United States
Department of
Agriculture

Agricultural
Research
Service

ARS-173

July 2012

A Century and a Half of Research on the Stable Fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae), 1862-2011: An Annotated Bibliography

United States
Department of
Agriculture

Agricultural
Research
Service

ARS-173

July 2012

A Century and a Half of Research on the Stable Fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae), 1862-2011: An Annotated Bibliography

K.M. Kneeland, S.R. Skoda, J.A. Hogsette,
A.Y. Li, J. Molina-Ochoa, K.H. Lohmeyer,
and J.E. Foster

Kneeland, Molina-Ochoa, and Foster are with the Department of Entomology, University of Nebraska, Lincoln, NE. Molina-Ochoa also is the Head of Research and Development, Nutrilite SRL de CV, El Petacal, Jalisco, Mexico. Skoda is with the Knipling-Bushland U.S. Livestock Insects Research Laboratory (KBUSLIRL), Screwworm Research Unit, USDA Agricultural Research Service, Kerrville, TX. Hogsette is with the Center for Medical, Agricultural and Veterinary Entomology, USDA Agricultural Research Service, Gainesville, FL. Li and Lohmeyer are with KBUSLIRL, Tick and Biting Fly Research Unit, USDA Agricultural Research Service, Kerrville, TX.

Abstract

Kneeland, K.M., S.R. Skoda, J.A. Hogsette, A.Y. Li, J. Molina-Ochoa, K.H. Lohmeyer, and J.E. Foster. 2012. A Century and a Half of Research on the Stable Fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae), 1862-2011: An Annotated Bibliography. ARS-173. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC.

The stable fly, *Stomoxys calcitrans*, is a cosmopolitan pest of livestock, wild animals, pets and humans. It is a primary pest of cattle in the United States, estimated to cause more than $1 billion in economic losses annually. It also causes dissention at the rural-urban interface and is a problem in recreation areas such as Florida beaches and the Great Lakes. Due to its pestiferous nature and painful bite, methods to control stable flies have been investigated for over a century. A large amount of research has been reported on stable fly biology, ecology, genetics, physiology, and vector competence. For this bibliography, literature has been gathered from journals and other resources available to the authors, and a selected number of articles have been annotated. This bibliography represents an update of literature published since 1980; literature from pre-1980 was included if copy could be ascertained.

Keywords: ectoparasites, biting flies, livestock parasites, livestock pests, parasite transmission, pest management, veterinary entomology.

ARS Mission

The Agricultural Research Service conducts research to develop and transfer solutions to agricultural problems of high national priority and provides information access and dissemination to—

- ensure high-quality, safe food and other agricultural products;
- assess the nutritional needs of Americans;
- sustain a competitive agricultural economy;
- enhance the natural resource base and the environment; and
- provide economic opportunities for rural citizens, communities, and society as a whole.

Copies of this publication may be purchased in various formats (microfiche, photocopy, CD, print on demand) from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161, (800) 553-6847, www.ntis.gov.

This publication is freely accessible at http://www.ars.usda.gov/is/np/indexpubs.html

July 2012

Introduction

The stable fly, *Stomoxys calcitrans,* is a cosmopolitan pest of livestock, wild animals, pets and humans. It is a primary pest of cattle in the United States, estimated to cause more than $1 billion in economic losses annually. It also causes dissention at the rural-urban interface and is a problem in recreation areas such as Florida beaches and the Great Lakes. Due to its pestiferous nature and painful bite, methods to control stable flies have been investigated for over a century. A large amount of research has been reported on stable fly biology, ecology, genetics, physiology, and vector competence. For this bibliography, literature has been gathered from journals and other resources available to the authors, and a selected number of articles have been annotated. This bibliography represents an update of literature published since 1980; literature from pre-1980 was included if copy could be ascertained. For additional listings of stable fly literature, see also the following two bibliographies:

Rasmussen, R.L., and J.B. Campbell. 1978. Bibliography of the Stable Fly *Stomoxys calcitrans* (L). Report No. 8, June 1979. Agricultural Experiment Station, University of Nebraska-Lincoln, 47 pp.

Morgan, C.E., G.D. Thomas, and R.D. Hall. 1983. Annotated Bibliography of the Stable Fly, *Stomoxys calcitrans* (L.), Including References on Other Species Belonging to the Genus *Stomoxys.* North Central Regional Research Publication No. 291. University of Missouri Agricultural Experiment Station Research Bulletin 1049, Columbia, MO.

References

A

Abasa, R. O. 1983. Effects of temperature, relative humidity, lipid and water content on post-oviposition development of eggs of *Stomoxys calcitrans*. Entomol. Exp. & Appl. 33: 259-262.

Abbink, J. 1991. The biochemistry of imidacloprid. Pflanzenschutz-Nachrichten Bayer 42: 183-195.

Adams, J. R., and A. J. Forgash. 1966. The location of the contact chemoreceptors of the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae). Ann. Entomol. Soc. Am. 59: 135-141.

Adams, J. R., P. E. Holbert, and A. J. Forgash. 1965. Electron microscopy of the contact chemoreceptors of the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae). Ann. Entomol. Soc. Am. 58: 909-917.

Aders, W. M. 1917. Insects injurious to man and stock in Zanzibar. Bull. Entomol. Res. 7: 391-401.

Adkins, T. R., W. G. Ezell, Jr., D. C. Sheppard, and M. M. Askey, Jr. 1972. A modified canopy trap for collecting Tabanidae (Diptera). J. Med. Entomol. 9: 183-185.

Agee, H. R., and R. S. Patterson. 1983. Spectral sensitivity of stable, face, and horn flies and behavioral responses of stable flies to visual traps (Diptera: Muscidae). Environ. Entomol. 12: 1823-1828.

Aguiar-Valgode, M., and E. M. V. Milwared-de-Azevedo. 1992. Determination of thermal requirements of *Stomoxys calcitrans* (L.) (Diptera, Muscidae), under laboratory conditions. Mem. Institute Oswaldo Cruz 87: Supp. 1: 11-20. (In Portugese).

The development of eggs, larvae and pupae of *Stomoxys calcitrans* was studied at 20. 25, 30 amd 35°C. Duration of each stage decreased with increased temperature. The best temperature for development was 25°C, and 35°C proved harmful to larval development.

Ajidagba, P., C. W. Pitts, and D. E. Bay. 1983. Early embryogenesis in the stable fly (Diptera: Muscidae). Ann. Entomol. Soc. Am. 76: 616-623.

Ajidagba, P. A., D. E. Bay, and C. W. Pitts. 1985. Morphogenesis of the external features of the first-stage larva of the stable fly (Diptera: Muscidae). J. Kans. Entomol. Soc. 58: 569-577.

Allan, S. A., J. F. Day, and J. D. Edman. 1987. Visual ecology of biting flies. Ann. Rev. Entomol. 32: 297-316.

Alzogaray, R. A., and D. A. Carlson. 2000. Evaluation of *Stomoxys calcitrans* (Diptera: Muscidae) behavioral response to human and related odors in a triple cage olfactometer with insect traps. J. Med. Entomol. 37: 308-315.

Behavioral responses of stable flies to chemostimulants were categorized into 4 steps: activation, orientation, attraction and probing. The main stimuli included human breath, a human hand, and CO_2. The highest response occurred when there was no air flow to disperse the odor. CO_2 induced activation but not probing.

Ameri, M., X. Wang, M. J. Wilkerson, M. R. Kanost, and A. B. Broce. 2008. An immunoglobulin binding protein (Antigen 5) of the stable fly (Diptera: Muscidae) salivary gland stimulates bovine immune responses. J. Med. Entomol. 45: 94-101.

A stable fly salivary gland protein, a homolog of insect antigen 5, was tested to determine whether the protein suppressed bovine lymphocyte production, to determine specificity of the protein, and to test whether calves immunized with Ag5 would produce antibodies and memory lymphocytes. A recombinant form of the protein was used in the study, as well as the natural form.

Amor, T. B., and G. Jori. 2000. Sunlight-activated insecticides: historical background and mechanisms of phototoxic activity. Insect Biochem. Mol. Biol. 30: 915-925.

Anderson, J. F., and W. H. Frost. 1912. Transmission of poliomyelitis by means of the stable fly (*Stomoxys calcitrans*). Public Health Rep. 27: 3-5.

Transmission of poliomyelitis by stable flies was tested using monkeys. Two monkeys were inoculated with the virus, and then exposed to several hundred stable flies. The flies were then allowed to bite healthy monkeys. The healthy monkeys that were bitten by the flies which had fed on the inoculated monkeys soon also acquired the disease. It was concluded that poliomyelitis could be transmitted by the bite of stable flies.

Anderson, J. F., and W. H. Frost. 1913. Poliomyelitis. Further attempts to transmit the disease through the agency of the stable fly *Stomoxys calcitrans*. Public Health Rep. 28: 833-837.

Anderson, J. R. 1964. Methods for distinguishing nulliparous from parous flies and for estimating the age of *Fannia canicularis* and some other Cyclorraphous diptera. Ann. Entomol. Soc. Am. 57: 226-236.

Anderson, J. R. 1966. Recent developments in the control of some arthropods of public health and veterinary importance: Muscoid flies. Bull. Entomol. Soc. Am. 12: 342-348.

Anderson, J. R. 1974. Symposium on reproduction of arthropods of medical and veterinary importance. II. Meeting of the sexes. J. Med. Entomol. 11: 7-19.

Anderson, J. R. 1978. Mating behavior of *Stomoxys calcitrans*: effects of a blood meal on the mating drive of males and its necessity as a prerequisite for proper insemination of females. J. Econ. Entomol. 71: 379-386.

This research describes the mating behavior of *Stomoxys calcitrans,* comparing blood-fed (BF) and non-blood-fed (NBF) males with receptive and non-receptive females. It tests the virility and mating aggressiveness of BF vs. NBF males, as well as the ability of each test group to inseminate the receptive females. It was reported that only 6.31% of the NBF males were able to inseminate the receptive females, and it was a partial insemination. BF males were able to fully inseminate all the females within 12-24 hours. Reportedly, a blood meal causes the cells to enlarge around the ejaculatory duct, resulting in the accessory glands producing enough seminal fluid to transfer the sperm. However, after inseminating 2 or 3 females, the males lose their mating drive. Dissection of the accessory glands showed that the seminal fluid was depleted. It was concluded that male *Stomoxys calcitrans* need a blood meal before they can properly inseminate a female.

Anderson, J. R., and J. H. Poorbaugh. 1964. Observations on the ethology and ecology of various Diptera associated with northern California poultry ranches. J. Med. Entomol. 1: 131-147.

Anderson, J. R., and C. H. Tempelis. 1970. Precipitin test identification of blood meals of *Stomoxys calcitrans* (L.) caught on California poultry ranches, and observations of digestion rates of bovine and citrated human blood. J. Med. Entomol. 7: 223-229.

Andress, E. R., and J. B. Campbell. 1994. Inundative releases of pteromalid parasitoids (Hymenoptera: Pteromalidae) for the control of stable flies, *Stomoxys calcitrans* (L.) (Diptera: Muscidae) at confined cattle installations in West Central Nebraska. J. Econ. Entomol. 87: 714-722.

Anon. 1911. The domestic flies. Brit. Med. J. 2: 449-450.

Anon. 1915. Flies in France and Gallipoli. Brit. Med. J. 2: 184-185.

Anon. 1917. Mosquitoes and flies in the epidemiology of acute poliomyelitis. Brit. Med. J. 2: 429-430.

The experiments of Rosenau and Brues, which exposed flies to monkeys infected with poliomyelitis and subsequently allowed them to bite healthly monkeys, was cited, as well as experiments conducted by Frost. It was concluded that the transmission of poliomyelitis by flies was mechanical only, that flies were not biological vectors.

Anon. 2002. Guide to pest surveillance during contingency operations. Armed Forces Pest Management Board Technical Guide No. 43. Defense Pest Management Information Analysis Center, Washington, DC.

Anon. 2009. Personal protective measures against insects and other arthropods of military significance. Armed Forces Pest Management Board Technical Guide No. 36.

Anthony, C. 2005. Control of stable flies and house flies. Cooperative Extension Service Publ. 2045, College of Agriculture & Biological Sciences, South Dakota State Univ., USDA.

Reviews the economic importance of controlling stable flies and house flies on cattle. Describes the feeding habits, life cycle and breeding habits of the flies in South Dakota, as well as control methods. Suggests IPM as the most effective method of control.

Antonelli, A. L., and C. Ramsay. 2004. Livestock pest study guide. WSU Extension Misc. Pub. 0052.

Anziani, O. S., A. A. Guglielmore, and M. M. Volpogni. 1995. Distribución estacinal de *Stomoxys calcitrans* en un rodeo lechero da la provincial de Santa Fé. Argent. Rev. Med. Vet. 75: 330-332. (In Spanish).

Apperson, C. S., and R. C. Axtell. 1981. Arthropods associated with shoreline deposits of Eurasian Watermilfoil in the Currituck Sound, North Carolina. J. Georgia Entomol. Soc. 16: 53-59.

Appleby, J. E., and F. W. Fisk. 1959. Stable fly rearing. Proceedings in North Central Branch. Entomol. Soc. Am. 14: 41-42.

Ascoli-Christensen, A., J. F. Sutcliffe, and P. J. Albert. 1990. Effect of adenine nucleotides on labellar chemoreceptive cells of the stable fly, *Stomoxys calcitrans*. J. Insect Physiol. 36: 339-344.

Ascoli-Christensen, A., J. F. Sutcliffe, and C. J. Straton. 1990. Feeding response of the stable fly, *Stomoxys calcitrans* (L.), to blood fractions and adenine nucleotides. Physiol. Entomol. 15: 249-259.

Laboratory experiments were conducted to study the feeding response of stable flies to whole blood, plasma, erythrocyte fractions, platelets and saline. The flies fed on whole blood, plasma and erythrocyte fractions but not the platelets or saline, indicating that the phagostimulants could be ATP, ADP, AMP and cAMP.

Ascoli-Christensen, A., J. F. Sutcliffe, and P. J. Albert. 1991. Purinoceptors in blood feeding behavior in the stable fly, *Stomoxys calcitrans.* Physiol. Entomol. 16: 145-152.

Ascunce, M. S., C. C. Yang, C. Geden, and D. Shoemaker. 2009. Twenty-three new microsatellite loci in the stable fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Mol. Ecol. Resour. 9: 271-273.

Twenty-three microsatellite markers were isolated from *Stomoxys calcitrans*, 17 of which were polymorphic. Number of alleles per locus ranged from 2-9. Three microsatellite loci isolated by Gilles et al. (2004) were used for comparisons, and were successfully isolated.

Ashrafi, S. H. 1960. The study of phosphomonoesterases in the stable fly, *Stomoxys calcitrans* (L.). PhD dissertation, Graduate School, The Ohio State University, Columbus, Ohio.

Ashrafi, S. H. 1964. The cultivation and nutritional requirements of *Stomoxys calcitrans*. Bull. World Health Org. 31: 519-520.

A new method of rearing stable flies (modified from Champlain & Fisk 1954) is described. Adults are housed in larger cages, 36 X 36 X 36 inches, and fed blood with 5% sodium citrate to prevent coagulation. Larval medium is a modified CSMA. Eggs were buried 1" deep, kept at 28°C and 50% RH, which prevented fungal growth. A layer of sand was placed on the larval medium to prevent fungal growth, water was sprinkled on it on day 2, and a crust formed on day 6. The crust was crumbled into a fine consistency and watered. It was watered again on the 9th day which caused the mature larvae to begin pupariation.

Ashrafi, S. H., and F. W. Fisk. 1961. Acid phosphatase in the stable fly, *Stomoxys calcitrans*. Ann. Entomol. Soc. Am. 54: 598-602.

Ashrafi, S. H., and F. W. Fisk. 1961. Histochemical localization of phosphatases in the stable fly, *Stomoxys calcitrans* (L.), using Naphthol AS-Phosphate. Ohio J. Sci. 61: 7.

Atkinson, E. T. 1916. The fly pest in Gallipoli. J. Naval Med. 2: 147-152.

Avancini, R. M. P., and G. A. R. Silveira. 2002. Age structure and abundance on populations of Muscoid flies from a poultry facility in Southern Brazil. Mem. Inst. Oswaldo Cruz, Rio De Janeiro 95: 259-264.

Flies were collected in sweep nets at different places in and around a poultry facility in Brazil. The two most numerous species (*M. domestica and M. stabulans*) were analyzed for gonadotrophic profile. Stable flies were the least numerous species captured, and only newly emerged females and females ready to oviposit were collected. This led to the conclusion that stable flies use the poultry facility specifically to lay their eggs.

Axtell, R. C. 1967. Macrochelidae (Acarina: Mesostigmata) as biological control agents for synanthropic flies. Proc. 2nd Int. Cong. Acarol. 1967: 401-416.

A review of the biology and life history of Macrochelidae, with emphasis on the efficacy of *Macrocheles muscaedomesticae* as a biological control agent for the house fly, *Musca domestica.* The mite is known to parasitize other dung-breeding diptera including *Stomoxys calcitrans*. However, *S. calcitrans* is not as attractive to the mite as *M. domestica* and seems to lack the nutrients needed by the mite. It has been reported that *M. muscaedomesticae* could destroy 3-4 stable fly eggs per day if offered these eggs in laboratory tests.

Axtell, R. C. 1970. Integrated fly-control program for caged-poultry houses. J. Econ. Entomol. 63: 400-405.

Axtell, R. C. 1985. Arthropod pests of poultry, pp. 269-295. *In* R. E. Williams, R. D. Hall, A. B. Broce and P. J. Scholl, (eds). Livestock Entomology. John Wiley and Sons, New York.

Azevedo, J. F., and H. Moreira. 1946. Um caso de miase interna devida a *Stomoxys calcitrans*. Lisbon Instituto de Medicina Tropical. 3: 467-473. (In Portuguese).

B

Bai, M. G., and T. Sankaran. 1977. Parasites, predators and other arthropods associated with *Musca domestica* and other flies breeding in bovine manure. Entomophaga 22: 163-168.

Bailey, D. L., and D. W. Meifert. 1973. Feeding incidence of stable flies on beef cattle, as influenced by temperature, relative humidity, and light. Environ. Entomol. 2: 1125-1126.

Bailey, D. L., T. L. Whitfield, and B. J. Smittle. 1973. Flight and dispersal of the stable fly. J. Econ. Entomol. 66: 410-411.

Flight mill studies and release-recapture experiments were conducted to evaluate the dispersal capabilities of stable flies. Flies were found to fly up to 29 km in the flight mill. Very few flies in the release-recapture experiment were recovered because the flies were not attracted to the traps. Flies were found up to 2 miles from the release site. These experiments were conducted to evaluate the possibility of using the sterile insect technique for the control of stable flies.

Bailey, D. L., T. L. Whitfield, and G. C. LaBrecque. 1975. Laboratory biology and techniques for mass producing the stable fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae). J. Med. Entomol. 12: 189-193.

Techniques for rearing stable flies for the sterile male release program are described. The program is designed for rearing 1 million flies per week. Laboratory life cycles at different temperatures are studied to determine the number of eggs per fly and length of life stages. A modified larval rearing medium is described which consists of wheat bran, bagasse (sugar cane waste) and water.

Bailie, H. D., and J. C. Woods. 1980. Pyrethroids, their use in the control of animal ectoparasites. Elsevier Scientific Pub. Com. pp. 256-280.

Bailie, H. D., and D. W. T. Morgan. 1980. Field trials to assess the efficacy of permethrin for the control of flies on cattle. Vet. Rec. 106: 124-127.

Baird, W. H. W. 1930. Veterinary entomology research. Ann. Rep. Dept. Vet. Sci. Anim. Husb. Tanganyika Terr. pp. 43-48.

Baker, A. W. 1917. Preliminary notes on the use of repellents for horn flies and stable flies on cattle. Toronto, 47th Annual Report of the Entomological Society of Ontario for 1916, pp 52-56.

Baker, A. W., and O. A. College. 1918. The effect of stable fly and horn fly attacks on milk production. 48th Annual Report of the Entomological Society of Ontario for 1917, 1917-1918, pp 91-93.

Baker, K. P., and P. J. Quinn. 1978. A report on clinical aspects and histopathology of Sweet Itch. Equine Vet. J. 10: 243-248.

Baldrey, F. S. H. 1911. The evolution of *Trypansoma evansi* through the fly: *Tabanus* and *Stomoxys*. J. Trop. Vet. Sci. 6: 271-282.

Experiments were conducted with Tabanids and *Stomoxys calcitrans* to determine if these flies were cyclical vectors of *Trypanosoma evansi*, the causative agent of Surra disease. The experiments were unable to verify cyclical development of the parasites in the intestines of the flies.

Ball, S. G. 1984. Seasonal abundance during the summer months of some cattle-visiting Muscidae (Diptera) in northeast England. Ecol. Entomol. 9: 1-10.

Ball, S. G., G. R. Port, and M. L. Luff. 1985. Aspects of the reproduction biology of some cattle-visiting Muscidae (Diptera) in north-east England. Vet. Parasitol. 18: 193-196.

Flies were captured in Manitoba traps and by sweep netting around cattle and frozen until dissection. Parameters measured were wing length and damage, stage of ovarian development, number of eggs in one ovary, and amount of blood feeding. The survey concentrated on the 2 most numerous muscids, *Hydrotaea irritans* and *Morellia simplex*, however data is included for two Stomoxyine species, *S. calcitrans* and *Haematobosca stimulans*.

Ballard, R. C. 1957. An analysis of *Stomoxys calcitrans* (L.) for vitamin A. J. Econ. Entomol. 50: 836-837.

Two populations of laboratory reared stable flies (2500 and 3500 flies) were analyzed for the presence of Vitamin A in their bodies, to investigate whether the vitamin was necessary for vision in this species. One population was fed dextrose, the other was fed blood. No Vitamin A was found in either population, but the researchers suggested that it may be found if only the heads were analyzed.

Ballard, R. C. 1958. Response of *Stomoxys calcitrans* (L.) to radiant energy and their relation to absorption characteristics of the eye. Ann. Entomol. Soc. Am. 51: 449-464.

Barker, R. W., B. Stacey, and R. Wright. Beef cattle ectoparasites. Oklahoma Cooperative Extension Service VTMD-7000. Oklahoma State University, Division of Agricultural Sciences and Natural Resources.

Barnes, J. R., and J. Fellig. 1969. Synergism of carbamate insecticides by phenyl 2-propynyl ethers. J. Econ. Entomol. 62: 87-89.

Barr, R. B. 1974. Symposium on reproduction of arthropods of medical and veterinary importance. V. Reproduction in Diptera of medical importance with special reference to mosquitoes. J. Med. Entomol. 11: 35-40.

Barros, A. T. M., W. W. Koller, J. B. Catto, and C. O. Soares. 2010. *Stomoxys calcitrans* outbreaks in pastured beef cattle in the state of Mato Grosso do Sul, Brazil: Surtos por Stomoxys calcitrans em gado de corte no Mato Grosso do Sul 30: 945-952.

Bartlett, C. 1985. An olfactometer for measuring the repellent effect of chemicals on the stable fly, *Stomoxys calcitrans* (L.). Pesticide Science. 16: 479-487.

Bartlett, A. C., and R. T. Staten. 1996. The sterile insect release method and other genetic control strategies. Radcliffe's IPM World Textbook. University of Minnesota. http://ipmworld.umn.edu.

Baudet, J. L. 1977. Les pieces buccles de *Stomoxys calcitrans* (L.) et. de *Lyperosia irritans* L. (Dipteres piqeurs) mophologie et fonctionnement. Bull. Soc. Sci. Nat. Ouest France. Tome 75: 21-29. (In French).

Beach, C. L., and A. B. Clark. 1904. Protecting cows from flies. Stoirs Agric. Exp. Stn. 32: 5-14.

Beersma, D. G. M., D. G. Stavanga, and J. W. Kuiper. 1977. Retinal lattice, visual field and binocularities in flies. J. Comp. Physiol. 119: 207-220.

Beerwinkle, K. R., I. L. Berry, and S. E. Kunz. 1978. Prediction models for mortality of immature stable flies caused by cold temperatures. Environ. Entomol. 7: 273-277.

Benigno, R. N. M., M. L. M. Garcia, and R. P. DeMello. 1989. Classificacao de femeas de *Stomoxys calictrans* (L.) (Diptera: Muscidae), de acordo com a idade fisiologica. Mem. Inst. Oswaldo Cruz. Rio De Janeiro 84: 69-73. (In Spanish).

Berberian, D.A. 1938. Successful transmission of cutaneous Leishmaniasis by the bites of *Stomoxys calcitrans*. Proc. Soc. Exp. Biol. Med. 38: 254-256.

Beresford, D. V., and J. F. Sutcliffe. 2006. Studies on the effectiveness of Coroplast sticky traps for sampling stable flies (Diptera: Muscidae), including a comparison to Alsynite. J. Econ. Entomol. 99: 1025-1035.

Beresford, D. V., and J. F. Sutcliffe. 2008. Stable fly (*Stomoxys calcitrans*: Diptera, Muscidae) trap response to changes in effective trap height caused by growing vegetation. J. Vector Ecol. 33: 40-45.

Tests were conducted to determine if stable flies responded to the height of sticky traps when flying, whether traps should be set a certain distance from the ground or from the top of the vegetation. Stable flies did not change their flight due to height of the traps. It was found that trap height should be constant with vegetation (20 cm above grass) and not ground level.

Beresford, D. V., and J. F. Sutcliffe. 2008. Male stable fly (*Stomoxys calcitrans*) response to CO_2 changes with age: evidence from wind tunnel experiments and field collections. J. Vector Ecol. 33: 247-254.

The attractiveness of CO_2 to male stable flies was tested in the laboratory using a wind tunnel and compared with field catches on Nzi traps. Results showed that the majority of male flies flying upwind toward the CO_2 were 2-3 days old, and most of the older males flew downwind, away from the CO_2. This suggests that stable flies are attracted to CO_2 only for the purpose of host location, since they need a blood meal to become sexually mature.

Beresford, D. V., and J. F. Sutcliffe. 2009. Sampling designs of insect time series data: are they all irregularly spaced? Oikos 118: 115-121.

Beresford, D. V., and J. F. Sutcliffe. 2009. Local infestation or long-distance migration? The seasonal recolonization of dairy farms by *Stomoxys calcitrans* (Diptera: Muscidae) in south central Ontario, Canada. J. Econ. Entomol. 102: 788-798.

Twenty-two dairies in south-central Ontario were monitored for stable flies to investigate their origins, either by long distance migration or local sources from overwintering. Models were divided into farms as refuges: (H1) all are refuges, (H2) some refuges, (H3) none are refuges, and (H4) long distance migration. Overwintering flies were found at 3 dairies at the southern part of the research area, adjacent to Lake Ontario. This suggested the H2 model that some dairies were refuges for overwintering, and some flies arrived by long distance migration.

Beresford, D. V., and J. F. Sutcliffe. 2010. Assessing pest control using changes in instantaneous rate of population increase: treated targets and stable fly populations case study. J. Dairy Sci. 93: 2517-2524.

Berkebile, D. R., and G. D. Thomas. 1992. Overwintering and dispersal of the stable fly, pp. 110-118. *In* G. D Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Berkebile, D. R., G. D. Thomas, and J. B. Campbell. 1994. Overwintering of the stable fly (Diptera: Muscidae) in southeastern Nebraska. J. Econ. Entomol. 87: 1555-1563.

Several farms in southeastern Nebraska were monitored for stable flies over the winters of 1987, 1988 and 1989. Adult flies were found inside barns and caught on Alsynite traps. Breeding sites were sampled for immatures. The results of the study showed evidence that stable flies overwinter as developing immatures in silage, manure piles and grass clippings.

Berkebile, D. R., A. P. Weinhold, and D. B. Taylor. 2009. A new method for collecting clean stable fly (Diptera: Muscidae) pupae of known age. Southwest. Entomol. 34: 469-476.

The usual method of collecting stable fly pupae from larval rearing medium is by floatation, but with this method the age of each pupa is not known. The new method of collecting pupae consists of a shelf at the end of the larval rearing pan containing a sponge wrapped in a towel to retain moisture. The wandering larvae climb onto the shelf to pupariate, and the sponge keeps the area moist enough for the pupae. The pupae can be collected each day, and they are free of debris from the rearing media.

Berry, I. L. 1973. Improved system for measuring flying activity of insects by detecting static charges. J. Econ. Entomol. 6: 820-822.

Berry, I. L., and R.A. Hoffman. 1963. Use of step-on switches for control of automatic sprayers. J. Econ. Entomol. 56: 888-890.

Berry, I. L., and O. R. Kunze. 1970. Effects of 100F and 115F blackbody radiation on flight activity of stable flies. Trans. ASAE. 13: 328-331.

Berry, I. L., and S. E. Kunz. 1977. Mortality of adult stable flies. Environ. Entomol. 6: 569-574.

Berry, I. L., and S. E. Kunz. 1978. Oviposition of stable flies in response to temperature and humidity. Environ. Entomol. 7: 213-216.

Berry, I. L., and J. B. Campbell. 1985. Time and weather effects on daily feeding patterns of stable flies. (Diptera: Muscidae). Environ. Entomol. 14: 336-342.

Daily feeding patterns of stable flies were documented during the summer in 1981 and 1982, and the time and weather conditions were examined to investigate any correlations between these factors and feeding patterns. The most important weather factor was temperature, but relative humidity, radiation and wind also had some effect on stable fly feeding. In Nebraska, stable fly feeding follows a unimodal pattern, the maximum being during midday with less feeding at sunrise and sunset.

Berry, I. L., K. W. Foerster, and E. H. Ilcken. 1976. Prediction model for development time of stable flies. Trans. ASAE. 19: 123-127.

Berry, I. L., S. E. Kunz, and K. W. Foerster. 1977. A dynamic model of the physiological development of immature stable flies. Ann. Entomol. Soc. Am. 70: 173-176.

Berry, I. L., K. W. Foerster, and J. B. Campbell. 1978. Overwintering behavior of stable flies in manure mounds. Environ. Entomol. 7: 67-72.

Berry, I. L., J. A. Miller, and R. L. Harris. 1978. A chilling table for immobilizing insects. Ann. Entomol. Soc. Am. 71: 126-128.

The design and operation of a new chilling table for immobilizing insects is described. The tables recirculate air more efficiently than previous methods, reducing the condensation. The tables are used by ARS for immobilizing stable flies, horn flies and mosquitoes.

Berry, I. L., P. J. Scholl, and J. I. Shugart. 1981. A mark and recapture procedure for estimating population sizes of adult stable flies. Environ. Entomol. 10: 88-93.

Berry, I. L., D. A. Stage, and J. B. Campbell. 1983. Populations and economic impacts of stable flies on cattle. Trans. ASAE. 26: 873-877.

Berry, I. L., A. K. Nelson, and A. B. Broce. 1986. Effect of weather on capture of stable flies (Diptera: Muscidae) by Alsynite fiber glass traps. Environ. Entomol. 15: 706-709.

The effect of temperature, solar radiation, relative humidity and wind speed on the number of stable flies captured on alsynite traps was tested using one trap in Kansas and 4 in Nebraska. Number of flies caught on traps had no correlation with number of flies on the cattle. Temperature, relative humidity and solar radiation had significant effects on number of flies captured, but wind speed had no effect.

Berry, I. L., D. A. Stage, J. B. Campbell, and C. B. Gilbertson. 1982. Populations and economic impacts of stable flies at cattle feedlots. *In* ASAE Pub. 3-82: 457-466.

Berry, I. L., K. W. Foerster, and E. H. Ilcken. 1976. Prediction model for development time of stable flies. Trans ASAE. 19: 123-127.

Betke, P., Schultka, H., and Ribbeck, R. 1986. *Stomoxys calcitrans* – Plage in einer Milchviehanlage. Angew. Parasitol. 27: 39-44.

Bidgood, H. M. 1980. Host location in *Stomoxys calcitrans* (L.) (The Stable Fly). Zoology and Comparative Physiology, University of Birmingham pp. 1-60.

Birkemoe, T., A. Soleng, and A. Aak. 2009. Biological control of *Musca domestica* and *Stomoxys calcitrans* by mass releases of the parasitoid *Spalangia cameroni* on two Norwegian pig farms. Biocontrol 54: 425-436.

Birkemoe, T., and A. Sverdrup-Thygeson. 2011. Stable fly (*Stomoxys calcitrans*) and house fly (Musca domestica) densities: A comparison of three monitoring methods on pig farms. J. Pest Sci. 84: 273-280.

Birkett, M. A., N. Agelopoulos, K. M. Jensen, J. B. Jespersen, J. A. Pickett, H. J. Prijs, G. Thomas, J. J. Trapman, L. J. Wadhams, and C. M. Woodcock. 2004. The role of volatile semiochemicals in mediating host location and selection by nuisance and disease-transmitting cattle flies. Med. Vet. Entomol. 18: 313-322.

A number of chemicals were tested for attractiveness or repellency to 5 species of cattle flies, including *Stomoxys calcitrans*. Methods used were gas chromatography-electrophysiology (GC-EAG), gas chromatography-mass spectrometry (GC-MS), electrophysiology (EAG), lab behavior and field studies. *S. calcitrans* responded to several chemicals of each type: amino acid derivatives, fatty acid derivatives, and isoprenoids or derivatives. Of the chemicals which elicited responses in all fly species, 1-octen-3-ol and 6-methyl-5-hepten-2-one were attractants and naphthalene, linalool and propyl butanoate were repellents.

Bishopp, F. C. 1913. The stable fly. USDA Farmers' Bull. #540. U.S. Govt. Printing Office. Washington, DC. 28 pp.

Bishopp, F. C. 1913. The stable fly (*Stomoxys calcitrans* L.) An important livestock pest. J. Econ. Entomol. 6: 112-127.

Bishopp, F. C. 1916. Flytraps and their operation. USDA Farmers' Bull. #734. U.S. Govt. Printing Office. Washington, DC. 14 pp.

Bishopp, F. C. 1920. The stable fly: how to prevent its annoyance and its losses to livestock. USDA Farmers' Bull. #1087. U.S. Govt. Printing Office. Washington, DC. 23 pp.

Bishopp, F. C. 1931. The stable fly: how to prevent its annoyance and its losses in livestock. USDA Farmers' Bulletin No. 1097 (rev). U.S. Govt. Printing Office. Washington, DC. 17 pp.

Bishopp, F. C. 1953. Stable flies: how to control them. USDA leaflet no. 338. U.S. Govt. Printing Office. Washington, DC. 8pp.

Bittencourt, A. J., and G. E. Moya-Borja. 2000. Flutuação sazonal de *Stomoxys calcitrans* em bovines e eqűinos no município de Espiríto Santo do Pinhal, São Paulo, Brasil. Rev. Univ. Rural 22: 101-106. (In Spanish).

Bittencourt, A. J., and B. G. De Castro. 2004. *Stomoxys calcitrans* parasitism associated with cattle diseases in Espirito Santo do Pinhal, Sao Paulo, Brazil. Ann. N.Y. Acad. Sci. 1026: 219-221.

Black, W. C., and E. S. Krafsur. 1985. Use of sticky traps to investigate seasonal trends in the spatial distribution of house flies and stable flies. (Diptera: Muscidae). J. Med. Entomol. 22: 550-557.

Blakemore, D., M. J. Lehane, and S. Williams. 1993. Cyclic AMP can promote the secretion of digestive enzymes in *Stomoxys calcitrans.* Insect Biochem. Mol. Biol. 23: 331-335.

Blakemore, D., S. Williams, and M. J. Lehane. 1995. Protein stimulation of trypsin secretion from the opaque zone cells of *Stomoxys calcitrans*. Comp. Biochem. Physiol. 110B: 301-307.

Blakeslee, E. B. 1944. DDT as a barn spray in stable fly control. J. Econ. Entomol. 37: 134-135.

The efficacy of DDT to control stable flies was tested in two horse stables along the Gulf Coast in NW Florida. Stables were sprayed every 10-12 days, and the DDT continued to kill flies for 12 days in one treatment and 13 days in another. The treatment had no effect on the outside of the barn. As a spray used directly on the horses, DDT gave 100% kill for one hour, partial protection for 2-4 hours, and had a toxic effect on stable flies for several days.

Blakeslee, E. B. 1945. DDT surface sprays for control of stable fly breeding in shore deposits of marine grass. J. Econ. Entomol. 38: 548-552.

The efficacy of using DDT emulsions for the control of stable flies breeding in marine grasses was tested in northwest Florida. This was to replace the current method of using creosote mixed with bay water, due to the economic cost of the current method. DDT was found to produce 99-100% control of stable flies in marine grasses.

Blume, R. R., R. H. Roberts, J. L. Eschle, and J. J. Matter. 1971. Tests of aerosols of deet for protection of livestock from biting flies. J. Econ. Entomol. 64: 1193-1196.

Blume, R. R., J. J. Matter, and J. L. Eschle. 1973. Biting flies (Diptera: Muscidae) on horses: laboratory evaluation of five insecticides for control. J. Med. Entomol. 10: 596-598.

Boeckh, J., H. Breer, M. Geier, F.-P. Hoever, B.-W. Krüger, G. Nentwig, and H. Sass. 1996. Acylated 1,3-Aminopropanols as repellents against bloodsucking arthropods. Pestic. Sci. 48: 359-373.

Boiko, G. P., and I. S. Nochvinov. 1978. Substantiation of the economic effectiveness of fly control measures in cattle breeding farms of the Zaporozhe district. Med. Parazitol.: Parazitol. Bolezn 48: 61-65. (In Russian with English summary).

Boire, S., D. E. Bay, and J. K. Olson. 1988. An evaluation of various types of manure and vegetative materials as larval breeding media for the stable fly. Southwest. Entomol. 13: 247-249.

Stable fly larvae were reared in different manures (cattle, horse, swine and chicken), bermudagrass hay and pine wood chips, alone and in combinations of manure and vegetation. The highest percent pupation occurred in horse manure, horse manure/hay mix, and the hay alone. The highest mean pupal weight occurred in horse manure. The chicken dung was the least effective manure for larval rearing, and no larvae survived on the wood chips alone.

Boisvenue, R. J., and J. A. Hair. 1985. Systemic activity of a benzimidazoline compound in cattle against ticks and biting flies. Vet. Parasitol. 17: 327-335.

Boisvenue, R. J., and G. O. P. O’Doherty. 1980. Systemic animal external parasiticidal activities of perfluoroalkylbenimidazoles and their aminoanilide precursor. Experientia 36: 189-190.

Bonduriansky, R., and R. J. Brooks. 1997. A technique for measuring and marking live flies. Can. Entomol. 129: 827-830.

A device for measuring and marking flies is described. The device restrains the fly with less risk of killing the fly by handling with fingers or forceps. It is used without anaesthetics, which also reduces fly mortality. The method was reported to have been used for 2 years, with 90% and 96% success rate, respectively.

Borja, G. E. M. 1981. Sexual sterility of *Stomoxys calcitrans* (L.) induced by females of *Dermatobia hominis* (Linnaeus Jr.) treated with theotepa. Rev. Brasil Biol. 41:117-120.

Born, D. E. 1954. Mold control in fly rearing media. J. Econ. Entomol. 47: 367.

The use of sand as the top layer in larval rearing media is reported to control the growth of mold. The sand adds volume to the media, and larvae remain beneath the sand layer. Their activity suppresses growth of mold beneath the sand. The larvae migrate into the sand layer to pupate. For stable flies, the sand must be moistened 1 day prior to pupating, otherwise they will pupate at the sand-media interface rather than in the sand layer. The sand also facilitates collection of the pupae by filtering.

Borovsky, D. 1985. Characterization of proteolytic enzymes of the midgut and excreta of the biting fly *Stomoxys calcitrans*. Arch. Insect Biochem. Physiol. 2: 145-159.

Borovsky, D. 1986. Isolation and *in vitro* synthesis of trypsin from the biting fly, *Stomoxys calcitrans.* Arch. Insect Biochem. Physiol. 3: 307-318.

Boulanger, N., R. J. Munks, J. V. Hamilton, F. Vovelle, R. Brun, M. J. Lehane, and P. Bulet. 2002. Epithelial innate immunity. A novel antimicrobial peptide with antiparasitic activity in the bloodsucking insect *Stomoxys calcitrans*. J. Bio. Chem. 277: 49921-49926.

An antimicrobial peptide is identified in the anterior midgut of the stable fly, *Stomoxys calcitrans*, which demonstrates antimicrobial activity against Gram-positive and Gram-negative bacteria, fungi and yeast. The AMP, designated “stomoxyn”, also has trypanolytic activity against the trypomastigote (bloodstream) form of *Trypanosoma brucei rhodesiense*, the parasite which causes African trypanosomiasis. Since *S. calcitrans* feeds on the same vertebrate hosts as *Glossina spp.*, the presence of this unique AMP may explain why *S. calcitrans* is not a cyclical vector of trypanosomiasis. Additionally, stomoxyn is adult specific, suggesting that it protects the stable fly from microbes entering the midgut with blood meals.

Bowles, D. E., and J. A. Swaby. 2006. Field guide to venomous and medically important invertebrates affecting military operations: identification, biology, symptoms, treatment. Version 2.0. USAF Institute for Operational Health, Brooks City-Base, TX.

Bowman, M. C., J. E. Wright, and M. Beroza. 1973. Determination of two juvenile hormone-active compounds and their stability in stable fly medium. J. Econ. Entomol. 66: 301-304.

Boyd, N. R., and B. W. Arthur. 1960. Biological degradation of O, O-diethyl O-naphthalimido phosphorothioate (Bayer 22408). J. Econ. Entomol. 53: 848-853.

Bradbury, W. C., and P. E. Morrison. 1975. A portable electric aspirator for collecting large insects. Can. Entomol. 107: 107-108.

Brady, J., and W. Shereni. 1988. Landing responses of the tsetse fly *Glossina morsitans* Westwood and the stable fly *Stomoxys calcitrans* (L.) (Diptera: Glossinidae & Muscidae) to black-and-white patterns: a laboratory study. Bull. Entomol. Res. 78: 301-311.

Brady, U. E., and B. W. Arthur. 1962. Absorption and metabolism of Ruelene by arthropods. J. Econ. Entomol. 55: 833-836.

Brain, C. K. 1912. *Stomoxys calcitrans* Linn. Ann. Entomol. Soc. Am. 5: 421-432.

Life history and breeding media of the stable fly are discussed. The external mouthparts, method of feeding, and digestive system are described.

Brain, C. K. 1913. *Stomoxys calcitrans* Linn., part II. Ann. Entomol. Soc. Am. 6: 197-202.

Brain, C. K. 1918. Storage of manure and fly suppression at Durban remount plant. J. Econ. Entomol. 11: 339-341.

A management system for the control of flies at the Durban Remount Depot was described. An average of 3300 animals, mostly horses, mules and donkeys, were maintained at the depot. The management practices consisted of removing all the manure daily and putting it into trenches. It was then covered with sand or earth. The stables were cleaned and treated with a contact spray after removal of the manure. The management practices proved effective for the control of flies.

Bram, R. A. 1992. Current and future status of research on stable flies, pp. 146-148. *In* G.D. Thomas and S.R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Bram, R. A. 1993. Current and future status of research on stable flies and house flies in the United States, pp. 94-97. *In* G.D. Thomas and S.R. Skoda (eds.), Rural flies in the urban environment. Proc. Of a Symposium, 1989 annual meeting of the ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Res. Bull. No. 317.

Brandner, G., W. J. Kloft, C. Schlager-Vollmer, E. Platten, and P. Neumann-Opitz. 1992. Preservation of HIV infectivity during uptake and regurgitation by the stable fly, *Stomoxys calcitrans* L. AIDS-Forschung 7: 253-256.

Braverman, Y., and K. Frish. 1980. Economic losses in dairy cattle caused by the stable fly (*Stomoxys calcitrans* L.) and sucking lice (Anoplura) Refu. Vet. 37: 51.

Brethes, J. 1918. La mosca brava. Anales del la Sociedad Rural Argentina. pp. 496-498. (In Spanish).

Bridges, A. C., and G. E. Spates. 1983. Larval medium for the stable fly, *Stomoxys calcitrans* (L.). Southwest. Entomol. 8: 6-10.

Bridges, A. C., J. W. Summerlin, and G. E. Spates. 1984. A new and more economical base medium for rearing larvae of the stable fly, horn fly, and house fly. Southwest. Entomol. 9: 388-390.

Broce, A. B. 1988. An improved Alsynite trap for stable flies, *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 25: 406-409.

Broce, A. B. 1993. Dispersal of house flies and stable flies, pp. 50-60. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment? Proc. of a Symposium, 1989 annual meeting of the ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Res. Bull. No. 317.

Broce, A. B., and M. S. Haas. 1999. Relation of cattle manure age to colonization by stable fly and house fly (Diptera: Muscidae). J. Kans. Entomol. Soc. 72: 60-72.

Broce, A. B., J. R. Schwenke, and K. E. Hampton. 1991. Landing patterns of stable flies (Diptera: Muscidae) on the Alsynite cylinder traps: effect of wind speed and direction. J. Med. Entomol. 28: 730-733.

Broce, A. B., J. Hogsette, and S. Paisley. 2005. Winter feeding sites of hay in round bales as major developmental sites of *Stomoxys calcitrans* (Diptera: Muscidae) in pastures in spring and summer. J. Econ. Entomol. 98: 2307-2312.

A study was conducted near Manhattan, KS to determine whether the wasted hay from large round bales served as breeding sites for stable flies. Three methods were used to make surveys. Core samples were taken from the sites where round bales had been placed throughout the winter; flies were caught on alsynite traps placed in pairs close to the feeding sites and far from the feeding sites; a mark-release-recapture survey was done. Results suggested that sites where round hay bales are placed during winter feeding make good breeding sites for stable flies.

Brody, A. L. 1936. The transmission of fowl-pox. Ithaca, New York. pp. 4.

Brown, J. 1974. The dog fly control program in west Florida. Rep. 45th Annu. Meet. Fla. Anti-Mosq. Control Assoc.: 33-34.

Brown, K. R. 1979. Comparative wing morphometrics of some calyptrate Diptera. J. Aust. Entomol. Soc. 18: 289-303.

Bruce, W. G., and C. Eagleson. 1938. A new method of feeding adult horn flies, *Haematobia irritan* L., and stable flies, *Stomoxys calcitrans* (L.). J. Kans. Entomol. Soc. 11: 144-145.

Describes a new cage designed for rearing and feeding adult horn flies and stable flies, including a method for maintaining the proper humidity for horn flies.

Bruce, W. G., and E. B. Blakeslee. 1946. DDT to control insect pests affecting livestock. J. Econ. Entomol. 39: 367-374.

Bruce, W. N., and G. C. Decker. 1947. Fly control and milk flow. J. Econ. Entomol. 40: 530-536.

Test herds of dairy cows treated with DDT or Rhothane maintained higher milk production than herds treated with a repellent spray. A correlation was found between stable fly and horn fly control and milk production. The greatest responses to treatments were found in the poorly managed herds that depended on pasture for feeding.

Bruce, W. N. and G. C. Decker. 1957. Experiments with several repellent formulations applied to cattle for the control of stable flies. J. Econ. Entomol. 50: 709-713.

Bruce, W. N., and G. C. Decker. 1958. The relationship of stable fly abundance to milk production in dairy cattle. J. Econ. Entomol. 51: 269-274.

Brues, C. T. 1913. The geographical distribution of the stable fly, *Stomoxys calcitrans*. J. Econ. Entomol. 6: 459-477.

