.S. Vetter, and T.C. Baker. 1993. Male-produced aggregation pheromone of *Carpophilus mutilatus* (Coleoptera:Nitidulidae**). J. Chem. Ecol**. 19:107-118.

87. Cossé, A.A., J.J. Endris, J.G. Millar, and T.C. Baker. 1994. Identification of volatile compounds from fungus-infected date fruit that stimulate upwind flight in female *Ectomyelois ceratoniae*. **Entomol. exp. et Appl**. 72:233-238.

88. Endris, J.J., and T.C. Baker. 1993. Action potentials recorded from the foreleg of *Varroa jacobsoni* after olfactory stimulation. **Apidologie**. 24:488-489.

89. Todd, J.L., and T.C. Baker. 1993. Response of single antennal neurons of female cabbage loopers to behaviorally active attractants. **Naturwiss**. 80:183-186.

90. Vickers, N.J., and T.C. Baker. 1994. Visual Feedback in the control of pheromone-mediated flight of *Heliothis virescens* males (Lepidoptera:Noctuidae). **J. Insect Behav**. 7:605-632.

91. Vickers, N.J. and T.C. Baker. 1994. Reiterative responses to single strands of odor promote sustained upwind flight and odor source location by moths. **Proc. Nat. Acad Sci.** (USA) 91:5756-5760.

92. Willis, M.A. and T.C. Baker. 1994. Behaviour of flying oriental fruit moth males during approach to sex pheromone sources. **Physiol. Entomol.** 19:61-69.

93. Bartelt, R.J., R.S. Vetter, D.G. Carlson and T.C. Baker. 1994. Influence of pheromone dose, trap height, and septum age on effectiveness of pheromones for *Carpophilus mutilatus* and *C. hemipterus* (Coleoptera:Nitidulida) in a California date garden. **J. Econ. Entomol**. 87:667-675.

94. Bartelt, R.J., R.S. Vetter, D.G. Carlson and T.C. Baker. 1994. Responses to aggregation pheromones for five *Carpophilus* species (Coleoptera:Nitidulidae) in a California date garden. **Environ. Entomol**. 23:1534-1543.

95. Cossé, A.A., M.G. Campbell, T.J. Glover, C.E. Linn, Jr., J.L. Todd, T.C. Baker and W.L. Roelofs. 1995. Pheromone behavioral responses in unusual male European corn borer hybrid progeny not correlated to electrophysiological phenotypes of their pheromone-specific antennal neurons. **Experientia** 51:809-816.

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Invited Chapters and Review Articles:

1. Roelofs, W.L., J.R. Miller and T.C. Baker. 1976. Pheromones of lepidopterous insects. In "Perspectives in Forest Entomology." Academic Press, pp. 111-125.

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10. Baker, T.C. 1989. Sex pheromone communication in the Lepidoptera: New research progress. Experientia 45:248-262.

11. Baker, T.C. 1989. Sensory adaptation: A simple sensory event with profound effects on the behaviour of male moths. In "Application of Pheromones to Pest Control," T.E. Bellas, (ed.) Proc. Joint CSIRO-DSIR Workshop, July 11-14, 1988, Canberra, Australia, pp. 3-14.

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14. Baker, T.C. 1990. Upwind flight and casting flight: Complimentary phasic and tonic systems used for location of sex pheromone sources by male moths. In "ISOT X, Proc. 10th Intl. Symp. Olfac. Taste.," K. Døving (ed.). GCS/AS Oslo, pp. 18-25.

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16. Baker, T.C. 1993. Learning the language of insects - and how to talk back. Amer. Entomol. 39:212-220.

17. Baker, T.C. and N.J. Vickers. 1994. Behavioral reaction times of male moths to pheromone filaments and visual stimuli: determinants of flight track shape and direction. In "Olfaction and Taste XI", K. Kurihara, N. Suzuki, H. Ogawa (eds.). Springer-Verlag, Tokyo. pp. 838-841.

18. Baker, T. C., and N. J. Vickers. 1997. Pheromone-mediated flight in moths. In "Pheromone Research: New Directions" R. T. Cardé and A. K. Minks (eds.) Chapman and Hall, New York. pp. 248-264.