Brues, C. T. 1913. The relation of the stable fly (*Stomoxys calcitrans*) to the transmission of infantile paralysis. J. Econ. Entomol. 6: 101-110.

Brues, C. T., and P. A. E. Sheppard. 1912. The possible etiological relation of certain biting insects to the spread of infantile paralysis. J. Econ. Entomol. 5: 305-324.

Brummer-Korvenkontio, M., P. Saikku, P. Korhonen, I. Ulmanen, T. Reunala, and J. Karvonen. 1973. Arboviruses in Finland. IV. Isolation and characterization of Inkoo Virus, a Finnish representative of the California group. Am. J. Tropical. Med. Hyg. 22: 404-413.

Brummer-Korvenkontio, M. 1974. Bunyamwera arbovirus supergroup in Finland. Societas Scientaiarum Fennica. 26: 1-52.

Bulet, P., and R. Stöcklin. 2005. Insect antimicrobial peptides: structures, properties and gene regulation. Protein and Peptide Letters 12: 3-11.

Bull, D. L., and R. W. Meola. 1994. Interactions of the insect growth regulator pyriproxyfen with immature and adult stages of the stable fly. Southwest. Entomol. 19: 257-263.

Burg, J. G., A. W. Roberts, N. M. Williams, D. G. Powell, and F. W. Knapp. 1990. Attempted transmission of *Ehrlichia risticii* (Rickettsiacaea) with *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 27: 874-877.

Burg, J. G., F. W. Knapp, and D. G. Powell. 1990. Seasonal abundance and spatial distribution patterns of three adult Muscoid (Diptera: Muscidae) species on equine premises. Environ. Entomol. 19: 901-904.

Populations of stable flies, horn flies and face flies were monitored on Kentucky horse farms from May-October of 1987 and 1988 to study seasonal abundance and distribution of the flies. Stable flies were most abundant from mid-June until late August during both years. A smaller population peak was observed in September 1987 but not in 1988. Distributions of stable flies were influenced by the horses congregating, mating swarms, and the proximity to ovipositional sites.

Burg, J. G., D. G. Powell, and F. W. Knapp. 1991. Arthropod faunal composition on Kentucky equine premises. J. Med. Entomol. 28: 658-662.

Burg, J. G., D. M. Neely, N. M. Williams, and F. W. Knapp. 1994. Retention and attempted mechanical transmission of *Ehrlichia risticii* by *Stomoxys calcitrans*. Med. Vet. Entomol. 8: 43-46.

Burnstock, G. 1996. Purinoceptors: ontogeny and phylogeny. Drug Dev. Res. 39: 204-242.

Buschman, L. L., and R. S. Patterson. 1981. Assembly, mating, and thermoregulating behavior of stable flies under field conditions. Environ. Entomol. 10: 16-21.

The behavior of stable flies was observed at some livestock facilities near Gainesville, FL. Flies gathered on light-colored objects near livestock. All ages and reproductive stages gathered, suggesting that the primary purpose was thermoregulation. Male flies were found to remain on the "waiting stations" and make short flights to patrol their territory. They were also observed to engage other flies in physical conflict. Mating also occurred near the "waiting stations".

Butler, J. F., W. J. Kloft, L. A. Dubose, and E. S. Kloft. 1977. Recontamination of food after feeding a ^{32}P food source to biting Muscidae. J. Med. Entomol. 13: 567-571.

Butler, J. F., R. Escher, and J. A. Hogsette. 1981. Natural parasite levels in house flies, stable flies, and horn flies in Florida, pp. 61-79. *In* Status of biological control of filth flies. Proceedings of a workshop, USDA/SEA, IFAS. University of Florida, Gainesville.

Buttram, J. R., and B. W. Arthur. 1961. Absorption and metabolism of Bayer 22408 by dairy cows and residues in the milk. J. Econ. Entomol. 54: 446-451.

Buxton, B. A., N. C. Hinkle, and R. D. Schultz. 1985. Role of insects in the transmission of bovine leukosis virus: potential for transmission by stable flies, horn flies, and tabanids. Am. J. Vet. Res. 46: 123-126.

Byford, R. L., M. E. Craig, and B. L. Crosby. 1992. A review of ectoparasites and their effect on cattle production. J. Anim. Sci. 70: 597-602.

A review of the effects of certain ectoparasites, primarily the horn fly, on the health and weight gain of cattle. Stable flies are not specifically discussed.

C

Callan, E. MCC. 1945. A wasp preying on house flies and stable flies. Nature 155: 146.

Camp, H. B., and B. W. Arthur. 1967. Absorption and metabolism of Carbaryl by several insect species. J. Econ. Entomol. 60: 803-807.

Campau, E. J., G. J. Baker, and F. D. Morrison. 1953. Rearing stable fly for laboratory tests. J. Econ. Entomol. 46: 524.

A method for rearing a large number of stable flies is described. It is similar to the method described by Peet-Grady (1951) for rearing house flies. Flies are provided with bovine blood by soaking cellucotton in water, squeezing it dry, and pouring blood over the cotton. Oviposition occurs in the food dishes, eggs are removed and put in beakers. They are then put into the larval medium, where they stay below the surface and pupate near the edges of the cage. Pupae are placed in holding cages for emergence.

Campbell, J. B. 1985. Arthropod pests of confined beef, pp. 207-221. *In* R. E Williams, R. D. Hall, A. B. Broce and P. J. Scholl (eds.), Livestock entomology. John Wiley and Sons, New York.

Campbell, J. B. 1992. The economic significance of the stable fly, pp. 1-8. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Campbell, J. B. 1992. Chemical control of the stable fly, pp. 142-145. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Campbell, J. B. 1993. The economics of the fly problem, pp. 34-39. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment? Proc. of a Symposium, 1989 annual meeting of the ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Res. Bull. No. 317.

Campbell, J. B. 1997. Stable fly control on cattle. NebGuide pp. 1-5.

Campbell, J. B. 2002. A guide for the control of flies in Nebraska feedlots and dairies. MyCattle.com. University of Nebraska Cooperative Extension pub.

Campbell, J. B. 2006. Horse insect control guide. University of Nebraska-Lincoln Extension pub. G950.

A guide for the control of insects which affect horses. Mentions that stable flies can transmit a nematode parasite (*Habronema spp.*) to horses.

Campbell, J. B., and E. S. Raun. 1971. Aerial ULV and LV applications of insecticides for control of the stable fly and the horn fly. J. Econ. Entomol. 64: 1170-1173.

This study investigated the effectiveness of applying low volume (LV) and ultra low volume (ULV) insecticides to cattle by helicopter and fixed-wing aircraft for the control of stable flies and horn flies. Both feedlot cattle and range cattle were sprayed, and the average percent reduction in flies ranged from 40.4-85.8%, 16-24 hours after spraying. ULV applications of naled and dichlorvos by fixed-wing aircraft were found to be more effective than LV applications, and spraying was more effective when buildings and other obstructions were farther away from the cattle.

Campbell, J. B., and J. F. Hermanussen. 1971. Efficacy of insecticides and methods of insecticidal application for control of stable flies in Nebraska. J. Econ. Entomol. 64: 1188-1190.

Campbell, J. B., and J. F. Hermanussen. 1974. *Philonthus theveneti*: Life history and predatory habits against stable flies, house flies, and face flies under laboratory conditions. Environ. Entomol. 3: 365-358.

Campbell, J. B., and J. E. Wright. 1976. Field evaluations of insect growth regulators, insecticides, and a bacterial agent for stable fly control in feedlot breeding areas. J. Econ. Entomol. 69: 566-568.

Six insect growth regulators, 5 insecticides, and a bacterial agent were evaluated for the control of stable flies in Nebraska feedlots. Studies were conducted on small plots and large plots. All of the treatments were efficacious in controlling stable fly populations. Since the IGRs affect specific life stages, there was a lag phase before the reduction of stable fly numbers. The authors suggest that the addition of IGRs would be beneficial in a fly control program.

Campbell, J. B., and T. H. Doane. 1977. Weight gain response and efficacy of washing and various insecticide treatments for prevention of flies feeding on shear wounds of summer shorn lambs. J. Econ. Entomol. 70: 132-134.

Campbell, J. B., and C. D. McNeal. 1978. Implementation and evaluation of a pilot project for insect pest management in Nebraska feedlots. Univ. Nebr. Coop. Ext. Serv., North Platte Station. 40pp.

Campbell, J. B., and C. D. McNeal. 1979. A guide to Intergrated Pest Management at feedlots and dairies. Nebraska University College of Agriculture and Home Economics Extention Circular EC 80-1536: 1-21.

Campbell, J. B., and I. L. Berry. 1989. Economic threshold for stable flies on confined livestock. Misc. Publ. Entomol. Soc. Am. 74: 18-22.

Campbell, J. B., and G. D. Thomas. 1999. House fly and stable fly management in and near livestock facilities. Beef Cattle Handbook 3815: 1-4.

Campbell, J. B., R. G. White, J. E. Wright, and D. C. Clanton. 1976. Stable flies slow weight gains. Univ. Neb.-Lincoln Inst. Ag. Nat. Res. #EC 76-218.

Campbell, J. B., R. G. White, J. E. Wright, R. Crookshank, and D. C. Clanton. 1977. Effects of stable flies on weight gains and feed efficiency of calves on growing or finishing rations. J. Econ. Entomol. 70: 592-594.

Campbell, J. B., D. J. Boxler, D. M. Danielson, and M. A. Crenshaw. 1984. Effects of house and stable flies on weight gain and feed efficiency by feeder pigs. Southwest. Entomol. 9: 273-274.

Campbell, J. B., D. J. Boxler, and I. L. Berry. 1987. Efficacy of 17 insecticides applied at temperatures of 10C, 15.5C, 21C, 27C for control of overwintering stable fly larvae, *Stomoxys calitrans* (L.) (Diptera: Muscidae). J. Kans. Entomol. Soc. 60: 350-352.

Campbell, J. B., I. L. Berry, D. J. Boxler, R. L. Davis, D. C. Clanton, and G. H. Deutscher. 1987. Effects of stable flies (Diptera: Muscidae) on weight gain and feed efficiency of feedlot cattle. J. Econ. Entomol. 80: 117-119.

Campbell, J. B., M. A. Catangui, G. D. Thomas, D. J. Boxler, and R. Davis. 1993. Effects of stable flies (Diptera: Muscidae) and heat stress on weight gain and feed conversion of feeder cattle. J. Agric. Entomol. 10: 155-161.

Campbell, J. B., S. R. Skoda, D. R. Berkebile, and G. D. Thomas. 2001. Research on stable flies and house flies at Nebraska. Agr. Res. Div., Inst. Agr. Nat. Res., Univ. Nebr.-Lincoln, Bull. #RB-341, 22pp.

Campbell, J. B., S. R. Skoda, D. R. Berkebile, D. J. Boxler, G. D. Thomas, D. C. Adams, and R. Davis. 2001. Effects of stable flies (Diptera: Muscidae) on weight gain of grazing yearling cattle. J. Econ. Entomol. 94: 780-783.

A field experiment was conducted to determine the effect of stable flies on pastured yearling cattle as compared to feedlot cattle. Sprays and ear tags were used to eliminate horn flies and face flies as factors. An attempt was

made to maintain the economic threshold of 5 flies per front leg by releasing flies in the area, however the number varied. Results showed a 19% reduction in weight gain due to stable flies, or ~7% per fly.

Cantrell, B. K. 1978. Identifying insects…flies (order Diptera). Queensl. Agric. J. 104: 9-16.

Capehart, J. S., R. L. Harris, and D. E. Bay. 1981. The effect of host species on developmental time of *Muscidifurax raptor* and *Spalangia drosophilae*. Southwest. Entomol. 6: 136-138.

Capriles, J. M. 1971. A simple way to determine the presence of the stable fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae), on dairy farms in Puerto Rico. J. of Agric. Univ. Puerto Rico. 55: 259-260.

Carlson, D. A., and J. W. Mackley. 1985. Polyunsaturated hydrocarbons in the stable fly. J. Chem. Ecol. 11: 1485-1496.

Carlson, D. A., R. A. Alzogaray, and J. A. Hogsette. 2000. Behavioral response of *Stomoxys calcitrans* (Diptera: Muscidae) to conspecific feces and feces extracts. J. Med. Entomol. 37: 957-961.

Carn, V. M. 1996. The role of dipterous insects in the mechanical transmission of animal viruses. Br. Vet. J. 152: 377-393.

Carrera, M. 1944. Relacão de alguns dipteros capturados em Monte Alegre, Estado de São Paulo. Papeis Avulsos Dept. Zool. 6:37-50. (In Portuguese).

Case, A. A., and J. E. Ackert. 1939. Intermediate hosts of chicken tapeworms found in Kansas. Transactions of the Kansas Academy of Science 42: 437-442.

Castro, B. G., M. M. S. de Souza, and A. J. Bittencourt. 2007. Aerobic bacterial microbiota in *Stomoxys calcitrans*: preliminary studies in Brazil. Brazil. J. Vet. Parasitol. 16: 193-197.

Castro, B. G., M. M. S. Souza, A. H. Régua-Mangia, and A. J. Bittencourt. 2010. Enterobacterial microbiota on *Stomoxys calcitrans* external surface. Transboundary Emerging Dis. 57: 22-24.

Castro, J. J. 1968. Biologia de la mosca de los establos *Stomoxys calcitrans* (L.). [Biology of the stable fly (*Stomoxys calcitrans*)]. Agronomia (Guatemala) 3: 8-22. (In Spanish).

Catangui, M. A., J. B. Campbell, G. D. Thomas, and D. J. Boxler. 1993. Average daily gains of Brahman-crossbred and English X exotic feeder heifers exposed to low, medium, and high levels of stable flies (Diptera: Muscidae). J. Econ. Entomol. 86: 1144-1150.

The affect of stable flies on Brahman-crossbred and English X Exotic heifers was compared using low, medium and high densities of released stable flies. The Brahman-crossbred heifers showed tolerance to stable flies only at 12-13 months of age. At 13-14 months of age, both breeds responded the same to stable flies. Average daily gains of the Brahman-crossbred heifers were lower than the English X Exotic when stable flies were not present.

Catangui, M. A., J. B. Campbell, G. D. Thomas, and D. J. Boxler. 1993. Calculating economic injury levels for stable flies (Diptera: Muscidae) on feeder heifers. J. Econ. Entomol. 90: 6-10.

A mathematical equation was developed using nonlinear regression to calculate the economic injury level for stable flies on feeder heifers. The data was based on 8 separate experiments conducted from 1974-1991. The equation results in a negative exponential curve, and can be used to calculate whether selected control measures are appropriate for the stable fly infestation level.

Catangui, M. A., J. B. Campbell, G. D. Thomas, and D. J. Boxler. 1995. Average daily gains of Brahman-crossbred and English X exotic feeder heifers during long-term exposure to stable flies (Diptera: Muscidae). J. Econ. Entomol. 88: 1349-1352.

Yearling Brahman cross and English X exotic cross heifers were exposed to a medium level of stable fly infestation (13-14 flies per minute on one front leg) daily for 112 days. Stable fly infestations reduced heifer weight gain from 1-84 days of treatment. From 85-112 days, when heifers were 15 months old, the fly infestations no longer reduced the weight gain. It was suggested that by this age the heifers had reached maturity and began to compensate from previous loss due to stable fly feeding. Breeds were not affected differently by stable fly feeding.

Chamberlain, W. F. 1979. A comparison of procedures for labeling stable flies with ^{32}P for behavior and ecological studies. Southwest. Entomol. 4: 150-155.

Chamberlain, W. F. 1988. On the insecticidal principle and timing of treatment of stable fly larvae with calcium cyanamide. Southwest. Entomol. 13: 235-241.

Chamberlain, W. F., and C. C. Barrett. 1964. A comparison of the amounts of Metepa required to sterilize the screwworm fly and the stable fly. J. Econ. Entomol. 57: 267-269.

Tests were performed to determine the amount of metepa required to sterilize screwworm flies and stable flies. Topical treatments and feeding treatments were used. Stable flies were much more susceptible than screwworm flies. In topical treatments, the male screwworm flies required 5.5 times more metapa than male stable flies, where female screwworm flies required 18 times more than female stable flies. In feeding treatments, male screwworm flies required 3.9 times more than male stable flies, and female screwworm flies required 6.2 times more than female stable flies. Differences in the weight of the two species were considered in the calculations.

Chamberlain, W. F., and E. W. Hamilton. 1964. Absorption, excretion, and metabolism of P^{32}-labeled Metepa by screwworm and stable flies. J. Econ. Entomol. 57: 800-803.

Screwworm flies require a much greater dose of metepa than stable flies to produce sterility. Rate of absorption, excretion, and detoxification of metepa was analyzed in screwworm flies and stable flies in an attempt to determine why this was the case. Multiplying the results of these three factors together gave a value that was comparable to the ratios of effective dose in stable flies and screwworms.

Chamberlain, W. F., and C. C. Barrett. 1968. Incorporation of tritiated thymidine into the ovarian DNA of stable flies: effects of treatment with apholate. Nature 218: 471-472.

Chamberlain, W. F. and D. E. Hopkins. 1980. Retention of larval dietary ^{32}P in the malpighian tubules of adult *Stomoxys calcitrans, Haematobia irritans,* and *Cochliomyia macellaria*. Ann. Entomol. Soc. Am. 73: 310-314.

Chamberlain, W. F., and J. J. Matter. 1986. Control of stable flies (Diptera: Muscidae) with a unique nitrogen fertilizer, calcium cyanamide. J. Econ. Entomol. 79: 1573-1576.

Champlain, R. A., F. W. Fisk, and A. C. Dowdy. 1954. Some improvements in rearing stable flies. J. Econ. Entomol. 47: 940-941.

Some modifications of Campau's (1953) rearing method for stable flies are described. A sponge is provided for oviposition, and sand is added to the larval medium for easier removal of pupae. It was also found that using a UV lamp stimulated oviposition so it was utilized instead of natural light.

Champlain, R. A., and F. W. Fisk. 1956. The digestive enzymes of the stable fly, *Stomoxys calcitrans* (L.). Ohio J. Sci. 56: 52.

Charlwood, J. D., and J. Lopes. 1980. The age-structure and biting behaviour of *Stomoxys calcitrans* (L.) (Diptera: Muscidae) from Manaus, Brazil. Bull. Entomol. Res. 70: 549-555.

Charlwood, J. D., and S. Sama. 1996. The age structure, biting cycle and dispersal of *Stomoxys niger* Macquart (Diptera: Muscidae) from Ifakara, Tanzania. Afr. Entomol. 4: 274-277.

Chaudhri, R. P. 1965. Some insect tormentors of livestock. Indian Livestock 3: 3-5, 7, 43.

Chen, A. C. 1989. Changes in the hemolymph of the stable fly, *Stomoxys calcitrans*, after a blood meal. Arch. Insect Biochem. Physiol. 11: 147-158.

Chen, A. C., and R. M. Wagner. 1992. Hemolymph constituents of the stable fly, *Stomoxys calcitrans.* Comp. Biochem. Physiol., A: Mol. Integr. Physiol. 102:133-137.

Chen, A. C. and T. J. Kelly. 1993. Correlation of ecdysteroids with ovarian development and yolk protein synthesis in the adult stable fly, *Stomoxys calcitrans*. Comp. Biochem. Physiol. A: Comp. Physiol. 104: 485-490.

Chen, A. C., and P. G. Schleider. 1996. An analysis of excretion in the stable fly, *Stomoxys calcitrans*. Southwest. Entomol. 21: 43-48.

Chen, A. C. and T. J. Kelly. 1997. Cycling of ecdysteroid levels in adult female stable flies, Stomoxys calcitrans in relation to blood feeding. J. Insect Physiol. 43: 789-794.

Chen, A.C., R. T. Mayer, and J. R. DeLoach. 1982. Purification and characterization of chitinase from the stable fly, *Stomoxys calcitrans.* Arch. Biochem. Biophys. 216: 314-321.

Chen, A. C., H. R. Kim, R. J. Mayer, and J. O. Norman. 1987. Vitellogenesis in the stable fly *Stomoxys calictrans*. Comp. Biochem. Physiol. 88B: 897-903.

Chen, A. C., T. L. Pannabecker, and D. Taylor. 1997. Natriuretic and depolarizing effects of a stable fly (*Stomoxys calcitrans*) factor on malpighian tubules. J. Insect Physiol. 43: 991-998.

Cheng, T. 1958. The effect of biting fly control on weight gain in beef cattle. J. Econ. Entomol. 51: 275-278.

Cheng, T. H., and J. P. Vanderberg. 1958. The treadle sprayer and the cable-type back rubber for control of biting flies on cattle in Pennsylvania. J. Econ. Entomol. 51: 149-156.

Cheng, T., and E. M. Kesler. 1961. A three-year study on effect of fly control on milk production by selected and randomized dairy herds. J. Econ. Entomol. 54: 751-757.

Cheng, T. H., D. E. H. Frear, and H. F. Enos, Jr. 1958. The use of treatments containing Methoxychlor against biting flies on cattle and the determination of Methoxychlor residues in milk. J. Econ. Entomol. 51: 618-623.

Cheng, T. H., D. E. H. Frear, and H. F. Enos. 1959. Effectiveness of aerosol formulations containing Methoxychlor and other insecticide-repellents against biting flies on cattle, and analyses of milk from treated animals. J. Econ. Entomol. 52: 866-868.

Cheng, T. H., D. E. H. Frear, and H. F. Enos, Jr. 1961. Fly control in dairy barns sprayed with Dimethoate and the determination of Dimethoate residues in milk. J. Econ. Entomol. 54: 740-742.

Two applications of dimethoate were applied to the walls and ceilings of 2 dairy barns and loafing sheds to tests its insecticidal effect against horn flies, house flies and stable flies. The applications were performed on June 10 and August 14, 1959. Dimethoate was found to be effective for up to 9 weeks against house flies and horn flies. Results for stable flies were inconclusive because the flies disappeared from the barns, including the control barn, shortly after the application. Residual effect from the first application seemed to enhance the effect of the second application. No dimethoate residue was found in milk from lactating cows.

Cheng, T. H., D. E. H. Frear, and H. F. Enos. 1962. The use of spray and aerosol formulations containing R-1207 and Dimethoate for fly control on cattle and the determination of Dimethoate residues in milk. J. Econ. Entomol. 55: 39-43.

Cheng, T. H., A. A. Hower, and R. K. Sprenkel. 1965. Oil-based and water-based Ciodrin sprays for fly control on dairy cattle. J. Econ. Entomol. 58: 910-913.

The efficacy of oil-based and water-based 2% Ciodrin sprays were tested on cattle for control of face flies, horn flies and stable flies. Cows were

sprayed as they walked through a doorway using a "push-button" sprayer. Oil-based Ciodrin had a greater toxic effect initially, but the water-based has a longer lasting residual effect. Although there was a reduction in the number of flies per cow, better results could have been obtained with stable flies if the legs had been sprayed instead of only the head, neck and back of the cows.

Chia, L. S. 1978. Studies on female reproductive physiology in the stable fly, *Stomoxys calcitrans* (L.). M.S. Thesis. University of Waterloo.

Chia, L. S., J. A. Baxter, and P. E. Morrison. 1982. Quantitative relationship between ingested blood and follicular growth in the stable fly, *Stomoxys calcitrans*. Can. J. Zool. 60: 1917-1921.

The effect of 1-5 blood meals on the growth of the ultimate and penultimate follicles during the first ovarian cycle in stable flies is examined. Follicular growth rate was the same for flies given a daily meal and those supplied with blood ad libitum. In blood fed females, the fat body increased after the first blood meal, then declined. In sugar fed females the weight of fat body and ovaries did not change. Stable flies were found to require 2 to 3 blood meals to build up the nutrient reserves needed for oogenesis. Five blood meals were required to produce the first batch of eggs. Follicle growth after blood meals followed an exponential curve.

Chia, L. S., A. Baxter and P. E. Morrison. 1984. Reduction in the nutritional requirements for oogenesis due to high concentrations of cholesterol in the larval diet of the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae). Can. Entomol. 116: 801-804.

Chihota, C. M., L. F. Rennie, R. P. Kitching, and P. S. Mellor. 2003. Attempted mechanical transmission of lumpy skin desease virus by biting insects. Med. Vet. Entomol. 17: 294-300.

Christmas, P. E. 1970. Laboratory rearing of the biting fly *Stomoxys calcitrans* (Diptera: Muscidae). N. Z. Entomol. 4: 45-49.

The methods used to rear a colony of *Stomoxys calcitrans* to the 4th generation was described. The colony was started in New Zealand for the purpose of shipping a population to Kerrville, TX. Pupae of the 4th generation were shipped by air in vacuum flasks.

Chung, C. Y., R. W. Kasten, S. M. Paff, B. A. Vanltorn, M. Vayssier-Taussat, H. Boulouis, and B. B. Chomel. 2004. *Bartonella* spp. DNA associated with biting flies from California. Emerging Infectious Disease. 10: 1311-1313.

Chung, K. H., J. Ryu, S. H. Kwon, and M. S. Im. 1975. Study on stable fly eradication by sterile-male technique: (5) On the population density of the stable fly, *Stomoxys calcitrans* L. Korean J. Entomol. 5:13-16. (In Korean with English summary).

Cilek, J. E. 1999. Evaluation of various substances to increase adult *Stomoxys calcitrans* (Diptera: Muscidae) collections on Alsynite cylinder traps in North Florida. J. Med. Entomol. 36: 605-609.

Cilek, J. E. 2002. Attractiveness of beach ball decoys to adult *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 39: 127-129.

Inflated beach balls of different colors and coated with adhesive trapped more stable flies on Florida beaches than Alsynite traps.

Cilek, J. E. 2003. Attraction of colored plasticized corrugated boards to adult stable flies *Stomoxys calcitrans* (Diptera: Muscidae). Fla. Entomol. 86: 420-423.

Different colored plastic boards (blue, red, white, orange) were coated with adhesive and tested for trapping stable flies on Florida beaches. More flies were trapped on the blue boards than any other color, although blue was not significantly different from red. Flies tended to land on the leeward side of the boards. This experiment investigated the efficacy of traps to reduce the number of flies on the beaches.

Cilek, J. E. 2004. Stable fly, *Stomoxys calcitrans* (Diptera: Muscidae). *In* J. L. Capinera (ed.), Encyclopedia of entomology. Part 19 pp. 3536-3539. Springer.

A brief summary of stable fly behavior, economic importance, biology and control.

Cilek, J. E., and G. L. Greene. 1994. Stable fly (Diptera: Muscidae) insecticide resistance in Kansas cattle feedlots. J. Econ. Entomol. 87:275-279.

Resistance to the organophosphate insecticides dichlorvos, stirofos and the pyrethroid permethrin was tested in stable flies from 8 Kansas feedlots. Resistance was found to all of these chemicals, being highest for dichlorvos and lowest for permethrin. Six of the 8 populations were tested for resistance to methoxychlor, but no resistance was found.

Claborn, H. V., H. F. Beckman, and R. W. Wells. 1950. Excretion of DDT and TDE in milk from cows treated with these insecticides. J. Econ. Entomol. 43: 850-852.

Clements, B. W., Jr., and A. J. Rogers. 1967. Some factors affecting kill of the stable fly, *Stomoxys calcitrans* (L.), with insecticidal aerosols. Mosq. News 27: 274-277.

Clements, B. W., A. J. Rogers, W. E. Thomas, and W. N. Swenson. 1977. Tests of insecticides applied by ultra low volume ground equipment for the control of adult stable flies, *Stomoxys calcitrans* (L.). Mosq. News 37:43-45.

Cleveland, C. R. 1926. Repellent sprays for flies attacking dairy cattle. J. Econ. Entomol. 19: 529-536.

Clottens, F. L., G. M. Holman, G. M. Coast, N. T. Totty, T. K. Hayes, I. Kay, A. I Mallet, M. S. Wright, J. Chung, O. Truong, and D. L. Bull. 1994. Isolation and characterization of a diuretic peptide common to the house fly and stable fly. Peptides 15: 971-979.

Clymer, B. C. 1974. Control of flies around feedlots. Great Plains Agric. Counc. Publ. Fact Sheet GPE-7802.

Clymer, B. C. 1992. The stable fly as a pest in beef cattle feedlots, pp. 9-11. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Clymer, B. C. 1993. Rural flies in the urban environment – a pest consultant's view, pp. 46-49. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment? Proc. of a Symposium, 1989 annual meeting of the ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Res. Bull. No. 317.

Coaker, T. H., and R. G. Passmore. 1958. *Stomoxys* sp. on cattle in Uganda. Nature 182: 4634-4635.

Cobb, M. 1999. What and how do maggots smell? Biol. Rev. 74: 425-459.

Cockburn, A. F., and S. E. Mitchell. 1989. Repetitive DNA interspersion patterns in diptera. Arch. Insect Biochem. Physiol. 10: 105-113.

Coffey, M. D. 1966. Studies on the association of flies (Diptera) with dung in Southeastern Washington. Ann. Entomol. Soc. Am. 59: 207-218.

A study was conducted to determine the types of flies occurring on several types and ages of dung in Southeastern Washington. Adults were collected with sweep nets, and samples of dung were collected from which larvae were reared. *Stomoxys calcitrans* was found only on cow and

chicken dung, in one location only (Pullman), from June-August. They were reported to be rare in the area.

Coghlan, A. 2002. Once bitten. New Scientist 173: 18.

Coker, R. E. 1926. Fauna of Penikese Island, 1923. Biol. Bull. 50: 17-37.

Collins, D. L. 1966. Recent advances in the control of some arthropods of public health and veterinary importance: biting flies. Bull. Entomol. Soc. Am. 12: 326-333.

Discusses advances in control of biting flies from 1964-1966, with a section on stable flies and tabanids. Research on New Jersey and Florida beaches concerning the control of these flies is cited. The use of the WHO tsetse fly kit was used to determine tolerance levels to some chemicals in stable flies. Resistance to dieldrin was found in the Panama City, FL strain of stable flies, and resistance to DDT in the Kerrville, TX strain.

Colwell, D. D., and M. Kavaliers. 1992. Evidence for activation of endogenous opioid systems in mice following short exposure to stable flies. Med. Vet. Entomol. 6: 159-164.

Colwell, D. D., M. Kavaliers, and T. J. Lysyk. 1997. Stable fly, *Stomoxys calcitrans*, mouthpart removal influences stress and anticipatory responses in mice. Med. Vet. Entomol. 11: 310-314.

The analgesic response of mice to biting flies was tested using intact stable flies, stable flies with mouthparts removed, and house flies. After being exposed to intact stable flies for 1h, fly-naïve mice exhibited an analgesic response when subsequently exposed to intact flies, but there was no analgesic response when exposed to altered stable flies or house flies. However, mice which had previously been exposed to intact stable flies exhibited an analgesic response when exposed to altered stable flies, but not house flies. This suggests that the analgesic response of mice is induced by the bite of a fly, and that just the presence of biting flies could have adverse effects on animals in an anticipatory manner.

Conway, J. A. 1972. Studies of status and control of the stable fly in intensive beef units in Britain. International Pest Control. 14: 11-16.

Cook, B. J. 1992. The oviduct musculature of the stable fly *Stomoxys calcitrans*: properties of its spontaneous motility and neural regulation. Arch. Insect Biochem. Physiol. 19: 119-132.

Cook, B. J., and S. Meola. 1983. Heart structure and beat in the stable fly, *Stomoxys calcitrans.* Physiol. Entomol. 8: 139-149.

Cook, B. J., and S. Meola. 1988. Heart structure and beat in the larvae of the stable fly, *Stomoxys calcitrans*. Southwest. Entomol. 13: 217-224.

Cook, B. J., and T. Peterson. 1989. Ovarian muscularis of the stable fly *Stomoxys calcitrans*: its structural, motile, and pharmacological properties. Arch. Insect Biochem. Physiol. 12: 15-30.

Cook, B. J., and R. M. Wagner. 1992. Some pharmacological properties of the oviduct muscularis of the stable fly *Stomoxys calcitrans*. Comp. Biochem. Physiol., C: Toxicol. Pharmacol. 102: 273-280.

Cook, B. J., and N. W. Pryor. 1995. Structural characterization of muscles and epithelial sheaths of the oviduct of *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 32: 328-337.

Female stable flies were dissected, and the muscles and epithelium of the oviducts were studied under an electron microscope. These structures were characterized at the cellular level. Occurance of a fragmented Z line in the muscle cells suggest the ability for super contraction in the stable fly ovarian muscles.

Cook, B. J., and N. W. Pryor. 1995. Structural properties of the female accessory gland in the stable fly, *Stomoxys calcitrans*. J. Entomol. Sci. 30: 362-373.

Cook, B. J., and N. W. Pryor. 1996. Structural characterization of peripheral nerve cells and nerve-muscle junctions of the oviduct of stable fly (Diptera: Muscidae). J. Med. Entomol. 33: 496-503.

The ultrastructures of peripheral nerve cells, branch nerves, and nerve-muscle junctions were examined in the oviduct of stable flies. Flies were dissected and observed by electron microscopy. The characteristics of the nervous system in that location were described.

Cook, B. J., and N. W. Pryor. 1997. Structural properties of the intrinsic muscles of the malpighian tubules of the female stable fly, *Stomoxys calcitrans* L. J. Entomol. Sci. 32: 138-147.

Cook, B. J., T. Peterson, and B. Staneart. 1990. Quantitative measurement of muscle contractions associated with the hindgut and oviduct of the stable fly (Diptera: Muscidae). J. Entomol. Sci. 25: 99-105.

Cook, B. J., R. M. Wagner, and T. L. Peterson. 1991. The hindgut muscularis of the stable fly, *Stomoxys calcitrans*: some of its structural motile and pharmacological properties. J. Insect. Physiol. 37: 635-645.

Cook, B. J., A. C. Chen, and N. W. Pryor. 1997. Activity of the extrinsic and intrinsic muscle networks of the malpighian tubules and the ureter in the female stable fly, *Stomoxys calcitrans* (L.). J. Entomol. Sci. 32: 487-499.

Cook, D. F., I. R. Dadour, N. Keals, and B. Paulin. 1997. Stable flies on the Swan Coastal Plain. J. Agric. West. Aust. 2: 58-61.

Cook, D. F., I. R. Dadour, and N. J. Keals. 1999. Stable fly, house fly, (Diptera: Muscidae), and other nuisance fly development in poultry litter associated with horticultural crop production. J. Econ. Entomol. 92: 1352-1357.

Copland, J. W. 1974. Swine pox in Papua New Guinea. Trop. Animal Health and Production 6: 153-157.

Corbet, L. N., and J. W. Turner. 1977. Stable fly bites production. Queensl. Agric. J. 103: 168.

Coronado, A. J., C. E. Suárez, F. F. Mujica and H. R. Henriquez. 2006. Parasitoides enemigos naturals de la mosca de los establos, *Stomoxys calcitrans*, en una finca lechera del Estado Lara, Venezuela. Veterinaria Trop. 31: 33-41.

Cory, E. N. 1917. The protection of dairy cattle from flies. J. Econ. Entomol. 10: 111-114.

Cory, E. N., H. G. Harns, and W. H. Anderson. 1936. Dusts for control of flies on cattle. J. Econ. Entomol. 29: 331-335.

Couri, M. S., and G. P. S. Barros. 2010. Diptera hosts of *Stylogaster* Macquart (Diptera: Conopidae) from Madagascar and South Africa. Revista Brasileira de Entomologia 54: 361-366.

Cranshaw, W. S., F. B. Peairs, and B. Kondratieff. 2007. Biting flies. Colorado State University Extension publication no. 5.582.

Contains a brief summary of stable fly biology and control.

Crow, R. 1978. Flies breed in lawn cuttings. J. Agric., Victoria 76: 372-373.

Cruz-Vazquez, C., S. M. Rangel, I. V. Mendoza, M. R. Parra, M. T. Q. Martinez, and Z. C. Vazquez. 2000. Variacion anual de la infestacion pro *Stomoxys calcitrans* (L.) (Diptera: Muscidae) en tres establos lecheros de Aguascalientes, Mexico. Tec. Pecu. Mex. 38: 135-142.

Cruz-Vazquez, C., I. V. Mendoza, M. R. Parra, and Z. Garcia-Vazquez. 2004. Influence of temperature, humidity and rainfall on field population trend of *Stomoxys calcitrans* (Diptera: Muscidae) in a semiarid climate in Mexico. Parasitol. Latinoam. 59: 99-103.

Stable fly populations were surveyed on 2 dairy farms in Aguiascalientes State, Mexico, which has a semi-arid climate, over 3 years. The surveys were divided into 4 phases: increasing phase I (April-September), fluctuation (September), increasing phase II (October) and decreasing phase (October-December). Relative humidity had a high effect on population size during the increasing phase I, and temperature had a high effect during the decreasing phase. Rainfall had no significant effect of stable fly populations.

Cruz-Vázquez, C., Z. García-Vázquez, M. Fernández-Ruvalcaba, and J. E. George. 2005. Susceptibility of *Stomoxys calcitrans* (L.) to permethrin in dairy farms of Aguascalientes, Mexico. Vet. Méx. 36: 485-490.

Cruz-Vazquez, C., M. Ramos-Parra, I. Vitela-Mendoza, Z. Garcia-Vazquez, and M. T. Quintero-Martinez. 2007. Relationships between stable fly infestation with some physical facility characteristics and sanitation practices in several dairy farms in the State of Aguascalientes, Mexico. Vet. Parasitol. 149: 246-250.

Cuglovici, D. A., D. C. Bartholomeu, J. L. Reis-Cunha, A. U. Carvalho, and M. F. B. Ribeiro. 2010. Epidemiologic aspects of an outbreak of *Trypanosoma vivax* in a dairy cattle herd in Minas Gerais state, Brazil. Vet. Parasitol. 169: 320-326.

Cunningham, H. B., C. D. Little, S. A. Edgar, and W. G. Edens. 1955. Species and relative abundance of flies collected from chicken manure in Alabama. J. Econ. Entomol. 48: 620.

A survey of fly species collected from chicken manure in Alabama from 1950-1952. Stable flies comprised 1.374% of the collected species.

Cunningham, M. P., J. M. B. Harley, H. A. W. Southon, and W. H. R. Lumsden. 1962. Detection of antibodies in blood meals of haematophagous diptera. Science 138: 32-33.

Curran, C. H. 1934. The families and genera of North American diptera. American Museum of Natural History, New York, N.Y. 512pp.

Cuthbertson, A. 1938. The breeding habitat and economic significance of some common muscoidean flies (Diptera) in Southern Rhodesia. Proc. Rhodedia Sci. Assoc. XXXVI: 53-57

Cutkomp, L. K., and A. L. Harvey. 1958. The weight responses of beef cattle in relation to control of horn and stable flies. J. Econ. Entomol. 51: 72-75.

D

Dacy, G. H. 1920. Stable flies are dairy cow "cooties". Southwest Planter pp. 8-11.

Dadour, I. R., and S. C. Voss. 2009. Investigation of the factors affecting adult fly production in biosolid cake. Environ. Entomol. 38: 633-638.

Dahlman, D. L., F. Herald, and F. W. Knapp. 1979. L-canavainin effects on growth and development of four species of Muscidae. J. Econ. Entomol. 72: 678-679.

Dahm, P. A., and E. S. Raun. 1955. Fly control on farms with several organic thiophospate insecticides. J. Econ. Entomol. 48: 317-322.

D'Amato, L. A., F. W. Knapp, and D. L. Dahlman. 1980. Survival of the face fly in feces from cattle fed alfalfa hay or grain diets: effect of fermentation and microbial changes. Environ. Entomol. 9: 557-560.

D'Amico, F., J. P. Gouteux, F. LeGall, and D. Cuisance. 1996. Are stable flies (Diptera: Stomoxyinae) vectors of *Trypanosoma vivax* in the Central African Republic? Vet. Res. 27: 161-170.

De Almeida, M. A. F., and A. P. do Prado. 1999. *Aleochara* spp. (Coleoptera: Staphylinidae) and pupal parasitoids (Hymenoptera: Pteromalidae) attacking symbovine fly pupae (Diptera: Muscidae, Sarcophagidae and Otitidae) in Southeastern Brazil. Biol. Control 14: 77-83.

De Castro, B. G., M. M. S. de Souza, and A. J. Bittencourt. 2008. Isolation of enterobacterial species in *Stomoxys calcitrans.* Ciência Rural, Santa Maria 38: 2654-2657. (In Portugese).

DeFoliart, G. R. 1956. Fly control in Wyoming barns. J. Econ. Entomol. 49: 341-344.

DeFoliart, G. R. 1963. Preventive spraying schedules for dairy farm fly control. J. Econ. Entomol. 56: 649-654.

DeFoliart, G. R., and J. L. Eschle. 1961. Barn fogging as a fly control method. J. Econ. Entomol. 54: 862-865.

DeFoliart, G. R., and C. D. Morris. 1967. A dry ice-baited trap for the collection and field storage of hematophagous Diptera. J. Med. Entomol. 4: 360-362.

DeFoliart, G. R., M. R. Rao, and C. D. Morris. 1967. Seasonal succession of bloodsucking diptera in Wisconsin during 1965. J. Med. Entomol. 4: 363-373.

Degrugillier, M. E., and S. G. Grosz. 1981. Effects of female accessory gland ablation on fertility of screwworms, stable flies, and face flies. Ann. Entomol. Soc. Am. 74: 217-221.

DeLoach, J. R., and R. T. Mayer. 1979. The pupal instar of *Stomoxys calcitrans*: developmental changes in acid phosphatase, cytochrome oxidase and lysosomal glycosidases. Insect Biochem. 9: 653-659.

DeLoach, J. R., and G. Spates. 1979. Rate of digestion of ^{51}CR-Hemoglobin by *Stomoxys calicitrans* (Diptera: Muscidae). J. Med. Entomol. 16: 493-496.

DeLoach, J. R., and G. E. Spates. 1980. Effect of soybean trypsin inhibitor-loaded erythrocytes on fecundity and midgut protease and hemolysis activity of stable flies. J. Econ. Entomol. 73: 590-594.

DeLoach, J. R., and G. E. Spates. 1984a. Hemoglobin and albumin diet for adult *Stomoxys calcitrans* and *Glossina palpalis palpalis*. Southwest. Entomol. 9: 28-34.

DeLoach, J. R., and G. E. Spates. 1984b. Glycosidase activity from mnidgut region of *Stomoxys calcitrans* (Diptera: Muscidae). Insect Biochem. 14: 169-173.

DeLoach, J. R., S. M. Meola, and R. T. Mayer. 1981. Effect of diflubenzuron on thymidine incorporation in *Stomoxys calcitrans* pupae. Southwest. Entomol. 6: 123-125.

DeLoach, J. R., S. M. Meola, R. T. Mayer, and J. M. Thompson. 1981. Inhibition of DNA synthesis by diflubenzuron in pupae of the stable fly *Stomoxys calcitrans* (L.). Pestic. Biochem. Physiol. 15: 172-180.

DeLoach, J. R., H. H. Mollenhauer, and R. T. Mayer. 1981. Isopycnic centrifugation of acidic glycosidases and acid phosphatase containing particles from *Stomoxys calcitrans*. Comp. Biochem. Physiol., B: Biochem. Mol. Biol. 69: 279-282.

Derbenieva-Ukhova, V. P. 1942. Development of ovaries and imaginal feeding of manure flies. Med. Parazitol. 11: 85-97. (Translated from Russian).

Desquesnes, M., G. Bossard, D. Patrel, S. Herder, O. Patout, E. Lepetitcolin, S. Thevenon, D. Berthier, D. Pavlovic, R. Brugidou, P. Jacquiet, F. Schelcher, B. Faye, L. Touratier, and G. Cuny. 2008. First outbreak of *Trypanosoma evansi* in camels in metropolitan France. Vet. Rec.: J. Br. Vet. Assoc. 162: 750-752.

Detinova, T. S. 1968. Age structure of insect populations of medical Importance. Ann. Rev. Entomol. 13: 427-443.

Dia, M. L., M. Desquesnes, P. Elsen, R. Lancelot, and G. Acapovi. 2004. Evaluation of a new trap for tabanids and stomoxyines. Bulletin de la Societe Royale Belge d'Entomologie 140: 72-81.

Dixon, J. B., R. S. Cull, I. F. Dunbar, R. J. Greenhill, C. G. Grimshaw, M. A. Hill, F. J. Lande, and W. M. Miller. 1971a. Non-cyclical transmission of trypanosomiasis in Uganda: I. Abundance and biting behaviour of Tabanidae and *Stomoxys*. Vet. Rec. 89: 228-233.

Dixon, J. B., R. S. Cull, I. F. Dunbar, R. J. Greenhill, C. G. Grimshaw, M. A. Hill, F. J. Landeg, and W. M. Miller. 1971b. Non-cyclical transmission of trypanosomiasis in Uganda: II. Experimental assessment of the survival time of *Trypanosoma brucei* in *Stomoxys calcitrans*. Vet. Rec. 89: 233-235.

Djiteye, A., M. Diarra, I. Ouattara, and D. Traore. 1998. Comparison of the efficacy of different traps and attractants for Tabanidae and *Stomoxys* in Mali. Journal of Protozoology Research 8: 263-273.

Dobson, R. C., and R. C. Peterson. 1963. Horn fly control on beef cattle by the use of cable rubbers. J. Econ. Entomol. 56: 230-234.

Dodge, H. R. 1953. Identifying common flies. Public Health Reports (1896-1970) 68: 345-350.

Doty, A. E. 1937. Convient method of rearing the stable fly. J. Econ. Entomol. 30: 367-369.

Dougherty, C. T., F. W. Knapp, P. B. Burrus, D. C. Willis, J. G. Burg, P. L. Cornelius, and N. W. Bradley. 1993. Stable flies (*Stomoxys calcitrans* L.) and the behavior of grazing beef cattle. App. Anim. Behav. Sci. 35: 215-233.

Dougherty, C. T., F. W. Knapp, P. B. Burrus, D. C. Willis, P. L. Cornelius, and N. W. Bradley. 1993. Multiple releases of stable flies (*Stomoxys calcitrans*) and behaviour of grazing beef cattle. Appl. Anim. Behav. Sci. 38: 191-212.

Dougherty, C. T., F. W. Knapp, P. B. Burrus, D. C. Willis, and P. L. Cornelius. 1994. Moderation of grazing behavior of beef cattle by stable flies (*Stomoxys calcitrans* L.). Appl. Anim. Behav. Sci. 40: 113-127.

Dougherty, C. T., F. W. Knapp, P. B. Burrus, D. C. Willis, and P. L. Cornelius. 1995. Behavior of grazing cattle exposed to small populations of stable flies (*Stomoxys calcitrans*). Appl. Anim. Behav. Sci. 42:231-248.

Dove, W. E. 1939. Control of dog fly breeding in peanut litter. U.S. Dept. Agr., Farmers' Bulletin No. 1097 pp. 1-4.

Dove, W. E. 1942. Dog fly threats to army camps averted through recent research. Florida Anti-Mosquito Assoc. Rep. 16 pp. 17.

Dove, W. E., and S. W. Simmons. 1942. Control of stable fly or "dog fly" breeding in shore deposits of bay grasses. J. Econ. Entomol. 35: 582-589.

The control of stable flies along the northern Florida shoreline using creosote oil mixed with diesel oil is described. Shoreline grasses were sprayed with the treatment from September 4-October 20, 1941, along ~700 miles of shoreline. The treatment reduced stable fly populations from 1000 eggs, 15.4 larvae or ~25 adult flies per square foot to zero population. Creosote remained viable in the grasses for 18-30 days.

Downes, J. A. 1958. The feeding habits of biting flies and their significance in classification. Ann. Rev. Entomol. 3: 249-267.

Doyle, M. S., B. N. Swope, J. A. Hogsette, K. L. Burkhalter, H. M. Savage, and R. S. Nasci. 2011. Vector competence of the stable fly (Diptera: Muscidae) for West Nile Virus. J. Med. Entomol. 48: 656-668.

Drummond, R. O. 1958. Laboratory screening tests of animal systemic insecticides. J. Econ. Entomol. 51: 425-427.

Drummond, R. O. 1960. Preliminary evaluation of animal systemic insecticides. J. Econ. Entomol. 53: 1125-1127.

Drummond, R. O. 1962. Further evaluation of animal systemic insecticides, 1961. J. Econ. Entomol. 55: 398-402.

Drummond, R. O. 1963. Further evaluation of animal systemic insecticides, 1962. J. Econ. Entomol. 56: 831-834.

Drummond, R. O. 1964. Further evaluation of animal systemic insecticides, 1963. J. Econ. Entomol. 57: 741-745.

Drummond, R. O. 1965. Further evaluation of animal systemic insecticides, 1964. J. Econ. Entomol. 58: 773-776.

Drummond, R. O. 1966. Further evaluation of animal systemic insecticides, 1965. J. Econ. Entomol. 59: 1049-1053.

Drummond, R. O. 1967. Further evaluation of animal systemic insecticides, 1966. J. Econ. Entomol. 60: 733-737.

Drummond, R. O. 1968. Further evaluation of animal systemic insecticides, 1967. J. Econ. Entomol. 61: 1261-1264.

Drummond, R. O., and O. H. Graham. 1959. Dowco 109 as an animal systemic insecticide. J. Econ. Entomol. 52: 749-750.

Drummond, R. O., and W. J. Gladney. 1969. Further evaluation of animal systemic insecticides, 1968. J. Econ. Entomol. 62: 934-936.

Drummond, R. O., D. I. Darrow, and W. J. Gladney. 1970. Further evaluation of animal systemic insecticides, 1969. J. Econ. Entomol. 63: 1103-1106.

Drummond, R. O., D. I. Darrow, and W. J. Gladney. 1971. Further evaluation of animal systemic insecticides, 1970. J. Econ. Entomol. 64: 1166-1170.

Drummond, R. O., G. Lambert, H. E. Smalley, and C. E. Terrill. 1981. Estimated losses of livestock to pests. CRC Handbook of Pest. Management Agric. Vol.1 pp.111-127, 528-536.

Dsouli, N., F. Delsuc, J. Michaux, E. De Stordeur, A. Couloux, M. Veuille, and G. Duvallet. 2011. Phylogenetic analyses of mitochondrial and nuclear data in haematophagous flies support the paraphyly of the genus *Stomoxys* (Diptera: Muscidae). Infect., Genet. Evol. 11: 663-670.

Dsouli-Aymes, N. 2009. Contribution à la phylogénie du genre *Stomoxys* (Diptera: Muscidae) et à la phylogéographie de *Stomoxys calcitrans* (L. 1758). Doctoral dissertation. Universite Montpellier III- Paul Valery, Département de Biologie-Écologie-Environnement, Montpellier, France.

Dsouli-Aymes, N., J. F. Mavoungou, E. De Stordeur, and G. Duvallet. 2009. Landscape, population structure and genetic diversity of *Stomoxys calcitrans*. Parasite 16: 37-41.

Dsouli-Aymes, N., J. Michaux, E. De Stordeur, A. Couloux, M. Veuille, and G. Duvallet. 2011. Global population structure of the stable fly (*Stomoxys* *calcitrans*) inferred by mitochondrial and nuclear sequence data. Infect., Genet. Evol. 11: 334-342.

Duffield, J. E. 1937. Notes on some animal communities of Norwegian Lapland. J. Animal Ecol. 6: 160-168.

Dukes, J. C., and C. F. Hallmon. 1984. Laboratory tests of insecticides for control of adult stable flies. J. Fla. Anti-Mosq. Assoc. 55: 6-9.

DuPonte, M. W., and L. B. Larish. 2003. Stable fly. Livestock management insect pests. LM-10.4. Cooperative Extension Service, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa.

DuToit, G. D. G. 1974. Aspects of the biology of *Stomoxys calcitrans* Linnaeus (Diptera: Muscidae). Farm Animals pp. 211-212.

DuToit, G. D. G. 1975. Reproductive capacity and longevity of stable flies maintained on different kinds of blood. J. S. Afr. Vet. Assoc. 46: 345-347.

Duvallet, G., and A. Pont. 2008. Stomoxyine flies from Ethiopia. Vet. Parasitol. 153: 193-194.

E

Eads, R. B. 1979. Notes on muscoid diptera of public health interest. Mosq. News 39: 674-675.

Eagleson, C. 1938. Resistance of *Stomoxys calcitrans* (L.) to laboratory application of pyrethrum spray. J. Econ. Entomol. 31: 778.

Eagleson, C. 1943. Stable fly. Am. Assoc. Adv. Sci. Publ. 20: 77-78.

Easton, E. R., and M. A. Catangui. 1988. Vinyl plastic cage design for single-mating experiments to chemosterilize the stable fly (Diptera: Muscidae) with Bisazir. J. Econ. Entomol. 81: 400-402.

Eavy, L., K. Aukli, C. Brandell, J. Greager, L. Higginbottom, S. Kane, S. Miller, and S. Voice. 1981. Biology, economics, and management of the stable fly as a recreational pest. The University of Michigan Stable Fly Study Project. 103 p.

Eddy, G. W. 1951. Aminophenols as antioxidants for pyrethrum. J. Econ. Entomol. 44: 109-111.

Eddy, G. W., and W. S. McGregor. 1949. Residual action of organic insecticides against stable fies. J. Econ. Entomol. 42: 547.

Eddy, G. W., and W. S. McGregor. 1949. Use of white mice for testing materials used as repellents and toxicants for stable flies. J. Econ. Entomol. 42: 461-463.

Eddy, G. W., and A. R. Roth. 1961. Toxicity to fly larvae of the feces of insecticide-fed cattle. J. Econ. Entomol. 54: 408-411.

Eddy, G. W., W. S. McGregor, D. E. Hopkins, and J. M. Dreiss. 1954. Effects on some insects of the blood and manure of cattle fed certain chlorinated hydrocarbon insecticides. J. Econ. Entomol. 47: 35-38.

Eddy, G. W., A. R. Roth, and F. W. Plapp. 1962. Studies on the flight habits of some marked insects. J. Econ. Entomol. 55: 603-607.

Several thousand stable flies, horn flies, house flies and mosquitoes were marked with ^{32}P and released at Buffalo Well in Lake County, Oregon. Bait animals were stationed 1 and 5 miles from the release site, at 8 locations, and traps were placed near the bait animals. The area around the release site was primarily sagebrush. A number of stable flies were recaptured at stations 5 miles from the release site after only 1 hour and 45 minutes. Direction of flight followed wind direction. No flies were recaptured to the north, which was against the wind.

Eicher, S. D., and J. W. Daily. 2002. Indicators of acute pain and fly avoidance behaviors in Holstein calves following tail-docking. J. Dairy Sci. 85: 2850-2858.

Eicher, S. D., J. L. Morrow-Tesch, J. L. Albright, and R. E. Williams. 2001. Tail-docking alters fly numbers, fly avoidance behaviors and cleanliness, but not physical measures. J. Dairy Sci. 84: 1822-1828.

Eigen, M., W. J. Kroft, and G. Brandner. 2002. Transferability of HIV by arthropods supports the hypothesis about transmission of the virus from apes to man. Naturwissenschaften. 89: 185-186.

Eldridge, B. F., and J. D. Edman (eds.). 2004. Medical entomology: a textbook on public health and veterinary problems caused by arthropods. Kluwer Academic Publishers, Boston, Mass. 659pp.

Elkan, P. W., R. Parnell, and J. L. D. Smith. 2009. A die-off of large ungulates following a *Stomoxys* biting fly outbreak in lowland forest, northern Republic of Congo. Afr. J. Ecol. 47: 528-536.

Elliott, M., N. F. Janes, and C. Potter. 1978. The future of Pyrethroids in insect control. Ann. Res. Entomol. 23: 443-469.

Emden, F. I. van. 1941. XVIII. Entomological expedition to Abyssinia, 1926-1927. Diptera Cyclorrhapha: Muscidae. Ann. Mag. Nat. Hist. Ser. 11: 223.

Estienne, M. J., F. W. Knapp, J. A. Boling, and J. G. Burg. 1991. Physiological and nutritional response of beef steers exposed to stable flies (Diptera: Muscidae). J. Econ. Entomol. 84: 1262-1265.

The physiological and nutritional responses of steers were measured in the lab when exposed to 0, 10, 20, or 30 stable flies for 15 minutes, 3 times per day. Flies were caged, and put on the backs of the animals. Heart rate, respiration, rectal temperature, amount of feed consumed and waste produced, and nitrogen and cortisol concentrations were measured. No signs of stress were recorded in the steers during the experiment.

Ewing, H. E. 1919. Stable flies and chiggers. J. Econ. Entomol. 12: 466.

F

Farkas, R., and J. A. Hogsette. 2000. Current and prospective control possibilities of filth-breeding flies in livestock and poultry production, pp. 889-904. *In* Papp, L. and Darvas, B. (eds.), Contributions to a Manual of Palearctic Diptera, Vol. 1 General and Applied Dipterology. Science Herald, Budapest.

Farkas, R., and L. Papp. 1989. Species composition and breeding sites of fly communities (Diptera) in caged-layer houses in Hungary. Parasit. Hung. 22: 93-98.

Farkas, R., and A. Gyurcsó. 2006. What do we know about flies attacking the ears of dogs. Magyar Allatorvosok Lapja 128: 222-226.

During the warm summer and autumn months flies attack many dogs of different breeds kept outdoors throughout Hungary. These ectoparasites, as they feed, cause damage usually at the edges, tips and/or bases of the ears. The flies' bites result in severe irritation to the skin, causing dermatitis. The skin is covered by bloody crusts and scabs. The painful bite of flies usually causes restlessness, head shaking and scratching the ears, leading to further irritation and bleeding. Based on the species identification of flies caught on four infested dogs the specimens of the common stable fly, *Stomoxys calcitrans* (Diptera: Muscidae) occurred. The authors summarize the biology of the blood-sucking fly species,

which is also called "dog fly" in some countries. The treatment of the affected dogs and the control possibilities are also discussed.

Feaster, J. E., M. A. Scialdone, R. G. Todd, Y. I. Gonzalez, J. P. Foster, and D. L. Hallahan. 2009. Dihydronepetalactones deter feeding activity by mosquitoes, stable flies, and deer ticks. J. Med. Entomol. 46: 832-840.

Feedes, J. J. R., and J. A. DeShazer. 1986. Modeling the effects of stable flies on the performance of beef cattle. Agr. Forestry Bull. 9: 13-16.

Ferguson, J. 1951. Recommendations for the control of external livestock parasites. Polled Hereford Mag. 8: 3.

Ferrar, P., H. A. Standfast, and A. L. Dyce. 1975. A survey of blood-sucking and synanthropic Diptera and dung insects on Norfolk Island, South Pacific. J. Aust. Entomol. Soc. 14: 7-13.

Ferris, D. H., R. P. Hanson, R. J. Dicke, and R. H. Roberts. 1955. Experimental transmission of vesicular stomatitis virus by Diptera. J. Infect. Dis. 96: 184-192.

Fischer, O., L. Matlova, L. Dvorska, P. Svastova, J. Bartl, I. Melicharek, R. T. Weston, and I. Pavlik. 2001. Diptera as vectors of mycobacterial infections in cattle and pigs. Med. Vet. Entomol. 15: 208-211.

Fischer, R. G., W. Turner, D. H. Luecke, and G. J. Burton. 1973. Assays for the Friend murine leukemia virus (FLV) complex in the stable fly, *Stomoxys calcitrans*. Mosq. News 33: 440-446.

Fisher, E. H. 1955. A dairy-barn fogging method for fly control. J. Econ. Entomol. 48: 330.

Fletcher, M. G., E. C. Turner, J. W. Hansen, and B. D. Perry. 1988. Horse-baited insect trap and mobile insect sorting table used in a disease vector identification study. J. Am. Mosq. Control Assoc. 4: 431-435.

Flitters, N. E. 1962. Observations on the effect of hurricane “Carla” on insect activity. Int. J. Biometeorol. 6: 85-90.

Floate, K. D. 2003. Field trials of *Trichomalopsis sarcophagae* (Hymenoptera: Pteromalidae) in cattle feedlots: a potential biocontrol agent of filth flies (Diptera: Muscidae). Can. Entomol. 135: 599-608.

Floate, K., B. Khan, and G. Gibson. 1999. Hymenopterous parasitoids of filth fly (Diptera: Muscidae) pupae in cattle feedlots. Can. Entomol. 131: 347-362.

Floate, K. D., P. Coghlin, and G. A. P. Gibson. 2000. Dispersal of the filth fly parasitoid *Muscidifurax raptorellus* (Hymenoptera: Pteromalidae) following mass release in cattle confinements. Biol. Control 18: 172-178.

Floate, K. D., R. W. Spooner, and D. D. Colwell. 2001. Larvicidal activity of endectocides against pest flies in the dung of treated cattle. Med. Vet. Entomol. 15: 117-120.

Flynn, A. D., and W. G. Eden. 1958. Systemic insecticidal action on bloodsucking ectoparasites of several compounds administered orally to rabbits. J. Econ. Entomol. 51: 499-501.

Flynn, A. D., and W. G. Eden. 1960. Systemic and topical insecticidal activity of some substituted phosphates and phosphorothioates. J. Econ. Entomol. 53: 692-693.

Foil, L., and C. Foil. 1988. Dipteran parasites of horses. Equine Practice. 10: 21-38.

Foil, L. D., and J. A. Hogsette. 1994. Biology and control of tabanids, stable flies and horn flies. Rev. Sci. Tech. Off. Int. Epiz. 13: 1125-1158.

Foil, L. D., and C. D. Younger. 2006. Development of treated targets for controlling stable flies (Diptera: Muscidae). Vet. Parasitol. 137: 311-315.

Baited fabric targets and electrocution devices such as those developed by Vale (1993) were tested for their efficiency against stable flies. These cloth targets were made of blue and black cloth, and captured 6 times more stable flies than Alsynite traps

Foil, L. D., C. L. Meek, W. V. Adams, and C. J. Issel. 1983. Mechanical transmission of Equine Infectious Anemia Virus by deer flies (Chrysops flacidus) and stable flies (*Stomoxys calcitrans*). Am. J. Vet. Res. 44: 155-156.

Forester, K. W., I. L. Berry, and J. B. Campbell. 1976. Simulation of overwintering stable fly populations. Am. Soc. of Ag. Engineers. 76: 5024.

Förster, M., S. Slimpel, H. Mehlhorn, K. Sievert, S. Messler, and K. Pfeffer. 2007. Pilot study on synanthropic flies (e.g. *Musca, Sarcophaga, Calliphora*, *Fannia*, *Lucilia*, *Stomoxys*) as vectors of pathogenic microorganisms. Parasitol. Res. 101: 243-246.

Förster, M., K. Sievert, S. Messler, S. Klimpel, and K. Pfeffer. 2009. Comprehensive study on the occurrence and distribution of pathogenic microorganisms carried by synanthropic flies caught at different rural location in Germany. J. Med. Entomol. 46: 1164-1166.

Fosbrooke, H. A. 1963. The stomoxys plague in Ngorongora. Afr. J. Ecol. 1: 124-126.

Fourie, L. J., D. Stanneck, and I. G. Horak. 2006. The efficacy of a topically applied combination of imidacloprid and permethrin against *Stomoxys calcitrans* on dogs. Intern. J. Appl. Res. Vet. Med. 4: 29-33.

Frank, J. H., and E. D. McCoy. 1993. Introduction to the behavioral ecology of introduction. The introduction of insects into Florida. Fla. Entomol. 76: 1-53.

Frank, J. H., and E. D. McCoy. 1994. Introduction to the behavioral ecology of the protection of native floras and faunas. Commercial importation into Florida of invertebrate animals as biological control agents. Fla. Entomol. 77: 1-20.

Frantsevich, L., and D. Gladun. 2002. Evolution of the middle leg basal articulations in flies (Diptera). Acta Zool. (Stoch.) 83: 125-147.

Frazar, E. D., and C. D. Schmidt. 1979. Susceptibility of laboratory-reared horn flies and stable flies to selected insecticides. J. Econ. Entomol. 72: 884-886.

Freeborn, S. B., W. M. Regan, and A. H. Folger. 1925. The relation of flies and fly sprays to milk production. J. Econ. Entomol. 18: 779-790.

Freeborn, S. B., W. M. Regan, and A. H. Folger. 1928. The relation of flies and fly sprays to milk production. J. Econ. Entomol. 21: 494-501.

Freitas, T. R., and C. H. Romero. 1991. Experimental transmission of bovine leukosis virus by leukocites recovered from the stable fly *Stomoxys calcitrans* (L.) Braz. J. Med. Res. 24: 1017-1023.

Friend, W. G., and J. J. B. Smith. 1977. Factors affecting feeding by bloodsucking insects. Ann.Rev. Entomol. 23: 309-331.

A review on the blood feeding behavior of insects including several families of Diptera, which devotes half a page to *Stomoxys calcitrans*. The mouthparts and feeding process are described, and feeding stimuli discussed. Gatehouse (1970) is cited as saying that olfactory stimuli do not induce probing, but probing can be induced when chemoreceptors on the tarsi contact ATP or leucine. It is suggested that many different factors induce the feeding of stable flies.

Fuller, C. 1913. Fly plagues: an unusual outbreak of *Stomoxys calcitrans* following floods. Agr. II Union S. Afr. 5: 922-925.

Fye, R. L., J. Brown, J. Ruff, and L. Buschman. 1980. A survey of northwest Florida for potential stable fly breeding. Fla. Entomol. 63: 246-251.

A survey was done in 15 counties of Northwest Florida and neighboring counties in Alabama and Georgia to identify potential areas for stable fly breeding sites. One of the main sources of stable flies seemed to be on livestock farms which fed green chop and silage, and these were within 70 miles of the Florida beaches. Stable flies had been reported to breed in marine grasses, but migration from the farms was also likely as they can migrate long distances. The livestock farms are a possible source for the stable flies on the Northwest Florida beaches.

G

Gadelhak, G. G., V. K. Pedibhotla, R. M. T. Rosario, G. D. Thomas, and D. W. Stanley-Samuelson. 1995. The influence of blood meals on accumulation of arachidonic acid by adult stable flies. Comp. Biochem. Physiol. 110B: 613-621.

Gahan, J. B., H. G. Wilson, C. Keller, and C. N. Smith. 1968. Toxicity of insecticides to stable flies. USDA-ARS (Ser.), 33-123, 27p.

Galowalia, M. M. S. 1981. Some conclusions of a study on the development of chemical control of *Stomoxys nigra*. Trop. Pest Manag. 27: 435-436.

Gamal-Eddin, F. M. 1963. Experimental studies on the development stages of two blood-sucking flies (*Stomoxys calitrans*, Lin. And *S. sitiens*, Rond.) in Egypt (Diptera: Stomoxydinae). J. Arab. Vet. Med. Assoc. 23: 309-138.

Gamal-Eddin, F. M. 1963. Further experimental studies on the stable fly *Stomoxys calcitrans* Lin. and its kins. Rond in Egypt. J. Arab.Vet. Med. Assoc. 23: 35-42.

Gardiner, E. M. M., and F. W. Plapp, Jr. 1997. Insecticide uptake and decreased uptake resistance in the house fly (Diptera: Muscidae): a study with avermectin. J. Econ. Entomol. 90: 261-266.

Garfias, C. R. B., A. P. M. Flores, and I. G. Hernández. 2007. Effect of feeding *Stomoxys calcitrans* (Diptera: Muscidae) with blood from *Bos Taurus* immunized with concealed antigens from the stable fly on the oviposition. Vet. Méx. 38: 177-184.

Garros, C., J. Gilles, and G. Duvallet. 2004. A new morphological character for the identification of *Stomoxys* calcitrans and *S.* niger (Diptera: Muscidae). Comparison of La Reunion Island populations. [Un nouveau caractère morphologique pour distinguer *Stomoxys calcitrans* et *S. niger* (Diptera: Muscidae): comparaison de populations de L'ile de La Réunion.] Parasite. 11: 329-332.

A new morphological character is described to differentiate between the stable fly species *Stomoxys calcitrans* and *S. niger*. It was found that the maxillary palpi are longer in *S. niger*, regardless of sex, and the character is visible in the field using a magnifying glass. Populations of both species were studied at different elevations on La Reunion Island, and populations in West Africa were surveyed to confirm the consistency of the character.

Gatehouse, A. G. 1967. Synergistic effect of two stimulants to induce probing in *Stomoxys calcitrans.* Nature 216: 794-795.

Gatehouse, A. G. 1970. Interactions between stimuli in the induction of probing by *Stomoxys calcitrans.* J. Insect Physiol. 16: 991-1000.

Gatehouse, A. G. 1970. The probing response of *Stomoxys calcitrans* to certain physical and olfactory stimuli. J. Insect Physiol. 16: 61-74.

Gatehouse, A. G., and C. T. Lewis. 1973. Host location behaviour of *Stomoxys calcitrans*. Ent. Exp. & Appl. 16: 275-290.

Gatterdam, P. E., W. F. Chamberlain, and D. E. Hopkins. 1962. Studies with P^{32}-labeled Bayer 22408 in steers and guinea pigs. J. Econ. Entomol. 55: 326-332.

Gaugler, R. 1990. Salinity tolerance of stable fly (Diptera: Muscidae). J. Econ. Entomol. 83: 887-891.

Experiments were performed on each life stage of stable flies to determine their tolerance of salinity. Eggs were placed on filter paper with different salinity concentrations (20-160 parts per thousand). Studies for survival and development were conducted in beakers. Larval rearing media was treated with 6 solutions of NaCl from 10-34 ppt. Larvae and pupae were weighed to monitor development, and adult longevity was determined. Salinity was most harmful to larvae. Survival declined at salinity of >25ppt, and no larvae survived to pupariation at concentrations above that of sea water (34 ppt). Salinity also had a negative effect on fecundity in adult flies.

Geden, C. J. and J. A. Hogsette (eds.). 1994. Research and extension needs for integrated pest management for arthropods of veterinary importance. Proceedings of a workshop. Lincoln, NE.

Geden, C. J. 1996. Modeling host attacks and progeny production of *Spalangia gemina*, *Spalangia cameroni*, and *Muscidifurax raptor* (Hymenoptera: Pteromalidae) at constant and variable temperatures. Biol. Control 7: 172-178.

Geden, C. J. 2006. Visual targets for capture and management of house flies, *Musca domestica* L. J. Vector Ecol. 31: 152-157.

Geden, C. J., and R. D. Moon. 2009. Host ranges of gregarious muscoid fly parasitoids: *Muscidifurax raptorellus* (Hymenoptera: Pteromalidae), *Tachinaephagus zealandicus* (Hymenoptera: Encyrtidae), and *Trichopria nigra* (Hymenoptera: Diapriidae). Environ. Entomol. 38: 700-707.

Geden, C. J., R. D. Moon, and J. F. Butler. 2006. Host ranges of six solitary filth fly parasitoids (Hymenoptera: Pteromalidae, Chalcididae) from Florida, Eurasia, Morocco, and Brazil. Environ. Entomol. 35: 405-412.

Geden, C., A. Garcia-Maruniak, V. U. Lietze, J. Maruniak, and D. G. Boucias. 2011. Impact of house fly salivary gland hypertrophy virus (MdSGHV) on a heterologous host, *Stomoxys calcitrans*. J. Med. Entomol. 48: 1128-1135.

Geden, C. J., T. Steenberg, V. U. Lietze, and D. G. Boucias. 2011. Salivary gland hypertrophy virus of house flies in Denmark: Prevalence, host range, and comparison with a Florida isolate. J. Vector Ecol. 36: 231-238.

Geigy, R., and M. Huber. 1952. Studies on structure and function of stigmates in various species of tsetse flies and *Stomoxys calcitrans*. [Untersuchungen über bau und funktion der stigmen bei verschiedenen *Glossina*-arten und bei *Stomoxys calcitrans*.] Acta Trop. 9: 233-263.

Gerry, A. C., N. G. Peterson, and B. A. Mullens. 2007. Predicting and controlling stable flies on California dairies. Univ. of Calif. Div. of Agric. and Nat. Res. Publ. 8258.

Reviews the economic injury level of stable flies on cattle, identification of stable flies, and how to determine the abundance of flies using the count of 5 flies per front leg or 10 tail flicks. Discusses control methods including sanitation to reduce larval development sites, knockdown or residual spray for control of adults, using sprays on cattle, and biological control.

Gersabeck, E. F., and R. W. Merritt. 1983. Vertical and temporal aspects of Alsynite panel sampling for adult *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Fla. Entomol. 66: 222-227.

Gersabeck, E. F. and R. W. Merritt. 1985. Dispersal of adult *Stomoxys calcitrans* (L.) (Diptera: Muscidae) from known immature developmental areas. J. Econ. Entomol. 78: 617-621.

Mark-release-recapture experiments were conducted on Mackinac Island, Michigan to examine the dispersal patterns and of stable flies. The island was populated with 500-600 horses each summer, transported in for recreational purposes. Flies were obtained from the USDA lab in Gainesville, FL, marked with different colors for each area and each release, and recaptured on adhesive panel traps. Dispersal was found to coincide with host location and availability, not wind direction.

Gersabeck, E. F., R. W. Merritt, and J. D. Haefner. 1982. An efficient trap for collecting wild adult stable flies, *Stomoxys calcitrans* (Diptera: Muscidae) for mark-release study. J. Med. Entomol. 19: 541-544.

Gibbs, E. P. J., R. H. Johnson, and A. G. Gatehouse. 1973. A laboratory technique for studying the mechanical transmission of bovine herpes mammillitis virus by the stable fly (*Stomoxys calcitrans* L.). Res. Vet. Sci. 14: 145-147.

Gibson, G. A. P. 2000. Differentiation of the species of Urolepis (Hymenoptera: Chalcidoidea: Pteromalidae), potential biocontrol agents of filth flies (Diptera: Muscidae). Can. Entomol. 132: 391-410.

Gibson, G., and S. J. Torr. 1999. Visual and olfactory responses of haematophagous Diptera to host stimuli. Med. Vet. Entomol. 13: 2-23.

Literature on the responses of blood-feeding Diptera to host stimuli are reviewed and summarized, including the effect of wind, biotic factors, long- and short-range responses to olfactory cues, and visual responses. Includes research on Glossinidae, Muscidae, Tabanidae, Culicidae, Ceratopogonidae, Phlebotominae and Simuliidae. Discusses chemical attractants, responses to colors, efficacy of the different traps.

Gibson, G. A. P., and K. Floate. 2001. Species of *Trichomalopsis* (Hymenoptera: Pteromalidae) associated with filth flies (Diptera: Muscidae) in North America. Can. Entomol. 133: 49-85.

Gibson, G. A. P., and K. D. Floate. 2004. Filth fly parasitoids on dairy farms in Ontario and Quebec, Canada. Can. Entomol. 136: 407-417.

Gilbert, I. H., H. K. Gouck, and C. E. Schreck. 1970. Comparison of four cinchoninates, an oxetanone, and two standard skin repellents against *Aedes aegypti* and *Stomoxys calcitrans*. Fla. Entomol. 53: 89-92.

Gilbertson, C. B. 1986. Stable fly biology and control in cattle feedlots. Kans. Agric. Exp. Stn. Publ. 86-362-D.

Gilbertson, C. B. 1987. Mortality of stable flies and house flies in water and carbon dioxide. Trans ASAE 30: 1442-1446.

Gilbertson, C. B., and J. B. Campbell. 1986. Evaluation of beef cattle feedlot subsystems for immature house flies and stable flies. Trans ASAE 29: 1092-1096.

Gilbertson, C. B., and E. T. Clemens. 1986. The effect of the biting fly *Stomoxys calcitrans* and ambient temperature on rabbit manure production. Trans ASAE 29: 1730-1732.

Giles, G. M. 1906. The anatomy of the biting flies of the genus *Stomoxys* and *Glossina*. J. Trop. Med. 9: 99-102, 153-156, 169-173, 182-185, 198-202, 217-219, and 235-236.

Gilles, J., I. Litrico, P. Sourrouille, and G. Duvallet. 2004. Microsatellite DNA markers for the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae). Mol. Ecol. Notes 4: 635-637.

Eight microsatellite markers were isolated from *Stomoxys calcitrans* from La Reunion Island. Number of alleles per locus ranged for 4-15. Several heterozygote deficiencies were detected. Four of the microsatellite loci were successfully isolated from *S. niger.*

Gilles, J., I. Litrico, and G. Duvallet. 2005. Microsatellite loci in the stable fly, *Stomoxys niger niger* (Diptera: Muscidae) on La Réunion Island. Mol. Ecol. Notes 5: 93-95.

Gilles, J., J. -F. David, and G. Duvallet. 2005. Temperature effects on development and survival of two stable flies, *Stomoxys calcitrans* and *Stomoxys niger niger* (Diptera Muscidae), in La Reunion Island. J. Med. Entomol. 42: 260-265.

Laboratory experiments were conducted to compare the survival and developmental rate of the immature stages (eggs, larvae, pupae) of *Stomoxys calcitrans* and *S. niger niger* at five different temperatures (15, 20, 25, 30 and 35ºC). *S. calcitrans* had a significantly higher survival rate than *S. niger* at 20ºC. At 15ºC, there was high mortality for *S. calcitrans* larvae and *S. niger* eggs. The pupae of both species had high mortality at

35ºC. Results suggest that the tropical *S. niger* is better adapted to lower temperatures than *S. calcitrans*.

Gilles, J., J. -F. David, and G. Duvallet. 2005. Effects of temperature on the rate of increase of *Stomoxys calcitrans* and *Stomoxys niger niger* (Diptera: Muscidae) from La Réunion Island. J. Med. Entomol. 42: 959-965.

Laboratory experiments were conducted to compare life history parameters of *Stomoxys calcitrans* and *S. niger niger* at five different temperatures. In the first experiment, all life stages were reared at the same temperature (15, 20, 25, 30 and 35ºC). In the second experiment, immature were reared at 25ºC and the adults were exposed to different temperatures. Mean adult longevity was greatest for *S. calcitrans* at 20ºC, however they experienced high mortality perhaps due to an inadequate larval diet in these experiments.

Gilles, J., J. -F. David, G. Duvallet, S. de la Rocque, and E. Tillard. 2007. Efficiency of traps for *Stomoxys calcitrans* and *Stomoxys niger niger* on Reunion Island. Med. Vet. Entomol. 21: 65-69.

The efficiency of 2 Alsynite sticky traps (Williams trap and Broce trap) and 2 phtalogen blue cloth traps (Vavouva and Nzi) were tested on 2 farms on La Reunion Island. Total fly catches were higher on the sticky traps but they were less specific to *Stomoxys* spp. On farm 1 the Vavouva trap proved more efficient for catching *Stomoxys*, but on farm 2 the Williams traps was more efficient. Considering that the cloth traps can hold more flies and are easier to use than the Williams trap, the results supported the use of the Vavouva trap as part of a stable fly control program.

Gilles, J., I. Litrico, E. Tillard, and G. Duvallet. 2007. Genetic structure and gene flow along an altitudinal gradient among two Stomoxyine species (Diptera: Muscidae) on La Reunion Island. J. Med. Entomol. 44: 433-439.

Gilles, J., J. -F. David, G. Duvallet, and E. Tillard. 2008. Potential impacts of climate change on stable flies, investigated along an altitudinal gradient. Med. Vet. Entomol. 22: 74-81.

Stomoxys calcitrans and *S. n. niger* were sampled on La Reunion Island, on 7 farms along an altitude gradient (100m-1600m above sea level) to examine the effects of temperature on fly abundance. There was no relationship found between maximum or mean abundance and temperature, but minimum numbers during winter were higher at the lower altitudes. A greater difference was found between fly abundance and husbandry methods of the farms.

Gilles, J., J. -F. David, E. Tillard, G. Duvallet, and K. Pfister. 2008. Potential impacts of climate change on stable flies, investigated along an altitudinal gradient. Parasitol. Res. 103 (Suppl. 1): S150.

Gilles, J., J. -F. David, P. Lecomte, and E. Tillard. 2008. Relationships between chemical properties of larval media and development of two *Stomoxys* species (Diptera: Muscidae) from Reunion Island. Environ. Entomol. 37: 45-50.

Gingrich, R. E. 1960. Development of a synthetic medium for aseptic rearing of larvae of *Stomoxys calcitrans* (L.). J. Econ. Entomol. 53: 408-411.

Gingrich, R. E. 1965. *Bacillus thuringiensis* as a feed additive to control dipterous pests of cattle. J. Econ. Entomol. 58: 363-364.

Glaser, R. W. 1923a. The relationship of microorganisms to the development and longevity of flies. Amer. J. Trop. Med. 4: 85-107.

Glaser, R. W. 1923b. The survival of bacteria in the pupal and adult stages of flies. Am.. J. Hyg. 3: 469-480.

Glaser, R. W. 1924. Rearing flies for experimental purpose with biological notes. J. Econ. Entomol. 17: 486-496.

Glaser, R. W. 1924. The effect of food on longevity and reproduction in flies. J. Exper. Zool. 38: 383-412.

Glick, P. A. 1939. The distribution of insects, spiders and mites in the air. U.S. Dept. Agric. Tech. Bull. 673.

Glover, G. H. 1940. Combatting stable flies brings comfort to stock. Western Farm Life 42: 14.

Gojmerac, W. L. 1981. Weekly cleanup limits fly breeding. Hoard's Dairyman. May 10,1981: 692, 697.

Golding, F. D. 1946. A new method of trapping flies. Bull. Entomol. Res. 37: 143-154.

Goncalves, N. M. F. M., and L. A. Viega. 1994. Influence of temperature on the occurrence of *Stomoxys calcitrans* in poultry ranches (*Gallus gallus*). Arq. Biol. Tecnol. 37: 853-864. (In Portuguese with English summary).

Goncalves, N. M. F. M., and L. A. Viega. 1995. Precipitin test in the identification of blood meals of *Stomoxys calcitrans* (L.), stable fly, caught on Parana poultry ranches. Arq. Biol. Tecnol. 38: 1217-1224. (In Portuguese with English summary).

Goodhue, L. D., and C. E. Linnard. 1950. Air seperation apparatus for cleaning fly pupae. J. Econ. Entomol. 43: 228.

Goodhue, L. D., and R. E. Stansbury. 1953. Some new fly repellents from laboratory screening tests. J. Econ. Entomol. 46: 982-985.

Goodhue, L. D., and K. E. Cantrel. 1958. The use of vermiculite in medium for stable fly larvae. J. Econ. Entomol. 51: 228.

A short note that adding vermiculite to the standard CSMA fly rearing medium produces better results when rearing stable flies. A modified recipe and procedures are included.

Gouck, J. K., and I. H. Gilbert. 1962. Responses of mosquitoes and stable flies to a man in a light-weight rubber diving suit. J. Econ. Entomol. 55: 386-392.

Gouin, F. 1951. Musculature membrane basale et teguments chez la larve des Dipteres *Stomoxys calcitrans* L. et *Chironomus cingulatus* M.G. Trans. 9th International Congress of Entomology (Amsterdam) 1 pp. 104.

Graham, O. H., and R. L. Harris. 1966. Recent developments in the control of some arthropods of public health and veterinary importance: livestock insects. Bull. Entomol. Soc. Am. 12: 319-325.

Graham, O. H., and J. L. Hourrigan. 1977. Eradication programs for the arthropod parasites of livestock. J. Med. Entomol. 13: 629-658.

Granett, P. 1960. Use of an animal membrane in the evaluation of chemical repellents against the stable fly. J. Econ. Entomol. 53: 432-435.

Granett, P., and H. L. Haynes. 1945. Insect-repellent properties of 2-Ethylhexanediol-1,3. J. Econ. Entomol. 38: 671-675.

Granett, P., and H. L. Haynes. 1955. Use of Cyclethrin in livestock sprays for control of flies. J. Econ. Entomol. 48: 409-412.

Granett, P., and E. J. Hansens. 1956. The effect of biting fly control on milk production. J. Econ.Entomol. 49: 465-467.

Granett, P., and E. J. Hansens. 1957. Futher observation on the effect of biting fly control on milk production on cattle. J. Econ. Entomol. 50: 332-336.

Granett, P., and E. J. Hansens. 1961. Tests against face flies on cattle in New Jersey during 1960. J. Econ. Entomol. 54: 562-566.

Granett, P., H. L. Haynes, D. P. Connola, T. G. Bowery, and G. W. Barber. 1949. Two butoxypolypropylene glycol compounds as fly repellents for livestock. J. Econ. Entomol. 42: 281-286.

Granett, P., H. L. Haynes, and R. W. Helm. 1951. Further evaluation of butoxypolypropylene glycol as a fly repellent for dairy cattle. J. Econ. Entomol. 44: 97-102.

Granett, P., E. J. Hansens, and C. T. O'Connor. 1955. Automatic cattle sprayers for fly control in New Jersey. J. Econ. Entomol. 48: 386-389.

Granett, P., E. J. Hansens, and A. J. Forgash. 1962. Tests against face flies on cattle in New Jersey during 1961. J. Econ. Entomol. 55: 655-659.

Grasela, J. J., and L. G. Pickens. 1979. A comparison of two methods for feeding the stable fly (Diptera: Muscidae). J. Med. Entomol. 15: 274-277.

Graybill, H. W. 1914. Repellents for protecting animals from the attacks of flies. Bull. U. S. Dept. Agriculture #131, 26pp.

Greathead, D. J. 1986. Biological control of stable flies (*Stomoxys calcitrans and S. Nigra)* Misc. Pub. Entomol. Soc. Am. 61: 116-119.

Green, B. E., L. D. Foil, S. D. Hagius, and C. J. Issel. 1996. Stability of equine infectious anemia virus in *Aedes aegypti* (Diptera: Culicidae), *Stomoxys calcitrans* (Diptera: Muscidae), and *Tabanus fuscicostatus* (Diptera: Tabanidae) stored at -70°C. J. Am. Mosq. Cont. Assoc. 12: 334-336.

Greenberg, B. 1961. Mite orientation and survival on flies. Nature 190: 107-108.

Greenberg, B. 1962. Host-contaminant biology of muscoid flies. II. Bacterial survival in the stable fly, false stable fly, and the little house fly. J. Insect Pathol. 4: 216-223.

Greenberg, B. 1965. Flies and disease. Do flies spread disease? Surprisingly the evidence is still inconclusive. Efforts to provide an answer have nonetheless yielded significant information on the nature of infection. Sci. Amer. 213: 92-99.

Greenberg, B. 1971. Flies and disease volume I. Ecology, classification and biotic associations. Princeton University Press. Princeton, N. J. 856 pp.

Greenberg, B. 1973. Flies and disease volume II. Biology and disease transmission. Princeton University Press. Princeton, N. J. 447pp.

Greenberg, B. 1977. Pathogens of *Stomoxys calcitrans* (stable flies). Bull. W. H. O. 55 (Suppl. 1): 259-263.

Lists the pathogens of stable flies, the incidence rate, location and life stage affected.

Greenberg, B., and A. A. Bornstein. 1964. Fly dispersion from a rural Mexican slaughterhouse. Am. J. Trop. Med. and Hygiene 13: 881-886.

Greenberg, B., and N. Ash. 1972. Setiferous plaques on antennal pedicels of Muscoid Diptera: appearance in various species and tests of function. Ann. Entomol. Soc. Am. 65: 1340-1346.

Greene, C. T. 1956. Dipterous larvae parasitic on animals and man and some dipterous larvae causing myiasis in man. Trans. Am. Entomol. Soc. 82: 17-34.

Greene, G. L. 1985. Naturally occuring fly parasites in western Kansas feedlots during 1983. Department Report. pp.41-48.

Greene, G. L. 1989. Seasonal population trends of adult stable flies. *In* J. J. Petersen and G. L. Green (eds.), Current status of stable fly (Diptera: Muscidae) research. Misc. Publ. Entomol. Soc. Am. 74: 12-17.

Greene, G. L. 1990. Biological control of filth flies in confined cattle feedlots using pteromalid parasitoids, pp. 29-42. *In* D. A. Rutz and T. S. Patterson (eds.), Biocontrol of arthropods affecting livestock and poultry. Westview Press, Boulder, CO.

Greene, G. L. 1993. Chemical, cultural, and mechanical control of stable flies and house flies. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment. North Central Regional Res. Publ. No. 335. University of Nebraska, Lincoln. 83-90.

Greene, G. L. 1997. Occurance of *Aleochara* spp. (Coleoptera: Staphylinidae) parasitoidism of filth fly pupae in western Kansas. J. Kans. Entomol. Soc. 70: 70-72.

Greene, G. L., and J. E. Cilek. 1993. Management of stable flies in cattle feedlots with releases of parasitic wasps. Cattlemen's Day. Kansas State University Agricultural Experiment Station and Cooperative Extension Service.

Greene, G. L., and Y. J. Guo. 1997. Integrated stable fly (*Stomoxys calcitrans*) management in confined cattle feedlots. Recent Res. Devel. in Entomol. 1: 243-250.

Greene, G. L., J. A. Hogsette, and R. S. Patterson. 1989. Parasites that attack stable fly and house fly (Diptera: Muscidae) puparia during the winter on dairies in Northwestern Florida. J. Econ. Entomol. 82: 412-415.

Greene, G. L., P. E. Sloderbeck, and J. R. Nechols. 1998. Biological fly control for Kansas feedlots. Kansas State University Agricultural Experiment Station and Cooperative Extension Service. April 1998.

A pamphlet on the use of parasitoid wasps for the control of house flies and stable flies in feedlots.

Gretz, G. H. 1977. Stable fly rearing procedures. Fresno pp. 1-6.

Griffiths, O. V. 1962. Uncovered silage stacks encourage spread of biting flies. N. Z. J. Agric. 104: 65-66.

Grigor'Eva, L. A. 1992. Seasonal variation in abudance of common species of zoophilous flies (Diptera) in Southern Pskov Province. Entomol. Rev. 71: 1-7.

Grigor'eva, L. A. 1994. The absolute count of the housefly (*Musca domestica*) and the stable fly (*Stomoxys calcitrans*) in buildings for cattle. [Absoliutnaia chislennost' komnatnoĭ mukhi (*Musca domestica*) I osenneĭ zhigalki (*Stomoxys calcitrans*) v pomeshcheniiakh dlia skota.] Parazitologiia 28: 147-155.

Grodowitz, M. J., J. Krchma, and A. B. Broce. 1982. A method for preparing soft bodied larval diptera for scanning electron microscopy. J. Kans. Entomol. Soc. 55: 751-753.

Grodowitz, M. J., C. R. Roseland, K. K. Hu, A. B. Broce, and K. J. Kramer. 1987. Mechanical properties of mineralized and sclerotized puparial cuticles of the flies *Musca autumnalis* and *M. domestica*. J. Exp. Zool. 243: 201-210.

Grose, J. E. H., E. G. Harris, and L. J. Saliba. 1977. Observations on flies found on livestock farms in Malta. I. Behaviour of adult flies, breeding sites and farm hygiene in relation to fly control. Cent. Overseas Pest Res. Misc. Rep. #34, 9 pp.

Guberlet, J. E. 1919. On the life history of the chicken cestode, *Hymenolepis carioca* (Magalhaes). J. Parasitol. 6: 35-38.

Guerrero, F. D. 1997a. Transcriptional expression of a putative tachykinin-like peptide receptor gene from stable fly. Peptides 18: 1-5.

Guerrero, F. D. 1997b. Cloning of a cDNA from stable fly which encodes a protein with homology to a drosophila receptor for tachykinin-lije peptides. Ann. N. Y. Acad. Sci. 814: 310-311.

Guerrero, F. D., R. C. Jamroz, D. Kammlah, and S. E. Kunz. 1997. Toxicological and molecular characterization of pyrethroid-resistant horn flies, *Haematobia irritans*: identification of *kdr* and *super-kdr* point mutations. Insect Biochem. Molec. Biol. 27: 745-755.

Guglielmone, A. A., M. M. Volpogni, O. R. Quaino, O. S. Anziani, and A. J. Mangold. 2004. Abundance of stable flies on heifers treated for control of horn flies with organophosphate impregnated car tags. Med. Vet. Entomol. 18: 10-13.

Thirty Holstein heifers were used to study the efficacy of organophosphate-impregnated ear tags against horn flies and stable flies in Argentina. The ear tags had no effect on stable flies, and during 6 weeks of the study, the treated animals had more stable flies than the control group.

Guo, Y., G. L. Greene, and M. D. Butine. 1998. Population profile of stable flies (Diptera: Muscidae) caught on Alsynite traps in various feedlot habitats. J. Econ. Entomol. 91: 159-164.

Guo, Y., J. A. Hogsette, G. L. Greene, and C. J. Jones. 1997. Survey report on pupal parasites of filth flies in livestock and poultry facilities in China. Chinese J. Biol. Control 13: 106-109. (In Chinese).

Guyer, G. E., H. L. King, R. L. Fischer, and W. A. Drew. 1956. The emergence of flies reared from grass silage in Michigan. J. Econ. Entomol. 49: 619-622.

Guzman, D. R., and J. J. Petersen. 1986. Overwintering of flith fly parasites (Hymenoptera: Pteromalidae) in open silage in Eastern Nebraska. Environ. Entomol. 15: 1296-1300.

The overwintering ability of *Muscidifurax zaraptor*, *Spalangia cameroni* and *Urolepis rufipes* (Hymenoptera: Pteromalidae) were examined. Pupae of *Musca domestica* were exposed to the parasitoids and placed at different depths in silage. The parasitoids were also of different ages. Second/third instar larvae were most successful at overwintering, and the greatest survival was at a depth of 0-3 cm. *Spalangia* spp. were less tolerant of cold conditions than the other two species.

H

Hafez, M. 1941. Investigations into the problem of fly control in Eygpt. Bull. Soc. Fouad. Entomol. 25: 99-144.

Hafez, M., and F. M. Gamal-Eddin. 1959. Ecological studies on *Stomoxys calcitrans* L. and s*itiens* Rond. in Egypt, with suggestions on their control. Bull. Soc. Entomol. Egypte 43: 245-283.

Hafez, M., and F. M. Gamal-Eddin. 1959. On the feeding habits of *Stomoxys calcitrans* L. and *sitiens* Rond., with special reference to their biting cycle in nature. Bull. Soc. Entomol. Egypte 43: 291-301.

Hafez, M., and F. M. Gamal-Eddin. 1961. The behavior of the stable fly larvae *Stomoxys calcitrans* L. towards some environmental factors. Bull. Soc. Entomol. Egypt. 45: 311-367.

Haile, D. G. 1993. Modeling of stable fly and house fly populations, pp. 91-93. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment? Proc. of a symposium, 1989 annual meeting of the ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Res. Bull. No. 317.

Haines, T. W. 1953. Breeding media of common flies. I. In urban areas. Am. J. Trop. Med. Hyg. 2: 933-940.

Haines, T. W. 1953. Breeding media of common flies. II. In rural areas. Am. J. Trop. Med. Hyg. 4: 1125-1130.