19. Todd, J. L., and T. C. Baker. 1997. The cutting edge of insect olfaction. Amer. Entomol. 43. 174-182.

20. Baker, T. C., A. Mafra-Neto, T. Dittl, and M. E. Rice. 1997. A novel controlled-release device for disrupting sex pheromone communication in moths. In "Technology Transfer in Mating Disruption" P. Witzgall and A. K. Minks (eds.), IOBC wprs Bull. 20: 141-149.

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24. Hetling J.R., Myrick A.J., Park K.-C. & Baker T.C. (2003). Odor discrimination using a hybrid-device olfactory biosensor. *Proceedings of the 1st International IEEE Neural Engineering Meeting*, Capri.

25. Baker, T.C., and Heath, J.J. (2004) Pheromones – function and use in insect control. In: *Molecular Insect Science*. LI Gilbert, K Iatro, SS Gill (eds) Elsevier. Volume 6, pp. 407-460.

26. Myrick, A.J., Baker, T.C., Park, K.-C., and Hetling, J.R. (2005) Bioelectronic artificial nose using four-channel moth antenna biopotential recordings. Proc. 2nd Internat. IEEE EMBS Conf. Neur. Eng. 2005 pp. 313-316.

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28. Baker, T. C. (2008) Use of pheromones in IPM. *In* T. Radcliffe and B. Hutchinson (eds), Integrated Pest Management. Cambridge University Press. pp. 273-285.

Invited Presentations (Last 10 Years)
Presented by T.C. Baker

2009.

1. Jena, Germany. January 24, 2009. Bill Hansson 50th Birthday Fest/Symposium at the Max Planck Institute for Chemical Ecology. "The cabbage looper olfactory receptor neuron story, with Bill Hansson through the ages".
2. Riverside, California. March 2, 2009. Department of Entomology Seminar series, University of California, Riverside: "But do we shoot the driver? Meeting new challenges in detecting agents of harm by using old entomological knowledge".
3. Davis, California. March 4, 2009. Department of Entomology Seminar series, University of California, Davis: "But do we shoot the driver? Meeting new challenges in detecting agents of harm by using old entomological knowledge".
4. Alnarp, Sweden. Presented two invited lectures for the Insect Chemical Ecology '09 short course (ICE09) at the Swedish Agricultural University at Alnarp:
   1) June 6, 2009: "Insect Pheromone-Mediated Behavior" and
   2) June 8, 2009. "The Olfactory Sensillum and Physiology".
5. Neuchatel, Switzerland. 25th Annual meeting of the International Society of Chemical Ecology. August 25, 2009: "Focusing of pheromone molecules by trichoid sensillar cuticular lipid coatings".
6. Villasimius, Sardinia, Italy. September 23, 2009. European Symposium on Insect Taste and Olfaction: "Focusing of pheromone molecules by trichoid sensillar cuticular lipid coatings".
7. Tanka Village, Sardinia, Italy. September 27, 2009. European Congress for Research on Olfaction: "Focusing of pheromone molecules by trichoid sensillar cuticular lipid coatings".
8. Auburn, Alabama. October 12, 2009. Department of Entomology seminar series, Auburn University: "Detection: new opportunities for applying entomology's historic strengths in biomimetics".
9. Honolulu, Hawaii. October 29, 2009. Asia-Pacific Association of Chemical Ecologists: "Detection and location of distant odor sources using a bioelectronic sensor array based on the insect electroantennogram".

10. Kailua Kona, Hawaii. November 2, 2009. International Chemoreception Workshop on Insects: Focusing of pheromone molecules by trichoid sensillar cuticular coatings".

2008.

1. Syracuse, NY. March 11, 2008. Eastern Branch Meeting of the Entomological Society of America. (Invited Speaker). Symposium on Insect Imaging. "Atomic- and Chemical-Force Microscopy for Imaging Insect Nano-structures Related to Sensory Physiology".
2. Indianapolis, IN. April 1, 2008. Symposium by Insects Limited Inc. on Advanced Pheromone Uses and Monitoring. (Invited Speaker). "Practical Uses of Mating Disruption".
3. Alnarp, Sweden. June 25, 2008. Seminar Speaker (Invited Speaker) in the Department of Chemical Ecology, Swedish Agricultural University at Alnarp. "Examination of insect sensillar cuticular surfaces using atomic force and chemical force microscopy".
4. Penn State University. August 18, 2008. 25th Anniversary Meeting of the International Society of Chemical Ecology. (Invited Speaker). "Evidence for a nano-level "olfactory lens" found on individual male moth sensilla trichodea by using atomic force microscopy."
5. Portoroz, Slovenia. September 7, 2008. European Chemoreception Research Organization (ECRO). "Antennal Receptor Neurons of Mutant- and Normal-Strain *Trichoplusia ni* Male Moths Exhibit Differing Ratios of Response to Major and Minor Sex Pheromone Components"
6. Reno, NV. November 18, 2008. ESA National Meeting, (Invited Speaker). Symposium in honor of Wendell Roelofs. "Learning neuroethology in the Roelofs lab, ca. 1972."