Hald, B., H. Skovgård, K. Pedersen, and H. Bunkenborg. 2008. Influxed insects as vectors for *Campylobacter jejuni* and *Campylobacter coli* in Danish broiler houses. Poultry Science 87: 1428-1434.

Hale, K. M. 2011. Proximate causation of stable fly (*Stomoxys calcitrans* (L.) host use: the influence of phenology and host blood suitability. Doctoral Dissertation. Montana State University, Bozeman, MT.

Hall, R. D. 1992. Biotic agents affecting stable fly populations, pp. 53-71. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Hall, R. D., and F. J. Fischer. 1988. Laboratory studies on the biology of *Spalangia nigra* (Hym.:Pteromalidae). Entomophaga 33: 495-504.

Hall, R. D., G. D. Thomas, and C. E. Morgan. 1982. Stable fly, *Stomoxys calcitrans* (L.), breeding in large round hay bales: initial associations (Diptera: Muscidae). J. Kans. Entomol. Soc. 55: 617-620.

Hall, R. D., G. D. Thomas, I. L. Berry, F. J. Fischer, and M. C. Foehse. 1983. Relative abundance of stable flies, *Stomoxys calcitrans* (L.) (Diptera: Muscidae), at dairies, feedlots, and pastures in Missouri. J. Kans. Entomol. Soc. 56: 223-228.

Hall, R. D., J. P. Smith, and G. D. Thomas. 1989. Effects of predatory arthropods on the survival of immature stable flies (Diptera: Muscidae) *In* Current status of stable fly research. Misc. Publ. Entomol. Soc. Am. 74: 33-40.

Hamer, W. H. 1908. Nuisance from flies. Report of the Medical Officer. London City Council Public Health Committee. 10pp. Abstr. in Br. Med. J., May 9, 1908 pp. 1123-1124.

Hamilton. J. V., R. J. L. Munks, S. M. Lehane, and M. J. Lehane. 2002. Association of midgut defensin with a novel serine protease in the bloodsucking fly *Stomoxys calcitrans*. Insect Mol. Biol. 11: 197-205.

Hamilton, J. V., M. J. Lehane, and H. R. Braig. 2003. Isolation of *Enterobacter sakazakii* from the midgut of *Stomoxys calcitrans*. Emerging Infectious Diseases 9: 1355-1356.

Hammack, L., and L. S. Hesler. 1996. Phenylpropanoids as attractants for adult *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 33: 859-862.

Hammer, P. 1942. Biological and ecological investigations on flies associated with pasturing cattle and their excrement. Vidensk. Meddr dansk naturh. Foren. 105: 141-393.

Hansens, E. J. 1951a. The stable fly and its effect on seashore recreational areas in New Jersey. J. Econ. Entomol. 44: 482-487.

A survey was conducted to determine the numbers and breeding areas of stable flies on Island Beach in New Jersey in 1946-47. Flies were so abundant that they were causing losses in tourism at beach resorts. Outbreaks of flies were found to coincide with west winds, and flies would breed in the vegetation that was washed ashore. Flies were controlled with .5% DDT.

Hansens, E. J. 1951b. Stable flies at the seashore. Pest Control. 19: 12-13.

Hansens, E. J. 1956. Control of house flies in dairy barns with special reference to diazinon. J. Econ. Entomol. 49: 27-32.

Hansens, E. J. 1963. Fly populations in dairy barns. J. Econ. Entomol. 56: 842-844.

Harley, J. M. B. 1965. Seasonal abundance and diurnal variations in activity of some *Stomoxys* and Tabanidae in Uganda. Bull. Entomol. Res. 56: 319-332.

Harris, E. G., and J. E. H. Grose. 1972. Toxicities of several Iinsecticides by topical application to houseflies and stableflies. Centre Overseas Pest Res. 6: 1-4.

Harris, E. G., J. E. H. Grose, and V. Weston. 1973. Breeding and handling the stable fly, *Stomoxys calcitrans* L. Centre Overseas Pest Res. 11: 1-9.

Harris, E. G., J. E. H. Grose, and M. L. Zammit. 1976. Control of farm flies in Malta-I. Toxicities of insecticides to laboratory and Maltese field strains of *Musca domestica* and *Stomoxys calcitrans.* PANS (Pest Artic. News Summ.) 22: 202-206.

Harris, E. G., J. E. H. Grose, and L. J. Saliba. 1976. Control of farm flies in Malta-II. Residual effectiveness of insecticide formulations on various surfaces to *Musca domestica* and *Stomoxys calcitrans.* PANS (Pest Artic. News Summ.) 22: 207-214.

Harris, J. A., J. E. Hillerton, and S. V. Morant. 1987. Effect on milk production of controlling muscid flies, and reducing fly-avoidance behaviour, by the use of fenvalerate ear tags during the dry periods. J. Dairy Res. 54: 165–171.

Fenvalerate ear tags reduced fly loads on dry dairy cattle by 95 % between July and September. Fly dislodging behaviour, such as ear flicks which correlated with numbers of Musca autumnalis on the face and stamps/kicks which correlated with numbers of *Stomoxys caldtrans* on the legs, was also significantly reduced. There was no significant difference between the tagged and untagged groups in the total time spent grazing each day. Milk yields were not statistically significantly different, but the tagged group showed a greater increase in milk yield between lactations, of 1-45 kg/cow daily in the first 12 weeks of the lactation.

Harris, R. L. 1962. Chemical induction of sterility in the stable fly. J. Econ. Entomol. 55: 882-885.

Three chemicals, apholate, aphoxide and methaphoxide, were tested for inducing sterility in stable flies. The chemicals were applied topically to the flies, and apholate was tested as a residual film. All of the compounds induced sterility in the flies.

Harris, R. L. 1964. Laboratory tests to determine susceptibility of adult horn fly and stable fly to insecticides. J. Econ. Entomol. 57: 492-494.

Harris, R. L., R. A. Hoffman, and E. D. Frazar. 1965. Chilling vs. other methods of immobilizing flies. J. Econ. Entomol. 58: 379-380.

Harris, R. L., E. D. Frazar, P. D. Grossman, and O. H. Graham. 1966. Mating habits of the stable fly. J. Econ. Entomol. 59: 634-636.

Experiments were carried out to determine the age at which stable flies first mate after adult emergence, the number of females a male fly will inseminate, and whether females mate only once. They found that males would begin to copulate with females at 1 day after emergence, but did not transfer sperm until 2 days old. Males were found to mate with 2-9 females. Females mated only once unless they were not inseminated during the first mating. If this was the case they would mate again until inseminated.

Harris, R. L., O. H. Graham, and E. D. Frazar. 1972. Mating compatibility of five strains of stable flies. J. Econ. Entomol. 65: 738-740.

Stable flies were obtained from New Zealand, Japan, Thailand, and South Africa, and mated with the lab-reared colony at Kerrville, TX to test mating compatibility. All crosses were found to be compatible. This experiment was conducted to determine compatibility for the SIT control method.

Harris, R. L., O. H. Graham, and E. D. Frazar. 1972. Susceptibility of five strains of stable flies to certain insecticides. J. Econ. Entomol. 65: 915-916.

Harris, R. L., E. D. Frazer, and R. L. Younger. 1973. Horn flies, stable flies, and house flies: development in feces of bovines treated orally with juvenile hormone analogues. J. Econ. Entomol. 66: 1099-1102.

Harris, R. L., W. F. Chamberlain, and E. D. Frazar. 1974. Horn flies and stable flies: free-choice feeding of methoprene mineral blocks to cattle for control. J. Econ. Entomol. 67: 384-386.

Harris, R. L., J. A. Miller, and E. D. Frazar. 1974. Horn flies and stable flies: feeding activity. Ann. Entomol. Soc. Am. 67: 891-894.

Feeding activity of horn flies was monitored in the lab and on a steer, and compared with the feeding activity of stable flies. Feeding activity differed between lab and and host trials, the feeding taking twice as long on a host. They also fed more often on the host, the average number of

feedings being 24 for males and 38.4 for females, whereas on a blood pad in the lab they only fed from 7.5-10.5 times per day. In contrast, stable flies feed ~2 times per day.

Harris, R. L., D. D. Oehler, D. Coggin, and R. A. Bram. 1975. Compatibility of insecticides and a disinfectant. J. Econ. Entomol. 68: 852-854.

Harris, R. L., D. D. Oehler, and I. L. Berry. 1976. Sex pheromone of the stable fly: affect on cuticular hydrocarbons of age, sex, species, and mating. Environ. Entomol. 5: 973-977.

Harris, T. W. 1862. Insects of New England. A treatise on some of the insects injurious to vegetation. 3rd ed. P. 614.

Hart, B. L. 1992. Behavioral adaptations to parasites: an ethological approach. J. Parasitol. 78: 256-265.

Harvey, T. L. and J. R. Brethour. 1970. Horn fly control with dichlorvos-impregnated strips. J. Econ. Entomol. 63: 1688-1689.

Harwood, R. F., and M. T. James. 1979. Entomology in human and animal health. Macmillan Publishing Co. Inc., New York, N.Y. 548pp.

Hasegawa, T., and Y. Yoneyama. 1979. Fauna of flies infesting pasturing cattle and the actual conditions of infestation in the Keizai farm of Iwate University Shizukaishi Iwate Prefecture Japan. J. Fac. Agric. Iwate Univ. 14: 289-301. (In Japanese with English abstract).

Haseman, P. 1927. Controlling horn and stable flies. U. of Missouri Agr. Exp. Sta. Bull. #254, 10pp.

Hass, M. S. 1986. Characterization of aging bovine manure in relation to stable fly (Diptera:Muscidae) adult and larval presence. Master's Thesis, Kansas State University.

Hawkins, J. A., W. V. Adams, L. Cook, B. H. Wilson, and E. E. Roth. 1973. Role of horse fly (*Tabanus fuscicostatus* Hine) and stable fly (*Stomoxys calcitrans* L.) in transmission of equine infectious anemia to ponies in Louisiana. Am. J. Vet. Res. 34: 1583-1586.

Hayakama, H. 1978. Seasonal and diurnal prevalences of biting muscid flies attacking pasturing cattle in Iwate Prefecture. Bull. Tohoku Natl. Agric. Exp. Stn., 58: 261-270. (In Japanese with English abstract).

Hayes, D. K. 1993. Legal aspects of rural flies in the urban environment, pp. 40-45. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment? Proc. of a Symposium, 1989 annual meeting of the ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Res. Bull. No. 317.

Heath, A. C. G. 2002. Distribution, seasonality and relative abundance of *Stomoxys calcitrans* (stable fly) (Diptera: Muscidae) in New Zealand. N. Z. Vet. J. 50: 93-98.

Heer, Gerónimo. 2009. Control biológico de moscas. Producir XXI, Bs. As., 18: 45-47.

Herms, W. B., C. M. Wheeler, and H. P. Herms. 1934. Attempts to transmit equine encephalomyelitis by means of blood sucking insects, especially mosquitoes. J. Econ. Entomol. 27: 987-998.

Herms, W. B. 1943. Medical entomology: with special reference to the health and well-being of man and animals. The Macmillan Company, New York, N.Y.

Herrick, G. W. 1925. Manual of injurious insects. Henry Holt and Company, New York, N.Y.

Hieu, T. T., S. -I. Kim, H. W. Kwon, and Y. -J. Ahn. 2010. Enhanced repellency of binary mixtures of *Zanthoxylum piperitum* pericarp steam distillate or *Zanthoxylum armatum* seed oil constituents and *Calophyllum inophyllum* nut oil and their aerosols to *Stomoxys calcitrans.* Pest Manag. Sci. 66: 1191-1198.

Hieu, T. T., S. -I. Kim, S. -G. Lee, and Y. -J. Ahn. 2010. Repellency to *Stomoxys calcitrans* (Diptera: Muscidae) of plant essential oils alone or in combination with *Calophyllum inophyllum* nut oil. J. Med. Entomol. 47: 575-580.

Hillerton, J. E., and A. J. Bramley. 1984. The distribution of five species of flies (Diptera: Muscidae) over the bodies of dairy heifers in England. Bull. Entomol. Res. 74: 113-119.

Hixson, E., and M. H. Muma. 1951. Stable fly control on dairy animals with piperonyl butoxide-pyrethrins. J. Econ. Entomol. 44: 401-404.

Hodge, C. F. 1913. A new fly trap. J. Econ. Entomol. 6: 110-112.

Hoebeke, E. R., and D. A. Rutz. 1988. *Trichomalopsis dubius* (Ashmead) and *Dibrachys cavus* (Walker): newly discovered pupal parasitoids (Hymenoptera: Pteromalidae) of house fly and stable fly associated with livestock manure. Ann. Entomol. Soc. Am. 81: 493-497.

The Pteromalid wasps *Trichomalopsis dubius* and *Dibrachys cavus*, pupal parasitoids of the house fly and stable fly, are described. The key by Rueda and Axtell (1985) is modified to include the newly discovered species. Biological notes, field and laboratory observations and distribution of the species are included.

Hoffman, R. A. 1965. The stable fly, *Stomoxys calcitrans* (Linnaeus): biology and behavior studies. PhD dissertation, Oklahoma State University.

Hoffman, R. A., and B. F. Hogan. 1972. Selected toxicants for control of lice on poultry at Kerrville, Texas, 1961-69. J. Econ. Entomol. 65: 468-470.

Hoffman, R. A., I. L. Berry, and O. H. Graham. 1965. Control of flies on cattle by frequent, low-volume mist spray applications of Ciodrin. J. Econ. Entomol. 58: 815-817.

Hoffmann, G., and H. Herrmann. 2002. Gliedertiere (Arthropoda) als mögliche überträger (Vectoran) des maul- und klauenseuche-(MKS-) virus. Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz 45: 565-576. (In German).

Hoffmann, J. A. 1997. Immune responsiveness in vector insects. Proc. Natl. Acad. Sci. USA 94: 11152-11153.

This is a discussion of the immune responses in insects, including phagocytosis, encapsulation by blood cells, and antimicrobial peptides. It focuses on the antimicrobial peptide defensin, which is produced in the anterior midgut, and discusses the work by Lehane on the defensins found in *Stomoxys calcitrans* midgut. It is suggested that the midgut not only produces defensins, but triggers an immune response from other tissues.

Hogsette, J. A. 1981. Fly control by composting manure at a south Florida equine facility, pp. 105-113. *In* Status of biological control of filth flies. USDA/SEA, Gainesville, Fla.

Hogsette, J. A. 1983. An attractant self-marking device for marking field populations of stable flies with fluorescent dusts. J. Econ. Entomol. 76: 510-514.

Hogsette, J. A. 1984. Effect of fluorescent dust color on the attractiveness of attractant self-marking devices to the stable fly (Diptera: Muscidae). J. Econ. Entomol. 77: 130-132.

Attractant self-marking devices (ASMDs) were tested using different colors and varying amounts of fluorescent dust, for their effectiveness in attracting stable flies. The devices were made using Williams traps coated with fluorescent dust. No significant differences were found between colors or amount of dust, and the number of flies caught on the fluorescent traps was comparable with the number caught on Williams traps without dust. The only difference found was with arc yellow, which attracted so many butterflies that it was impossible for the stable flies to become stuck on the traps. The results show that Williams traps can be used to estimate the number of stable flies per day marked by ASMDs set up at the same locations.

Hogsette, J. A. 1992. New diets for production of house flies and stable flies (Diptera, Muscidae) in the laboratory. J. Econ. Entomol. 85: 2291-2294.

Hogsette, J. A. 1993. The influence of poultry operations on the urban fly problem in the Eastern United States, pp. 17-24. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment? Proc. of a Symposium, 1989 annual meeting of the ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Res. Bull. No. 317.

Hogsette, J. A. 1996. Problems with stable flies, horn flies, and house flies in intensive animal production. Seninario Internacional sobre Dipteros plagas que affectan a la salud publica y veterinaria, pp. 5-23. *In* D. C. Crespo and R. E. Lecuona (eds.), Serie de la Academia Nacional de Agronomia y Veterinaria No. 20. Buenos Aires, Argentina (Proceedings).

Hogsette, J. A. 1998. Fly breeding in livestock manure. Conference of West Central Region of the Soil and Water Conservation Society, Ames, Iowa.

Hogsette, J. A. 1999. Management of ectoparasites with biological control organisms. Int. J. Parasitol. 29: 147-151.

Hogsette, J. A. 2003. United States Department of Agriculture-Agricultural Research Service research on veterinary pests. Pest Manag. Sci. 53: 835-841.

Hogsette, J. A., and J. P. Ruff. 1985. Stable fly (Diptera: Muscidae) migration in Northwest Florida. Environ. Entomol. 14: 170-175.

Hogsette, J. A., and J. P. Ruff. 1986. Evaluation of Flucythrinate- and Fenvalerate-impregnated ear tags and Permethrin ear tapes for fly (Diptera: Muscidae) control on beef and dairy cattle in Northwest Florida. J. Econ. Entomol. 79: 152-157.

Hogsette, J. A., and J. P. Ruff. 1987. Control of stable flies and horn flies (Diptera: Muscidae) with permethrin tapes applied to the tails of beef and dairy cattle. J. Econ. Entomol. 80: 417-420.

Hogsette, J. A, and J. P. Ruff. 1990. Comparative attraction of four different fiberglass traps to various age and sex classes of stable fly (Diptera: Muscidae) adults. J. Econ. Entomol. 83: 883-856.

Hogsette, J. A., and J. P. Ruff. 1996. Permethrin-impregnated yarn: longevity of efficacy and potential use on cylindrical fiberglass stable fly (Diptera: Muscidae) traps. J. Econ. Entomol. 89: 1521-1525.

Hogsette, J. A. and R. Farkas. 2000. Secretophagous and hematophagous higher Diptera, pp. 769-792. *In* Papp, L. and Darvas, B. (eds.), Contributions to a Manual of Palearctic Diptera, Vol. 1 General and Applied Dipterology. Science Herald, Budapest.

Hogsette, J. A., J. P. Ruff, and M. J. McGowan. 1981. Stable fly integrated pest management (IPM) in Northwest Florida. J. Fla. Anti-Mosq. Assoc. 52: 48-52.

A report of ongoing and proposed projects to determine whether control of stable flies in agricultural areas would have an impact on the number of flies on the beaches. Ongoing projects include a survey of stable fly populations on dairy farms and on the beaches, and a survey of hymenopteran parasitoids. Proposed projects include mark-release studies and rate of blood digestion.

Hogsette, J. A., J. P. Ruff, and C. J. Jones. 1987. Stable Fly Biology and Control in Northwest Florida. J. Agric. Entomol. 4: 1-11.

Hogsette, J. A., J. P. Ruff, and C. J. Jones. 1989. Dispersal behavior of stable flies (Diptera: Muscidae), *In* J. J. Petersen and G. L. Greene (eds.), Current status of stable fly (Diptera: Muscidae) research. Misc. Publ. Entomol. Soc. Am. 74: 23-32.

Hogsette, J. A., R. D. Jacobs, and R. W. Miller. 1993. The sticky card-device for studying the distribution of adult house fly (Diptera, Muscidae) populations in closed poultry houses. J. Econ. Entomol. 86: 450-454.

Hogsette, J. A., R. Farkas, and R. R. Coler. 1994. Hymenopteran pupal parasites recovered from house fly and stable fly (Diptera: Muscidae) pupae collected on livestock and poultry facilities in Northern and Central Hungary. Environ. Entomol. 23: 778-781.

Hogsette, J. A., R. Farkas, and C. Thuroczy. 2001. Hymenopteran pupal parasites recovered from house fly and stable fly (Diptera: Muscidae) pupae collected on livestock facilities in Southern and Eastern Hungary. Environ. Entomol. 30: 107-111.

Hogsette, J. A., A. Nalli, and L. D. Foil. 2008. Evaluation of different insecticides and fabric types for development of treated targets for stable fly (Diptera: Muscidae) control. J. Econ. Entomol. 101: 1034-1038.

Hogsette, J. A., R. Urech, P. E. Green, A. G. Skerman, M. M. Elson-Harris, R. L. Bright, and G. W. Brown. 2012. Nuisance flies on Australian cattle feedlots: Immature populations. Med. Vet. Entomol. 26: 46-55.

Holdsworth, P. H., J. Vercruysse, S. Rehbein, R. J. Peter, C. De Bruin, T. Letonja, and P. Green. 2006. World Association for the Advancement of Veterinary Parasitology (W.A.A.V.P.) guidelines for evaluating the efficacy of ectoparasiticides against biting and nuisance flies on ruminants. Vet. Parasitol. 136: 3-13.

Holloway, M. T. P., and R. J . Phelps. 1991. The responses of *Stomoxys* spp. (Diptera: Muscidae) to trap and artificial host odors in the field. Bull. Entomol. Res. 81: 51-55.

Holman, G. M., and B. J. Cook. 1979. The analytical determination of proctolin by HPLC and its pharmacological action in the stable fly. Comp. Biochem. Physiol. 62C: 231-235.

Holman, G. M., and B. J. Cook. 1982. Physiological amino acids of the nervous system of the stable fly, *Stomoxys calcitrans*. Comp. Biochem. Physiol. 71A: 23-27.

Hopkins, B. A. 1964. The probing response of *Stomoxys calcitrans* (L.) (The stable fly) to vapours. Animal Behav. 12: 513-524.

Hopkins, T. L., and R. A. Hoffman. 1955. Effectiveness of Dilan and certain candidate synergists against DDT-resistant house flies. J. Econ. Entomol. 48: 146-147.

Hori, K., S. Araki, and K. Kuramochi. 1982. Trypsin-like enzyme and aminopeptidase in the midguts of the adult horn fly, *Haematobia irritans* and the stable fly, *Stomoxys calcitrans:* change of activity in relation to blood ingestion and age. Entomol. Exp. Appl. 31: 421-427.

Hornok, S., A. Micsutka, M. L. Meli, H. Lutz and R. Hofmann-Lehmann. 2011. Molecular investigation of transplacental and vector-borne transmission of bovine haemoplasmas. Vet. Microbiol. 152: 411-414.

Hoskins, M. 1934. An attempt to transmit yellow fever virus by dog fleas *Ctenocephalides canis* Curt) and flies (*Stomoxys calcitrans* Linn.) J. Parasitol. 20: 299-303.

Hough, G. D. N. 1899. Some Muscinae of North America. Biological Bulletin 1: 19-33.

Houseman, J. G., A. E. Downe, and P. E. Morrison. 1984. Similarites in digestive proteinase production in *Rhodnius protixus* (Hemiptera: Reduviidae) and *Stomoxys calcitrans* (Diptera: Muscidae) Insect Biochem. 15: 471-474.

Houseman, J. G., and P. E. Morrison. 1986. Absence of female-specific protein in the hemolymph of stable fly *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Arch. Insect Biochem. Physiol. 3: 205-213.

Houseman, J. G., F. C. Campbell, and P. E. Morrison. 1987. A preliminary characterization of digestive proteases in the posterior midgut of the stable fly *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Insect Biochem. 17: 213-218.

Houseman, J. G., F. Aresta, W. A. Mark, and P. E. Morrison. 1988. Effect of fractionated blood components on trypsin activity in the stable fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Can. J. Zool. 66: 1188-1190.

Howard, C. W. 1917. Insect transmission of infectious anemia of horses. J. Parasitol. 4: 70-79.

Howard, L. O. 1909. Stable fly. J. Econ. Entomol. 2: 305.

Howell, D. E., and F. A. Fenton. 1944. The repellency of a pyrethrum-thiocyanate oil spray to flies attacking cattle. J. Econ. Entomol. 37: 677-680.

Hoy, J. B. 1970. Trapping the stable fly by using CO2 or CO as attractants. J. Econ. Entomol. 63: 792-79.

An experiment was conducted to compare the attractiveness of CO_2 and CO to stable flies. Malaise traps were baited with CO_2 and CO, which was released at 3L/min. for 3 consecutive days. Six traps were used at 2 sites, 3 traps for each gas, and control traps were also used. Hoy found that the traps emitting CO_2 attracted significantly more stable flies (2-6 X) than either the CO or the control traps. He concluded that the "release of CO_2 increased the catch of the traps". Finally he discussed two methods of generating CO_2 for the purpose of trapping stable flies in a dairy environment.

Huckett, H. C. 1974. The Anthomyiidae and Muscidae of the Great Smoky Mountains and Mt. Mitchell, North Carolina (Diptera). J. N.Y. Entomol. Soc. 82: 150-162.

Huggert, L., and P. B. Morgan. 1993. Description and biology of *Trichopria painteri* n.sp. (Hymenoptera: Diapriidae), a solitary parasitoid of *Stomoxys calcitrans* (Diptera: Muscidae) from Harare, Zimbabwe. Med. Vet. Entomol. 7: 358-362.

Hume, M. E., and A. C. Chen. 1992. RNA in the developing ovaries of the stable fly, *Stomoxys calcitrans* (L.). Southwest. Entomol. 17: 127-134.

Hummadi, M. K., and B. Maki. 1970. Studies on the breeding of *Stomoxys calcitrans*, stable fly. Bull. Iraq. Nat. Hist. Mus. 4: 21-26.

Hunter, F. F., J. F. Sutcliffe, and C. Stratton. 1992. Subcostal incomplete: a new genetic mutant of *Stomoxys calcitrans* L. (Diptera: Muscidae). J. Heredity 83: 453-455.

Hutson, R. 1941. How to combat insect pest. Golfdom pp 58-62.

I

Ingle, L. 1943. An apparatus for testing chemotropic responses of flying insects. J. Econ. Entomol. 36: 108-110.

Isard, S. A., D. A. R. Kristovich, S. H. Gage, C. J. Jones, and N. F. Laird. 2001. Atmospheric motion systems that influence the redistribution and accumulation of insects on the beaches of the Great Lakes in North America. Aerobiologia 17: 275-291.

Ishijima, H. 1967. Revision of the third stage larvae of synanthropic flies in Japan (Diptera: Anthomyiidaw, Muscidae, Calliphoridae, and Sarcophagidae). Sanitary Zool. 18: 47-100.

Ivey, M. C., and J. L. Eschle. 1970. Residues of dichlorvos in milk and tissues of dairy cows treated to control insect pests. J. Econ. Entomol. 63: 1729-1730.

Ivey, M. C., J. L. Eschle, H. V. Chaborn, and O. H. Graham. 1967. Ronnel residues in the meat and milk of cattle exposed to runnel-impregnated back rubbers used for horn fly control. J. Econ. Entomol. 60: 712-716.

Ivie, G. W., and J. E. Wright. 1978. Fate of diflubenzuron in the stable fly and house fly. J. Agric. Food Chem. 26: 90-94.

Iwuala, M. O .E., and J. O. A. Onyeka. 1977. The types and distribution patterns of domestic flies in Nsukka, East Central State, Nigeria. Environ. Entomol. 6: 43-49.

J

Jacobson, M., R. E. Redfern, and G. D. Mills. 1975. Naturally occuring insect growth regulators. II. Screening of insects and plant extracts as insect juvenile hormone mimics. Lloydia 38: 455-471.

James, P. K. and K. A. Browning. 1979. Mesoscale structure of line convection at surface cold fronts. Q. J. R. Meteorol. Soc. 105: 371-382.

Jarzen, D. M., and J. A. Hogsette. 2008. Pollen from the exoskeletons of stable flies, *Stomoxys calcitrans* (Linnaeus 1758), in Gainesville, Florida, U.S.A. Palynology 32: 77-81.

Jay, E. G. 1962. Species of *Hippelates* (Diptera: Chloropidae) gnats collected from mammals. J. Econ. Entomol. 55: 1011-1012.

Jeanbourquin, P., and P. M. Guerin. 2007. Sensory and behavioural responses of the stable fly *Stomoxys calcitrans* to rumen volatiles. Med. Vet. Entomol. 21: 217-224.

Electroantennograms and wind tunnel experiments were used to measure the response of stable flies to several chemicals emitted by rumen digesta. The strongest response was elicited from dimethyl trisulphide, which is found in cheese flavor, human skin odor, and livestock wastes. Other attractants included carboxylic acids, butanoic acid, *p*-cresol and skatole. Ketones were also detected in the rumen volatiles, and are stable fly attractants that are found in human or bovine breath, skin odor, and human sweat. This study supported previous findings that oct-1-en-3-ol is not a stable fly attractant by itself.

Jeanbourquin, P., and P. M. Guerin. 2007. Chemostimuli implicated in selection of oviposition substrates by the stable fly *Stomoxys calcitrans*. Med. Vet. Entomol. 21: 209-216.

Several laboratory experiments were conducted to test the oviposition behavior of stable flies using horse and cow dung. In the first experiment, flies were caged and dung was placed beneath the cage. Flies could not access the dung but could locate it by olfactory cues. Next, the flies were

given access to both types of dung. In both experiments the flies preferred horse dung. When given access, they oviposited in the horse dung but avoided the cow dung, only ovipositing in the vicinity. Flies were also tested in a wind tunnel, where they also preferred horse dung. In electroantennogram tests, the chemostimuli were similar in both attractants, however more CO_2 was emitted from horse dung.

Jennings, A. H. 1914. Summary of two years' study of insects in relation to pellagra. J. Parasitol. 1: 10-21.

Johnson, C. G. 1963. The aerial migrstion of insects. Sci. Am. 209: 132-138.

Johnson, C. G. 1966. A functional system of adaptive dispersal by flight. Ann. Rev. Entomol. 11: 233-260.

Johnson, C. W. 1928. Some common insects of the household. The Scientific Monthly 27: 343-346.

Johnson, C. W., and D. W. Coquillett. 1895. Diptera of Florida. Proc. Acad. Nat. Sci. Philadelphia 47: 303-340.

Johnson, G., N. Panella, K. Hale, and N. Komer. 2010. Detection of West Nile Virus in stable flies (Diptera: Muscidae) parasitizing juvenile American white pelicans. J. Med. Entomol. 47: 1205-1211.

Johnston, L., and T. E. Blakeslee. 1961. Stable fly tolerance to residues of DDT, Dieldrin, Malathion and Diazinon. J. Econ. Entomol. 54: 528-530.

Jones, C. J., and R. A. Weinzierl. 1997. Geographical and temporal variation in pteromalid (Hymenoptera: Pteromalidae) parasitism of stable fly and house fly (Diptera: Muscidae) pupae collected from Illinois cattle feedlots. Environ. Entomol. 26: 421-432.

Jones, C. J., J. A. Hogsette, R. S. Patterson, and D. E. Milne. 1985. Effects of natural saccharide and pollen extract feeding on stable fly (Diptera: Muscidae) longevity. Environ. Entomol. 14: 223-227.

Field studies were conducted to determine the amount of nectar feeding in wild stable flies. In flies collected on Florida beaches, 11.8% of males and 22.8% of the females had fed on nectar. Of flies collected on dairies, 2.9% of the males and 7.4% of the females had fed on nectar. Lab experiments were conducted to compare the longevity of stable flies fed honey solutions, pollen and water, or sucrose solutions. A 32% pollen diffusate produced the greatest longevity, with a maximum of 19 days. Males fed only sugars were not able to fertilize the females. Females fed only sugars did not show egg development beyond stage I.

Jones, C. J., R. S. Patterson, and D. E. Milne. 1987. Electrophoretic comparisons of isozymes from selected populations of *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 24: 54-60.

Jones, C. J., J. A. Hogsette, R. S, Patterson, D. E. Milne, G. D. Propp, J. F. Milio, L. G. Rickard, and J. P. Ruff. 1991. Origin of stable flies (Diptera: Muscidae) on West Florida Beaches: electrophoreyic analysis of dispersal. J. Med. Entomol. 28: 787-795.

Jones, C. J., G. L. Green, S. A. Isard, J. Hogsette, A. Broce, Y. -J. Guo, M. E. Irwin, D. Keen, M. Belding, G. Hutchinson, E. Shields, and S. Rutherford. 1997. Dispersal of stable flies: phenology of dispersing flies. NCR-148. www.inhs.uiuc.edu/cee/movement/97ILfly.html.

Jones, C. J., D. E. Milne, R. S. Patterson, E. T. Schreiber, and J. A. Milio. 1992. Nectar feeding by *Stomoxys calcitrans* (Diptera: Muscidae): effects on reproduction and survival. Environ. Entomol. 21: 141-147.

A lab experiment was conducted to test the reproductive rate and longevity of stable flies given different treatments of sugar and blood meals: blood ad libitim with sugar ad libitum, morning, evening or none; sugar ad libitum with blood morning, evening or none. Water was supplied ad libitum. The highest reproduction and longevity were achieved with the blood ad libitum: evening nectar treatment. They concluded that moderate nectar feeding was not harmful and may aid in the survival of dispersing flies, but feeding on too much nectar may be detrimental to reproductive rate. Blood feeding was necessary for both reproduction and longevity.

Jones, C. J., S. A. Isard, and M. R. Cortinas. 1999. Dispersal of synanthropic Diptera: lessons from the past and technology for the future. Ann. Entomol. Soc. Am. 92: 829-839.

A review of the dispersal of certain synanthropic Diptera, including house flies, screwworm flies, stable flies, midges and black flies. Discusses techniques used to monitor dispersal, and technology for future research.

Jones, C. M. 1966. Stable flies, pp 145-152. *In* C. N. Smith (ed.), Insect colonization and mass production. Academic Press. New York, N.Y.

Jones, C. T. 1989. Proceeding of a symposium: physiological interactions between hematophagous arthropods and their vertebrate hosts. MPPEAL 71: 1-36.

Jones, C. T., R. S. Patterson, and D. E. Milne. 1987. Electrophoretic comparison of isozymes from selected populations of *Stomoxys calcitrans*, (Diptera: Muscidae) J. Med. Entomol. 24: 54-60.

Jones, S. R., and S. E. Kunz. 1997. Importance of supercooling points in the overwintering of the horn fly and stable fly (Diptera: Muscidae). J. Med. Entomol. 34: 426-429.

Supercooling points were determined for egg, 3rd instar larvae, newly emerged adults and feeding adults of horn flies and stable flies. Chilling injury was also studied at 4ºC. Eggs had the lowest supercooling points, and 3rd instar larvae had the highest. All stages of both flies were freeze intolerant. Both species had similar patterns between life stages, and the horn fly was found to be more adapted to colder overwintering sites than the stable fly.

Jordão, B. P., M. J. Lehane, W. R. Terra, A. F. Ribeiro, and C. Ferreira. 1996. An immunocytochemical investigation of trypsin secretion in the midgut of the stable fly, *Stomoxys calcitrans*. Insect Biochem. Mol. Biol. 26: 445-453.

Joslyn, D. J., J. A. Seawright, and N. L. Willis. 1979. The karyotype of the stable fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Caryologia 32: 349-354.

Judd, W. W. 1956. Results of a survey of calyptrate flies of medical importance conducted at London, Ontario during 1953. Am. Midl. Nat. 56: 388-405.

Judd, W. W. 1958. Studies of the Byron Bog in southwestern Ontario VIII: seasonal distribution of filth flies. Am. Midl. Nat. 60: 186-195.

K

Kabayo, J. P, M. Taher, and A. M. Van Der Vloedt. 1985. Development of a synthetic diet for *Glossina* (Diptera: Glossinidae). Bull. Entomol. Res. 75: 635-640.

Kangwagye, T. N. 1973. Diurnal and nocturnal biting activity of flies (Diptera) in western Uganda. Bull. Entomol. Res. 63: 17-29.

Kangwagye, T. N. 1974. The seasonal incidence of biting flies (Diptera) in Rwenzor National Park and Kigezi Game Reserve, Uganda. Bull Entomol. Res. 63: 533-549.

Kapatsa, G. M., G. E. Spates, C. L. Sheffield, J. P. Kabayo, and J. R. DeLoach. 1989. The nature of erythrocyte stroma lipid components required for normal reproduction in *Stomoxys calcitrans* (Diptera: Muscidae). J. Insects. Physiol. 35: 205-208.

Kapatsa, G., G. E. Spates, C. L. Sheffield, and J. R. DeLoach. 1989. Comparison of lipid-free haemoglobin and stroma-contaminated haemoglobin diets for adults of *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Bull. Entomol. Res. 79: 41-45.

Kaufman, P. E. 2002. Dairy pest management (arthropods), *In* Encyclopedia of pest management. Marcel Dekker, Inc. pp.181-183.

Notes on the parasites of cattle and their control, including descriptions of the house fly and stable fly, horn fly and face fly, cattle grubs and lice.

Kaufman, P. E., and D. A. Rutz. 2000. Common pest flies found in the urban/rural environment and their biological control agents. Cornell Cooperative Extension IPM fact sheet 102IPMFS1.

An extension fact sheet to aid in the identification of fly pests, some nonpest species, parasitoids and predators. Includes photos and descriptions of several species of flies at different life stages.

Kaufman, P. E., D. A. Rutz, and S. Frisch. 2005. Large sticky traps for capturing house flies and stable flies in dairy calf greenhouse facilities. J. Dairy Sci. 88: 176-181.

Kaufman, P. E., R. S. Mann, and J. F. Butler. 2010. Insecticidal potency of novel compounds on multiple insect species of medical and veterinary importance. Pest Manag. Sci. 67: 26-35.

Kaur, P. 1970. Chromosome numbers and sex- mechanism in eight species of Diptera. Res. Bull. Panjab University. 21: 527-528.

Kavaliers, M., and D. D. Colwell. 1995. Exposure to stable flies reduces spatial learning in mice: involvement of endogenous opoid systems. Med. Vet. Entomol. 9: 300-306.

Kavaliers, M., and D. D. Colwell. 1996. Synergism between stress responses induced by biting flies and predator odours. Ethol. 102: 89-98.

Kavaliers, M., D. D. Colwell, E. Choleris, and K. -P. Ossenkopp. 1999. Learning to cope with biting flies: rapid NMDA-mediated acquisition of conditioned analgesia. Behav. Neurosci. 113: 126-135.

Kavaliers, M., D. D. Colwell, and E. Choleris. 2003. Learning to fear and cope with a natural stressor: individually and socially acquired corticosterone and avoidance responses to biting flies. Hormones and Behavior 43: 99-107.

Kavaliers, M., D. D. Colwell, and E. Choleris. 2005. Kinship, familiarity and social status modulate social learning about "Micropredators" (biting flies) in deer mice. Behav. Ecol. Sociobiol. 58: 60-71.

Keen, D. P., J. E. Keen, Y. He, and C. J. Jones. 2001. Development of an enzyme-linked immunosorbent assay for detection of the gregarious hymenopteran parasitoid *Muscidifurax raptorellus* in house fly pupae. Biol. Control, 21: 140-151.

Kelly, T. J., and A. C. Chen. 1997. Cycling of ecdysteroid levels in adult female stable flies, *Stomoxys calcitrans* in relation to blood feeding. J. Insect Physiol. 43: 789-794.

Kennedy, M. K., and R. W. Merritt. 1980. Horse and buggy island. Nat. Hist. 89: 34-40.

Ketavan, C., and P. Kanjanamungsuk. 1987. Effects of a juvenile hormone analogue on the biology of the stable fly (*Stomoxys calcitrans* (L.) Diptera: Muscidae). Kasetsart J. (Nat.Sci.). 21: 306-313.

Tested the effect of juvenile hormone analogue MV-678 on different life stages of the stable fly. MV678 was incorporated into the larval diet, applied topically to puparia, and applied topically to 6-hour-old adults. In the larval experiment, a high percent of pupae were formed at the lowest concentration, but there was no adult eclosion during the entire experiment. Some pupae were found to contain pupal-adult intermediates. No treated adults survived more than 7 days. The experiment demonstrated that MV-678 would be an efficient control for stable flies.

Kettle, D. S. 1990. Medical and Veterinary Entomology. Croom Helm, London and Sydney. Pp. 223-241.

Khan, M. A. 1964. Recent developments in the control of arthropod parasites of cattle. Can. Vet. J. 5: 20-29.

Khater, F., M. Y. Ramadan, and R. S. El-Madawy. 2009. Lousicidal, ovicidal and repellent efficacy of some essential oils against lice and biting flies infesting water buffaloes in Egypt. Vet. Parasitol. 164: 257-266.

Killough, R. A., and D. M. McKinstry. 1965. Mating and oviposition studies of the stable fly. J. Econ. Entomol. 58: 489-491.

King, W. V., and L. G. Lenert. 1936. Outbreaks of *Stomoxys calcitrans* L. (Dog Flies) along Florida's Northwest Coast. Fla. Entomol. 19: 33-39.

Outbreaks of *Stomoxys calcitrans* along the Northwest coast of Florida led to the search for breeding places for the species. Cattlemen on inland farms claimed that the flies migrated inland from the coast, and the largest concentrations of flies occurred on the beaches after a northerly wind. Investigators inspected turtle grass, *Thalassia testudium*, and manatee grass, *Halodule wrightii*, and found no stable fly larvae, nor did they find larvae in the decaying organic matter in the marshes. Females were purported to oviposit in black humus soil but no larvae were found in that location. However, larvae and pupae were discovered in *Sargassum*, a brown seaweed which gets washed up on the beaches

Kinn, D. N. 1966. Predation by the mite, *Macrocheles muscaedomesticae* (Acarina: Macrochelidae), on three species of flies. J. Med. Entomol. 3: 155-158.

Lab tests were conducted to test the efficacy of the mite, *Macrocheles muscaedomesticae*, as a predator on house flies (*Musca domestica*), stable flies (*Stomoxys calcitrans*), and blow flies (*Phormia regina*). The mites were effective on eggs and 1st instar larvae of *M. domestica* and *Phormia regina*, but had no significant effect on those of *Stomoxys calcitrans*. The stable fly eggs were not attractive to the mites.

Kirch, H. J., G. Spates, R. Droleskey, W. J. Kloft, and J. R. DeLoach. 1991. Mechanismn of haemolysis of erythrocytes by haemolytic factors from *Stomoxys calcitrans* L. (Diptera: Muscidae). J. Insect Physiol. 37: 851-861.

Kirch, H. J., G. Spates, W. J. Kloft, and J. R. DeLoach. 1991. The relationship of membrane lipids to species specific hemolysis by hemolytic factors from *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Insect Biochem. 21: 113-120.

Kirkwood, A. C., and D. W. Tarry. 1973. A survey of some species of flies associated with cattle. International Pest Control 15: 6-10.

Kissui, B. M., and C. Packer. 2004. Top-down population regulation of a top predator: Lions in the Ngorongora crater. Proc. R. Soc. Lond. 271: 1867-1874.

Kitching, R. P., and P. S. Mellor. 1986. Insect transmission of Capri pox virus. Res. Vet. Sci. 40: 255-258.

Knapp, F. W. 1985. Arthropod pests of horses,. pp. 297-313. *In* R. E. Williams, R. D. Hall, A. B. Broce, and P. J. Scholl (eds.), Livestock entomology. John Wiley and Sons, New York, N.Y.

Knapp, F. W., A. E. Charron, and J. G. Burg. 1992. Disease transmission by the stable fly, pp. 25-38. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Kneeland, K. M. 2011. Genetic variability of the stable fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae) assessed on a global scale using amplified fragment length polymorphism. Ph.D. Dissertation. University of Nebraska.

Knipling, E. F. 1962. Potentialities and progress in the development of chemosterilants for insect control. J. Econ. Entomol. 55: 782-786.

Knipling, E. F., and W. E. Dove. 1944. Recent investigations of insecticides and repellents for the armed forces. J. Econ. Entomol. 37: 477-480.

Knowles, C. O., and B. W. Arthur. 1966. Metabolism of and residues associated with dermal and intramuscular application of radio-labeled fenthion to dairy cows. J. Econ. Entomol. 59: 1346-1352.

Koehler, P. G. 1978. Stable flies: carriers of several diseases. Fla. Cattleman 42: 66-67.

Koehler, P. G., and P. E. Kaufman. 2006. Stable fly (Dog Fly) control. University of Florida IFAS extension publication ENY-267 (IG133). http://edis.ifas.ufl.edu.

Koné, N., E. K. N'Goran, I. Sidibe, A. W. Kombassere, and J. Bouyer. 2011. Spatio-temporal distribution of tsetse and other biting flies in the Mouhoun River basin, Burkina, Faso. Med. Vet. Entomol. 25: 156-168.

Krafsur, E. S. 1993. Allozyme variation in stable flies (Diptera: Muscidae). Biochem. Genet. 31: 231-240.

Krafsur, E. S., R. D. Moon, and T. J. Lysyk. 1994. Adult age and reproductive success in stable fly populations (Diptera: Muscidae). Can. Entomol. 126: 239-249.

Kramer, J. P. 1952. A study of possible DDT resistance in *Stomoxys calcitrans* (L.), the stable fly. MS thesis, Univ. of Missouri, Columbia.

Kramer, J. P. 1973. Susceptibility of sixteen species of Muscoid flies to the microsporidian parasite *Octosporea muscaedomesticae*. J. N.Y. Entomol. Soc. 81: 50-53.

Kramer, J. P., and D. C. Steinkraus. 1981. Culture of *Entomophthora muscae* in vivo and its infectivity for six species of muscoid flies. Mycopathologia 76: 139-143.

Krijgsman, B. J. 1930. Reizphysiologische Untersuchungen an Blutsaugenden Arthropean im Zusammenhang mit inhrer Nahrungswahl. I Teil. *Stomoxys calcitrans*. Zeitschrift Vergh. J. Comp. Physiol. A: Neuroethology, Sensory, Neural and Behavioral Physiol. 11: 702-729. (In German).

Krishnananthusivam. K. 1972. The stable fly *Stomoxys calcitrans.* Ceylon Vet. J. 20: 25-34

Kuhn, P. 1910. Uber einheimische Stechfliegen (Stomoxys) als Krankheitsubertrager. 4. Tagung der Freien Vereinigung fur Microbilogia, Berlin. Centralbl. Bekteriol. Parasitenk. Beitrage 27: 155-156. (In German).

Kunast, C. 1981. Das stallfliegenproblem. Tierarztliche Umschau. 36: 537-549. (In German).

Kunast, C. 1981. Der wadenstecher (*Stomoxys calcitrans* L.). Jahrgang. 33: 121-123. (in German).

Kunast, C., M. Schah-Zeidi, and M. Messner. 1979. Die Abwehr von Stubenfliegen (*Musca domestica* L.) durch das Pyrethroid Cypermethrin. Berl. Muench. Tieraerztl. Wochenschr. 92: 322-324. (In German).

Kunz, S. E. 1981. Biological activity of Bay Sir 8514 against the stable fly in laboratory studies. Southwest. Entomol. 6: 147-149.

Kunz, S. E. 1982. Ovarian development in the stable fly, *Stomoxys calcitrans* (L.). Southwest. Entomol. 7: 31-35.

Kunz, S. E. 1987. Integrated pest management of dipteran pests in the New World. Int. J. Parasitol. 17: 659-664.

Kunz, S. E. 1992. The influence of temperature on adult and immature stable flies, pp. 87-109. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Kunz, S. E., and J. Monty. 1976. Biology and ecology of *Stomoxys nigra* Macquart and *Stomoxys calcitrans* (L.) (Diptera, Muscidae) in Mauritius. Bull. Entomol. Res. 66: 745-755.

Kunz, S. E., and C. D. Schmidt. 1985. *Stomoxys calcitrans*,. pp. 153-156. *In* P. Singh and R. F. Moore (eds.), Handbook of insect rearing, Vol. 2. Elsevier, New York, N.Y.

Kunz, S. E., I. L. Berry, and K. W. Foerster. 1977. The development of the immature forms of *Stomoxys calcitrans*. Ann. Entomol. Soc. Am. 70: 169-172.

Developmental times of egg, larval and pupal stages of the stable fly were investigated in a laboratory experiment using the temperature of the larval medium rather than air temperature. Immatures were reared at 75, 85 and 95ºF (23.9, 29.4 and 35.0ºC). The data were calculated as percentage of time spent in each stage. Time spent in each stage was shortened as temperature increased, except at 35ºC, where the 3rd instar larval stage and pupal stage were lengthened.

Kunz, S. E., R. L. Harris, B. F. Hogan, and J. E. Wright. 1977. Inhibition of development in a field population of horn flies treated with diflubenzuron. J. Econ. Entomol. 70: 298-300.

Kuzina, O. S. 1942. Concerning gonotrophic interrelationships in stable flies (*Stomoxys calcitrans* L. and *Haematobia stimulans* L.). Med. Parazit. Moskva. 11: 70-78. (Translated from Russian).

Kuzina, O. S. 1950. Comparative parasitological and ecological observations on horse flies (*Stomoxys calcitrans* L., *Haematobia stimulans* Meig., and *Lyperosia irritans* L.). Mater. Pozman. Fauny i. Flory, SSSR, n. s. Otdel. Zool. 30: 139-165. (Translated from Russian).

Kyei-Poku, G. K., M. Giladi, P. Coghlin, O. Mokady, E. Zchori-Fein, and K. D. Floate. 2006. *Wolbachia* in wasps parasitic on filth flies with emphasis on *Spalangia cameroni*. Entomologia Experimentalis et Applicata 121: 123-135.

L

Laake, E. W. 1946. DDT for the control of the horn fly in Kansas. J. Econ. Entomol. 39: 65-68.

Laake, E. W. 1949. Livestock parasite control investigations and demonstrations in Brazil. J. Econ. Entomol. 41: 276-280.

Labarthe, N. V., J. O. Remião, A. M. Sacco, and L. C. Maia. 1985. Cross-reaction of tick salivary antigens in the *Boophilus microplus*-cattle system. Vet. Parasitol. 17: 259-263.

LaBrecque, G. C., and D. E. Weidhaas. 1975. A method for determining the survival of adult and immature stages in populations of *Stomoxys calcitrans* (Diptera: Muscidae). Fla. Entomol. 58: 9-14.

LaBrecque, G. C., and D. W. Meifert. 1975. Sterility of stable flies, *Stomoxys calcitrans* (L.) (Diptera: Muscidae), exposed to treated surfaces or diets. J. Med. Entomol. 12: 261-262.

LaBrecque, G. C., D. W. Meifert, and D. E. Weidhaas. 1972. Dynamics of house fly and stable fly populations. Florida. Entomol. 55: 101-106.

Counts were taken of house flies and stable flies 10 times per week over a year to estimate the rates of population increase in central Florida. A 45x45cm grid was used for house flies, and counts per animal were used for stable flies. Observations were made at a dairy farm, a horse stable, a hog farm and a poultry farm. Stable flies were not counted at the poultry farm. Rate of increase under these natural conditions, from one generation to the next, were relatively low, generally less than 6x.

LaBrecque, G. C., D. W. Meifert, and J. Rye. 1972. Experimental control of stable flies, *Stomoxys calcitrans* (Diptera: Muscidae), by releases of chemosterilized adults. Can. Entomol. 104: 885-887.

LaBrecque, G. C., R. L. Fye, and J. Morgan. 1972. Induction of sterility in adult house flies and stable flies by chemosterilization of pupae. J. Econ. Entomol. 65: 751-753.

LaBrecque, G. C., D. E. Weidhaas, and T. L. Whitfield. 1975. Graphic models as intermediate steps to computerized simulations of stable fly populations. Mosq. News 35: 316-321.

LaBrecque, G. C., D. W. Meifert, and D. E. Weidhaas. 1975. Potential of the sterile-male technique for the control or eradication of stable flies, *Stomoxys calcitrans* Linnaeus. IAEA-SM-186/55 pp. 449-460.

LaBrecque, G. C., D. L. Bailey, D. W. Meifert, and D. E. Weidhaas. 1975. Density estimates and daily mortality rate evaluations of stable fly (*Stomoxys calcitrans* (Diptera: Muscidae) populations in field cages. Can. Entomol. 107: 597-600.

LaBrecque, G. C., R. S. Patterson, D. F. Williams, and D. E. Weidhaas. 1981. Control of the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae), on St. Croix, U. S. Virgin Islands, using integrated pest management measures. J. Med. Entomol. 18: 194-196.

LaChance, L. E. 1964. Chromosome studies in three species of Diptera (Muscidae and Hypodermatidae). Ann. Entomol. Soc. Am. 57: 69-73.

Lainson, R., and B. A. Southgate. 1965. Mechanical transmission of *Leishmania mexicana* by *Stomoxys calcitrans.* Trans. Royal Soc. Trop. Med. Hygiene 59: 716.

Lambremont, E. N., F. W. Fisk, and S. Ashrafi. 1959. Pepsin-like enzyme in larvae of stable flies. Science 129: 1484-1485.

Landon, C., H. Meudal, N. Boulanger, and F. Vovelle. 2006. Solution structures of Stomoxyn and Spinigerin, two insect antimicrobial peptides with an α-helical conformation. Biopolymers 81: 92-103.

The structure of Stomoxyn, an antimicrobial peptide from the gut epithelium of the stable fly, *Stomoxys calcitrans*, was studied in solution. Stomoxyn exhibits antimicrobial activity against both Gram + and Gram – bacteria, some fungi, and the trypanosome *T. brucei rhodesiense*. The structure of Stomoxyn is similar to cecropin A.

Lang, J. T., C. E. Schreck, and H. Pamintuan. 1981. Permethrin for biting-fly (Diptera: Muscidae; Tubanidae) control on horses on Central Luzon, Philippines. J. Med. Entomol. 18: 522-529.

Lara, F. M., D. L. Marchiori, and A. C. Busoli. 1975. Atratividade de cores a *Musca domestica* L. e *Stomoxys calcitrans* (L.) (Diptera: Muscidae), a pleno sol e a sombra. Cientifica (Jaboticabal) 3: 73-80. (In Portuguese with English abstract).

Larsen, E. B. 1943. The influence of humidity on life and development of insects. Experiments on flies. Saertrykkene udkommet den 30: 128-184.

Larsen, E. B., and M. Thomsen. 1940. The influence of temperature on the development of some species of Diptera. Vidensk. Medd. Dan. Naturhist. Foren Kbh. 104: 34-39.

Larsen, E. B. 1943. Problems of heat death and heat injury, experiments on some species of Diptera. Det. Kgl. Danske. Vindenskabernes Selskab Biologiske Meddelelser 19: 1-52.

Lavoipierre, M. M. J. 1965. Feeding mechanism of blood-sucking arthropods. Nature 208: 302-303.

Lazarus, W. F., D. A. Rutz, R. W. Miller, and D. A. Brown. 1989. Cost of existing and recommended manure management practices for house fly and stable fly (Diptera: Muscidae) control on dairy farms. J. Econ. Entomol. 82: 1145-1151.

Lee, E. M. K. W., and D. M. Davies. 1978. The role of abdominal air-sacs during feeding in the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae). Can. Entomol. 110: 671-672.

Lee, R. M. K. W., and D. M. Davies. 1979. Feeding in the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae) I. Destination of blood, sucrose solution and water in the alimentary canal, the effects of age on feeding, and blood digestion. J. Med. Entomol. 15: 541-554.

The path of water, sucrose solution, and blood were traced in the alimentary canal in stable flies of different ages. Newly emerged flies generally refused water for the first 2 ½ hours, sucrose for the first 4 hours, and blood meals for the first 12 hours. In younger flies, water and sucrose went mainly to the midgut, with a small amount going to the crop. Blood meals were found to go to both the crop and midgut in flies under 16 hours of age. However, as the flies aged, the amount of water and sucrose going to the crop increased, as did the blood going to the midgut. By 16 hours of age, all of the blood imbibed was going to the midgut. The time required for digestion of a blood meal is reported to be 24-36 hours at 20-21ºC and occurs in the posterior part of the midgut.

Legner, E. F. 1966. Parasites of the house fly and other filth-breeding Diptera in Southern California. J. Econ. Entomol. 59: 999-1001.

Legner, E. F. 1967. Behavior changes the reproduction of *Spalangia cameroni*, *S. endius*, *Muscidifurax raptor*, and *Nasonia vitripennis* (Hymenoptera: Pteromalidae) at increasing fly host densities. Ann. Entomol. Soc. Am. 60: 819-826.

Legner, E. F. 1969. Reproductive isolation and size variation in the *Muscidifurax raptor* complex. Ann. Entomol. Soc. Am. 62: 382-385.

Legner, E. F. 1977. Temperature, humidity, and depth of habitat influencing host destruction and fecundity of muscoid fly parasites. Entomophaga 22: 199-206.

Legner, E. F. 1978. Muscidae. U.S. Dep. Agric. Handb. No. 480: 869-915.

Legner, E. F. 1981. Improving commercial biological control of filth flies with parasites. Proc. Of Workshop of Status of Biological Control of Filth Breeding Flies, Gainesville, FL. February 4-5, 1981. pp. 5-10.

Legner, E. F. 1983. Requirements for appraisal of the true role of parasitic insects in the natural control of synanthropic Diptera, pp. 97-98. *In* Proceedings, 51st Annual Conference, Calif. Mosq. Vector Control Association.

Legner, E. F., and C. W. McCoy. 1966. The housefly, *Musca domestica* Linnaeus, as an exotic species in the Western Hemisphere incites biological control studies. Can. Entomol. 98: 243-248.

Legner, E. F., and H. W. Brydon. 1966. Suppression of dung-inhabiting fly populations by pupal parasites. Ann. Entomol. Soc. Am. 59: 638-651.

Legner, E. F., and G. S. Olton. 1968. The biological method and integrated control of house and stable flies in California. California Agric. 22: 1-4.

Legner, E. F., and G. S. Olton. 1968. Activity of parasites form Diptera: *Musca domestica, Stomoxys calcitrans,* and species of *Fannia, Muscina,* and *Ophyra.* II. At sites in the Eastern Hemisphere and Pacific area. Ann. Entomol. Soc. Am. 61: 1306-1314.

Legner, E. F., and D. J. Greathead. 1969. Parasitism of pupae in East African populations of *Musca domestica* and *Stomoxys calcitrans*. Ann. Entomol. Soc. Am. 62: 128-133.

Legner, E. F., and G. S. Olton. 1970. Worldwide survey and comparison of adult predator and scavenger insect populations associated with domestic animal manure where livestock is artificially congregated. Hilgardia. 40: 225-266.

Legner, E. F., and E. C. Bay. 1970. The introduction of natural enemies in California for the biological control of noxious flies and gnats. Con. California Mosquito Control Assoc. Inc. pp. 126-129.

Legner, E. F., and G. S. Olton. 1971. Distribution and relative abundance of Dipterous pupae and their parasitoids in accumulations of domestic animal manures in the southwestern United States. Hilgardia 40: 505-535.

Legner, E. F., and E. J. Dietrick. 1972. Inundation with parasitic insects to control filth breeding flies in California. Ann. Conference California Mosquito Control Assoc. 40: 129-130.

Legner, E. F., and W. R. Bowen. 1973. Influence of available poultry manure breeding habitat on emergence density of synanthropic flies (Diptera). Ann. Entomol. Soc. Am. 66: 533-538.

Legner, E. F., and E. I. Dietrick. 1974. Effectiveness of supervised control practices in lowering population densities of synanthropic flies on poultry ranches. Entomophaga 19: 467-478.

Legner, E. F., E. C. Bay, and E. B. White. 1967. Activity of parasites from Diptera: *Musca domestica*, *Stomoxys calcitrans*, *Fannia canicularis*, and *F. femoralis*, at sites in the Western Hemisphere. Ann. Entomol. Soc. Am. 60: 462-468.

Legner, E. F., W. R. Bowen, W. D. McKeen, W. F. Rooney, and R. F. Hobza. 1973. Inverse relationships between mass of breeding habitat and synanthropic fly emergence and the measurement of population densities with sticky tapes in California inland valleys. Environ. Entomol. 2: 199-205.

Legner, E. F., I. Moore, and G. S. Olton. 1976. Tabular keys and biological notes to common parasitoids of synanthropic Diptera breeding in accumulated animal wastes. Entomol. News 87: 113-144.

Legner, E. F., D. J. Greathead, and I. Moore. 1981. Equatorial east African predatory and scavenger arthropods in bovine excrement. Environ. Entomol. 10: 620-625.

Lehane, M. J. 1976. Digestive enzyme secretion in *Stomoxys calcitrans* (Diptera: Muscidae). Cell Tiss. Res. 170: 275-287.

Examines digestion of a blood meal in *Stomoxys calcitrans* by electron microscopy. The midgut is divided into 3 zones, the fore midgut (reservoir), the opaque zone, and the posterior midgut. Results show that the stable fly has different methods of storage and secretion of digestive enzymes in the midgut than other insects. Storage of digestive enzymes in *S. calcitrans* occurs in secretory membrane bound vesicles derived from the endoplasmic reticulum.

Lehane, M. J. 1976. Formation and histochemical structure of the peritrophic membrane in the stable fly, *Stomoxys calcitrans*. J. Insect Physiol. 22: 1551-1557.

Lehane, M. J. 1977. Transcellular absorption of lipids in the midgut of the stable fly, *Stomoxys calcitrans*. J. Insect Physiol. 23: 945-954.

Lehane, M. J. 1977. An hypothesis on the mechanism controlling proteolytic digestive enzyme production levels in *Stomoxys calcitrans*. J. Insect Physiol. 23: 713-715.

Lehane, M. J. 1988a. Evidence for secretion by the release of cytoplasmic extrusions from midgut cells of *Stomoxys calcitrans*. J. Insect Physiol. 34: 949-953.

Lehane, M. J. 1988b. Size of secretory granules from midgut cells of the stable fly, *Stomoxys calcitrans*. Tissue Cell. 20: 763-770.

Lehane, M. J. 1991. Biology of blood-sucking in insects. Harper Collins Acaemic, London.

Lehane, M. J., D. Blakemore, S. Williams, and M. R. Moffatt. 1995. Regulation of digestive enzyme levels in insects. Comp. Biochem. Physiol. 110B: 285-289.

Lehane, M. J., J. Chadwick, M. A. Howe, and T. S. Mail. 1986. Improvements in the pteridine method for determining age in adult male and female *Stomoxys calcitrans* (Diptera: Muscidae). J. Econ. Entomol. 79: 1714-1719.

Lehane, M. J., D. Wu, and S. M. Lehane. 1997. Midgut-specific immune molecules are produced by the blood-sucking insect *Stomoxys calcitrans*. Proc. Natl. Acad. Sci. USA 94: 11502-11507.

Two antimicrobial peptides were isolated from the anterior midgut of *Stomoxys calcitrans*. Designated Smd1 and 2 (Stomoxys midgut defensin 1 and 2), they are defensins which exhibit anti-Gram-negative activity. Smd1 and Smd2 are expressed exclusively in the anterior midgut, unlike other insect defensins which are expressed in the fat body and hemocytes. This suggests that the anterior midgut, where blood meals are stored before digestion, may have its own immune activity as a protective measure against microbes entering the midgut with the blood meal.

Lehane, S. M., S. J. Assinder, and M. J. Lehane. 1998. Cloning, sequencing, temporal expression and tissue-specificity of two serine proteases from the midgut of the blood-feeding fly *Stomoxys calcitrans*. Eur. J. Biochem. 254: 290-296.

Levy, R., Y. J. Chiu, and H. L. Crombroy. 1972. Effects of ozone on three species of Diptera. Environ. Entomol. 1: 608-611.

All life stages of *Stomoxys calcitrans, Musca domestica and Drosophila melanogaster* were exposed to high concentrations of ozone. There was a

detrimental effect on egg hatch (15-17% reduction). No detrimental effects were observed in the other life stages. In house flies (the only species used in adult tests), egg production was increased five-fold by ozone exposure.

Levy, R., H. L. Cromroy, and J. A. Cornell. 1974. Multi-elemental models for estimating the acute radiosensitivity of cockroaches and blood feeding insects. Fla. Entomol. 57: 43-46.

Levy, R., and A. J. Rogers. 1976. Modification of an olfactometer used for stable fly attraction studies. Fla. Entomol. 59: 342.

Lewis, C. T. 1971. Superficial sense organs of the antennae of the fly, *Stomoxys calcitrans*. J. Insect Physiol. 17: 449-461.

Lewis, L. F., and G. W. Eddy. 1961. Laboratory evaluation of insecticides against the adult horn fly. J. Econ. Entomol. 54: 392-393.

Liénard, E., A. Salem, C. Grisez, F. Prévot, J. P. Bergeaud, M. Franc, B. Gottstein, J. P. Alzieu, Y. Lagalisse, and P. Jacquiet. 2011. A longitudinal study of *Besnoitia besnoiti* infections and seasonal abundance of *Stomoxys calcitrans* in a dairy cattle farm of southwest France. Vet. Parasitol. 177: 20-27.

Lindquist, A.W. 1936. Parasites of horn fly and other flies breeding in dung. J. Econ. Entomol. 29: 1154-1158.

Lindquist, A. W., E. F. Knipling, H. A. Jones, and A. H. Madden. 1944. Mortality of bedbugs on rabbits given oral dosages of DDT and pyrethrum. J. Econ. Entomol. 37: 128.

Data are compared with the effects of the insecticides on stable flies.

Linstow, O. V., and A. Harlivig. 1913. Die Schmarotzer. Leipzig p. 49.

Liu, S. S., A. Y. Li, C. M. Witt, and A. A. Perez De Leon. 2011. Immunohistological localization of serotonin in the CNS and feeding system of the stable fly *stomoxys calcitrans* L. (Diptera: muscidae). Archives of Insect Biochemistry and Physiology. 77: 199-219.

Lloyd, D. H., and O. O. Dipeolu. 1974. Seasonal prevalence of flies feeding on cattle in Northern Nigeria. Trop. Anim. Hlth. Prod. 6: 231-236.

Lloyd, J. E. 1985. Arthropod pests of sheep, pp. 253-267. *In* R. E. Williams, R. D. Hall, A. B. Broce and P. J. Scholl (eds.), Livestock entomology. John Wiley and Sons, New York.

Lodha, K. R. 1961. Studies on the life cycle of the stable fly *Stomoxys calcitrans* (L.). Indian Vet. J. 38: 541-547.

Loera-Gallardo, J., J. F. Luna-Salas, and G.A.P. Gibson. 2008. First report of pupal parasitoids of filth-breeding flies (Diptera) from bovine manure in northeastern Mexico. Can. Entomol. 140: 682-689.

Logan, J. G., and M. A. Birkett. 2007. Semiochemicals for biting fly control: their identification and exploitation. Pest Manag. Sci. 63: 647-657.

A review of the role of semiochemicals in host location and the potential for the use of semiochemicals and pheromones for the control of biting flies. Describes the use of semiochemicals in traps and discusses the most common chemicals used. Offers suggestions for potential control methods using pheromones and semiochemicals and the importance of isolating more of these chemical signals.

Lotmar, R. 1949. Beobachtungen uber nahrungsaufnahme und verdaung bei *Stomoxys calcitrans* (Dipt.). Mitt. Schwiz Entomol. Ges. 22: 97-115. (In German).

Love, J. A., and G. D. Gill. 1965. Incidence of coliforms and enterococci in field populations of *Stomoxys calcitrans* (Linnaeus). J. Invert. Pathol. 7: 439-436.

Lowenstein, O. 1963. Foraging and feeding behavior. Nature 199: 966-968.

Lumaret, J. P., and T. Errouissi. 2002. Use of anthemintics in herbivores and evaluation of risks for the non target fauna of pastures. Vet. Res. 33: 547-562.

Lutz, A. 1910. Notas dipterolojiocsas and dipterologishe notizen. Memories Instituto Oswaldo Cruz (Rio de J.) 1: 58-63. (In Spanish).

Lyon, W. F. 2007. Pet pest management, Bulletin 586. Ohio State University Extension Bulletin.

Information on control measures for flies, including preventative (sanitation), non-chemical and chemical control methods.

Lysyk, T. J. 1993. Adult resting and larval developmental sites of stable flies and house flies (Diptera: Muscidae) on dairies in Alberta. J. Econ. Entomol. 86: 1746-1753.

Lysyk, T. J. 1993. Seasonal abundance of stable flies and house flies (Diptera: Muscidae) in dairies in Alberta, Canada. J. Med. Entomol. 30: 888-895.

Stable fly populations were monitored on 4 dairies near Lethbridge, Alberta during 1989, 1990 and 1991 using alsynite traps and leg counts on cattle. In 1989, fly populations increased from May-August, with peaks occurring in late August and again in late September. In 1990, the populations began increasing in late June-early July, with a minor peak in late August and a major peak in late Septermber-mid October. In 1991 the populations increased as in the previous years, but had only one peak in mid-September. The highest rainfall occurred during May and June. The data suggested that stable flies overwinter in the area and become abundant in the 2nd or 3rd generation.

Lysyk, T. J. 1995. Parasitoids (Hymenoptera: Pteromalidae, Ichneumonidae) of filth fly (Diptera: Muscidae) pupae at dairies in Alberta. J. Econ. Entomol. 88: 659-665.

Lysyk, T. J. 1995. Temperature and population density effects on feeding activity of *Stomoxys calcitrans* (Diptera: Muscidae) on cattle. J. Med. Entomol. 32: 508-514.

Lysyk, T. J. 1998. Relationships between temperature and life-history parameters of *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 35: 107-119.

Lab experiments were conducted to examine the relationship between life history parameters of the stable fly and temperature. All life stages were studied individually, including preovipositional period and fecundity. The optimal temperatures for stable fly development in this experiment were between 25-30ºC.

Lysyk, T. J. 2000. Relationships between temperature and life history parameters of *Mucuidifurax raptor* (Hymenoptera: Pteromalidae). Environ. Entomol. 29: 596-605.

Lysyk, T. J. 2001. Relationships between temperature and life history parameters of *Mucsidifaurax zaraptor* (Hymenoptera: Pteromalidae). Environ. Entomol. 30: 147-156.

Lysyk, T. J. 2001. *Stomoxys calcitrans* (L.), stable fly (Diptera: Muscidae). *In* P. Mason and J. Huber (eds.), Biological control programmes against insects & mites, weeds, and pathogens in Canada 1981-2000. CABI Publishing, New York, N.Y.

Lysyk, T. J. 2004. Host mortality and progeny production by solitary and gregarious parasitoids (Hymenoptera: Pteromalidae) attacking *Musca domestica* and *Stomoxys calcitrans* (Diptera: Muscidae) at varying host densities. Environ. Entomol. 33: 328-339.

Lysyk, T. J. 2011. Arthropods associated with livestock grazing systems. *In* K. D. Floate (ed.). Arthropods of Canadian Grasslands (Volume 2): Inhabitants of a Changing Landscape. Biological Survey of Canada pp. 45-69.

Lysyk, T. J., and G. B. Schaalje. 1992. Binomial sampling for pest management of stable flies (Diptera: Muscidae) that attack dairy cattle. J. Econ. Entomol. 85: 130-136.

Lysyk, T. J., and E. S. Krafsur. 1993. Relationship between pterin accumulation and ovarian development in the stable fly *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Can. Entomol. 125: 869-879.

Lysyk, T. J., L. Kalischuk-Tymensen, L. B. Selinger, R. C. Lancaster, L. Wever, and K. -J. Cheng. 1999. Rearing stable fly larvae (Diptera: Muscidae) on an egg yolk medium. J. Med. Entomol. 36: 382-388.

Stable fly larvae were reared on egg yolk agar with added cultures of certain bacterial species isolated from a stable fly colony. Bacterial species evaluated were *Acinetobacter* sp, *Aeromonas* sp., *Empedobacter breve, Flavobacterium odoratum,*and *Serratia marcescens*. Stable flies did not develop on uninoculated plates. Larvae died during the 1st instar on plates inoculated with *Aeromonas* sp. and *Serratia marcescens*. Larval survival and percent adult emergence were greatest on plates inoculated with *Acinetobacter* and *F. odoratum*. Larval survival in some mixed cultures were greater than in pure cultures, and lower in other mixed cultures.

Lysyk, T. J., L. D. Kalischuk-Tymensen, and L. B. Selinger. 2002. Comparison of selected growth media for culturing *Serratia marcescens*, *Aeromonas* sp., and *Pseudomonas aeruginosa* as pathogens of adult *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 39: 89-98.

Lysyk, T. J., L. D. Kalischuk-Tymensen, K. Rochon, and L. B. Selinger. 2010. Activity of *Bacillus thuringiensis* isolates against immature horn fly and stable fly (Diptera: Muscidae). J. Econ. Entomol. 103: 1019-1029.

M

MacCreary, D., and A. H. Goddin. 1937. Tests of cattle fly sprays by the "one-half cow" method. J. Econ. Entomol. 30: 478-482.

MacGregor, I. M. 1945. A case of accidental intestinal myiasis. Br. Med. J. 1: 14.

Macloskey, G. 1880. The proboscis of the house fly. Am. Nat. 14: 153-161.

Macvicker, J. A. K., P. F. Billingsley, M. B. A. Djamgoz, and I. D. Harrow. 1994. Ouabain-sensitive Na^+/K^+-ATPase activity in the reservoir zone of the midgut of *Stomoxys calcitrans* (Diptera: Muscidae). Insect Biochem. Mol. Biol. 24: 151-159.

Madsen, M., B. O. Nielson, P. Holter, O. C. Pedersen, J. B. Jespersen, K. M. V. Jensen, P. Nansen, and J. Gronvold. 1990. Treating cattle with ivermectin: effects on the fauna and decomposition of dung pats. J. Appl. Ecol. 27: 1-15.

Mail, T. S., and M. J. Lehane. 1988. Characterisation of pigments in the head capsule of the adult stable fly, *Stomoxys calcitrans.* Entomologia Exp. Appl. 46: 125-131.

Mail, T. S., J. Chadwick, and M. J. Lehane. 1983. Determining the age of adults of *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Bull. Entomol. Res. 73: 501-525.

Mailen, T. H. 1940. Seasonal occurrence and the effect of host attractiveness on the abundance of stable flies and horn flies on cattle. Proc OK Academy of Science 21: 19-21.

Malloch, J. R. 1932. Exotic Muscaridae (Diptera). XXXVI. Family Muscidae. Subfamily Stomoxyinae. Ann. Mag. Nat. Hist. Ser. 102: 307-319.

Mann, R. S., P. E. Kaufman, and J. F. Butler. 2010. Evaluation of semiochemical toxicity to house flies and stable flies (Diptera: Muscidae). Pest Manag. Sci. 66: 816-824.

Manville, R. H. 1951. A small island community in midsummer. Ecology 32: 608-617.

Marcon, P. C. R. G., G. D. Thomas, B. D. Siegfried, and J. B. Campbell. 1997. Susceptibility of stable flies (Diptera: Muscidae) from southeastern Nebraska beef cattle feedlots to selected insecticides and comparison of 3 bioassay techniques. J. Econ. Entomol. 90: 293-298.

Markus, M. B. 1980. Flies as natural transport hosts of *Sarcocystis* and other coccidia. J. Parasitol. 66: 361-362.

Markwick, N. P., R. L. Hill, and D. J. Allan. 1989. Muscidae, muscid flies (Diptera), pp. 387-394. *In* P. J. Cameron, R. L. Hill, J. Bain, and W. P. Thomas (eds.), A review of biological control of invertebrate pests and weeds in New Zealand 1874-1987. CAB International Institute of Biological Control technical communication. Wallingford, I. K.

Marshall, J. M., and W. J. Herbert. 1979. An attempt to infect the stable fly *Stomoxys calcitrans* with *Trypanosoma theileri*. Br. Vet. J. 135: 416-419.

Marquez, J. G., M. A. Cummings, and E. S. Krafsur. 2007. Phylogeography of stable fly (Diptera: Muscidae) estimated by diversity at ribosomal 16S and Cytochrome Oxidase I mitochondrial genes. J. Med. Entomol. 44: 998-1008.

Masmeatathip, R., C. Ketavan, and G. Duvallet. 2006. Morphological studies of *Stomoxys* spp. (Diptera: Muscidae) in Central Thailand. Kasetsart J. (Nat. Sci.) 40: 872-881.

Masmeatathip, R., J. Gilles, C. Ketavan, and G. Duvallet. 2006. First survey of seasonal abundance and daily activity of *Stomoxys* spp. (Diptera: Muscidae) in Kamphaengsaen Campus, Nakornpathom Province, Thailand. Parasite 13: 245-250.

Matheson, R. 1950. Medical entomology. Comstock Publishing Co., Inc. New York, N.Y.

Matlova, L., L. Dvorska, J. Barett, M. Bartos, W. Y. Ayele, M. Alexa, and I. Pavlik. 2003. Mycobacteria isolated from the environment of pig farms in the Czech Republic during the years 1996-2002. Vet. Med.-Czech. 48: 343-357.

Matsumura, T. 1979. Inhibitory effects of methoprene on emergence of stable fly. Jpn. J. Sanit. Zool. 30: 367-370. (In Japanese with English summary).

Matter, J. J., and C. D. Schmidt. 1974. New technique for capturing stable flies (Diptera: Muscidae). J. Med. Entomol. 11: 432.

Matthews, J. R., and J. J. Petersen. 1989. Effect of temperature on parasitism, development, and diapauses of the filth fly parasite, *Urolepis rufipes* (Hymenoptera: Pteromalidae). Environ. Entomol. 18: 728-731.

Matthysse, J. G. 1945. Observations on housefly overwintering. J. Econ. Entomol. 38: 493-494.

Mavoungou, J. F., P. Jay-Robert, J. Gilles, A. Atsame Edda, and G. Duvallet. 2008. Écologie des Stomoxes (Diptera: Muscidae) au Gabon. I – Premier inventaire dans différentes ones écologiques. Parasite 15: 27-34. (In French).

Mavoungou, J. F., G. Simo, G. Gilles, E. De Stordeur, and G. Duvallet. 2008. Écologie des stomoxes (Diptera: Muscidae) au Gabon. II- Origine des repas de sang et consequences épidémiologiques. Parasite 15: 611-615 (In French).

Mayer, R. T., and A. C. Chen. 1985. Effects of diflubenzuron and tunicamycin on N-acetylglucosaminyl transferases in prepupae of the stable fly (*Stomoxys calcitrans*). Cellular and Molecular Life Sciences 41: 623-625.

Mayer, R. T., and A. C. Chen. 1985. N-acetylglucosaminyl transferases from the pupal instar of the stable fly, *Stomoxys calcitrans.* Arch. Insect Biochem. Physiol. 2: 161-179.

Mayer, R. T., S. M. Meola, D. L. Coppage, and J. R. DeLoach. 1979. The pupal instar of *Stomoxys calcitrans*: cuticle deposition and chitin synthesis. J. Insect Physiol. 25: 677-683.

Mayer, R. T., A. C. Chen, and J. R. Deloach. 1983. Characterization of mannosyl transferases during the pupal instar of *Stomoxys calcitrans* (L.). Arch. Insect Biochem. Physiol. 1: 1-15.

Mayer, R. T., S. M. Meola, D. L. Coppage, and J. R. DeLoach. 1980. Utilization if imaginal tissues from pupae of the stable fly for the study of chitin synthesis and screening of chitin synthesis inhibitors. J. Econ. Entomol. 73: 76-80.

Mayer, R. T., A. C. Chen, and J. R. Deloach. 1980. Characterization of a chitin synthase from the stable fly, *Stomoxys calcitrans* (L.) Insect Biochem. 10: 549-556.

Mayer, R. T., A. C. Chen, and J. R. DeLoach. 1981. Chitin synthesis inhibiting insect growth regulators do not inhibit chitin synthase. Experientia 37: 337-338.

Mazzola, V. 1994. Better trap means fewer flies. Agric. Res. Mag. pp. 12-15.

McAlister, L. C., H. A. Jones, and D. H. Moore. 1947. Piperonyl butoxide with pyrethrins in wettable powders to control certain agricultural and household insects. J. Econ. Entomol. 40: 906-909.

McCain, T. L., R. E. Williams, and S. M. Gaafar. 1981. The role of stable flies, *Stomoxys calcitrans* (L.), in the transmission of *Eperythrozoon suis*, Splitter, in swine. Abst. Proc. Am. Cong. Conf. Res. Workers in An. Diseases, Chicago, Ill. Nov. 9-10, 1981.

McCoy, C.W. 1963. Mass liberation of laboratory reared parasites *Spalangia muscidarum* (Richardson), for control of *Stomoxys calcitrans* (L.) and

Musca domestica (L.) in Lancaster County, Nebraska. M.S. Thesis, University of Nebraska, Lincoln.

McDuffie, W. C. 1959. Suggestions for the control of flies affecting man and animals. Proc. Chem. Spec. Mfr. Assoc. Midyear Meeting 45: 128-131.

McGarry, J. W., and A. S. Baker. 1997. Observations on the mite fauna associated with adult *Stomoxys calcitrans* in the UK. Med. Vet. Entomol. 11: 159-164.

McGowan, M. J. 1982. Blood meal identification and digestion in the stable fly, *Stomoxys calcitrans*. Proc. Fla. Anti-Mosquito Assoc. 53: 17-19.

McGregor, W. S., and J. M. Dreiss. 1955. Rearing stable flies in the laboratory. J. Econ. Entomol. 48: 327-328.

The rearing method for stable flies at the Kerrville, TX. laboratory is described. It is simpler than methods described earilier, and consists of mixing 1 part CSMA with 5 parts wood shavings. Eggs are placed in a 7 x 9” jar and maintained at 80°F. Larvae feed on the medium, and pupate under the dry layer that forms. If the medium becomes too moist, a small amount of rolled oats can be added. Pupae can be left undisturbed, and adults removed as they emerge. Adults are placed in another cage and fed citrated beef blood. Oviposition sites are provided which consist of a ball of damp cotton covered with black cloth. A 5% ammonia solution is applied to stimulate oviposition.

McGregor, W. S., and R. C. Bushland. 1956. Research on the use of systemic insecticides for the control of livestock pests. J. Econ. Entomol. 49: 86-88.

McGregor, W. S., and R. C. Bushland. 1957. Tests with Dow ET-57 against two species of cattle grubs. J. Econ. Entomol. 50: 246-249.

McKay, T., and T. D. Galloway. 1999. Biology of *Phygadeum fumator* Gravenhorst (Hymenoptera: Ichneumonidae) a pupal parasitoid of house and stable flies (Diptera: Muscidae) in Manitoba. Entomol. Soc. Manitoba. 55: 17-27.

McKay, T., and T. D. Galloway. 1999. Survey and release of parasitoids (Hymenoptera) attacking house and stable flies (Diptera: Muscidae) in dairy operations. Can. Entomol. 131: 743-756.

McNeal, C. D. Jr., and J. B. Campbell. 1981. Insect pest management in Nebraska feedlots and dairies: a pilot integerated pest management project. Report No. 10. Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Neraska, Lincoln.

McOrist, S., R. Blunt, and C. J. Gebhart. 2011. Pig-associated *Lawsonia intracellularis* in various on-farm dipterous fly stages. J. Swine Health Prod. 19: 277-283.

McPheron, L. J., and A. B. Broce. 1995. Influence of environmental factors on the wandering phase and pupariation in stable fly, *Stomoxys calcitrans*, larvae. Physiol. Entomol. 20: 337-342.

Lab experiments were performed to test the mean length of the wandering phase of stable fly larvae, mean time to 50% pupariation and rate of pupariation at 3 different moisture levels and different light levels. The effect of larval density was also tested. Stable flies pupariated fastest and had the greatest survival rate at the moderate moisture level of 67% (compared with 17% or 84%). Temperature had an effect on rate of pupariation: mean time to 50% pupariation decreased with increased temperature. Density had no effect on mean time to 50% pupariation, or on rate of pupariation.

McPheron, L. J., and A. B. Broce. 1996. Environmental components of pupariation-site selection by the stable fly (Diptera: Muscidae). Environ. Entomol. 25: 665-671.

Experiments were conducted to determine the effect of different moisture levels, temperature, light, osmolality and pH on pupariation site selection of stable fly larvae. Larvae chose the highest moisture level (71%), but survival was highest at medium levels. They chose a temperature range of 24-28ºC and survival was highest at 26ºC. More pupae were found at the highest pH (9.3) but survival was highest at 7.2 and lowest at 9.3. They chose the lowest osmolality (111 mmol/kg) and survival was highest at the higher levels (254 and 403 mmol/kg). Most larvae pupariated in the dark and tended to aggregate.

Medley, J. G., and R. O. Drummond. 1962. Polymerization as a means of prolonging effectiveness of orally administered systemic insecticides. J. Econ. Entomol. 55: 118-121.

Mehlhorn, H., G. Schmahl, and J. Schmidt. 2005. Extracts of the seeds of the plant *Vitex agnus castus* proven to be highly efficacious as a repellent against ticks, fleas, mosquitoes and biting flies. Parasitol. Res. 95: 363-365.

Meifert, D. W., R. S. Patterson, T. Whitfield, G. C. LaBrecque, and D. E. Weidhaas. 1978. Unique attractant-toxicant system to control stable fly populations. J. Econ. Entomol. 71: 290-292.

The efficacy of fiberglass panels treated with permethrin was tested as a control for stable flies in the laboratory and in the field. The fiberglass panels act as an attractant to the flies, and once in contact with the permethrin they die within 24 hours. When permethrin was applied to traps at .5g/m^2, 98-100% of the flies died within 24 hours for the first 3 weeks, and 90% in the 4th week. When the concentration was increased to 2.5g/m^2, over 99% of the stable flies in the test area were killed over a 6-week period. The authors calculated that using 1 trap for every 5 domestic animals would decrease the stable fly population by 30%.

Mellor, J. E. M. 1919. Observations on the habits of certain flies, especially of those breeding in manure. Ann. Appl. Biol. 6: 53-88.

Mellor, P. S., R. P. Kitching, and P. J. Wilkinson. 1987. Mechanical transmission of capripox virus and African swine fever virus by *Stomoxys calcitrans*. Res. Vet. Sci. 43: 109-112.

Melvin, R. 1931. Notes on the biology of the stable fly *Stomoxys calcitrans* Linn. Ann. Entomol. Soc. Am. 24: 436-438.

A large number of *Stomoxys calcitrans* were reared in the laboratory to monitor life history parameters under constant temperature and humidity. Egg incubation period, larval and pupal periods were monitored at 25°C and 30°C. Two different rearing media were used at each temperature for larvae and pupae. Length of the pupal period was monitored under different relative humidity.

Melvin, R. 1932. Physiological studies on the effect of flies and fly spray on cattle. J. Econ. Entomol. 25: 1151-1164.

Melvin, R. 1934. Incubation period of eggs of certain Muscoid flies at different constant temperatures. Ann. Entomol. Soc. Am. 27: 406-410.

The incubation period of 9 species of muscoid flies were compared at temperatures ranging from 59°F-109°F, in 5-degree intervals. Both high and low temperatures were found to slow egg hatch. Eggs of *Stomoxys calcitrans* hatched between 79-94°F.

Menusan, H. 1946. Flies attacking cattle. Dairymens Price Reporter. 28: 3.

Meola, R.W., R. L. Harris, S. M. Meola, and D. D. Oehler. 1977. Dietary-induced secretion of sex pheromone and development of sexual behavior in the stable fly. Environ. Entomol. 6: 895-897.

Meola, S. M. 1982. Morphology of the region of the ejaculatory duct producing the male accessory gland material in the stable fly, *Stomoxys calcitrans* L. (Diptera: Muscidae). Int. J. Ins. Morphol. Embryol. 11: 69-77.

Meola, S. M., and R. T. Mayer. 1980. Inhibition of cellular proliferation of imaginal epidermal cells by diflubenzuron in pupae of the stable fly. Science 207: 985-987.

Meola, S. M., and B. J. Cook. 1986. Neuroendocrine plexus in the pericardial septum of the stable fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Int. J. Morphol. Embryol. 15: 269-281.

Meola, S. M., H. H. Mollenhauer, and J. M. Thompson. 1977. Cytoplasmic bridges within the follicular epithelium of the ovarioles of two diptera, *Aedes aegypti* and *Stomoxys calcitrans.* J. Morphol. 153: 81-85.

Meola, S. M., M. S. Wright, G. M. Holman, and J. M. Thompson. 1991. Localization of leucomyosuppressin-like peptides in the central nervous system of the stable fly with immunocytochemistry. J. Med. Entomol. 28: 712-718.

Meola, S. M., M. S. Wright, R. Nichols, and M. W. Pendleton. 1996. Localization of myosuppressinlike peptides in the hypocerebral ganglion of two blood-feeding flies: horn fly and stable fly (Diptera: Muscidae). J. Med. Entomol. 33: 473-481.

Two peptides, dromyossuppressin (DMS) and leucomyosuppressin (LMS) suppress the spontaneous contractions of visceral muscle in insects. These peptides were previously isolated from *Stomoxys calcitrans*, and in this study they were isolated from *Hematobia irritans*. Neurons reactive to LMS were located in both species.

Meola, S. M., M. W. Pendleton, P. A. Langley, and S. L. Lovering. 1999. Ultrastructural localization of unique neurosecretory granules in the *corpora cardiaca* of the stable fly, *Stomoxys calcitrans*, and the tsetse fly, *Glossina morsitans*. J. Morphol. 240: 155-168.

The corpora cardiaca of the stable fly and tsetse fly were studied, and unique elementary neurosecretory granules (ENG) in the intrinsic neurosecretory cells (INC) were described. Those of *Stomoxys calcitrans* contain square or rectangular granules, whereas *Glossina morsitans* has spindle-shaped ENG. The shapes are unique to these dipterans.

Metcalf, C. L., and W. E. Sanderson. 1931. Black flies, mosquitoes, and punkies of the Adirondacks. New York State Museum 5: 9-38.

Meyer, H. J., and H. Bolton. 2007. S1030: flies impacting livestock, poultry and food safety. Outline of project S1031, USDA, Cooperative State, Research, Education and Extension Service.

Meyer, J. A. 1993. The influence of poultry operations on the urban fly problem in the Western United States, pp. 7-16. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment? Proc. of a Symposium, 1989 annual meeting of the ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Res. Bull. No. 317.

Meyer, J. A., and T. A. Shultz. 1990. Stable fly and house fly breeding sites on dairies. Calif. Agric. 44: 28-29.

A survey was conducted to compare management practices between dairies in southern and central California, with the purpose of determining which contained more breeding sites for house flies and stable flies. It was concluded that different management practices influenced fly breeding.

Meyer, J. A., and J. S. Hunter, III. 1991. Residual activity of microencapsulated permethrin against stable flies on lactating dairy cows. Med. Vet. Entomol. 5: 359-362.

The residual properties of microencapsulated permethrin with an emulsifiable concentrate solution were compared on the shoulder and leg hair of lactating dairy cows. Microencapsulated permethrin was found to remain on the hair much longer than the concentrate. It remained on the shoulders of the cows longer than on the legs due to daily washing of the legs. The use of permethrin against stable flies on dairy cows is questioned since stable flies attack mainly the legs, and the permethrin is washed off the legs relatively fast. This also raises the possibility of stable flies acquiring resistance to permethrin due to the low dose on the legs of the cows.

Meyer, J. A., and J. J. Petersen. 1982. Samping stable fly and house fly pupal parasites on beef feedlots and dairies in Eastern Nebraska. Southwest. Entomol. 7: 119-124.

Meyer, J. A., and J. J. Peterson. 1983. Characterization and seasonal distribution of breeding sites of stable flies (Diptera: Muscidae) on eastern Nebraska feedlots and dairies. J. Econ. Entomol. 76: 103-108.

Weekly searches for stable fly and house fly breeding sites were made at 3 small feedlots, 1 large feedlot and one dairy. One-time searches were made at an additional 25 feedlots, all in eastern Nebraska. Breeding sites were classified into 16 categories, and the distribution of fly breeding in these areas was studied. Spilled feed was the major breeding site on large feedlots; drainage ditches, fencelines and empty lots were the main source on small feedlots; and stored manure and straw bedding were the main breeding site at dairies.

Meyer, J. A., B. A. Mullens, T. L. Cyr, and C. Stokes. 1990. Commercial and naturally occuring fly parasitoids (Hymenoptera: Pteromalidae) as biological control agents of stable flies and house flies (Diptera: Muscidae) on California dairies. J. Econ. Entomol. 83: 799-806.

Pteromalid parasitoids were released on 2 California dairies and their affect on stable fly and house fly populations was evaluated. Results showed that the releases had no significant effect on fly populations, perhaps because of the number of other dairies in the vicinity and the ability of flies to disperse.

Meyer, J. A., T. A. Shultz, C. Collar, and B. A. Mullens. 1991. Relative abundance of stable fly and house fly (Diptera: Muscidae) pupal parasites (Hymenoptera: Pteromalidae, Coleoptera: Staphylinidae) on confinement dairies in California. Environ. Entomol. 20: 915-921.

Mihok, S. 2002. The development of a multipurpose trap (the Nzi) for tsetse and other biting flies. Bull. Entomol. Res. 92: 385-403.

Mihok, S., and P. H. Clausen. 1996. Feeding habits of *Stomoxys* spp. stable flies in a Kenyan forest. Med. Vet. Entomol. 10: 392-394.

Mihok, S., and D. A. Carlson. 2007. Performance of painted plywood and cloth Nzi traps relative to Manitoba and Greenhead traps for Tabanids and stable flies. J. Econ. Entomol. 100: 613-618.

The efficacy of painted plywood Nzi traps was compared with that of the phthalogen blue cloth Nzi traps for capturing stable flies and Tabanids. Traps were baited with 1-octen-3-ol. It was found that plywood traps painted with a matte blue paint performed as well as the cloth traps. However, traps with shiny paint did not perform as well.

Mihok, S., E. K. Kang'ethe, and G. K. Kamau. 1995. Trials of traps and attractants for *Stomoxys* spp. (Diptera: Muscidae). J. Med. Entomol. 32: 283-289.

Mihok, S., O. Maramba, E. Munyoki, and K. Saleh. 1996. Phenology of Stomoxyinae in a Kenyan forest. Med. Vet. Entomol. 10: 305-316.

Mihok, S., D. A. Carlson, E. S. Krafsur, and L. D. Foil. 2006. Performance of the Nzi and other traps for biting flies in North America. Bull. Entomol. Res. 96: 387-397.

Mihok, S., D. A. Carlson, and N. Ndegwa. 2007. Tsetse and other biting fly responses to Nzi traps baited with octenol, phenols and acetone. Med. Vet. Entomol. 21: 70-84.

Miller, A., and R. L. Harris. 1970. A collector for studing the emergence pattern of flies. J. Econ. Entomol. 63: 1682-1683.

Miller, J. A., and W. F. Chamberlain. 1989. Azadirachtin as a larvicide against the horn fly, stable fly, and house fly (Diptera: Muscidae). J. Econ. Entomol. 82: 1375-1378.

Miller, J. A., J. L. Eschle, and I. L. Berry. 1969. Patterns of flight activity in livestock insects. 1. Preliminary testing of a system for recording flight activity of the stable fly. Ann. Entomol. Soc. Am. 62: 1046-1050.

An “aktograph”, a device used to detect the flight activity of stable flies was described. An experiment was conducted using the aktograph to monitor flight activity of stable flies that were recently engorged on blood. Flight activity was monitored under total light and total darkness. There was more activity in light conditions, and males were more active than females.