2007.

1. Annapolis, MD, USA. January 10, 2007. USDA/APHIS 18th Interagency Research Form on Invasive Species. Invited Speaker. "Paratrooper copulation: the role of vision in mate-finding in emerald ash borer."
2. Alnarp, Sweden. June 12, 2007. Invited Lecturer in the two-week course in Chemical Ecology offered by the Swedish Agricultural University at Alnarp. Lecture Title: "Pheromones: Attraction, Controlled Flight, and Other Reactions".
3. Tsukuba, Japan, September 11, 2007. Asia-Pacific Association of Chemical Ecologists. Plenary Lecurer (Invited). "Balanced olfactory antagonism as a facilitator of evolutionary shifts in moth sex pheromone blends".
4. San Diego, California, December 10, 2007. Entomological Society of America. "Olfactory lens capabilities of cuticular lipid coatings on the sensilla trichodea of male Helicoverpa zea moths".

2006

1. Raleigh, North Carolina, June 6, 2006. USDA-APHIS/ARS Technology Development Workshop. "Remote Sensing Device for Detection and reporting of Invasive Species."

2. Báckaskog, Sweden. May 16, 2006. CNS-MMX International Symposium. "Are there other odorant-class-related subclusters of gomeruli besides the MGC in the lepidopteran antennal lobe?"
3. Washington, D.C. June 14, 2006. Defense Threat Reduction Agency BioTech Workshop. "Moth Antennae for Discerning Bio-agents."
4. Barcelona, Spain. International Society of Chemical Ecology annual meeting. Symposium Organizer: Semiochemical Practical Approaches for Pest Control. Presented a symposium talk entitled: "Pros and cons of using high release-rate, low-density dispensers for mating disruption."
5. Granada, Spain. September 7, 2006. European Chemoreception Research Organization (ECRO) annual meeting. "Evidence for a Nano-Level "Olfactory Lens" Found on Individual Male Moth *Sensilla Trichodea* Using Atomic Force Microscopy"
6. Penn State University, October 12, 2006. Huck Institutes of the Life Sciences annual Crossover Symposium. "A tissue-based chemosensor for detecting and locating volatile molecules in nature."
7. October 31, 2006. Cincinnatti, Ohio. USDA/ARS/APHIS Emerald Ash Borer-Asian Longhorned Beetle Joint Research Update. "Paratrooper copulation: the role of vision in mate-finding in emerald ash borer."
8. November 9, 2006. Geneva New York, Cornell University. Department of Entomology Seminar Series. "Evidence for a Nano-Level "Olfactory Lens" Found on Individual Male Moth *Sensilla Trichodea* Using Atomic Force Microscopy."
9. November 29, 2006. Erie, Pennsylvania. Joint Penn State Cooperative Extension/Penssylvania Department of Agriculture meeting on the Multicolored Asian Lady Beetle. "Insect pheromones and pheromone-mediated behavior."
10. November 17, 2006. University of Vienna, Vienna, Austria. International Symposium: "New Frontiers in Neurobiology". Presented a talk entitled: "Odor-mediated behaviour."
11. December 12, 2006. Indianapolis, Indiana. ESA Annual Meeting. Symposium on "Applied Insect Chemical Ecology. "Key breakthroughs in chemical ecology of agricultural pests and practical applications for crop management."

2005

1. Alnarp, Sweden. March 11, 2005. Invited Lecturer in the two-week course in Chemical Ecology offered by the Swedish Agricultural University at Alnarp. Lecture Title: "Pheromones".
2. Harrisburg, PA. March 21, 2005. Delivered the Plenary Address (After-Dinner Banquet Address) at the Annual Meeting of the Eastern Branch of the Entomological Society of America. Title: "Science with practice: neuroethology of insect pheromone olfaction".
3. Geneva, New York. April 15, 2005. Presented an invited seminar to the Department of Entomology at Cornell University's N.Y.St. Agr. Exp. Sta. Title: "Heliothine moth olfaction: pheromone receptor neurons of hybrid male *Heliothis subflexa* X *Heliothis virescens*"
4. Raleigh, North Carolina. April 25, 2005. Presented an invited seminar to the Department of Entomology at N.C. State University. Title: "Malleability of moth sex pheromone receptors: insights gained through neuroethological studies of heliothine moths".

5. Washington, D. C. July 25, 2005. Organized and chaired a symposium and gave an invited presentation at the 21st Annual Meeting of the International Society of Chemical Ecology. Title: "Heliothine moth olfaction".
6. Wooster, Ohio October 11, 2005. Invited Speaker at the Department of Entomology, OARDC, Ohio State University, Wooster, Ohio. Presented two talks.

   Title #1: "Insights into moth pheromone receptor expression gained through neuroethological studies of heliothine moths".

   Title #2: "Odor source discrimination and location using an insect antennal-based hybrid biosensor".
7. Penn State University, October 14, 2005. Gave an invited presentation in the annual Crossover Meeting of the Huck Institutes of The Life Sciences and The Materials Research Institute. Title: "Odor source discrimination and location using an insect antennal-based hybrid biosensor"
8. Cheju, Korea, October 18, 2005. Organized and chaired a symposium and gave an invited talk at the 5the Meeting of the Asia-Pacific Association of Chemical Ecologists. Title: "Heliothine moth olfaction".
9. Penn State University, November 14, 2005. Invited seminar presented in the Department of Agricultural and Biological Engineering's weekly seminar series. Title: "Odor discrimination using insect antennae".

2004

1. Athens, Georgia. February 23, 2004. University of Georgia Entomology Department Seminar Series. Gave an invited talk entitled "Science With Practice: Chemical Ecology and Applied Neuroethology".
2. Seewiesen, Germany. March 16, 2004. Max Planck Institute at Seewiesen. Gave an invited talk entitled "Neuroethological and Applied Neuroethological Aspects of Moth Sex Pheromone Olfaction".
3. Jena, Germany, March 20, 2004. Max Planck Institute for Chemical Ecology. Gave an invited talk entitled "Neuroethological and Applied Neuroethological Aspects of Moth Sex Pheromone Olfaction".
4. Turrialba, Costa Rica, March 24, 2004. Workshop at CATIE concerning Semiochemicals and Microbial Antagonists: Their Role in Integrated Pest Management in Latin America. Gave an invited talk entitled: "Mating disruption of several lepidopterous pests using high emission rate and low point source dispensers."
5. Penn State University, Department of Entomology, April 8, 2004. "Malleability of Moth Sex Pheromone Antennal Receptor Neurons."
6. Ottawa, Ontario, Canada, July 23-29 2004. International Society of Chemical Ecology Annual Meeting.
7. Brisbane, Australia, XXII International Congress of Entomology, August 15-21, 2004. "Mating Disruption of Several Lepidopterous Pests Using High-emission-rate, Widely Spaced Dispensers."
8. Entomological Society of America, Salt Lake City, Utah. November 13-18, 2004, AIENA Symposium: "Sex Pheromone Mating Disruption: Commercial Opportunities and Challenges."

2003

1. Kona, Hawaii. January 15, 2003. 30th International Chemoreception Workshop on Insects. "Development of an Insect Antennal-Based Biosensor"
2. Ames, Iowa. February 6, 2003. Iowa State University BMS/Neuroscience Seminar Series. "Moth sex pheromone olfaction: pathways to behavior".
3. Alnarp, Sweden, May 22, 2003. Swedish Agricultural University, Department of Chemical Ecology: "Science with practice: applied uses of sex pheromones and olfactory neuroethology for use in biosensors"
4. Kristianstad, Sweden, May 29, 2003. 3rd International Symposium on Insect Pheromones. Insect antenna-based biosensor discriminates among strands of different odorants within confluent natural plumes.
5. New Brunswick, New Jersey. November 7, 2003. Rutgers University Entomology Department Seminar Series. Gave an invited talk entitled "'Science With Practice: Chemical Ecology and Applied Neuroethology".