Miller, J. A., S. E. Kunz, D. D. Oehler, and R. W. Miller. 1981. Larvicidal activity of Merck MK-933, an avermectin, against the horn fly, stable fly, face fly, and house fly. J. Econ. Entomol. 74: 608-611.

Miller, J. A., K. Lohmeyer, J. George, J. Pruett, J. M. Pound, and P. Olafson. 2006. Sustainable pest management systems for blood-feeding flies affecting livestock. USDA-ARS annual report.

Miller, L. D., D. R. Downing, and N. O. Morgan. 1974. Transmission of hog cholera virus by flies: recovery of virus from flies following exposure to infective blood. U.S. Anim. Health Assoc. 7: 324-330.

Miller, R.W. 1992. The stable fly as a pest of dairy cattle, pp. 12-20. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Miller, R.W. 1993. The influence of dairy operations on the urban fly problem, pp. 25-33. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment? Proc. of a Symposium, 1989 annual meeting of the

ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Res. Bull. No. 317.

Miller, R. W. 1994. Inhibition of house flies and stable flies (Diptera: Muscidae) in field-spread dairy bedding from cattle treated with diflubenzuron boluses. J. Econ. Entomol. 87: 402-404.

Five heifers were kept in a stall with straw bedding and diflubenzuron boluses were administered to each one. After 3 weeks the bedding was removed and spread out. Another group of untreated heifers and their bedding was used as a control. The spread out bedding was sampled for house flies and stable flies. It was found that fewer flies emerged from the treated bedding.

Miller, R. W., and L. G. Pickens. 1975. Feed additives for control of flies on dairy farms. J. Med. Entomol. 12: 141-142.

Miller, R. W., L. G. Pickens, N. O. Morgan, R. W. Thimijan, and R. L. Wilson. 1973. Effect of stable flies on feed intake and milk production of dairy cows. J. Econ. Entomol. 66: 711-713.

Miller, R. W., D. A. Rutz, L. G. Pickens, and C. J. Geden. 1993. Evaluation of traps and the parasitoid *Muscidifurax raptor* Girault and Sanders to manage house flies (Diptera, Muscidae) and stable flies (Diptera, Muscidae) on dairy farms. J. Agr. Entomol. 10: 9-19.

Miller, R. W., L. G. Pickens, and W. E. Potts. 1993. Comparison of traps and an integrated program to manage house flies and stable flies on dairy farms. J. Agric. Entomol. 10: 189-196.

Miller, R. W., E. T. Schmidtmann, R. D. Wauchope, C. M. Clegg, A. E. Herner, and H. Weber. 1996. Urine delivery of cyromazine for suppressing house and stable flies (Diptera: Muscidae) in outdoor dairy calf hutches. J. Econ. Entomol. 89: 689-694.

Miller, T. A., and R. E. Treece. 1968. A device for obtaining flies of known age. Ann. Entomol. Soc. Am. 61: 548.

Miloushov, Y. 1978. Species composition and numbers of common house and stable (Synanthropic) flies on stock breeding farms. Vet. Science. 15: 39-44.

Mitchell, E. R., W. W. Copeland, and F. C. Tingle. 1974. Parasites of filth-breeding dipteral in poultry houses in north central Florida. Fla. Entomol. 57: 383-384.

Mitzmain, M. B. 1913. *Stomoxys calcitrans* Linn. A note giving a summary of its life history. Public Health Reports (1896-1970) 28: 345-346.

A brief summary of the life history of *Stomoxys calcitrans*.

Mitzmain, M. B. 1913. The bionomics of *Stomoxys calcitrans* Linnaeus: a preliminary account. Philippine J. Sci. 8: 29-48.

Mitzmain, M. B. 1914. Experimental insect transmission of anthrax. Public Health Reports (1896-1970) 29: 75-77.

Discusses several experiments involving the transmission of anthrax by stable flies and tabanids, including some with negative results. Anthrax was successfully transmitted by the flies when their feeding on infected animals was interrupted, and they were transferred to a susceptible host to complete their blood meal. Anthrax was found in the feces of stable flies and tabanids 24 hours after feeding on an infected animal.

Moffatt, M.R. and M.J. Lehane. 1990. Trypsin is stored as an inactive zymogen in the midgut of *Stomoxys calcitrans*. Insect Biochem. 20: 719-723.

Moffatt, M. R., D. Blakemore, and M. J. Lehane. 1995. Studies on the synthesis and secretion of trypsin in the midgut of *Stomoxys calcitrans*. Comp. Biochem. Physiol. 110B: 291-300.

Monty, J. 1972. A review of the stable fly problem in Mauritius. Revue Agricole Et Sucriere. 51 :13-29.

Moobola, S. M., and E. W. Cupp. 1978. Ovarian development in the stable fly, *Stomoxys calcitrans*, in relation to diet and juvenile hormone control. Physiol. Entomol. 3: 317-321.

Corpora allata are removed to examine the effect of juvenile hormone on ovarian development. Cell lysis occurred in flies with no CA and a diet of sugar only, but not in blood fed flies. Follicles did not grow in any flies in the absence of juvenile hormone, but when the CA was implanted back into surgically altered flies, the ovaries began to develop, and when given blood meals they produced yolk.

Moon, R. D., I. L. Berry, and J. J. Petersen. 1982. Reproduction of *Spalangia cameroni* Perkins (Hymenoptera: Pteromalidae) on Stable fly (Diptera: Muscidae) in the laboratory. J. Kans. Entomol. Soc. 55: 77-85.

Moon, R. D., L. D. Jacobson, and S. G. Cornelius. 1987. Stable flies (Diptera: Muscidae) and productivity of confined nursery pigs. J. Econ. Entomol. 80: 1025-1027.

The effect of stable flies on piglets was studied using 4 sets of 5 pigs each. Two sets were exposed to over 1000 stable flies and 2 sets were free from flies. Amount of feed consumed and weight gain of the piglets was calculated. Stable flies did not significantly affect the average daily gain of piglets at a rate of 7 flies per animal.

Moore, J. 1993. Parasites and the behavior of biting flies. J. Parasitol. 79: 1-16.

Moore, S., A. H. Toczydlowski, and H. L. Sweetman. 1951. Fly control experiments in Massachusetts in 1950. J. Econ. Entomol. 44: 731-733.

Moorhouse, D. E. 1972. Cutaneous lesions on cattle caused by stable fly. Aust. Vet. J. 48: 644.

Moraes, A. P. R., V. R. E. P. Bittencourt, and A. J. Bittencourt. 2010. Pathogenicity of *Beauveria bassiana* on immature stages of *Stomoxys calcitrans*. Ciéncia Rural, Santa Maria 40: 1802-1807. (In Portugese).

Moraes, A. P. R., I. da C. Angelo, E. K. K. Fernandes, V. R. E. P. Bittencourt and A. J. Bittencourt. 2008. Virulence of *Metarhizium anisopliae* to eggs and immature stages of *Stomoxys calcitrans*. Ann. N. Y. Acad. Sci. 1149: 384-387.

Morgan, C. E., G. D. Thomas, and R. D. Hall. 1983. Annotated bibliography of the stable fly, *Stomoxys calcitrans* (L.), including references on other species belonging to the genus *Stomoxys.* North Central Regional Res. Publication No. 291. University of Missouri Agricultural Experiment Station Research Bulletin 1049, Columbia.

Morgan, D. W. T., and H. D. Bailie. 1980. A field trial to determine the effect of fly control using permethrin on milk yields in dairy cattle in the U. K. Vet. Rec. 106: 121-123.

Morgan, N. O., and H. J. Retzer. 1974. Modified double nozzle micronized dust gun for delivering insecticides. J. Econ. Entomol. 67: 563-564.

Morgan, N. O., and L. D. Miller. 1976. Muscidae (Diptera): experimental vectors of hog cholera virus. J. Med. Entomol. 12: 657-660.

Morgan, N. O., L. G. Pickens, and R. W. Thimijan. 1970. House flies and stable flies captured by two types of traps. J. Econ. Entomol. 63: 672-673.

Morgan, N. O., L. G. Pickens, and R. W. Miller. 1972. Doorway curtains help exclude flies from dairy barns. J. Econ. Entomol. 65: 1061-1063.

Morgan, N. O., W. N. Sullivan, and M. S. Schechter. 1973. Micronized resmethrin dust for control of flies in dairy barns. J. Econ. Entomol. 66: 1281-1282.

Morgan, P. B. 1980. Sustained releases of *Spalangia endius* Walker (Hymenoptera: Pteromalidae) for the control of *Musca domestica* L. and *Stomoxys calcitrans* (L.) (Diptera: Muscidae). J. Kans. Entomol. Soc. 53: 367-372.

Morgan, P. B. 1981. The potential use of parasites to control *Musca domestica* L. and other filth breeding flies at agricultural installations in the southern United States. Proc. of Workshop of Status of Biological Control of Filth Breeding Flies, Gainesville, FL. February 4-5, 1981. pp. 11-25.

Morgan, P. B., and R. S. Patterson. 1977. Sustained releases of *Spalangia endius* to parasitize field populations of three species of filth breeding flies. J. Econ. Entomol. 70: 450-452.

Morgan, P. B., R. S. Patterson, G. C. LaBrecque, D. E. Weidhaas, A. Benton, and T. Whitfield. 1975. Rearing and release of the house fly and pupal parasite *Spalangia endius* Walker. Environ. Entomol. 4: 609-611.

Morgan, P. B., G. C. LaBrecque, D. E. Weidhaas, and R. S. Patterson. 1979. Interrelationships between two species of muscoid flies and the pupal parasite *Spalangia endius* (Hymenoptera: Pteromalidae). J. Med. Entomol. 16: 331-334.

Morgan, P. B., H. Hoyer, and R. S. Patterson. 1989. Life history of *Spalangia cameroni* (Hymenoptera: Pteromalidae) a microhymenopteran pupal parasite of muscoid flies (Diptera: Muscidae). J. Kans. Entomol. Soc. 62: 381-386.

Morgan, P. B., J. A. Hogsette, and R. S. Patterson. 1990. Life history of *Trichopria stomoxydis* (Hymenoptera: Proctotrupoidea: Diapriidae) a gregarious endoparasite of *Stomoxys calcitrans* from Zimbabwe, Africa. Florida Entomol. 73: 496-502.

Morrison, P. E., K. Venkatesh, and B. Thompson. 1982. The role of male accessory-gland substance on female reproduction with some observations of spermatogenesis in the stable fly. J. Insect Physiol. 28: 607-614.

Morrisson, H. E., R. W. Lauderdale, H. H. Crowell, and D. C. Mate. 1950. Space spraying for fly control in dairy barns. J. Econ. Entomol. 43: 846-850.

Mount, G. A. 1965. Use of WHO tsetse fly kit for determining resistance in the stable fly. J. Econ. Entomol. 58: 794-796.

Mount, G. A., J. B. Gahan, and C. S. Lofgren. 1965. Evaluation of insecticides in the laboratory against adult and larval stable flies. J. Econ. Entomol. 58: 685-687.

Mount, G. A., N. W. Pierce, C. S. Lofgren, and J. B. Gahan. 1966. Fog oil and fuel ois as diluents of fenthion, naled, and malathion in thermal aerosols used to control adult stable flies and salt-marsh mosquitoes. Mosq. News 26: 149-153.

Mount, G. A., C. S. Lofgren, and J. B. Gahan. 1966. Malathion, naled, fenthion, and Bayer 39007 thermal fogs for control for the stable fly (dog fly), *Stomoxys calcitrans* (Diptera: Muscidae). Fla. Entomol. 49: 169-173.

Mount, G. A., C. S. Lofgren, J. B. Gahan, and N. W. Pierce. 1966. Comparisons of thermal and nonthermal aerosols of malathion, fenthion, and naled for control of stable flies and salt-marsh mosquitoes. Mosq. News 26: 132-138.

Mount, G. A., C. S. Lofgren, M. C. Bowman, and F. Acree. 1966. Fate of dieldrin applied topically to stable flies susceptible and resistant to dieldrin. J. Econ. Entomol. 59: 1352-1353.

Mount, G. A., J. B. Gahan, and C. S. Lofgren. 1967. Laboratory tests with promising insecticides for control of adult and larval stable flies. J. Econ. Entomol. 60: 1600-1602.

Mount, G. A., J. B. Gahan, and C. S. Lofgren. 1968. Toxicity of insecticides to stable flies. ARS #33-123. USDA. 27 pp.

Moya Borja, G. E. 1981. Sexual sterility of *Stomoxys calcitrans* (L.) induced by females of *Dermatobia hominis* (Linnaeus Jr.) treated with thiotepa. Rev. Brasil. Biol. 41: 117-120.

Mramba, F. W. 2006. Ecological and public health aspects of stable flies (Diptera: Muscidae): microbial interactions. PhD Dissertation, Department of Entomology, College of Agriculture, Kansas State University, Manhattan, KS.

Mramba, F., A. B. Broce, and L. Zurek. 2006. Isolation of *Enterobacter sakazakii* from stable flies, *Stomoxys calcitrans* L. (Diptera: Muscidae). J. Food Prot. 69: 671-673.

Mramba, F., A. B. Broce, and L. Zurek. 2007. Vector competence of stable flies, *Stomoxys calcitrans* L. (Diptera: Muscidae), for *Enterobacter sakazakii*. J. Vector Ecol. 32: 134-139.

Laboratory experiments showed that *Enterobacter sakazakii* can remain in the gut of stable flies for at least 20 days, and the bacteria supports the development of stable flies. However, no *E. sakazakii* were found in manure substrate which had not been sterilized, indicating that the bacteria cannot compete with other microbes in the natural environment. It was also shown that stable flies contaminated their food source with the bacteria, indicating their ability to transfer *E. sakazakii* to host animals.

Muenworn, V., G. Duvallet, K. Thainchum, S. Tuntakom, S. Tanasilchayakul, A. Prabaripai, P. Akratanakul, S. Sukonthabhirom, and T. Chareonviriyaphap. 2010. Geographic distribution of Stomoxyine flies (Diptera: Muscidae) and diurnal activity of *Stomoxys calcitrans* in Thailand. J. Med. Entomol. 47: 791-797.

Muhammed, S., J. F. Butler, and D. A. Carlson. 1975. Stable fly sex attractant and mating pheromones found in female body hydrocarbons. J. Chem. Ecol. 1: 387-398.

Muir, F. 1924. On the original habitat of *Stomoxys calcitrans*. J. Econ. Entomol. 7: 459-460.

Disagrees with C.T. Brues placing the origin of stable flies in the palearctic region of central Europe. Offers the opinion that *S. calcitrans* probably originated in the Indo-Ethiopian region with other Stomoxyine species.

Mullens, B. A., and J. A. Meyer. 1987. Seasonal abundance of stable flies (Diptera: Muscidae) on California dairies. J. Econ. Entomol. 80: 1039-1043.

Stable fly populations were monitored using alsynite sticky traps, and were found to peak during spring and early summer (April-June) in Southern California dairies. During this time the abundance of flies significantly exceeded the economic injury level of 5 flies per leg on the cattle. Stable fly abundance seemed to be related to the amount of rainfall occurring in March.

Mullens, B. A., and N. G. Peterson. 2005. Relationship between rainfall and stable fly (Diptera: Muscidae) abundance on California dairies. J. Med. Entomol. 42: 705-708.

Stable fly populations were monitored over 5 different years and compared with amount of rainfall earlier in the year. The amount in rainfall in March was found to significantly affect stable fly populations in

May and June. Earlier spring rains had no significant effect on fly numbers.

Mullens, B. A., N. Peterson, C. E. Dada, and R. K. Velten. 1995. Octenol fails to lure stable fly to insecticide. Calif. Agric. 49: 16-18.

Mullens, B. A., K. S. Lii, Y. Mao, J. A. Meyer, N. G. Peterson, and C. E. Szijj. 2006. Behavioral responses of dairy cattle to the stable fly, *Stomoxys calcitrans*, in an open field environment. Med. Vet. Entomol. 20: 122-137.

Repellent behaviors (head throws, leg stamps, tail flicks and skin twitches) against stable flies were studied on 100 individual cattle on 4 dairy farms. Behaviors and fly numbers differed on individual cows. Young animals displayed more behaviors and repelled more flies, and some cows exhibited more repellent behaviors than others. There was evidence of habituation to fly attack. No evidence was found correlating stable fly parasitism with milk production.

Mullens, B. A., W. G. Reifenrath, and S. M. Butler. 2009. Laboratory trials of fatty acids as repellents or antifeedants against houseflies, horn flies and stable flies (Diptera: Muscidae). Pest Manag. Sci. 65: 1360-1366.

Müller, G., J. A. Hogsette, J. C. Beier, S. F. Traore, M. B. Toure, M. M. Traore, S. Bah, S. Doumbia, Y. Schlein. 2012. Attraction of *Stomoxys* sp. to various flowers and fruits in Mali. J. Med. Vet. Entomol. (In press).

Muller, M. J., and M. D. Murray. 1977. Blood-sucking flies feeding on sheep in Eastern Australia. Aust. J. Zool. 25: 75-85.

Muma, M. H., and E. Hixson. 1949. Effects of weather, sanitation and chlorinated chemical residue on house and stable fly populations on Nebraska farms. J. Econ. Entomol. 42: 231-238.

Muniz, R., and O. Hecht. 1970. Observaciones sobre la distribucion de *Stomoxys calcitrans* en un predio ganadero y ensayos la seleccion de superificies de colores al aire libre. An Esc. Nac. Cienc. Biol. Mex. 17: 225-243. (In Spanish with English summary).

Munks, R. J. L., J. V. Hamilton, S. M. Lehane, and M. J. Lehane. 2001. Regulation of midgut defensin production in the bloodsucking insects *Stomoxys calcitrans*. Insect Mol. Biol. 10: 561-571.

N

Nachman, R. J., G. M. Coast, S. E. Tichy, D. H. Russell, J. A. Miller, and R. Predel. 2002. Occurrence of insect kinins in the flesh fly, stable fly and horn fly – mass spectrometric identification from single nerves and diuretic activity. Peptides 23: 1885-1894.

Nachman, R. J., W. K. Russell, D. H. Russell, and R. Predel. 2005. MALDI-TOF/TOF mass spectrometric assignment of Leu/Ile in PVK/CAP2b neuropeptides from single neurohemal organ preparations of four flies. Pestycydy 3-4: 49-53.

Nachman, R. J., W. K. Russell, G. M. Coast, D. H. Russell, J. A. Miller, and R. Predel. 2006. Identification of PVK/CAP2b neuropeptides from single neurohemal organs of the stable fly and horn fly via MALDI-TOF/TOF tandem mass spectrometry. Peptides 27: 521-526.

Nachman, R. J., and G. M. Coast. 2007. Structure-activity relationships for *in vitro* diuretic activity of CAP2b in the housefly. Peptides 28: 57-61.

Naem, S. 2007. First SEM observations on adult *Habronema microstoma* (Spirurida: Habronematidae), a parasite of the horse. Parasitol. Res. 101: 743-749.

Nakano, O., L. A. Paro, and A. H. Camargo. 1973. Controle quimico de adultos e larvas da mosca domestica. O Biologico (São Paulo) 39: 5-8. (In Portuguese with English summary).

Naoshima, Y., and H. Mukaidani. 1987. Synthesis of racemate and enantiomers of 15-methyltritriacontane, sex-stimulant pheromone of stable fly, *Stomoxys calcitrans* L. J. Chem. Ecol. 13: 325-333.

Nash, J. T. C. 1915a. The channels of infection in poliomyelitis. Br. Med. J. 1: 92.

Nash, J. T. C. 1915b. *Stomoxys calcitrans* as a carrier of the virus poliomyelitius. Lancet 186: 1372.

Nayar, J. K., and E. Van Handel. 1972. Utilization of injected glucose vy the tsetse fly (*Glossina*) and the stable fly (*Stomoxys*). J. Insect Physiol. 18: 105-107.

Ndegwa, P. N., and Ogodo, J. A. 2002. Community structure and diel activity patterns of Stomoxyinae from odour-baited Nzi trap collections. Insect Science and its Application 22: 281-287.

Nettles, W. C. 1934. An unusual outbreak of stable fly and its control. J. Econ. Entomol. 27: 1197-1198.

Neuhaus, G. H. 1886. Diptera marchica. Systematisches verzeichniss der zweiflugler (Mucken and Fliegen der Mark Branderburg). Mit kurzer beschreibung and analytischen bestimmungs-tabellen. 80 Berlin. Pp. 145. (In German).

Newson, H. D. 1977. Arthropod problems in recreation areas. Ann. Rev. Entomol. 22: 333-353.

Newstead, R. 1906. On the life-history of *Stomoxys calcitrans*, Linn. J. Econ. Biol. 1: 157-166.

Newstead, R., J. E. Dutton, and J. L. Todd. 1907. Insects and other Arthropoda collected in the Congo Free State. Ann. Trop. Med. Parasitol. 1: 3-112.

Ngeranwa, J. J. N., and D. C. Kilalo. 1994. The ability of *Stomoxys calcitrans* and mechanical means to transmit *Trypanosoma* (*Brucei*) *evansi* from goats to camels in Kenya. Vet. Res. Commun. 18: 307-312.

Nieshultz, O. 1933. Über die temperaturbegrenzung der aktivitätsstufen von *Stomoxys calcitrans*. Parasitol. Res. 6: 220-242. (In German).

Noriega, R., F. B. Ramberg, and H. H. Hagedorn. 2002. Ecdysteroids and oocyte development in the black fly *Simulium vittatum*. BMC Developmental Bio. 2: 1-5.

Norman, J. O., J. M. Thompson, G. E. Spates, and S. M. Meola. 1984. Identification and ultrastructure of bacteria found in the midgut of the stable fly, *Stomoxys calictrans* L. Southwest. Entomol. 9: 151-157.

Noronha, C., G. A. P. Gibson, and K. D. Floate. 2007. Hymenopterous parasitoids of house fly and stable fly puparia in Prince Edward Island and New Brunswick, Canada. Can. Entomol. 139: 748-750.

Nueza, M. F. M. G., and L. A. Veiga. 1995. Precipitan test in the identification of blood meals of *Stomoxys calcitrans* (L.), stable fly, caught on Parana, poultry ranches. Arq. Biol. Tecnol. 38: 1217-1224. (In Portuguese with English summary).

Nye, E.R. 1954. Disease and the pig bin. Br. Med. J. 1: 399.

O

O’Brochta, D. A., P. W. Atkinson, and M. J. Lehane. 2000. Transformation of *Stomoxys calcitrans* with a Hermes gene vector. Insect Molec. Biol. 9: 531-538.

Oda, F. H., and C. A. Arantes. 2010. Populational outbreak of the stable fly *Stomoxys calcitrans*, Linnaeus, 1758 (Diptera: Muscidae) at the municipality of Planalto, SP. [Surto populacional da mosca dos estábulos *Stomoxys calcitrans*, Linnaeus, 1758 (Diptera: Muscidae) no município de Planalto, SP] Rev. Em Agronegocio e Meio Ambiente 3: 145-159.

Odinokov, V. N., V. R. Akhmetova, R. G. Savchenko, and G. A. Tolstikov. 1987. Insect pheromones and their analogues. XVIII. Regiospecific synthesis of (±)-15,19-dimethyltritriacontane—a component of the pheromone of *Stomoxys calcitrans*. Chem.Nat. Comp. 23: 500-502.

Offori, E. D. 1970a. Gamma irradiation of *Stomoxys calcitrans.* J. Econ. Entomol. 63: 574-579.

Experiments were conducted to determine the effects of gamma radiation of male and female stable flies, as preliminary data for a sterile release control program. An increase of sterility was reported with increase of dosage. A dose of 4krad to pupae and 5krad to adults reduced the egg hatch to 1%. Females became sterile at a dose of 2krad, and laid no eggs at higher doses. Radiated males remained sterile for their entire mating life, but radiation had no effect on their longevity, virility, or ability to transfer sperm to the female.

Offori, E. D. 1970b. Cytology of gamma-irradiated gonads of *Stomoxys calcitrans* (Diptera: Muscidae). Ann. Entomol. Soc. Am. 63: 706-712.

Ogden, L. G., and J. W. Kilpatrick. 1958. Control of *Fannia canicularis* (L.) in Utah dairy barns. J. Econ. Entomol. 51: 611-612.

Ogwal, L. M. 1979. The effect of temperature on the life cycles and developmental periods of *Stomoxys calcitran*s (L) and *Stomoxys nigra* (Marq). Bull Afri. Insect Sci. 3: 12-13.

Okaeme, A. N. 1986. Flies (Diptera) infesting landed fresh water fishes of the Kainji Lake area, Nigeria. Int. J. Zool. 13: 49-53.

Olafson, P. U., K. H. Lohmeyer, and S.E. Dowd. 2010. Analysis of expressed sequence tags from a significant livestock pest, the stable fly (*Stomoxys calcitrans*), identifies transcripts with a putative role in chemosensation and sex determination. Arch. Insect Biochem. Physiol. 74: 179-204.

Olafson, P. U., J. B. Pitzer, and P. E. Kaufman. 2011. Identification of a mutation associated with permethrin resistance in the *Para*-type sodium channel of the stable fly (Diptera: Muscidae). J. Econ. Entomol. 104: 250-257.

Olbrich, D. L. and B. H. King. 2003. Host and habitat use by parasitoids (Hymenoptera: Pteromalidae) of house fly and stable fly (Diptera: Muscidae) pupae. Great Lakes Entomol. 36: 179-190.

Oldroyd, H. 1964. The natural history of flies. The Norton Library. W. W. Norton & Company Inc. New York.

Oliveira, M. T., A. M. L. de Azeredo-Espin, and A. C. Lessinger. 2005. Evolutionary and structural analysis of the cytochrome c oxidase subunit I (COI) gene from *Haematobia irritans*, *Stomoxys calcitrans* and *Musca domestica* (Diptera: Muscidae) mitochondrial DNA. DNA Sequence 16: 156-160.

The cytochrome c oxidase subunit I (COI) mtDNA gene was characterized for *Stomoxys calcitrans, Haematobia irritans,* and *Musca domestica*. The gene was 1536bp in size for each species, and coded for a 512 amino acid peptide. The COI gene is A+T rich in these species, with a predominance of A+T rich codons. The start codon was identified as TCG.

Oliveira, M. T., A. C. Da Rosa, A. M. L. Azeredo-Espin, and A. C. Lessinger. 2006. Improving access to the Control Region and tRNA gene clusters of dipteran mitochondrial DNA. J. Med. Entomol. 43: 636-639.

Eight new primers are designed to amplify 4 regions of dipteran mtDNA which have been difficult to isolate using universal primers. Dipteran families used were Muscidae, Calliphoridae and Oestridae. The target mtDNA regions were the Control Region and 3 tRNA gene clusters. The newly designed primers successfully amplified the target regions.

Oliveira, M. T., A. M. L. Azeredo-Espin, and A. C. Lessinger. 2007. The mitochondrial DNA control region of Muscidae flies: evolution and structural conservation in a dipteran context. J. Mol. Evol. 64: 519-527.

The Control Region and flanking regions of the Muscidae mitochondrial genome are described and compared with Calliphoridae, Oestridae and *Drosophila spp*. Conserved regions are described which are homologous among all species tested. Four Muscidae species are examined, including *Stomoxys calcitrans.* The *S. calcitrans* mtDNA proved more difficult to amplify, and sequence results from another experiment were used to comfirm the presence of certain areas of its mtDNA.

Oliveira, M. T., J. Grande Barau, A. C. M. Junqueira, P. C. Feijao, A. C. da Rosa, C. F. Abreu, A. M. L. Azeredo-Espin, and A. C. Lessinger. 2008. Structure and evolution of the mitochondrial genomes of *Haematobia irritans* and *Stomoxys calcitrans:* the Muscidae (Diptera: Calyptratae) perspective. Mol. Phylogenet. Evol. 48: 850-857.

Oliviera, J. B., J. Hernández-Gamboa, C. Jiménez-Alfaro, R. Zeledón, M. Blandón, and A. Urbina. 2009. First report of *Trypanosoma vivax* infection in dairy cattle from Costa Rica. Vet. Parasitol. 163: 136-139.

Olsuf’ev, N. G. 1940. The role of *Stomoxys calcitrans* L. in the transmission and preservation of tularemia (In Russian). Arkhiv. Biol. Nauk 58: 25-31.

Omori, N., and O. Suenaga. 1962. A method of destructing the maggots of housefly and stable fly from animal manure by airtight vinyl cover. Endem. Dis. Bull. Nagasaki Univ. 43: 52-56. (In Japanese with English summary).

O'Neill, M. P., G. M. Holman, and J. E. Wright. 1977. β-ecdysone levels in pharate pupae of the stable fly, *Stomoxys calcitrans* and interaction with chitin inhibitor diflubenzuron. J. Insect Physiol. 23: 1243-1244.

Otvos, L. 2000. Antibacterial peptides isolated from insects. J. Peptide Sci. 6: 497-511.

P

Packer, C., A. E. Pusey, H. Rowley, D. A. Gilbert, J. Martenson, and S. J. O’Brien. 1991. Case study of a population bottleneck: lions of the Ngorongora crater. Conserv. Biol. 5: 219-230.

Papp, L. 1974. Dipterological studies in a Hungarian horse farm (Diptera). Folia Entomol. Hung. 27: 167-176.

Papp, L. 1974. Dipterological studies in some Hungarian large-scale pig farms. Acta Agron Acad. Sci. Hung. 23: 136-147.

Papp, L. 1975. Dipterological studies in some Hungarian and Afghan large-scale cattle farms. Folia Entomol. Hung. 28: 137-145. (In Hungarian with English summary).

Papp, L. 1975. Ecological data on flies breeding in dung heaps. Acta Zoo. Acad. Sci. Hung. 11: 425-433.

Papp, L. 1975. Tragyaban fejlodo legyek komplex vizsgalata. Kandidatusi Ertekezes Tezisei, Budapest. 15 pp. (In Hungarian).

Papp, L. 1985. The role of taxonomy in the control of flies pestering grazing cattle and sheep in Hungary. Vet. Parasitol. 18: 197-202.

Papp. L. and P. Garzó. 1985. Flies (Diptera) of pasturing cattle: some new data and new aspects. Folia ent. hung., S.N. 46: 153-168.

Parashar, B. D., G. P. Gupta, N. Sikder, and K. M. Rao. 1993. Diethylphenylacetamide: a new insect repellent against stable fly *Stomoxys calcitrans*. Med. Vet. Entomol. 7: 259-262.

Parish, J. C., and B. W. Arthur. 1965. Mammalian and insect metabolism of the chemosterilant thiotepa. J. Econ. Entomol. 58: 976-979.

Park, S. 1977. Studies on flies in Korea, IV. Seasonal prevalence of flies surveyed at a farmhouse in Korea. Jap. J. Sanit. Zool. 28: 439-447.

Parker, R. R. 1918. Data concerning flies that frequent privy vaults in Montana (Dip.) Entomol. News. 29: 143-146.

Parman, D. C. 1920. Observations on the effect of storm phenomena on insect activity. J. Econ. Entomol. 18: 339-343.

Parr, H. C. M. 1959. *Stomoxys* control in Uganda, East Africa. Nature 184: 829-830.

Parr, H. C. M. 1959. Studies on *Stomoxys calcitrans*. I. A method of rearing large numbers of *Stomoxys calcitrans*. Bull. Entomol. Res. 50: 165-169.

Parr, H. C. M. 1962a. Studies on *Stomoxys calcitrans* (L.) in Uganda (Diptera). II. The morphological development of the cephalopharyngeal sclerites of *S. calcitrans*. J. Ent. Soc. S. Africa. 25: 73-81.

Parr, H. C. M. 1962b. Studies on *Stomoxys calcitrans* (L.) in Uganda, East Africa. III. Notes on life-history and behavior. Bull. Entomol. Res. 53: 437-443.

Parr, H. C. M., and J. E. H. Grose. 1961. A technique for exposing individual flies on insecticidal deposits. Nature 192: 475.

Parsons, A. J. 1977. Biting muscid flies. Vet. Rec. 100: 341-342.

Patterson, R. A., and F. W. Fisk. 1958. A study of the trypsinslike protease of the adult stable fly, *Stomoxys calcitrans* (L.). Ohio J. Sci. 58: 299-310.

Patterson, R. S. 1978. Room for rearing house flies and stable flies. Tech bull. USDA. 1576: 26-27.

Patterson, R. S. 1981. Importance of monitoring house fly and stable fly immature and adult populations in IPM programs using biocontrol. Proc. of

Workshop on Status of Biological Control of Filth Breeding Flies, Gainesville, FL, February 4-5, 1981.

Patterson, R. S. 1989. Biology and ecology of *Stomoxys nigra* and *S. calcitrans* on Zanzibar, Tanzania. Misc. Publ. Entomol. Soc. Am. pp. 2-11.

Patterson, R. S., and P. B. Morgan. 1986. Management of stable fly populations in cattle feedlots through intergrated control strategies. Department Report. Pp. 57-72.

Patterson, R. S., G. C. Labrecque, and D. F. Williams. 1973. Use of the sterile male technique to control stable flies on St. Croix. Federal Experiment Station pp. 53-54.

Patterson, R. S., G. C. Labrecque, and D. F. Williams. 1980. Use of the sterile male technique as an adjunct to insecticidal and physical methods for stable fly control on the island of St. Croix, U.S.V.I. IAEA-SM. 240: 283-295.

Patterson, R. S., G. C. LaBrecque, D. F. Williams, and D. E. Weidhass. 1981. Control of the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae), on St. Croix, U.S. Virgin Islands, using integrated pest management measures: III. Field techniques and population control. J. Med. Entomol. 18: 203-210.

Paulin, R., D. F. Cook, N. Keals, I. R. Dadour, O. Ashby, and D. Peckitt. 1998. Stable fly management project. Report on the agriculture Western Australia initiative in cooperation with the Health Department of Western Australia as well as key local government and agricultural industries, August, 1998. Agriculture WA Perth, Western Australia.

Pawson, B. M., J. J. Peterson, and R. E Gold. 1993. Utilization of freeze-killed house fly and stable fly (Diptera, Muscidae) pupae by 3 pteromalid wasps. J. Entomol. Sci. 28: 113-119.

Payne, R. M. 1984. Flies from cattle in North Somerset. Entomol. Monthly Magazine. pp 242.

Pearson, A. M. 1935. An improved method for the determination of cattle fly spray repellence. J. Econ. Entomol 28: 160-161.

Pearson, A. M., J. L. Wilson, and C. H. Richardson. 1933. Some methods used in testing cattle fly sprays. J. Econ. Entomol. 26: 269-274.

Peck, J. H., and J. R. Anderson. 1970. Influence of poultry-manure-removal schedules on various Diptera larvae and selected arthropod predators. J. Econ. Entomol. 63: 82-90.

Pedgley, D. E. 1983. Windborne spread of insect-transmitted diseases of animals and man. Philos. Trans. R. Soc. Lond., Ser. B., Biol. Sci. 302: 463-470.

Perez-Mendozo, J., F. E. Dowell, A. B. Broce, J. E. Throne, R. A. Wirtz, F. Xie, J. A. Fabrick, and J. E. Baker. 2002. Chronological age-grading of house flies by using near-infrared spectroscopy. J. Med. Entomol. 39: 499-508.

Peter, R. J., P. Van den Bossche, B. L. Penzhorn, and B. Sharp. 2005. Tick, fly, and mosquito control – lessons from the past, solutions for the future. Vet. Parasitol. 132: 205-215.

Petersen, J. J. 1993. Biotic agents to control house flies and stable flies, pp. 70-82. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment? Proc. of a Symposium, 1989 annual meeting of the ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Res. Bull. No. 317.

Petersen, J. J., and J. A. Meyer. 1983. Host preference and season distribution of pteromalid parasites (Hymenoptera: Pteromalidae) of stable flies and house flies (Diptera: Muscidae) associated with confined livestock in Eastern Nebraska. Environ. Entomol. 12: 567-571.

Petersen, J. J., and J. A. Meyer. 1983. Observations of the overwintering pupal parasites of filth flies associated with open silage in Eastern Nebraska. Southwest. Entomol. 8: 219-225.

Petersen, J. J., and J. A. Meyer. 1985. Evaluation of methods presently used for measuring parasitism of stable flies and house flies (Muscidae: Diptera) by Pteromalid wasps (Pteromalidae: Hymenoptera). J. Kans. Entomol. Soc. 58: 84-90.

Petersen, J. J., and B. M. Pawson. 1988. Late-season activity of pteromalid (Hymenoptera) parasites of filth flies (Diptera: Muscidae) in eastern Nebraska. J. Med. Entomol. 25: 272-275.

Petersen, J. J., and D. W. Watson. 1992. Comparison of sentinel and naturally occurring fly pupae to measure field parasitism by Pteromalid parasitoids (Hymenoptera). Biol. Control 2: 244-248.

Petersen, J. J., and J. K. Cawthra. 1995. Release of a gregarious *Muscidifurax* species (Hymenoptera: Pteromalidae) for the control of filth flies associated with confined beef cattle. Biol. Control 5: 279-284.

Petersen, J. J., and D. M. Currey. 1996. Timing of releases of gregarious *Muscidifurax reptorellus* (Hymenoptera: Pteromalidae) to control flies associated with confined beef cattle. J. Agric. Entomol. 13: 55-63.

Petersen, J. J., J. A. Meyer, D. A. Stage, and P. B. Morgan. 1983. Evaluation of sequential release of *Spalangia endius* (Hymenoptera: Pteromalidae) for control of house flies and stable flies (Diptera; Muscidae) associated with confined livestock in Eastern Nebraska. J. Econ. Entomol. 76: 283-286.

Spalangia endius were released weekly for 13 weeks to determine their efficacy for the control of stable flies and house flies. Evaluation methods included using sentinel pupae, collection of wild pupae, and counting adult fly populations. The parasitoid *S. endius* was found to be ineffective for fly control.

Petersen, J. J., D. R. Guzman, and B. M. Pawson. 1985. *Urolepis rufipes* (Hymenoptera: Pteromalidae), a new parasite record for filth flies (Diptera: Muscidae) in Nebraska, USA. J. Med. Entomol. 22: 345.

Petersen, J. J., D. W. Watson, and J. K. Cawthra. 1995. Comparative effectiveness of three release rates for a pteromalid parasitoid (Hymenoptera) of house flies (Diptera) in beef cattle feedlots. Biol. Control 5: 561-565.

Philpott, M., and A. O. Ez`eh. 1978. The experimental transmission by *Musca* and *Stomoxys* species of *D. congolensis* infection between cattle. Br. Vet. J. 134: 515-520.

Piatkowski, S. 1977. Kynbamika liczebnosci bolimuszki (*Stomoxys calcitrans* L.) w gospodarstwie hodowlanym. (The prevalence of *Stomoxys calcitrans* (L.) in stock breeding). Wiad. Parazyol. 23: 153-156. (In Polish with English summary).

Pickard, E. 1968. *Stomoxys calcitrans* (L.) breeding along TVA reservoir shorelines. Mosq. News 28: 644-646.

Pickens, L. G. 1989. Relative attractiveness of paired BL and BLB fluorescent bulbs for house and stable flies (Diptera: Muscidae). J. Econ. Entomol. 82: 535-538.

Pickens, L. G. 1991. Battery-powered, electrocuting trap for stable flies (Diptera: Muscidae). J. Med. Entomol. 28: 822-830.

Pickens, L. G. 1992. The use of traps to suppress stable fly populations, pp. 133-141. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Pickens, L. G., and D. K. Hayes. 1984. Evaluation of a new face fly and stable fly (Diptera: Muscidae) trap which segregates the catch of the two species. Environ. Entomol. 13: 1256-1260.

Pickens, L. G., and R. W. Miller. 1987. Techniques for trapping flies on dairy farms. J. Argic. Entomol. 4: 305-313.

Pickens, L. G., and G. D. Mills, Jr. 1993. Solar-powered electrocuting trap for controlling house flies and stable flies (Diptera: Muscidae). J. Med. Entomol. 30: 872-877.

Pickens, L. G., N. O. Morga, J. G. Hartsock, and J. W. Smith. 1967. Dispersal patterns and populations of the house fly affected by sanitation and weather in rural Maryland. J. Econ. Entomol. 60: 1250-1255.

Pickens, L. G., N. O. Morgan, and R. W. Miller. 1972. Comparison of traps and other methods for surveying density of populations of flies in dairy barns. J. Econ. Entomol. 65: 144-145.

Pickens, L. G., R. W. Miller, and F. R. Mowry. 1973. An improved bait for flies (Diptera: Muscidae, Calliphoridae). J. Med. Entomol. 10: 84-88.

Pickens, L. G., R. W. Miller, and L. E. Campbell. 1975. Bait-light combinations evaluated as attractants for house flies and stable flies (Diptera: Muscidae). J. Med. Ent. 11: 749-751.

Pickens, L. G., R. W. Miller, and M. M. Centala. 1975. Biology, population dynamics, and host finding efficiency of *Pachyrepoideus vindeminae* in a box stall and a poultry house. Environ. Entomol. 4: 975-979.

Pickens, L. G., R. W. Miller, and J. J. Grasela. 1977. Sticky panels as traps for *Musca autumnalis*. J. Econ. Entomol. 70: 549-552.

Pickens, L. G., R. W. Miller, G. D. Thomas, and D. K. Hayes. 1992. Distribution and dispersal of stable flies (Diptera: Muscidae) on a Maryland farm. J. Agric. Entomol. 9: 219-225.

Pickens. L. G., E. T. Schmidtmann, and R. W. Miller. 1994. How to control house and stable flies without using pesticides. Agri. Info. Bull. 673: 1-14.

Pierce, H. F. 1958. Diethyltoluamide in Aerosol Repellants. Soap. Chem. Spec. 34: 63, 80-81, 83, 85-86, 191.

Pinkus, H. 1913. The life history and habits of *Spalangia muscidarum* Richardson, a parasite of the stable fly. Psyche 20: 148-158.

Developmental rates are described on different hosts and at varying temperatures. Ovipositional habits are addressed, and some unique life habits such as “possuming”. Techniques for lab rearing are discussed, and a parasite breeding cage is descrbed which the author developed.

Pitzer, J. B., P. E. Kaufman, and S. H. Tenbroeck. 2011. Assessing permethrin resistance in the stable fly (Diptera: Muscidae) in Florida by using laboratory selections and field evaluations. J. Econ. Entomol. 103: 2258-2263.

Pitzer, J. B., P. E. Kaufman, C. J. Geden, and J. A. Hogsette. 2011. The ability of selected pupal parasitoids (Hymenoptera: Pteromalidae) to locate stable fly hosts in a soiled equine beding substrate. Environ., Entomol. 40: 89-93.

Pitzer, J. B., P. E. Kaufman, S. H. Tenbroeck, and J. E. Maruniak. 2011. Host blood meal identification by multiplex polymerase chain reaction for dispersal evidence of stable flies (Diptera: Muscidae) between livestock facilities. J. Med. Entomol. 48: 53-60.

Pitzer, J. B., P. E. Kaufman, J. A. Hogsette, C. J. Geden, and S. H. Tenbroeck. 2011. Seasonal abundance of stable flies and filth fly pupal parasitoids (Hymenoptera: Pteromalidae) at Florida equine facilities. J. Econ. Entomol. 104: 1108-1115.

Poels, J., T. Van Loy, V. Franssens, M. Detheux, R. J. Nachman, H. B. Oonk, K. E. Akerman, G. Vassart, M. Parmentier, A. De Loof, H. Torfs, and J. Vanden Broeck. 2004. Substitution of conserved glycine residue by alanine in natural and synthetic neuropeptide ligands causes partial agonism at the stomoxytachykinin receptor. J. Neurochem. 90: 472-478.

Poels, J., R. J. Nachman, K. E. Akerman, H. B. Oonk, F. Guerrero, A. De Loof, A. E. Janecka, H. Torfs, and J.Vanden Broeck. 2005. Pharmacology of stomoxytachykinin receptor depends on second messenger system. Peptides 26: 109-114.

STKR, a G-protein-coupled neurokinin receptor from the stable fly, *Stomoxys calcitrans*, was tested with 4 different peptide agonists. The receptor exhibited different levels of calcium and cyclic AMP responses, depending on the agonist involved.

Poels, J., H. Verlinden, J. Fichna, T. Van Loy, V. Franssens, K. Studzian, A. Janecka, R. J. Nachman, and J. V. Broeck. 2007. Functional comparison of two evolutionary conserved insect neurokinin-like receptors. Peptides 28: 103-108.

Poels, J., R. T. Birse, R. J. Nachman, J. Fichna, A. Janecka, J. VandenBroeck, and D. R. Nassel. 2009. Characterization and distribution of NKD, a receptor for *Drosophila* tachykinin-related peptide 6. Peptides 30: 545-556.

Poinar Jr., G. O. and D. J. Boxler. 1984. Infection of *Stomoxys calcitrans* (Diptera) by neoaplectanid nematodes (Steinernematidae). IRCS Med. Sci. 12: 481.

Pont, A. C. 1973. Studies on Australian Muscidae (Diptera). V. Muscidae and Anthomyiidae from Lord Howe Island and Norfolk Island. J. Aust. Entomol. Soc. 12: 175-194.

Pont, A. C. 1973. Studies on Australian Muscidae (Diptera) IV. A revision of the subfamilies Muscidae and Stomoxyinae. Aust. J. Zool. Suppl. Ser. 21: 129-296.

Poorbaugh, J. H. 1978. Health related aspects of solid waste management. Ann. Con. California Mosq. Vector Control Ass. pp. 8-9.

Potgieter, F. T., B. Sutherland, and H. C. Biggs. 1981. Attempts to transmit *Anaplasma marginale* with *Hippobosca rufipes* and *Stomoxys calcitrans*. Onderstepoort J. Vet Res. 48: 119-122.

Povolny, D., and M. Privora. 1961. Critical evaluation of the microbiological finds in synanthropic flies in Central Europe. Angew. Parasitol. 2: 66-74. (In German).

Powell, P. K., and S. Barringer. 1995. Stable fly biology and management. West Virginia University Extension Service. www.caf.wvu.edu

Prullage, J. B., R. E. Williams, and S. M. Gaafar. 1993. On the transmissibility of *Eperythrozoon suis* by *Stomoxys calcitrans* and *Aedes aegypti*. Vet. Parasitol. 50: 125-135.

Q

Quarterman, K. D., W. C. Baker, and J. A. Jensen. 1949. The importance of sanitation in municipal fly control. Am. J. trop. Med. 29: 973-982.

Quarterman, K. D., J. D. Parkhurst, and W. J. Dunn. 1951. DDT for control of stable fly, or dog fly, in Northwestern Florida. J. Econ. Entomol. 44: 61-65.

R

Ralley, W. E. and T. D. Galloway. 1993. Individual and group behavior of pastured cattle in response to attack by biting flies. Can. J. Zool. 71: 725-734.

Behavior of cattle exposed to biting flies was monitored in Manitoba, Canada during 1983 and 1984. The behaviors observed were the same as those described previously, such as head toss, tail swish, ear flick, foot stomp. The study primarily monitored mosquitoes and Tabanids, although stable flies were listed as flies parasitizing the cattle.

Ranade, D. R. 1970. The development of the eyes in *Stomoxys calcitrans* Linn. (Diptera—Cyclorrhapha—Muscidae—Stomoxyinae). Proc. Plant Sci. 71: 145-149.

Ramsamy, M. 1977. Effects of gamma radiation of the stable fly, *Stomoxys nigra* Macquart (Diptera: Muscidae). Bull. Entomol. Res. 67: 49-56.