2002

1. Geneva, New York, February 22, 2002. Cornell University, N.Y. St. Agr. Exp. Sta., Department of Entomology. "Plant-odor and sex phermone mixture interactions in moth antennal receptor neurons'.
2. State College, Pennsylvania, April 24, 2002 Dept. of Entomology, Penn State University. "Science With Practice: Neuroethology of Sex Pheromone Olfaction in Moths'.
3. Hamburg, Germany, August 7, 2002. The International Society of Chemical Ecology. Presented the Silverstein-Simeone Award Lecture, "Neuroethology of Sex Pheromone Olfaction'.
4. Ames, Iowa. September 9, 2002. Iowa State University Department of Entomology Departmental Seminar Series. "Some Emerging Issues Concerning Mixturesî Noise, and Fine-Grained Odor Plume Resolution Involving Plant-Odor and Sex Pheromone Mixtures"
5. Erice, Sicily, Italy. September 23, 2002. IOBC Pheromone Working Group Conference. "Development of a new mating disruption dispenser'.

2001

1. Catalina Island, California, March 12. International Chemoreception Workshop on Insects. 'Mixture interactions on olfactory receptor neurons of moths'.
2. Breckinridge, Colorado, March 20. Defense Advanced Research Projects Agency Conference. 'Mechanism of Detection of Chemical Signals by Parasitic Wasps'.
3. Lake Tahoe, California. July 10. International Society of Chemical Ecology. 'Mating disruption using widely spaced, high-emission-rate pheromone dispensers'.
4. Penang, Malaysia. August 9. Asia-Pacific Association of Chemical Ecology. 'Insect antennae as biosensors'.
5. Concepcion, Chile. August 23. University of Concepcion Symposium on Insect Pheromones. 1. 'Orientation of moths to sex pheromone'.
6. Concepcion, Chile. August 23. University of Concepcion Symposium on Insect Pheromones. 2. 'Applied uses of pheromones in mating disruption of moth pests'.
7. Villasimius, Sardinia, Italy. September 26. VIth European Symposium on Insect Taste and Olfaction. 'Plant-odor and sex pheromone mixture interactions in moth antennal receptor neurons'.

8. Seattle, Washington, November 27. University of Washington Department of Zoology Seminar Series. 'Neuroethology of sex pheromone olfaction in moths'.
9. San Diego, California. December 9. Annual Meeting of the Entomological Society of America. 'Research and development towards an improved attractant for fruit flies'.

2000

1. Gainesville, Florida, February 9. Gave keynote dinner address at the Annual Meeting for Review of U.S. Department of Agriculture Research of Interest to the U. S. Department of Defense. Title of talk was 'Mechanisms of detection of chemical signals by parasitic wasps: applications for defense and agriculture'.
2. Lund, Sweden, March 22 – 29. Department of Ecology, University of Lund, 'On-site mixture interactions in the processing of pheromone blend information in moths'.
3 Dayton, Ohio, July 10 – 12. USAF Research Symposium, Wright Patterson Air Force Base. 'Mechanisms of Detection of Chemical Signals by Parasitic Wasps'.
4. Pocas de Caldas, Brazil, August 14 – 21. Annual Meeting of the International Society of Chemical Ecology. 'Neuroethology of semiochemically mediated host-finding and acceptance'.
5. Iguassu Falls, Brazil. August 21 – 25. XXI International Congress of Entomology 'Widely spaced, high-emission-rate pheromone sources for mating disruption of lepidopterous pests'.
6. Samos, Greece. September 22 – Oct. 1. 25th Jubilee Meeting of the International Organization for Biological Control's Western Palearctic Regional Section Working Group. 'Use of Pheromones and Other Semiochemcials in Integrated Control'.
7. Chicago, Illinois. October 13. Department of Biological Engineering, University of Chicago, Illinois. "Development of Insect Antennal Arrays as Biosensors for Odor Detection and Discrimination".
8. Versailles, France. November 27. Department of Phytochemistry and Chemical Mediators, INRA. "Sex pheromone olfaction in North American heliothine moths".
9. Lund, Sweden, November 30. Department of Ecology. "Neuroethology of olfaction in heliothine moths".