Ramsamy, M. 1979. Studies on the large-scale rearing of the stable fly, *Stomoxys nigra* Macquart (Diptera: Muscidae). Bull. Entomol. Res. 69: 477-489.

Ramsamy, M. 1981. Development of a sampling plan for estimating the absolute population of *Stomoxys nigra* Macquart (Diptera: Muscidae) in Mauritius. Insect. Sci. Applications. 1: 133-137.

Rasmussen, R. L., and J. B. Campbell. 1978. Bibliography of the stable fly *Stomoxys calcitrans* (L). Report No. 8, June 1979. Ag. Exp. Station, Univ. Nebraska-Lincoln. 47 pp.

Rasmussen, R. L. and J. B. Campbell. 1981. Investigation of environmental factors and their relationship to populations of the stable fly, *Stomoxys calcitrans* (L.). Environ. Entomol. 10: 798-800.

Field investigations were conducted to determine the effect of moisture, temperature, organic matter, pH, and other insect species on stable fly populations. No correlation was found between stable fly populations and the physical factors, but there was a possibility of competition between stable flies and other insects, especially Syrphidae.

Ratcliffe, S. T., H. M. Robertson, C. J. Jones, G. A. Bollero, and R. A. Weinzierl. 2002. Assessment of parasitism of house fly and stable fly (Diptera: Muscidae) pupae by Pteromalid (Hymenoptera: Pteromalidae) parasitoids using a polymerase chain reaction assay. J. Med. Entomol. 39: 52-60.

Raun, E. S., and D. J. Casey. 1956. A comparison of back rubber formulations for controlling horn and stable flies in Iowa. J. Econ. Entomol. 49: 395-397.

Regan, W. M., and S. B. Freeborn. 1936. The effect of flies and fly sprays on certain physiological processes of the dairy cow. J. Dairy Sci. 19: 11-28.

The effect of horn flies, stable flies and house flies on cattle was tested, exposing lactating cows to over 70,000 flies. Stable flies were found to have the most effect on the cows, reducing milk production by 9.3%. When repellent oil was applied to the cows, milk production was reduced 12.4%. When a petroleum repellent spray was used, loss in milk production increased to 22%.

Resultados y lecciones en control biológico de la mosca de los cuernos en bovinos con extracto de neem. 2009. "Proyecto de Innovación en Regiones Metropolitana, de Valparaíso, del Maule y del Biobío". Fundación para la Innovación Agraria, Ministerio de agricultura, Chile. 38 pp.

Results presented regarding the use of neem, formulated in a bolus, to reduce stable fly and horn fly development in cattle feces. Targeted for use in 'organic' livestock production.

Richard, J. L., and A. C. Pier. 1966. Transmission of *Dermatophilus congolensis* by *Stomoxys calcitrans* and *Musca domestica*. Am. J. Vet. Res. 27: 419-423.

Richardson, C. H. 1916. The attraction of diptera to ammonia. Ann. Entomol. Soc. Am. 9: 408-413.

Richardson, C. H., and E. H. Richardson. 1922. Is the house-fly in its natural environment attracted to carbon dioxide? J. Econ. Entomol. 15: 425-430.

Riordan, K. 1972. Feeding behavior of *Stomoxys* (Diptera: Muscidae) in relation to the possible non-cyclical transmission of Trypanosomes. Entomologist 105: 118-225.

Rivers, D. B., and D. L. Denlinger. 1995. Fecundity and development of the ectoparasitic wasp *Nasonia vitripennis* are dependent on host quality. Entomol. Exp. Appl. 76: 15-24.

Roberts, R. H. 1959. Field tests with five insecticides for the control of horn flies. J. Econ. Entomol. 52: 1216-1217.

Roberts, R. H. 1961. Control of horn flies and stable flies with three general chemical compounds. J. Econ. Entomol. 54: 1047-1049.

Roberts, R. H. 1962. The effect of radiation to pyrethrins applied to cattle. J. Econ. Entomol. 55: 851-853.

Roberts, R. H. 1965. A steer-baited trap for sampling insects affecting cattle. Mosq. News 25: 281-285.

Roberts, R. H. 1972. Relative attractiveness of CO_2 and a steer to Tabanidae, Culicidae, and *Stomoxys calcitrans* (L.). Mosq. News 32: 208-211.

Roberts, R. H. 1981. Effectiveness of ULV ground aerosols of phenothrin against mosquitoes, house flies, and stable flies. Mosq. News 41: 251-253.

Roberts, R. H., and W. F. Chamberlain. 1963. Factors contributing to the loss of insecticide deposits on cattle. J. Econ. Entomol. 56: 614-618.

Roberts, R. H., and W. A. Pund. 1974. Control of biting flies on beef steers: effect on performance in pasture and feedlot. J. Econ. Entomol. 67: 232-234.

Roberts, R. H., R. D. Radeleff, and J. N. Kaplanis. 1958. Bioassay of the blood from cattle treated with Am. Cyanamid 12,880. J. Econ. Entomol. 51: 861-864.

Roberts, R. H., C. M. Jones, and E. E. Gless. 1960. Methods for the evaluation of stable fly toxicants and repellents. J. Econ. Entomol. 53: 301-303.

Roberts, R. H., M. J. Wrich, R. A. Hoffman, and C. M. Jones. 1961. Control of horn flies and stable flies with three general chemical compounds. J. Econ. Entomol. 54: 1047-1049.

Roberts, R. H., R. L. Harris, and O. H. Graham. 1963. Effects of additives on the toxicity of pyrethrins to stable flies and horn flies. J. Econ. Entomol. 56: 699-702.

Rochon, K., T. J. Lysyk, and L. B. Selinger. 2004. Persistence of *Escherichia coli* in immature house fly and stable fly (Diptera: Muscidae) in relation to larval growth and survival. J. Med. Entomol. 41: 1082-1089.

Rochon, K., T. J. Lysyk, and L. B. Selinger. 2005. Retention of *Escherichia coli* by house fly and stable fly (Diptera: Muscidae) during pupal metamorphosis and eclosion. J. Med. Entomol. 42: 397-403.

Rochon, K., R. B. Baker, G. W. Almond, and D. W. Watson. 2011. Assessment of *Stomoxys calcitrans* (Diptera: Muscidae) as a vector of porcine reproductive and respiratory syndrome virus. J. Med. Entomol. 48: 876-883.

Rodriguez-Batista, Z., R. C. Leite, P. R. Oliveira, C. M. L. Lopes, and L. M. F. Borges. 2005. Populational dynamics of *Stomoxys calcitrans* (L.) (Diptera: Muscidae) in three biocenosis, Minas Gerais, Brazil. Vet. Parasitol. 130: 343-346.

Roebuck, A. S. 1980. Accessory structures of the female reproductive organs of the stable fly, *Stomoxys calcitrans* Linnaeus (Diptera: Muscidae). Trans. of the Rhodesia Scientific Assoc. 59: 46-52.

Rogers, A. 1971. West Florida Arthropod Research Laboratory (Studies of the dispersal of adult dog flies). Annual Report. Div. Health, Fla. Dep. Health and Rehabil. Serv. 103-104.

Rogoff, W. M. 1980. Behavior modification for insect management by competitive displacement. Bull. Entomol. Soc. Am. 26: 121-125.

Rogoff, W. M., and A. L. Moxon. 1952. Cable type backrubbers for horn fly control on cattle. J. Econ. Entomol. 45: 329-334.

Romero, A., A. Broce, and L. Zurek. 2006. Role of bacteria in the oviposition behavior and larval development of stable flies. Med. Vet. Entomol. 20: 115-121.

Bacterial species collected from natural stable fly oviposition substrate were cultured in the lab and assays were performed to determine attractiveness of each microbe to stable flies. Oviposition substrates used were natural unsterilized, natural sterilized and sterilized inoculated with bacteria. Two bacterial species promoted oviposition and larval development, but were not as beneficial as natural substrate containing a variety of microbes.

Romero, A., J. A. Hogsette, and A. Coronado. 2010. Distribution and abundance of natural parasitoid (Hymenoptera: Pteromalidae) populations of house flies and stable flies (Diptera: Muscidae) at the University of Florida Dairy Research Unit. Neotrop. Entomol. 39: 424-429.

Roseland, C. R., M. J. Grodowitz, K. J. Kramer, T. L. Hopkins, and A. B. Broce. 1985. Stabilization of mineralized and sclerotized puparial cuticle of muscid flies. Insect Biochem. 15: 521-528.

Rosenau, M. J., and C. T. Brues. 1912. Some experimental observations upon monkeys concerning the transmission of poliomyelitis through the agency of *Stomoxys calcitrans*, a preliminary note. Psyche 19: 191-194.

Discusses the reasoning which led to the hypothesis that poliomyelitis was not a “contagious” disease that could be transferred from person to person.

When it was realized that it could be a vectored disease, tests were performed by exposing 12 healthy monkeys to monkeys (unreported number) which had been inoculated with the virus. Six of the 12 healthy monkeys contracted the disease. The authors did not draw conclusions.

Rouse, P., F. Chiroleu, J. Veslot and S. Quilici. 2007. The host- and microhabitat olfactory location by *Fopius arisanus* suggests a broad potential host range. Physiol. Entomol. 32: 313-321.

Rueda, L. M., and R. C. Axtell. 1985. Guide to common species of pupal parasites (Hymenoptera: Pteromalidae) of the house fly and other muscoid flies associated with poultry and livestock mnanure. North Carolina Agricultural Research Service Technical Bulletin No. 278. pp. 1-88.

Rueda, L. M., P. -U. Roh, and J. L. Ryu. 1997. Pupal parasitoids (Hymenoptera: Pteromalidae) of filth flies (Diptera: Muscidae, Calliphoridae) breeding in refuse and poultry and livestock manure in South Korea. J. Med. Entomol. 34: 82-85.

Ruff, J. P. 1979. Trapping effectiveness of several combinations of colors and textures of sticky traps for stable flies, *Stomoxys calcitrans*. Mosq. News 39: 290-292.

Rugg, D. 1982. Effectiveness of Williams traps in reducing the numbers of stable flies (Diptera: Muscidae). J. Econ. Entomol. 75: 857-859.

Rutz, D. A., and R. S. Patterson (eds.). 1990. Biocontrol of arthropods affecting livestock and poultry. Westview Press, Boulder, CO.

S

Saarma, B. D. 1979. High incidence of Trypanosomiasis in Jammu and Kahsmir State and its analysis. Livestock Advisor. pp. 33-79.

Saliba, L. J., D. F. Dandria, J. E. H. Grose, E. G. Harris, and M. Zammit Lucia. 1976. Control of farm flies in Malta - III. The effect of residual insecticide sprays on *Musca domestica* and *Stomoxys calcitrans* in the Maltese Islands. PANS 22: 215-222.

Saliba, L. J., M. Z. Lucia, J. E. H. Grose, and E. G. Harris. 1977. Observations on flies found on livestock farms in Malta – II. Fly population studies. Misc. Rep. # 35. Gt. Brit. Centre for Overseas Pest Research. London. 8 pp.

Sanborn, C. E. 1920. Control of the stable fly. Oklahoma Farmer 30: 19-20.

Sanders, G. E. 1941. What can we do in the prevention of infantile paralysis? Pests 9: 15.

Sandino, E. U. 1972. Control quimico de la mosca de los establos, *Stomoxys calcitrans* (L.) y otros insectos asociados con estipes de palma Africana en descomposicion. Revista Facultad Agronomia. 27: 49-57. (In Spanish with English summary).

Sardey, M. R. 1976. Seasonal prevalence of flies feeding on buffalo. Ind. Vet. J. 53: 530-534.

Schaefer, C. W. 1979. Feeding habits and hosts of calyptrate flies (Diptera: Brachycera: Cyclorrhapha) Entomol. Ceneralis 5: 193-200.

Schaerffenberg, B., and E. Kupka. 1951-1952. Untersuchungen uber die geruchliche orientierung blutsaugender insekten. I. Uber die wirkung eines blutduftstoffes auf *Stomoxys* und *Culex*. Oster-Reichische Zoologische Zeitschrift. 3: 410-424. (In German).

Schaerffenberg, B., and E. Kupka. 1952. Orientierungsversuche an *Stomoxys calcitrans* und *Culex pipiens* mit einem blutduftstoff. Trans. Ninth Int. Congr. Entomol. 1: 359-361. (In German).

Schechter, M. S., W. N. Sullivan, B. M. Cawley, N. O. Morgan, R. Waters, C. M. Amyx, and J. Kennedy. 1976. Gas propelled aerosols and micronized dusts for contol of insects in aircraft and vans. Isreal J. Entomol. 11: 133-145.

Schlein, Y., and C. T. Lewis. 1976. Lesions in haematophagous flies after feeding on rabbits immunized with fly tissues. Physiol. Entomol. 1: 55-59.

Schmidt, C. D. 1986. *Nasonia vitripennis* (Walker), a parasitoid contaminant in fly-rearing facilities. Southwest. Entomol. 11: 113-118.

The parasitoid wasp, *Nasonia vitripennis*, was found in the fly rearing facility at Kerrville, TX. It was readily parasitizing the blow fly *Chrysomya rufifacies*. Experiments were conducted to determine if the wasp would also parasitize the stable fly, *Stomoxys calcitrans*, and the horn fly, *Haematobia irritans*. The wasp parasitized both the stable fly and horn fly pupae but was more numerous on the blow fly pupae. This was the first report of *N. vitripennis* parasitizing these fly species in the United States.

Schmidt, C. D., and J. J. Matter. 1978. Systemic activity of the pyrethroid NRDC 161 against stable flies on cattle. Southwest. Entomol. 3: 133-136.

Schmidt, C. D., and S. E. Kunz. 1980. Testing immature laboratory-reared stable flies and horn flies for susceptibility to insecticides. J. Econ. Entomol. 73: 702-703.

Schmidt, C. D., J. J. Matter, J. H. Meurer, R. E. Reeves, and B. K. Shelley. 1976. Evaluation of a synthetic pyrethroid for control of stable flies and horn flies on cattle. J. Econ. Entomol. 69: 484-486.

Schmidt, C. D., J. J. Matter, and J. H. Meurer. 1977. Efficacy of ronnel and chlorpyrifos in controlling biting flies on horses. Southwest. Entomol. 2: 144-148.

Schmidtmann, E. T. 1977. Muscid fly predation by *Vespula germanica* (Hymenoptera: Vespidae). Environ. Entomol. 6: 107-108.

Schmidtmann, E. T. 1985. Arthropod pests of dairy cattle, pp. 223-238. *In* R.E. Williams, R.D. Hall, A.B. Broce, and P.J. Scholl (eds.), Livestock entomology. John Wiley and Sons, New York.

Schmidtmann, E. T. 1988. Exploitation of bedding in dairy outdoor calf hutches by immature house and stable flies (Diptera: Muscidae) J. Med. Entomol. 25: 484-488.

Schmidtmann, E. T. 1991. Suppressing immature house and stable flies in outdoor calf hutches with sand, gravel, and sawdust bedding. J. Dairy Sci. 74: 3956-3960.

Schmidtmann, E. T., R. W. Miller, and R. Muller. 1989. Effect of experimental bedding treatments on the density of immature *Musca domestica* and *Stomoxys calcitrans* (Diptera: Muscidae) in outdoor calf hutches. J. Econ. Entomol. 82: 1134-1139.

The use of alternative bedding substrates was tested in calf hutches for the suppression of house fly and stable fly larvae. Straw bedding is absorbent, and can absorb 2 to 3 times its weight in water, supplying maggots with a moist media in which to grow. Ground corn cob is nonabsorbent, and was found to suppress maggot growth by >90%. Feeding cyromazine to calves in their milk also suppressed maggot occurance by 79%. It was concluded that outdoor calf hutches were a good breeding site for muscoid flies when straw bedding was used, but the use of alternative substrates or cytomazine significantly reduced maggot production.

Schneider, F., J. G. Houseman, and P. E. Morrison. 1987. Activity cycle and the regulation of digestive proteases in the posterior midgut of *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Insect Biochem. 17: 859-862.

Schofield, S. 1998. Responses to electrified targets and daily activity of *Stomoxys* spp. (Diptera: Muscidae) in Zimbabwe. Bull. Entomol. Res. 88: 627-632.

Schofield, S., and J. Brady. 1996. Circadian activity pattern in the stable fly, *Stomoxys calcitrans*. Physiol. Entomol. 21: 159-163.

Activity patterns of stable flies were tested at LD 12:12, total darkness (DD) and total light (LL). Patterns were the same for LD and DD, showing a unimodal pattern of diurnal activity. However, in field conditions both unimodal and bimodal patterns are followed. The evidence in this experiment did not support earilier work that reported hunger to have an effect on circadian patterns.

Schofield, S., and J. Brady. 1997. Effects of carbon dioxide, acetone and 1-octen-3-ol on the flight responses of the stable fly, *Stomoxys calcitrans*, in a wind tunnel. Physiol. Entomol. 22: 380-386.

Wind tunnel experiments were conducted using CO_2, acetone and 1-octen-3-ol as attractants for stable flies. Fly behavior was recorded using a video camera. CO_2 produced progressively higher responses at increasing concentrations. The other two chemicals produced a decrease in response at the highest concentrations.

Schofield, S., and S. J. Torr. 2002. A comparison of the feeding behaviour of tsetse and stable flies. Med. Vet. Entomol. 16: 177-185.

Compares the response of *Stomoxys* spp. and *Glossina* spp. to host defensive behavior and other flies while taking a blood meal. *Stomoxys* were found to take more risks, remaining on the host longer in spite of defensive behavior. *Glossina* were more responsive to host behavior and tended to leave the host more quickly. It was suggested that these results could relate to the life cycle of the flies. Stomoxys could take more risks in order to acquire the blood meals needed for reproduction, due to their higher fecundity and shorter life span.

Schofield, S., A. Cork, and J. Brady. 1995. Electroantennogram responses of the stable fly, *Stomoxys calcitrans*, to components of host odour. Physiol. Entomol. 20: 273-280.

Schofield, S., C. Witty, and J. Brady. 1997. Effects of carbon dioxide, acetone and 1-octen-3-ol on the activity of the stable fly, *Stomoxys calcitrans*. Physiol. Entomol. 22: 256-260.

Activation (flight activity) of stable flies and time spent on a target was tested using carbon dioxide, acetone and octenol. CO_2 and acetone elicited an increase in activation and the flies stayed longer on the “host”.

However, high concentrations of octenol caused a decrease in activation and also decreased the time on the "host". The authors suggest that the responses to octenol are dynamic, and may be affected by concentration and flux.

Scholl, P. J. 1980. A technique for physiologically age-grading female stable flies, *Stomoxys calcitrans* (L.). Nebr. Agric. Exp. Stn. Res. Bull. #298: 28 pp.

Scholl, P. J. 1984. Comparison of physiological development of marked-recaptured populations and laboratory cohorts of stable flies, *Stomoxys calcitrans* (L.). Southwest. Entomol. 9: 382-387.

Scholl, P. J. 1986. Field population studies of *Stomoxys calcitrans* (L.) in eastern Nebraska. Southwest. Entomol. 11: 155-160.

Field studies of stable fly populations were studied during the summers of 1980 and 1981 in Cuming County, Nebraska. Flies were captured on Williams traps weekly and counted. Females were dissected to determine reproductive stage. Survival rate of females was higher than previously reported. More males dispersed from their origin than females. Population changes seemed to correlate with weather changes.

Scholl, P. J., and J. J. Petersen. 1985. Biting flies, pp. 49-63. *In* R. E. Williams, R. D. Hall, A. B. Broce, and P. J. Scholl (eds.). Livestock entomology. John Wiley, New York. 335 pp.

Scholl, P. J., J. J. Petersen, D. A. Stage, and J. A. Meyer. 1981. Open silage as an overwintering site for immature stable flies in eastern Nebraska. Southwest. Entomol. 6: 253-258.

Scholl, P. J., S. R. Lowry, and G. G. Rabe. 1985. Modified William's sticky traps used to measure activity of adult stable flies, *Stomoxys calcitrans* (L.) in eastern Nebraska. Southwest. Entomol. 10: 32-38.

Schoof, H. F. 1964. Laboratory culture of *Musca*, *Fannia*, and *Stomoxys*. Bull. Wld. Hlth. Org. 31: 539-544.

Schoof, H. F., R. E. Siverly and J. H. Coffey. 1951. Dieldrin as a chemical control material on community fly control programs. J. Econ. Entomol. 44: 803-807.

Schoof, H. F., G. A. Mail, and E. P. Savage. 1954. Fly production sources in urban communities. J. Econ. Entomol. 47: 245-253.

Schowalter, T. D., and M. J. Klowden. 1979. Blood meal size of the stable fly, *Stomoxys calcitrans* measured by the HiCN method. Mosq. News 39: 110-112.

Schreck, C. E., K. Posey, and H. K. Gouck. 1975. Evaluation of the electrocutor grid trap baited with carbon dioxide against the stable fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae). J. Med. Entomol. 12: 338-340.

Schreck, C. E., D. E. Weidhaas, N. Smith, and K. H. Posey. 1977. Chemical treatment of wide-mesh net clothing for personal protection against blood-feeding arthropods. Mosq. News 37: 455-462.

Schreck, C. E., N. Smith, D. Weidhaas, K. Posey, and D. Smith. 1978. Repellents vs. toxicants as clothing treatments for protection from mosquitoes and other biting fies. J. Econ. Entomol. 71: 919-922.

Schreck, C. E., T. P. McGovern, and N. Smith. 1978. Repellency of selected esters and amides of four alicyclic acids against the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 14: 589-591.

Schreck, C. E., K. Posey, and D. Smith. 1978. Durability of Permethrin as a potential clothing treatment to protect against blood-feeding arthropods. J. Econ. Entomol. 71: 397-400.

Schuster, R. K., S. Sivakumar, J. Kinne, H. Babiker, D. Traversa and G. R. Buzzell. 2010. Cutaneous and pulmonal habronemosis transmitted by *Musca domestica* in a stable in the United Arab Emirates. Vet. Parasitol. 174: 170-174.

Nematode larvae of the family Habronematidae were found in lung tissue of 3 horses on a farm in Al Dhaid (UAE). Larvae were found in 147 of 561 male and 64 of 739 female *Musca domestica* sampled on the farm. All of the 15 *Stomoxys calcitrans* tested were negative for Habronematidae larvae.

Schwardt, H. H. 1932. Bloodsucking flies (exclusive of Culicidae) in relation to human welfare. Ann. Entomol. Soc. Am. 25: 603-611.

Schwarz, M., J. E. Wright, R. E. Redfern, and G. D. Mills, Jr. 1974. Compounds related to juvenile hormone. Activity of arylterpenoid compounds in four insect species. J. Econ. Entomol. 67: 177-180.

Schwarz, M., R. W. Miller, J. E. Wright, W. F. Chamberlain, and D. E. Hopkins. 1974. Compounds related to juvenile hormone. Exceptional activity of arylterpenoid compounds in four species of flies. J. Econ. Entomol. 67: 598-601.

Schwinghammer, K. A., F. W. Knapp, J. A. Boling, and K. K. Schillo. 1986. Physiological and nutritional response of beef steers to infestations of the stable fly (Diptera: Muscidae). J. Econ. Entomol. 70: 1294-1298.

Schwinghammer, K. A., F. W. Knapp, and J. A. Boling. 1987. Physiological and nutritional response of beef steers to combine infestations of horn fly and stable fly (Diptera: Muscidae). J. Econ. Entomol. 80: 120-125.

Scoles, G. A., A. B. Broce, T. J. Lysyk, and G. H. Palmer. 2005. Relative efficiency of biological transmission of *Anaplasma marginale* (Rickettsiales: Anaplasmataceae) by *Dermacentor andersoni* (Acari: Ixodidae) compared with mechanical transmission by *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 42: 668-675.

Seawright, J. A., B. K. Birky, and B. J. Smittle. 1986. Use of a genetic technique for separating the sexes of the stable fly (Diptera: Muscidae). J. Econ. Entomol. 79: 1413-1417.

Segal, B. 1933. Why not Bourgault's trap for horse-flies? J. Econ. Entomol. 26: 301-302.

Sehgal, B. S., and P. Kumar. 1966. A study on the seasonal fluctuations in fly populations in two villages near Lucknow. Ind. J. Med. Res. 54: 1175-1181.

Semakula, L. M. 1971. Factors affecting flight of the stable fly, *Stomoxys calcitrans* (L.) and the house fly, *Musca domestica* (L.). MS Thesis, Kansas State University.

Semakula, L. M., R. A. J. Taylor, and C. W. Pitts. 1989. Flight behavior of *Musca domestica* and *Stomoxys calcitrans* (Diptera: Muscidae) in a Kansas dairy barn. J. Med. Entomol. 26: 501-509.

Sen, S. K. 1935. Mechanism of feeding in bloodsucking diptera. Nature 135: 915.

Service, M. W. 1986. Lecture notes on medical entomology. Blackwell Scientific Publications. pp. 138-154.

Seunaga, O. 1965. A rearing method of stable fly and quantity of blood taken up by a fly. Endem. Dis. Bull. Nagasaki. 1: 296-301. (In Japanese). Rev. Appl. Entomol. (1968) 56: 196. Abstract 709.

Seymour, R. C., and J. B. Campbell. 1993. Predators and parasitoids of house flies and stable flies (Diptera, Muscidae) in cattle confinements in West Central Nebraska. Environ. Entomol. 22: 212-219.

A survey was conducted during the summers of 1983 and 1984 to determine the species of pupal parasitoids and arthropod predators of house flies and stable flies. The survey was conducted on 2 dairies and 3 feedlots near North Platte, NE. Both natural and artificial breeding sites were used for the flies. Results showed that the major parasitoids attacking the flies were *Muscidifurax zaraptor* and *Spalangia nigroaenea* for the house fly and *Aleochara lacertian* and *S. nigroaenea* for stable flies. Staphilinids were the primary predators.

Shannon, H. J. 1926. A preliminary report on the seasonal migration of insects. J. N.Y. Entomol. Soc. 34: 199-205.

Shaw, A. O., and F. W. Atkeson. 1943. Effect of spraying cows with repellent type sprays as measured by milk production. J. Dairy Sci. 26: 179-187.

Shaw, A. O., R. C. Smith, F. W. Atkeson, H. C. Fryer, A. R. Borgmann, and F. J. Holmes. 1943. Tests of fly repellents of known ingredients and of selected commercial sprays of dairy cattle. J. Econ. Entomol. 36: 23-32.

Shiga, S. 2003. Anatomy and functions of brain neurosecretory cells in Diptera. Micro. Res. Tech. 62: 114-131.

Shipley, A. E. 1915. Stomoxys, the stable fly. Br. Med. J. 2: 216-218.

Simkover, H. G. 1964. 2-Imidazolidinone as an insect growth inhibitor and chemosterilant. J. Econ. Entomol. 57: 574-579.

Simmons, S. W. 1944. Observations on the biology of the stable fly in Florida. J. Econ. Entomol. 37: 680-686.

Studies were conducted on the biology and life history of stable flies, using both lab-reared and wild flies. Observations were made on the minimum and maximum duration of each life stage, as well as behavioral factors. Behavioral factors studied included biting rates at specified hours, with humans as hosts; breeding incidence in bay-grass media of different ages; overwintering.

Simmons, S. W., and W. E. Dove. 1941. Breeding places of the stable fly or "dog fly" *Stomoxys calcitrans* (L.) in northwestern Florida. J. Econ. Entomol. 34: 457-462.

Stable flies were found to be breeding in two major substrates in Northwest Florida. Contrary to the findings of King and Lenert (1936), the authors found stable flies breeding in the bay grasses *Halodule wrightii* and *Thalassia testudinum* washed up along the shores. They were found in the grasses washed up by storms, far enough above the tide mark to not be submerged each day. The other major breeding site was found to be piles of peanut litter left after harvesting of peanuts. It was estimated that over 100,000 piles of peanut litter were distributed over the 1,000,000 acres of peanuts harvested in the region, and most were breeding sites of stable flies.

Simmons, S. W., and W. E. Dove. 1942a. Waste celery as a breeding medium for the stable fly or "dog fly" with suggestions for control. J. Econ. Entomol. 35: 709-715.

Waste celery is found to be a major site of stable fly breeding, in addition to bay grasses and peanut litter, in Northwest Florida. Celery waste is dumped in piles after harvest and begins to ferment, creating a good medium for larval growth. In addition, it was found that plowing the waste celery under after harvest was not effective in controlling late instar larvae and pupae. Instead it supplied them with a great rearing medium from which the adults could easily emerge. Some suggestions for insecticidal control are discussed.

Simmons, S. W., and W. E. Dove. 1942b. Creosote oil with water for control of the stable fly, or "dog fly", in drifts of marine grasses. J. Econ. Entomol. 35: 589-592.

The efficacy of using creosote mixed with bay water for the control of stable flies on beach grasses was conducted in northwest Florida. The experiment tested the mixture against the previously used method of creosote mixed with diesel oil. Creosote mixed with water performed as well as creosote mixed with diesel oil as an insecticide against stable flies, with a projected savings of $15,000 for treating the bay from Pensacola to Apalachicola.

Simmons, S. W., and M. Wright. 1944. The use of DDT in the treatment of manure for fly control. J. Econ. Entomol. 37: 135.

Simmons, S. W., and W. E. Dove. 1945. Experimental use of gas condensate for the prevention of fly breeding. J. Econ. Entomol. 38: 23-25.

Singh, P., and P. D. Gupta. 1973. Raffinose in *Stomoxys calcitrans* Linn. (Diptera: Cyclorrhapha: Muscidae). Cell. Mol. Life Sci. 29: 732-733.

Sinshaw, A., G. Abebe, M. Desquisnes, and W. Yoni. 2006. Biting flies and *Trypanosoma vivax* infection in three highland districts bordering lake Tana, Ethiopia. Vet. Parasitol. 142: 35-46.

Siverly, R. E., and H. F. Schoof. 1955a. Utilization of various production media by Muscoid flies in a metropolitan area. I. Adaptability of different flies for infestation of prevalent media. Ann. Entomol. Soc. Am. 48: 258-262.

Skidmore, P. 1985. The biology of the Muscidae of the world. Ser. Entomol. 29: 1-275.

Skoda, S. R., and G. D. Thomas. 1992. The stable fly as a pest of humans, pp. 21-24. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Skoda, S. R., and G. D. Thomas 1992. Sampling of adult and immature stable flies, pp. 72-86. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Skoda, S. R., and G. D. Thomas. 1993. Breeding sites of stable flies and house flies, pp. 61-69. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment? Proc. of a Symposium, 1989 annual meeting of the ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Res. Bull. No. 317.

Skoda, S. R., G. D. Thomas, and J. B. Campbell. 1991. Developmental sites and relative abundance of immature stages of the stable fly (Diptera: Muscidae) in beef cattle feedlot pens in Eastern Nebraska. J. Econ. Entomol. 84: 191-197.

Three categories of feedlots in Nebraska were monitored for immature stable fly populations from 1986-1988. The categories were: minimum management (type A), intermediate management (type B) and intense management (type C). Feedlots were divided into 5 areas for collection of larvae: feed apron, mound, side fences, back fence and general lot. In the 1986 study, the majority (85%) of stable fly immatures were collected from the feed apron and mound areas. In 1987, feedlot types A and B had the highest number of immature, and the highest percent were collected at the feed apron and mound. Feedlot type C produced very few flies. During both years, the population peaked early in the season, and there was a strong correlation between number of immature and number of adults 2 weeks later. 1988 produced different results, with adult populations increasing gradually during the season at all lot types, and there were negative correlations between the numbers of immature and adults. The authors suggest that the 1988 results could be due to drought conditions during that season, with stable flies utilizing alternative breeding sites. They conclude that during years of normal rainfall, the feed apron is the primary breeding site for stable flies, and that an estimate

of the adult population could be made by sampling the breeding areas for immatures.

Skoda, S. R., G. D. Thomas, and J. B. Campbell. 1996. Comparison of core sampling and pupal traps for monitoring immature stable flies and house flies (Diptera: Muscidae) in beef feedlot pens. J. Econ. Entomol. 89: 428-434.

Two sampling methods for immature house flies and stable flies (core sampling and pupal traps) were tested at two cattle feedlots in 1986 and 1987. Samples were taken at 5 locations on each feedlot: the mound, feed apron, back fence, side fences and general lot. Core samples were more consistent but few pupae of either species were collected. Pupal traps captured a greater number of immatures but were more variable. Both methods supported earlier research which found that the feed aprons were the best developmental site for immature stable flies and house flies.

Skov, O., D. F. Williams, and R. S. Patterson. 1978. A release cage for the mass distribution of flies and other insects. Mosq. News 38: 284-286.

Skovgård, H. 2004. Sustained releases of the pupal parasitoid *Spalangia cameroni* (Hymenoptera: Pteromalidae) for the control of house flies *Musca domestica* and stable flies *Stomoxys calcitrans* (Diptera: Muscidae) on dairy farms in Denmark. Biol. Control 30: 288-297.

Skovgård, H. 2006. Search efficiency of *Spalangia cameroni* and *Mucidifurax raptor* on *Musca domestica* pupae in dairy cattle farms in Denmark. BioControl 51: 49-64.

Skovgård, H., and J. B. Jespersen. 1999. Activity and relative abundance of hymenopterous parasitoids that attack puparia of *Musca domestica* and *Stomoxys calcitrans* (Diptera: Muscidae) on confined pig and cattle farms in Denmark. Bull. Entomol. Res. 89: 263-269.

Skovgård, H., and T. Steenberg. 2002. Activity of pupal parasitoids of the stable fly *Stomoxys calcitrans* and prevalence of entomopathogenic fungi in the stable fly and house fly in Denmark. BioControl 47: 45-60.

Skovgård, H., and G. Nachman. 2004. Biological control of house flies *Musca domestica* and stable flies *Stomoxys calcitrans* (Diptera: Muscidae) by means of inundative releases of *Spalangia cameroni* (Hymenoptera: Pteromalidae). Bull. Entomol. Res. 94: 555-567.

The efficacy *Spalangia cameroni* as biological control of flies was tested on 3 farms in 1999 and 2000. The parasitoids had a significant effect on house fly numbers, but not stable flies. It was suggested that stable fly larvae may burrow deeper into the substrate than house fly larvae, making them more difficult for parasitoids to reach. The parasitoids may also have had a preference for house flies due to being lab reared on that species.

Slansky, F., and J. G. Rodriguez. 1987. Nutritional ecology of insects, mites, spiders, and related invertabrates. Wiley-Interscience Publications pp. 741-765.

Smith, C. W., and E. J. Hansens. 1975. The effect of temperature and humidity on the amount of blood ingested by the stable fly, *Stomoxys calcitrans* L. (Diptera: Muscidae). N.Y. Entomol. Soc. 83: 235-240.

Stable flies were kept at 23, 32 or 38ºC and 7, 43, 75 or 97% relative humidity to test the effect of temperature and humidity on the amount of blood ingested. No significant differences were found in amount of blood ingested, but there were significant differences in the percentage of flies that fed at the different temperature/humidity combinations. A higher percentage of flies fed at high temperature/low humidity, and the lowest percent of flies fed at low temperature/high humidity combinations.

Smith, H. G., and L. J. Krysl. 1989. Grub, House, Stable, Horn, and Face Fly Control for Dairy Cattle. U.N.R., Nevada Cooperative Extension. Fact Sheet 89-08.

Smith, J. B. 1896. An essay on the development of mouthparts of certain insects. Trans. Am. Philosophical Soc. 19: 175-198.

Smith, J. P. 1981. Blood sucking flies of food producing animals in the United States. Part I: Family Tabanidae and *Stomoxys calcitrans*. Southwest Vet. 34: 115-117.

Smith, J. P., R. D. Hall, and G. D. Thomas. 1983. Natural enemies of the stable fly, *Stomoxys Calictrans* (L.) and their impact in Missouri. J. Kans. Entomol. Soc. 56: 454-455.

Smith, J. P., R. D. Hall, and G. D. Thomas. 1985. Field studies on mortality of the immature stages of the stable fly (Diptera: Muscidae). Environ. Entomol. 14: 881-890.

Field studies were conducted for 3 years (1980-1982) to determine the factors causing mortality of immature stable flies. Life tables were produced from the results, and the majority of immature deaths were due to “unknown causes”. Predation was the second most important factor.

Smith, J. P., R. D. Hall, and G. D. Thomas. 1987. Arthropods predators and competitors of the stable fly *Stomoxys calcitrans* (L.) (Diptera: Muscidae) in Central Missouri. J Kans. Entomol. Soc. 60: 562-567.

Sentinel stable fly breeding sites were set up on four farms in Missouri to identify predators and competitors of immature stable flies. The most common predators recovered were staphylinids and macrochelid mites. Competitors included one species of Dermaptera, 2 species of Hemiptera, 8 coleopteran families and 5 dipteran families.

Smith, J. P., R. D. Hall, and G. D. Thomas. 1987. Field paratism of the stable fly (Diptera: Muscidae). Ann. Entomol. Soc. Am. 80: 391-397.

Smith, J. P., R. D. Hall, and G. D. Thomas. 1989. A review of natural mortality and enemies of the stable fly (Diptera: Muscidae) in Missouri. Fla. Entomol. 72: 351-360.

Smith, L., and D. A. Rutz. 1991. Relationship of microhabitat to incidence of house fly (Diptera: Muscidae) immatures and their parasitoids at dairy farms in central New York. Environ. Entomol. 20: 669-674.

Smith, L., and D. A. Rutz. 1991. Seasonal and relative abundance of Hymenopterous parasitoids attacking house fly pupae at dairy farms in central New York. Environ. Entomol. 20: 661-668.

Smith, T. A. 1969. The maturation of fly larvae following removal from the larval medium. Cal. Vector News 16: 73-82.

Smittle, B. J., G. C. LaBreque, D. F. Williams, and R. S. Patterson. 1978. Container for irradiation of stable flies for a mass-release program. J. Econ. Entomol. 71: 335-336.

Smittle, B. J., J. A. Seawright, and N. L. Willis. 1984. Mating competitiveness of irradiated male stable flies, *Stomoxys calcitrans* (Diptera: Muscidae), from a genetic sexing strain. J. Med. Entomol. 21: 179-182.

The mating competitiveness of males of a genetic sexing strain (with a sex-linked resistance factor to dieldrin) was compared with a normal strain. Males were irradiated with 2500R cesium-137, and results were obtained by mating males with dieldrin-susceptible females. During the course of the experiment, a test was performed using carmine eye females to confirm female monogamy. It was concluded that the use of SIT could be enhanced by using dieldrin-resistant males.

Smittle, B. J., J. A. Seawright, and B. K. Birky. 1986. Use of a commercial color sorter to separate sexes of stable fly (Diptera: Muscidea) pupae from a genetic sexing strain. J. Econ. Entomol. 79: 877-878.

A machine is described that sorts stable fly pupae by color, separating black pupae from brown. Pupae progress down a hopper, pass through a trough and onto rollers, where they fall into a scanner which compares their color to a preset standard color. Black pupae are directed through a different valve than brown pupae. Using this machine, pupae of the genetic strain [T(1;3)2] could be separated by sexes, as in this strain the male pupae are brown and female pupae are black. Since the machine can sort up to 1200 pupae/min., it would be an efficient method to use in a sterile male release program.

Somme, L. 1958. The number of stable flies in Norwegian barns, and their resistance to DDT. J. Econ. Entomol. 51: 599-601.

Somme, L. 1959. On the numbers of stable flies and house flies on Norwegian farms. Saertykk av Norsk Entomologist Tidsskrift. 91: 7-15.

Somme, L. 1959. Control of stable flies by Dipterex on Norwegian farms. Saertrykk av korsk Entomologisk Tidsskrift, Bd, XI, H. 1-2: 16-19.

Somme, L. 1961. On the overwintering of house flies (*Musca domestica* L.) and stable flies (*Stomoxys calcitrans* (L.)) in Norway. Norsk. Entomol. Tidsskr. 11: 191-223.

Somme, L. 1962. Notes on resistance to chlorinated hydrocarbon insecticides in the stable fly, *Stomoxys calcitrans* (L.) (Diptera). Nors. Entomol. Tidskr. 12: 11-16.

Sonnet, P. E. 1979. Synthesis of the male stable fly polyene (z,z)-1,7,13-pentacosatriene and its geometrical isomers. J. Chem. Ecology. 5: 415-421.

Sonnet, P. E., E. C. Uebel, and R. W. Miller. 1977. An unusual polyene from male stable flies. J. Chem. Ecol. 3: 251-255.

Sonnet, P. E., E. C. Uebel, R. L. Harris, and R. W. Miller. 1977. Sex pheromone of the stable fly: evaluation of methyl- and 1,5-dimethylalkanes as mating stimulants. J. Chem. Ecol. 3: 245-249.

Sonnet, P. E., E. C. Uebel, W. R. Lusby, M. Schwarz, and R. W. Miller. 1979. Sex pheromone of the stable fly. J. Chem. Ecol. 5: 353-361.

Spates, G. 1979. Fecundity of the stable fly: effect of soybean trypsin inhibitor and phospholipase A inhibitor on the fecundity. Ann. Entomol. Soc. Am. 72: 847-849.

Spates, G. E. 1981. Proteolytic and hemolytic activity in the midgut of the stable fly *Stomoxys calcitrans* (L.). Partial purification of the haemolysin. Insect Biochem. 11: 143-147.

Spates, G. E. 1983. Midgut proteolytic and hemolytic activities, and feeding habits of young adult stable flies *Stomoxys calcitrans* (L.). Southwest. Entomol. 8: 178-185.

Spates, G. E., and J. E. Wright. 1975. Effect of a juvenile hormone analogue on phosphatase activity in pupae of the stable fly, *Stomoxys calcitrans*. J. Insect Physiol. 21: 1789-1792.

Spates, G. E., and J. E. Wright. 1980. Residues of diflubenzuron applied topically to adult stable flies. J. Econ. Entomol. 73: 595-598.

Spates, G. E., and J. R. DeLoach. 1980. Hemolysin of the stable fly, *Stomoxys calcitrans*. Comp. Biochem. Physiol. 67B: 121-125.

Spates, G. E., and J. R. DeLoach. 1985. Reproductive performance of adult stable flies (Diptera: Muscidae) when fed fresh or reconstituted, freeze-dried bovine or porcine blood. J. Econ. Entomol. 78: 856-859.

Spates, G. E., and J. R. DeLoach. 1986. Possible correlations between reproductive performance of *Stomoxys calcitrans* and lipid content of blood diets. Comp. Biochem. Physiol., A: Mol. Integr. Physiol. 83: 667-671.

Spates, G. E., R. D. Stipanovic, H. Williams, and G. M. Holman. 1982. Mechanism of haemolysis in a blood-sucking Dipteran, *Stomoxys calcitrans*. Insect Biochem. 12: 707-712.

Spates, G. E., J. R. DeLoach, and A. C. Chen. 1988. Ingestion, utilization and excretion of blood meal sterols by the stable fly, *Stomoxys calcitrans*. J. Insect Physiol. 34: 1055-1061.

Spates, G. E., D. L. Bull, and A. C. Chen. 1990. Hydrolysis of sphingomyelin and phosphatidylcholine by midgut homogenates of the stable fly. Arch. Insect Biochem. Physiol. 14: 1-12.

Spencer, J. P., C. W. Pitts, and D. E. Bay. 1976. Humidity responses of the stable fly. Southwest. Entomol. 1: 95-99.

Stage, D. A., and J. J. Petersen. 1981. Mass release of pupal parasites for control of stable flies and house flies in confined feedlots in Nebraska. Proc. of Workshop on Status of Biological Control of Filth Breeding Flies, Gainesville, FL, February 4-5, 1981.

Starnes, E. B., and P. Granett. 1953. A laboratory method for testing repellents against biting flies. J. Econ. Entomol. 46: 420-423.

Steck, C. E., and R. Brinkmann. 2006. The trophic niche of the Geoffrey's bat (*Myotis emarginatus*) in south-western Germany. Acta Chiropterol. 8: 445-450.

Steelman, C. D. 1976. Effects of external and internal arthropods parasites on domestic livestock production. Ann. Rev. Entomol. 21: 155-178.

Steenberg, T., H. Skovgård, V. Kalsbeek, and J. B. Jespersen. 2001. Microbial and biological control of flies in stables. DJF Rapport, Markburg. 49: 91-94.

Steinbrink, V. H. 1989. The distribution of *Stomoxys calcitrans* (Diptera: Muscidae) in stables. [Zur Verbreitung von *Stomoxys calcitrans* (Diptera: Muscidae) in Stallen.] Angew. Parasitol. 30: 57-61.

Steinkraus, D. C., and J. P. Kramer. 1987. Susceptibility of sixteen species of Diptera to the fungal pathogen *Entomophthora muscae* (Zygomycetes: Entomophthoraceae). Mycopathologia 100: 55-63.

Stenersen, J., and L. Somme. 1963. Notes on cross-resistance and genetics of resistance to the DDT-group insecticides in the stable fly (*Stomoxys calcitrans* (L.) (Diptera). Norsk Entomologisk Tidsskrift 12: 113-117.

Stephens, J. W. W., and R. Newstead. 1907. The anatomy of the proboscis of biting flies. Part II. *Stomoxys* (stable flies). Ann. Trop. Med. Parasitol. 1: 171-198.

Stoffolano, J. G., Jr. 1970. Nematodes associated with the genus *Musca* (Diptera: Muscidae). Bull. Entomol. Soc. Am. 16: 194-203.

Stork, M. G. 1979. The epidemiological and economic importance of fly infestation of meat and milk producing animals in Europe. Vet. Rec. 105: 341-343.

Straif, S., W. Maier, and H. M. Seitz. 1990. Regurgitation as a potential mechanism of pathogen transmission in the biting fly *Stomoxys calcitrans*. J. Appl. Zool. 77: 357-366.

Stürckow, B., P. E. Holbert, and J. R. Adams. 1967. Fine structure of the tip of chemosensitive hairs in two blow flies and the stable fly. Cell. Mol. Life Sci. 23: 780-782.

Suenaga, O. 1958. Ecological studies of flies. 1. On the amount of larvae of housefly and stable fly breeding out from animal manure. Nagasaki Univ. Med. J. 33: 123-133. (In Japanese with English summary).

Suenaga, O. 1959. Ecological studies of flies. 3. Flies breeding out from animal dung collected in the field. Endem. Dis. Bull. Nagasaki Univ. 1: 186-191. (In Japanese with English summary).

Sumba, A. L., S. Mihok, and F. A. Oyieke. 1998. Mechanical transmission of *Trypanosoma evansi* and *T. congolense* by *Stomoxys niger* and *S. taeniatus* in a laboratory mouse model. Med. Vet. Entomol. 12: 417- 422.

Summerlin, J. W., and S. E. Kunz. 1978. Predation of the red imported fire ant on stable flies. Southwest. Entomol. 3: 260-262.

Surcouf, J. M. R. 1923. Deuxiene note sur les conditions biologiques du *Stomoxys calcitrans*. Bull. Mus. Hist. Nat. Paris 29: 168-172.

Suszkiw, J., and J. Core. ARS. 2003. Project aims to clean house on filth flies. Agricultural Research. November 2003.

Sutcliffe, J. F., C. Dcambre, and A. E. R. Downe. 1993. Effects of two blood-feeding regimes on mortality and female reproduction in a laboratory colony of stable flies, *Stomoxys calcitrans.* Med. Vet. Entomol. 7: 111-116.

Sutherland, B. 1978. Nutritional values of different blood diets expressed as reproductive potentials in adult *Stomoxys calcitrans* L. (Diptera: Muscidae). Onderstepoort J. Vet. Res. 45: 209-212.

Sutherland, B. 1978. Reproductive potentials in adult stomoxys calcitrans L. (Diptera: Muscidae) Onderstepoort J. Vet. Res. 45: 209-212.

Sutherland, B. 1978. The suitability of various types of dung and vegetable matter as larval breeding media for *Stomoxys calcitrans* L. (Diptera: Muscidae). Onderstepoort J. Vet. Res. 45: 241-243.

Sutherland, B. 1979. Some effects of temperature on the adults, eggs and pupae of *Stomoxys calcitrans* Linnaeus (Diptera: Muscidae). Onderstepoort J. Vet. Res. 46: 223-227.

Sutherland, B. 1979. The effect of temperature on the frons width in males of *Stomoxys calcitrans* Linnaeus (Diptera: Muscidae). Onderstepoort J. Vet. Res. 46: 117-119.

Sutherland, B. 1980. Physiological age determination in female *Stomoxys calcitrans* Linnaeus (Diptera: Muscidae). Onderstepoort J. Vet. Res. 47: 83-88.

Sutherland, B. 1980. The temperature preference of motile stage of *Stomoxys calcitrans* Linnaeus (Diptera: Muscidae). J. Vet. Res. 47: 7-11.

Sweetman, H. L. 1946. DDT as a spot treatment for flies. J. Econ. Entomol. 39: 380-381.

Insecticide treatment against house flies and stables flies using DDT in kerosene oil proved to be effective when applied to only certain areas of barns or houses. A concentration of 25% DDT was recommended for barns. Only areas where flies would land to rest needed to be sprayed, saving the time and money required to spray the entire barn.

Sweetman, H. L. 1947. Comparative effectiveness of DDT and DDD for control of flies. J. Econ. Entomol. 40: 565-566.

Swist, S. L., M. J. Wilkerson, C. R. Wyatt, A. B. Broce, and M. R. Kanost. 2002. Modulation of bovine lymphocyte response by salivary gland extracts of the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 39: 900-907.

Experiments were conducted *in vitro* to investigate the effect of stable fly salivary gland extracts on bovine lymphocytes. Results showed that the SGE was not directly toxic to cells, but did suppress the activity of bovine lymphocytes. In addition, a 27 kDa protein was detected in stable fly SGE which caused an IgG reaction.

Sychevskays, V. I. 1977. Pasture flies (Diptera) of Uzbekistan. Entomol. Obozr. 56: 79-87.

Szalanski, A. L., D. B. Taylor, and R. D. Peterson II. 1996. Population genetics and gene variation of stable fly populations (Diptera: Muscidae) in Nebraska. J. Med. Entomol. 33: 413-420.

Genetic variation of stable fly populations from Nebraska, Texas and Canada was analyzed using PCR-RFLP. Mitochondrial DNA and ribosomal DNA were examined using 16 restriction enzymes. No significant genetic variation was observed.

Szalanski, A. L., and C. B. Owens. 2003. Sequence change and phylogenetic signal in Muscoid COII DNA sequences. DNA Sequence 14: 331-334.

Szalanski, A. L., C. B. Owens, T. McKay, and C. D. Steelman. 2004. Detection of *Campylobacter* and *Escherichia coli* O157:H7 from filth flies by polymerase chain reaction. Med. Vet. Entomol. 18: 241-246.

T

Tainchum, K., G. Duvallet, P. Akaratanakul, and T. Chareonviriyaphap. 2009. Genetic diversity and gene flow among stable fly populations, *Stomoxys calcitrans* (L.) in Thailand. Kasetsart J. Nat. Sci. 43: 526-537.

Tainchum, K., S. Sukonthabhirom, G. Duvallet, P. Akratanakul, V. Muenworn, and T. Chareonviriyaphap. 2010. Population structure of *Stomoxys calcitrans* (Diptera: Muscidae) from nine regions of Thailand. J. Econ. Entomol. 103: 1012-1018.

Talley, J., G. Schuster, D. Parker, B. Clymer, and C. Patrick. 2002. Monitoring population trends of house flies and stable flies (Diptera: Muscidae) on Texas High Plains feedlots. (Not peer reviewed, written for the 2002 ASAE Annual Meeting.)

Talley, J. L. 2008. Management and characterization of stable fly larval habitats at round hay bale feeding sites in pastures. PhD Dissertation. Department of Entomology, College of Agriculture, Kansas State University, Manhattan, KS.

Talley, J., A. Broce, and L. Zurek. 2009. Characterization of stable fly (Diptera: Muscidae) larval development habitat at round hay bale feeding sites. J. Med. Entomol. 46: 1310-1319.

Tam, T. L. 2003. Relative attractiveness of the sonic web and the horse to *Stomoxys calcitrans.* MS Thesis. University of Florida, Gainesville.

Tangtrakulwanich, K., H. Chen, F. Baxendale, G. Brewer, and J. J. Zhu. 2011. Characterization of olfactory sensilla of *Stomoxys calcitrans* and electrophysiological responses to odorant compounds associated with hosts and oviposition media. Med. Vet. Entomol. 25: 1-10.

Tao, S. M. 1921. A comparative study of the early larval stages of some common flies. Am. J. Hyg. 7: 735-761.

Tarry, D. W., A. C. Kirkwood, and C. Nancy Hebert. 1971. The response to 'black-light' radiation of some common flies of economic importance. Entomol. Exp. Appl. 14: 23-29.

Tarry, D. W., L. Bernal, and S. Edwards. 1991. Transmission of bovine viral diarrhoea virus by blood feeding flies. Vet. Rec. 128: 82-84.

Tate, H. D., and M. H. Muma. 1946. DDT and fly control. Nebr. Agr. Expt. Sta., Ann. Rept. 59: 61-63.

Taylor, D., L. T. Pannabecker, and A. C. Chen. 1997. Natriuretic and depolarizing effects of a stable fly (*Stomoxys calcitrans*) factor on Malpighian tubules. J. Insect Physiol. 43: 991-998.

Taylor, D. B. 1992. Genetics of the stable fly, pp. 39-52. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Taylor, D. B., and D. Berkebile. 2006. Comparative efficiency of six stable fly (Diptera: Muscidae) traps. J. Econ. Entomol. 99: 1415-1419.

Five adhesive traps (the Farnam Bite-Free prototype trap, with and without Alsynite; the Olson trap, the Broce trap and the Farnam EZ trap) and the cloth Nzi trap were compared to test their efficiency for trapping stable flies. The adhesive traps proved to be more efficient than the Nzi traps, and the Bit-Free traps were the most efficient. However, the adhesive traps seemed to be biased toward younger flies, whereas the Nzi traps captured older flies.

Taylor, D. B., and D. R. Berkebile. 2008. Sugar feeding in adult stable flies. Environ. Entomol. 37: 625-629.

Compared the frequency of nectar feeding and blood feeding in rural and urban populations of stable flies. Flies caught on Alsynite sticky traps were analyzed for the presence of sugar using the anthrone assay. Sugar was detected in more flies collected in the urban areas than in rural areas. In rural areas, more flies collected in pastures had fed on sugar than those in cropland, with those adjacent to feedlots having fed on nectar the least. The frequency of flies with blood detected in the gut was also higher in the urban environment. There was no difference in the frequency of blood or sugar feeding between male and female flies. It was concluded that stable flies are opportunistic nectar feeders, and there is a positive interaction between blood feeding and sugar feeding, perhaps because feeding on nectar gives the flies energy to seek a blood meal.

Taylor, D. B., and D. R. Berkebile. 2011. Phenology of stable fly (Diptera: Muscidae) larvae in round bale hay feeding sites in Eastern Nebraska. Environ. Entomol. 40: 184-19.

Taylor, D. B., R. D. Peterson II, A. L. Szalanski, and J. J. Petersen. 1997. Mitochondrial DNA variation among *Muscidifurax* spp. (Hymenoptera: Pteromalidae), pupal parasitoids of filth flies (Diptera). Ann. Entomol. Soc. Am. 90: 814-824.

Taylor, D. B., D. R. Berkebile, and P. J. Scholl. 2007. Stable fly population dynamics in Eastern Nebraska in relation to climatic variables. J. Med. Entomol. 44: 765-771.

A survey was done over 5 years, from 2001-2005, in Eastern Nebraska, and adult stable fly populations were correlated with temperature and precipitation. Results suggest that peak stable fly populations are greatest after cold winters followed by warm springs. Results also show that precipitation was the factor limiting populations during midsdummer.

Taylor, D. B., R. D. Moon, J. B. Campbell, D. R. Berkebile, P. J. Scholl, A. B. Broce, and J. A. Hogsette. 2010. Dispersal of stable flies (Diptera: Muscidae) from larval development sites in a Nebraska landscape. Environ. Entomol. 39: 1101-1110.

Taylor, F. 1979. Convergence to the stable age distribution in populations of insects. Am. Nat. 113: 511-530.

Temeyer, K.B., and A.C. Chen. 2011. Acetylcholinesterase of *Stomoxys calcitrans* (L.) (Diptera: Muscidae): cDNA sequence, baculovirus expression, and biochemical properties. Vet. Parasitol. (In press).

Teskey, H. J. 1960.. Survey of insects affecting livestock in Southwestern Ontario. Can. Entomol. 92: 531-544.

Thimijan, R. W., L. G. Pickens, and N. O. Morgan. 1973. Responses of the house fly, stable fly, and face fly to electromagnetic radiant energy. J. Econ. Entomol. 66: 1269-1270.

Thomas, D. B. 1985. Phenology of intra-puparial metamorphosis in horn fly and stable fly; a note on the diapause stage of the horn fly. Southwest. Entomol. 10: 139-149.

Puparia of stable flies and horn flies were observed hourly for the first 24 hours after pupariation, every 2 hours for the next 24 hours, and every 5 hours after that until eclosion. Some puparia were punctured and treated with a tissue fixative, and others were observed under the microscope

without being punctured. Ten intra-puparial stages were described: pupariation, prepupa, larval-pupal apolysis, cryptocephalic pupa, larval-pupal ecdysis, phanerocephalic pupa, pupal-adult apolysis, early pharate adult, red-edyd pharate adult, and late pharate adult. It was determined that horn flies diapause in the red-eyed pharate or late pharate adult stage.

Thomas, G. D. 1992. Sanitation as a means of suppressing stable fly populations in beef cattle feedlots, pp. 119-132. *In* G. D. Thomas and S. R. Skoda (eds.), The stable fly: a pest of humans and domestic animals. Proc. Entomol. Soc. Am. Baltimore, MD.

Thomas, G. D. 1993. The influence of beef cattle feedlots on the urban fly problem, pp. 1-6. *In* G. D. Thomas and S. R. Skoda (eds.), Rural flies in the urban environment? Proc. of a Symposium, 1989 annual meeting of the ESA; N. Cent. Reg. Publ. No. 335. Agric. Research Div., Institute of Agric. And Natural Resources, Univ. of Nebraska Rs. Bull. No. 317.

Thomas, G. D., and S. R. Skoda (eds.). 1993. Rural flies in the urban environment? North Central Regional Research Bulletin No. 335. Institute of Agriculture and Natural Resources Research Bulletin No. 317. University of Nebraska Agricultural Research Division, Lincoln.

Thomas G. D. and S. R. Skoda (eds.) 1995. The stable fly: a pest of humans and domestic animals. Proceedings of a Symposium, 1992 annual meeting of the Entomological Society of America; Nebraska Agricultural Experiment Station Miscellaneous Publication 64. 148 pp.

Thomas, G. D., I. L. Berry, D. R. Berkebile, and S. R. Skoda. 1989. Comparison of three sampling methods for estimating adult stable fly (Diptera: Muscidae) populations. Environ. Entomol. 18: 513-520.

Sampling methods compared were a stanchioned calf, fly counts per front leg of cattle, and an Alsynite trap. The majority of flies were caught at 1400. Seasonal peaks occurred in mid-July and a smaller peak in early September. There was no significant difference found between the sampling methods.

Thomas, G. D., S. R. Skoda, I. L. Berry, and D. R. Berkebile. 1990. Seasonal ovipositional status of field population of female stable flies (Diptera: Muscidae) in cattle feedlots as measured by two sampling methods. Environ. Entomol. 19: 1597-1604.

Thomas, G. D., S. R. Skoda, D. R. Berkebile, and J. B. Campbell. 1996. Scheduled sanitation to reduce stable fly (Diptera: Muscidae) populations in beef cattle feedlots. J. Econ. Entomol. 89: 411-414.

Thompson, K. D., R. G. Fischer, and D. H. Luecke. 1971. Quanitative infectivity study of avian reticuloentothellosis virus (Strain T) in certain hematophapous arthropods. J. Med. Entomol. 8: 486-490.

Thompson, P. H. 1967. Sampling haematophagous Diptera with a conical trap and carbon dioxide with special reference to *Culex salinarius*. Ann. Entomol. Soc. Am. 60: 1260-1263.

Thomsen, E., and M. Thomsen. 1936. Über das thermopräferendum der larven einiger fliegenarten. J. Comp. Physiol. A: Neuroethology, Sensory, Neural and Behavioral Physiol. 24: 343-380.

Thomsen, M. 1934. Fly control in Demark. Quart. Bull. Health Org. League of Nations 3: 304-324.

Thomsen, M., and O. Hammer. 1935. The breeding media of some common flies. Bull. Entomol. Res. 27: 559-587.

Thomson, R. C. M. 1937. Observations on the biology and larvae of the Anthomyidae. Parasitol. 19: 273-358.

Titchener, R. N., and J. W. Newbold. 1981. Flies associated with cattle in southwest Scotland during the summer months. Res. Vet. Sci. 30: 109-113.

Tobón, F. A., and Q. M. S. Fcéutica. 2011. Insecticidal activity of a *Melinis minutiflora* grass extract on *Stomoxys calcitrans* flies. Revista Colombiana de Ciencias Pecuarias 24: 123-130.

Todd, D. H. 1964. The biting fly *Stomoxys calcitrans* (L.) in dairy herds in New Zealand. N. Z. J. Agric. Res. 7: 60-79.

Torfs, H., R. Shariatmadari, F. Guerrero, M. Parmentier, J. Poels, W. Van Poyer, E. Swinnen, A. De Loof, K. Åkerman, and J. Vanden Broeck. 2000. Characterization of a receptor for insect tachykinin-like peptide agonists by functional expression in a stable *Drosophila* Schneider 2 cell line. J. Neurochem. 74: 2182-2189.

Torfs, H., H. B. Oonk, J. V. Broeck, J. Poels, W. Van Poyer, A. DeLoff, F. Guerrero, R. H. Meloen, K. Akerman, and R. J. Nachman. 2001. Pharmacological characterization of STKR, an insect G protein coupled receptor for tachykini-like peptides. Arch. Insect Biochem. Physiol. 48: 39-49.

Torfs, H., M. Detheux, H. B. Oonk, K. E. Åkerman, J. Poels, T. Van Loy, A. De Loof, G. Vassart, M. Parmentier, and J. Vanden Broeck. 2002. Analysis of

C-terminally substituted tachykinin-like peptide agonists by means of aequorin-based luminescent assays for human and insect neurokinin receptors. Biochem. Pharmacol. 63: 1675-1682 .

The amino acid sequence of STKR, the G protein coupled receptor from *Stomoxys calcitrans*, is compared with other peptide sequences. The receptor is tested for biological activity with different peptide agonists.

Torgersen, T. R. 1974. Host index to the second supplement of the synoptic catalog for the Hymenoptera of America north of Mexico. Bull. Entomol. Soc. Am. 20: 285-292.

Torr, S. J. and T. N. C. Mangwiro. 2000. Interactions between cattle and biting flies: effects on the feeding rate of tsetse. Med. Vet. Entomol. 14: 400-409.

Torr, S. J., T. N. C. Mangwiro, and D. R. Hall. 2006. The effects of host physiology on the attraction of tsetse (Diptera: Glossinidae) and *Stomoxys* (Diptera: Muscidae) to cattle. Bull. Entomol. Res. 96: 71-84.

Traversa, D., D. Otranto, R. Iorio, A. Carluccio, A. Contri, B. Paoletti, R. Bartolini, and A. Giangaspero. 2008. Identification of the intermediate hosts of *Habronema microstoma* and *Habronema muscae* under field conditions. Med. Vet. Entomol. 22: 283-287.

Travis, B. V., F. A. Morton, and J. H. Cochran. 1946. Insect repellents used as skin treatments by the armed forces. J. Econ. Entomol. 39: 627-630.

Tseng, J. M., C. J. Jones, and J. A. Hogsette. 1983. Nectar feeding and the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae). J. Fla. Anti-Mosq. Assoc. 54: 40-41.

Stable flies were observed feeding on nectar during the fall of 1982 in Florida. Flies were captured and analyzed to confirm the nectar feeding. Flies that had fed on blood were also found to have fed on nectar, the preferred plants being salt bush and goldenrod. Flies which had recently fed on blood were not interested in feeding on human blood. In the laboratory, stable fly longevity was tested when fed on nectar, and they were able to survive on plant material for at least nine days.

Tseng, J. M., J. A. Hogsette, and R. S. Patterson. 1986. Effect of yarn on attractiveness of the Williams trap to *Stomoxys calcitrans* (Diptera: Muscidae) adults. Fla. Entomol. 69: 261-263.

Tucker, E. S. 1916-1917. Determination and records of insects collected at Plano, Tex. Trans. Kans. Academy of Sci. 28: 291-312.

Tulloch, F. 1906. The internal anatomy of *Stomoxys*. Proc. R. Soc. Lond. (B) 77: 523-531.

Describes the internal anatomy of *Stomoxys* as compared to *Glossina.*

Turrell, M. J., and G. B. Knudson. 1987. Mechanical transmission of *Bacillus anthracis* by stable flies (*Stomoxys calcitrans*) and mosquitoes (*Aedes aegypti* and *Aedes taeniorhynchus*). Infect. Immun. 55: 1859-1861.

Stable flies and mosquitoes were allowed to feed on *Bacillus anthracis*-infected guinea pigs and mice, and removed before finishing the blood meal. They were then allowed to feed on susceptible rodents. It was confirmed that both stable flies and mosquitoes transmitted *B. anthracis* to the susceptible rodents.

Turrell, M. J., D. J. Dohm, C. J. Geden, J. A. Hogsette, and K. J. Linthicum. 2010. Potential for stable flies and house flies (Diptera: Muscidae) to transmit Rift Valley Fever Virus. J. Am. Mosq. Contr. Assoc. 26: 445-448.

Tuttle, E. L. 1961. Studies of the effect of nutrition on survival and oviposition of laboratory reared stable flies, *Stomoxys calcitrans* L. University Microfilms Inc. pp 1-74. Ph.D. Dissertation. Rutgers University, N.J.

U

Uebel, E. C., P. E. Sonnet, B. A. Bierl, and R. W. Miller. 1975. Sex pheromone of the stable fly: isolation and preliminary identification of compounds that induce mating strike behavior. J. Chem. Ecol. 1: 377-385.

Uhlenhuth, P., and P. Kuhn. 1917. Experimentelle Übertragung der weilschen krankheit durch die stallfliege (*Stomoxys calcitrans*). Med. Microbiol. Immunol. 84: 517-540.

Urban, J. E., and A. B. Broce. 1998. Flies and their bacterial loads in greyhound kennels in Kansas. Current Microbiol. 36: 164-170.

Urech, R., R. L. Bright, P. E. Green, G. W. Brown, J. A. Hogsette, A. G. Skerman, M. M. Elson-Harris, and D. G. Mayer. 2011. Temporal and spatial trends in adult nuisance fly populations on Australian cattle feedlots . Australian J. Entomol. In press.

Urueta, E. J. 1975. Insectos asociados con el cultivo de africana en Uraba (Antioquia) y estudio de su relacion con la pudricion de la flechapudricion del cogollo. Rev. Columba. Entomol. 1: 15-31. (In Spanish with English summary).

V

Vale, G. A. 1980. Field studies of the response of tsetse flies (Glossinidae) and other Diptera to carbon dioxide, acetone and other chemicals. Bull. Ent. Res. 70: 563-570.

Van Loy, T., H. P. Vandersmissen, J. Poels, M. B. Van Hiel, H. Verlinden, and J. Vanden Broeck. 2010. Tachykinin-related peptides and their receptors in invertebrates: a current view. Peptides 31: 520-524.

Veer, V., B. D. Parashar, and S. Prokash. 2002. Tabanid and Muscoid haematophagus flies, vectors of Trypanosomiasis or Surra Disease in wild animals and livestock in Nandankanan Biological Park, Bhubaneswar (Orissa, India). Curr. Sci. 82: 500-503.

Venkatesh, K., and P. E. Morrison.1980. Crop filling and emptying by the stable fly *Stomoxys calcitrans* L. Can. J. Zool. 58: 57-63.

Venkatesh, K., and P. E. Morrison. 1980. Some aspects of oogenesis in the stable fly *Stomoxys calcitrans* (Diptera: Muscidae). J. Insect Physiol. 26: 711-715.

Venkatesh, K., and P. E. Morrison. 1980. Studies of weight changes and amount of food ingested by the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae). Can. Entomol. 112: 141-149.

Venkatesh, K., and P. E. Morrison. 1982. Metabolic fuel reserves in the stable fly (Diptera: Muscidae). J. Med. Entomol. 19: 330-335.

Venkatesh, K., and P. E. Morrison. 1982. Blood meal as a regulator of triacylglycerol synthesis in the haematophagous stable fly, *Stomoxys calcitrans.* J. Comp. Physiol. B: Biochem, System. Environ. Physiol. 147: 49-52.

Venkatesh, K., P. E. Morrison, and V. L. Kallapur. 1981. Influence of blood meals on the conversion of D-(U-^{14}C)-Glucose to lipid in the fat body of the haematophagous stable fly, *Stomoxys calcitrans*. Comp. Biochem. Physiol. 68B: 425-429.

Venkatesh, K., P. E. Morrison, and V. L. Kallapur. 1983. Incorporation of [U-^{14}C]acetate into lipids by the fat body of the adult stable fly (Diptera: Muscidae) Ann. Entomol. Soc. Am. 76: 209-214

The conversion of [U-^{14}C]acetate into lipids was followed by injecting the chemical into stable flies before and after blood meals. The acetate was converted to triacylglycerol by the fat body, and the accumulation of the lipid was greatest after the first blood meal. Males had a reduced concentration after the third blood meal, at which time they begin mating activity. Females had reduced concentration of lipids in the fat body after the second blood meal, at which time the lipids were transported to the ovaries. It is suggested that the synthesis of lipids is a necessary part of the reproductive cycle of stable flies.

Vickery, D. S., and B. W. Arthur. 1960. Animal systemic activity, metabolism, and stability of Co-Ral (Bayer 21/199). J. Econ. Entomol. 53: 1037-1043.

Vitela, I., C. Cruz-Vazquez, and A. Orihuela. 2006. A note on the effect of controlling stable flies (*Stomoxys calcitrans*) in the resting activity and pen distribution of dairy cows. J. Appl. Anim. Welfare Sci. 9: 241-248.

Vitela, M. I., C. Cruz-Vazquez, J. J. Solano, and A. Orihuela. 2007. A note on the associations between the prevalence of stable flies (*Stomoxys calcitrans*) and the behavior of dairy cows under semi-arid conditions. J. Anim. Vet. Adv. 6: 1284-1290.

Twenty-one Holstein dairy cows were monitored for their reactions to stable fly activity on a private dairy in Aguascalientes, Mexico, during July and August. The climate in the region was semi-arid, with an average rainfall of 74mm. Cows were monitored for fly-dislodging activities such as ear twitching, head-tossing, leg stamping, muscle twitching and tail switching. Cows were reported to perform the activities at the highest rate when fly counts were over 20 flies per front leg. Tail switching was the most frequent activity.

Voegtline, A. C., G. W. Ozburn, and G. D. Gill. 1965. The relation of weather to biting activity of *Stomoxys calcitrans* (Linneaus) along Lake Superior. Papers Mich. Acad. Sci., Art Lett. 10: 107-114.

W

Waldbillig, R. C. 1968. Color vision of the female stable fly, *Stomoxys calcitrans*. Ann. Entomol. Soc. Am. 61: 789-791.

The attractiveness of different wavelengths of light to female stable flies was tested. Stable flies were most attracted to wavelengths between 340-500 mµ, ultraviolet to blue-green. They were more attracted to white light than infrared, but in the absence of white light, they were attracted to the infrared. This result was contradictory to other research which suggested that stable flies were blind to red light. The authors suggest that the attractiveness of blue light to stable flies could explain their accumulation at large bodies of water.

Wales, A. D., J. J. Carrique-Mas, M. Rankin, B. Bell, B. B. Thind, and R. H. Davies. 2010. Review of the carriage of zoonotic bacteria by arthropods, with special reference to *Salmonella* in mites, flies and litter beetles. Zoonoses Public Health 57: 299-314.

Wall, R. 2007. Ectoparasites: future challenges in a changing world. Vet. Parasitol. 148: 62-74.

Walsh, J. D. 1964. A survey of fly production in cattle feedlots in the San Joaquin Valley. California Vector View. 11: 33-39.

Wang, X., J. M. C. Ribeiro, A. B. Broce, M. J. Wilkerson, and M. R. Kanost. 2009. An insight into the transcriptome and proteome of the salivary gland of the stable fly, *Stomoxys calcitrans*. Insect Biochem. Mol. Biol. 39: 607-614.

Wang, Y. E., and G. D. Gill. 1970. Effect of temperature and relative humidity on mortality of adult stable flies. J. Econ. Entomol. 63: 1666-1668.

The purpose of this experiment was to determine if stable fly mortality increased at temperature and relative humidity conditions that were comparable with their movement toward large bodies of water, such as Lake Superior. Test conditions were 36 hour exposure to 3 different RH at 5 degree intervals. Mortality was high at 20% RH at all temperatures. Mortality increased significantly at 85°F, but was least at 80% RH. The results were consistent with conditions in which flies move toward bodies of water.

Ware, G. W. 1966. Power-mower flies. J. Econ. Entomol. 59: 477-478.

Warnes, M. L., and L. H. Finlayson. 1985. Responses of the stable fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae), to carbon dioxide and host odours. I. Activation. Bull. Entomol. Res. 75: 519-527.

Warnes, M. L., and L. H. Finlayson. 1985. Responses of the stable fly, *Stomoxys calcitrans* (L.) (Diptera: Muscidae), to carbon dioxide and host odours. II. Orientation. Bull. Entomol. Res. 75: 717-727.

Warnes, M. L., and L. H. Finlayson. 1986. Electroantennogram response of the stable fly, *Stomoxys calcitrans*, to carbon dioxide and other odours. Physiol. Entomol. 11: 469-473.

Warnes, M. L., and L. H. Finlayson. 1987. Effects of host behaviour on host preference in *Stomoxys calcitrans*. Med. Vet. Entomol. 1: 53-57.

Watson, D. W., and J. J. Petersen. 1991. Infectivity of *Serratia marcescens* (Eubacteriales: Enterobacteriaceae) in *Stomoxys calcitrans* (Diptera: Muscidae). J. Med. Entomol. 28: 190-192.

Serratia marcescens were cultured from house flies caught at Nebraska feedlots and dairies. Laboratory experiments were conducted to determine the infectivity of *S. marcescens* to stable flies, to compare the wild isolate with cultures maintained at the UNL School of Biological Sciences, and to determine if stable flies could be infected through their food source. Although stable flies became infected with this bacteria, they were only facultatively pathogenic and therefore would not be an important means of stable fly control.

Watson, D. W., J. K. Waldron, and D. A. Rutz. 1994. Integrated management of flies in and around dairy and livestock barns. Cornell Cooperative Extension.

Watson, D. W., C. J. Geden, S. J. Long, and D. A. Rutz. 1995. Efficacy of *Beauveria bassiana* for controlling the house fly and stable fly (Diptera: Muscidae). Biol. Control 5: 405-411.

Watson, D. W., D. A. Rutz, and S. J. Long. 1996. *Beauveria bassiana* and sawdust bedding for the management of the house fly, *Musca domestica* (Diptera: Muscidae) in calf hutches. Biol. Control 7: 221-227.

Wayson, N. E. 1914. Plague and plague-like disease: a report on their transmission by *Stomoxys calcitrans* and *Musca domestica*. Public Health Reports (1896-1970) 29: 3390-3393.

Weber, A. F., R. D. Moon, S. K. Sorensen, D. W. Bates, J. C. Meiske, C. A. Brown, N. L. Rohland, E. C. Hooker, and W. O. Strand. 1988. Evaluation of the stable fly (*Stomoxys calcitrans*) as a vector of enzootic bovine leukosis. Am. J. Vet. Res. 49: 1543-1549.

Webster, K. A., M. Rankin, N. Goddard, D. W. Tarry, and G. C. Coles. 1992. Immunological and feeding studies on antigens derived from the biting fly, *Stomoxys calcitrans*. Vet. Parasitol. 44: 143-150.

Weidhaas, D. E. 1973. Field studies on insect sterilization with mosquitoes, house flies and stable flies. IAEA-PL-466/6: 137-139.

Weidhaas, D. E., and D. G. Haile. 1978. A theoretical model to determine the degree of trapping required for insect population control. Bull. Entomol. Soc. Am. 24: 18-20.

Weidhaas, D. E., G. C. LaBrecque, C. S. Lofgren, and C. H. Schmidt. 1972. Insect sterility in population dynamics research. Bull. Org. mond. Sante., Bull. Wld. Hlth. Org. 47: 309-315.

Weiner, T. J., and E. J. Hansens. 1975. Species and numbers of bloodsucking flies feeding on hogs and other animals in southern New Jersey. J. New York Entomol. Soc. 83: 198-202.

Weinzierl, R. A., and C. J. Jones. 1998. Releases of *Spalangia nigroaena* and *Muscidifurax zaraptor* (Hymenoptera: Pteromalidae) increase rates of parasitism and total mortality of stable fly and house fly (Diptera: Muscidae) pupae in Illinois cattle feedlots. J. Econ. Entomol. 91: 1114-1121.

During 1991-1993, pupal parasitoids were released weekly at small independent feedlots. Puparia were collected, and mortality was calculated by parasitoid species, unknown causes and duds (puparia in which no adult flies or parasitoids emerged). *Spalangia nigroaena* had a slight (9%) effect on stable fly mortality, and *Muscidifurax zaraptor* caused 1.1% mortality in house flies. Results seemed dependent on climatic variations.

Welch, E. V. 1939. Insects found on aircraft at Miami, Fla. in 1938. Public Health Reports (1896-1970) 54: 561-566.

Wellington, W. G. 1945a. Conditions governing the distribution of insects in the free atmosphere. Can. Entomol. 77: 7-15.

Wellington, W. G. 1945b. Conditions governing the distribution of insects in the free atmosphere. Part IV: Distributive processes of economic significance. Can. Entomol. 77: 67-74.

Wellington, W. G. 1983. Biometeorology of dispersal. Bull. Entomol. Soc. Am. 29: 24-29.

Wells, R. W. 1931. Some observations on electrified screens and traps. J. Econ. Entomol. 24: 1242-1247.

Westenbroek, P. 2002. Integrated pest management for fly control in Maine dairy barns. University of Maine Cooperative Extension Bulletin #5002.

Wharton, R. H., and K. R. Norris. 1980. Control of parasitic arthropods. Vet. Parasitol. 6: 135-164.

Whitaker, J. O., P. Clem, and J. R. Munsee. 1991. Trophic structure of the community in the guano of the evening bat *Nycticceius humeralis* in Indiana. Am. Midl. Nat. 126: 392-398.

White, D. J., and C. P. White. 1981. The occurence and relevance of arthropods of medical and veterinary importance captured during a survey on Plum Island, New York. J. N.Y. Entomol. Soc. 89: 2-15.

White, S. A. 1971. The effect of ionizing radiation on the stable fly *Stomoxys calcitrans* L. Ph.D. Dissertation, University of Florida.

White, W. H., S. M. Bauer, X. Zhao, J. A. Gutierrez, and C. K. Smith II. 2005. Comparison of *in vitro* and *in vivo* ectoparasiticide activity of experimental benzimidazole-carbamate with permethrin and amitraz. J. Med. Entomol. 42: 207-211.

Whitehead,W. E., and F. O. Morrison. 1947. Oh those flies. MacDonald College J. 7: 8.

Whitfield, T. L., G. C. LaBreque, R. S. Patterson, and D. W. Meifert. 1978. Effect of gamma irradiation on sterility and longevity of stable flies. J. Econ. Entomol. 7: 608-609.

Wieman, G. A., J. A. Deshazer, and J. B. Campbell. 1988. Performance and behavior responses of the beef cattle to stable flies in warm environments. Livestock environment III : proceedings of the Third International Livestock Environment Symposium, April 25-27, 1988, Toronto, Ontario, Canada.- St. Joseph, Mich. (USA): ASAE p. 315-321.

Wieman, G. A., J. B. Campbell, J. A. Deshazer, and I. L. Berry. 1992. Effects of stable flies (Diptera: Muscidae) and heat stress on weight gain and feed efficiency of feeder cattle. J. Econ. Entomol. 85: 1835-1842.

The purpose of this study was to separate the direct effects (biting) and indirect effects (bunching) of stable flies on feeder cattle. Four treatments were applied, with 10 cattle in each group. Treatments were: no flies, no bunching; flies, no bunching; no flies, bunching; flies and bunching. The effect of bunching was achieved by placing the groups of cattle into smaller pens. Direct effects (biting) were found to cause 28.5% of the reduction in weight gain, while bunching (and the resulting heat stress) was responsible for 71.5%.

Wille, J. 1925. A survey of the insects of agricultural importance in Rio Grande do Sul, Brazil. Z. Angew. Entomol. 11: 415-426. (In Portuguese).

Williams, D. F. 1973. Sticky traps for sampling populations of *Stomoxys calcitrans*. J. Econ. Entomol. 66: 1279-1280.

Williams, D. F., and A. J. Rogers. 1976a. Stable flies infested with the mite *Macrocheles muscaedomestica*. Fla. Entomol. 59: 328-228.

During collection of stable flies from sticky traps in northwest Florida, flies were observed to be infested with mites, which were later identified as *Macrocheles muscaedomestica.* Mites were found predominantly on abdominal segments 2 and 3, but also on the head and thorax. This was the only species of mite found on the flies. Percentage of flies infested with mites was higher on dairies (5.6%) than on the beaches (1.7%).

Williams, D. F., and A. J. Rogers. 1976b. Vertical and lateral distribution of stable flies in northwestern Florida. J. Med. Entomol. 13: 95-98.

A survey was taken of stable fly numbers in a vertical distribution using sticky traps attached to fire and Navy observation towers. A lateral survey was taken by placing sticky traps 4 ft above the ground in a power line right-of-way, some at the center in the open and others in adjacent wooded areas. The most flies were captured below 4 ft from the ground, and preferred the open areas to wooded areas.

Williams, D. F., O. Skov, and R. S. Patterson. 1977. Two traps for collecting live stable flies, *Stomoxys calcitrans*, in the field. Mosq. News 37: 404-406.

Williams, D. F., G. C. LaBrecque, and R.S. Patterson. 1977. Effect of gamma rays and/or fluorescent pigments on sterility and survival of the stable fly. Fla. Entomol. 60: 197-300.

Williams, D. F., R. S. Patterson, and G. C. LaBrecque. 1979. Marking large numbers of stable flies *Stomoxys calcitrans* (L.) for a sterile release program. Mosq. News 39: 146-148.

Williams, D. F., A. J. Rogers, P. Hester, J. Ruff, and R. Levy. 1980. Preferred breeding media of the stable fly, *Stomoxys calcitrans*, in northwestern Florida. Mosq. News 40: 276-279.

Williams, D. F., R. S. Patterson, G. C. LaBreque, and D. E. Weidhass. 1981. Control of the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae), on St. Croix, U. S. Virgin Islands, using integrated pest management measures. II. Mass rearing and sterilization. J. Med. Entomol. 8: 197-202.

Williams, R. E. 1985. Arthropod pests of swine, pp. 239-251. *In* R. E. Williams, R. D. Hall, A. B. Broce and P. J. Scholl (eds.), Livestock entomology. John Wiley and Sons, New York.

Willis, N. L., B. J. Smittle, and J. A. Seawright. 1980. A genetic sexing system for *Stomoxys calcitrans* (L.). Proc. Ann. Fla. Anti-Mosq. Assoc. Meet. 51: 52-54.

Willis, N. L., J. A. Seawright, C. Nickel, and D. J. Joslyn. 1981. Reciprocal translocations and partial correlation of chromosomes in the stable fly. J. Hered. 72: 104-106.

In this study, male stable flies were irradiated with Cs^{137} to cause reciprocal translocations in chromosomes, then crossed with females with certain combinations of two mutant forms: carmine eye (ca) and rolled down wing (rd). Using a "pseudolinkage" breeding scheme, the authors determined that the mutations were not sex-linked, sex determination is located on chromosome 1, carmine eye (ca) on chromosome 2, and rolled down wing (rd) on chromosome 4.

Willis, N. L., L. R. Hilburn, and J. A. Seawright. 1983. Black pupa, a recessive mutant on chromosome 3 of the stable fly, *Stomoxys calcitrans* (L.). The J. Hered. 74: 114-115.

Reciprocal translocations were used to determine the location of a 3rd mutant phenotype in the stable fly, black pupa (bp), which occurs only in the pupal stage. No color changes are present in larvae or adults with this phenotype. After crossing irradiated males with bp females and backcrossing, the F2 generation was examined. A correlation between chromosomes 1 and 3 was found by examination of male testes. Since it was found previously that sex determination is on chromosome 1, this suggests that the black pupa mutant gene is on chromosome 3. The authors suggest that new genes can be mapped by their linkage to one of the three mutants, carmine eye (ca), rolled down wing (rd) and black pupa (bp), since these genes are on different chromosomes.

Williston, S. W. 1889. A new cattle pest. Am. Nat. 23: 584-590.

Williston, S. W. 1908. North American Diptera. 3rd ed. James T. Hathaway, New Haven 405 pp.

Wilson, J. W. 1932. Coleoptera and Diptera collected from a New Jersey sheep pasture. J. New York Entomol. Soc. 40: 77-93.

Wingo, C. W. 1954. House fly control with diazinon. J. Econ. Entomol. 47: 632-635.

Winters, S. R. 1939. Effect of flies on milk production. South. Agric. 69: 12.

Wolf, W. W., R. A. Killough, and J. G. Hartsock. 1967. Small equipment for immobilizing flies with cool air. J. Econ. Entomol. 60: 303-304.

Wood, A.R., and M.J. Lehane. 1991. Relative contributions of apocrine and eccrine secretion to digestive enzyme release from midgut cells of *Stomoxys calcitrans* (Insecta: Diptera). J. Insect Physiol. 37: 161-166.

Wright, J. E. 1970. Hormones for control of livestock arthropods. Development of an assay to select candidate compounds with juvenile hormone activity in the stable fly. J. Econ. Entomol. 63: 878-883.

Wright developed an assay to test the juvenile hormone activity of several compounds when applied topically or in the diet of stable flies at all life stages. The prepupal stage was found to be the most susceptible to juvenile hormone, and the synthetic juvenile hormone SJH II produced the strongest results. Most of the compounds tested were ovicidal when applied topically. When applied to prepupae the juvenile hormone compounds produced a pupal-adult intermediate: head and thorax were developed and had setae, but the abdomen was not fully developed and no adult genitalia developed. It is suggested that juvenile hormone could be a possible control method for stable flies.

Wright, J. E. 1972. Hormones for control of livestock arthropods. Effectiveness of three juvenile hormone analogues for control of stable flies. J. Econ. Entomol. 65: 1361-1364.

Wright, J. E. 1973. Evaluation of juvenile hormone analogues for the control of stable fly. Folia Entomol. Mex. 25-26: 123.

Wright, J. E. 1974. Insect growth regulators: juvenile hormone analogs for control of the stable fly in marine plants in Florida. Mosq. News 34: 160-162.

Wright, J. E. 1974. Insect growth regulators: laboratory and field evaluations of Thompson-Hayward TH-6040 against the house fly and the stable fly. J. Econ. Entomol. 67: 746-747.

An insect growth regulator, TH-6040, was tested on stable flies and house flies in the laboratory, in a cattle feedlot, and in a wastewater treatment plant. In the laboratory, 1 µL of different concentrations was applied to white pupae. In the field, the compound was applied to the breeding medium. TH-6040 was not effective when applied topically to pupae. It was highly effective when ingested by larvae, causing morphological deformations and thinning of the cuticle.

Wright, J. E. 1975. Insect growth regulators: development of house flies in feces of bovines fed TH-6040 in mineral blocks and reduction in field populations by surface treatments with TH-6040 or a mixture of stirophos and dichlorvos at larval breeding areas. J. Econ. Entomol. 68: 322-324.

Wright, J. E., and J. N. Kaplanis. 1970. Ecdysones and ecdysone-analogues: effects on fecundity of the stable fly, *Stomoxys calcitrans*. Ann. Entomol. Soc. Amer. 63: 622-623.

Wright, J. E., and G. E. Spates. 1971. Biological evaluation of juvenile hormone compounds against pupae of the stable fly. Ag. Food Chem. 19: 289-290.

Wright, J. E. and G. E. Spates. 1972. A new approach in integrated control: insect juvenile hormone plus a Hymenopteran parasite against the stable fly. Science 178: 1292-1293.

Wright, J. E., and G. E. Spates. 1972. Laboratory evaluation of compounds to determine juvenile hormone activity against the stable fly. J. Econ. Entomol. 65: 1346-1349.

Twenty-nine compounds were tested on different life stages of the stable fly to determine if they had juvenile hormone activity against this insect. The compounds tested were 11 juvenile hormone analogues, 9 potential chemosterilants, and 9 plant extracts, which had demonstrated juvenile hormone activity in other insect species. In this experiment, only the juvenile hormone analogues were effective against stable flies. These compounds had considerable effect on larval, pupal, and adult stages but little effect on eggs. Application of the JH analogues to larvae and pupae caused larviform pupae or pupal-adult intermediates.

Wright, J. E., and M. Schwarz. 1972. Juvenilizing activity of compounds related to the juvenile hormone against pupae of the stable fly. J. Econ. Entomol. 65: 1644-1647.

Wright, J. E., and P. E. Sonnet. 1973. Juvenile hormone activity of citronellylamine and citronellol derivatives against pupae of the stable fly and the house fly (Diptera: Muscidae). J. Med. Entomol. 10: 477-480.

Wright, J. E., and D. Rushing. 1973. Glycogen in pupal and adult stable flies as affected by a juvenile hormone analogue. Ann. Entomol Soc. Am. 66: 274-276.

Wright, J. E., and G. E. Spates. 1975. Penetration and persistence of an insect growth regulator in the pupa of the stable fly, *Stomoxys calcitrans*. J. Insect. Physiol. 21: 801-805.

Wright, J. E., and R. L. Harris. 1976. Ovicidal activity of Thompson-Hayward TH 6040 in the stable fly and horn fly after surface contact by adults. J. Econ. Entomol. 69: 728-730.

The insect growth regulator TH-6040 was tested for ovicidal activity in stable flies and horn flies. In laboratory tests, stable flies were put into cylinders in which the walls were treated with TH-6040. Horn flies were treated topically. In the second test, flies were released in a stall with a steer which was sprayed with TH-6040. Ovicidal activity of TH-6040 was high even when one sex was treated, then mated with untreated flies.

Wright, J. E., and R. L. Jones. 1976. Insect growth regulators: methoprene and Stauffer R-20458 in pupae of the stable fly from treated breeding medium. Environ. Contam. Toxicol. 5: 525-529.

Wright, J. E., and G. E. Spates. 1976. Reproductive inhibition activity of the insect growth regulator TH 6040 against the stable fly and the house fly: effects on hatchability. J. Econ. Entomol. 69: 365-368.

The effect of TH-6040 on egg hatch was tested on the stable fly and the house fly. In the first test, the substrate was dusted with the compound, so that eclosing adults had to emerge through the powder. In the second test, TH-6040 was applied directly to the insects. TH-6040 was very effective on preventing egg hatch in the stable fly. It was also transferred from treated to untreated flies. However, TH-6040 was not as effective on house flies.

Wright, J. E., and H. E. Smalley. 1977. Biological activity of insect juvenile hormone analogues against the stable fly and toxicity studies in domestic animals. Arch. Environ. Contam. Toxicol. 5: 191-197.

Sixty-two terpenoid compounds, each with a different functional group, were applied to stable fly larvae at 10µg/pupa (1 µL of a 1% solution in acetone) to determine if chemical structure was related to juvenilization. Compound activity was determined by the presence of a pupal-adult intermediate in the puparium 8 days after treatment. Six of the compounds were found to be very effective on stable fly pupae. Four compounds of interest, which were similar to cecropia juvenile hormone, were found to be more effective when used on *Tenebrio molitor*, but were less effective than cecropia JH on the stable fly pupae.

Wright. J. E., and M. C. Bowman. 1973. Determination of the juvenile hormone-active compound Altosid® and its stability in stable fly medium. J. Econ. Entomol. 66: 707-709.

A method for determining the concentration of a juvenile hormone analogue, Altosid, in stable fly rearing medium is described. Altosid was extracted from the rearing medium using benzene-methanol. 100% recovery of the compound was reported 22 days after treatment. The persistence of Altosid would be sufficient to cause morphogenic effects in stable fly pupae, suggesting that it would be an effective control of this insect.

Wright, J. E., W. F. Chamberlain, and C. C. Barrett. 1971. Ovarian maturation in stable flies: inhibition by 20-hydroxy-ecdyson. Science 172: 1247-1248.

Wright, J. E., H. R. Crookshank, and D. D. Rushing. 1973. Glycogen phosphorylase activity in pharate adults of the stable fly and the effects of a juvenile hormone analogue. J. Insect Physiol. 19: 1575-1578.

Wright, J. E., J. B. Campbell, and P. Hester. 1973. Hormones for control of livestock arthropods: evaluation of two juvenile hormone analogues applied to breeding materials in small plot tests in Nebraska and Florida for control of the stable fly. Environ. Entomol. 2: 69-72.

Wright, J. E., T. P. McGovern, R. Sarmiento, and M. Beroza. 1974. Juvenile hormone activity of substituted aryl 3,7-dimethyl-6-octenyl ethers in the stable fly and house fly. J. Insect. Physiol. 20: 423-427.

Wright. J. E., J. B. Campbell, and D. D. Oehler. 1974. Insect growth regulators: large plot field tests against the stable fly in cattle feedlots. J. Econ. Entomol. 67: 459-460.

The effectiveness of an insect growth regulator, Stauffer R-20458, was tested in a cattle feedlot in Keith County, NE. Insect growth regulators primarily affect the pupal stage of stable flies, preventing adult eclosion. Plots were sprayed with a 1% concentration of the IGR at $1L/m^2$. Sprayed areas were covered with screens to catch eclosing adults. Reduction in stable fly adults in the treated area was 74-95.6%. The IGR did not affect house flies in the area. The product was found to persist in the soil after 22 days. It was also tested in crusty soil, and there was only a 32% reduction in flies. The authors concluded that Stauffer R-20458 is more effective if used in moist substrate.

Wright, J. E., D. D. Oehler, and J. H. Johnson. 1975. Control of house fly and stable fly breeding in rhinoceros dung with an insect growth regulator used as a feed additive. J. Wildlife Dis. 11: 522-524.

The effectiveness of the insect growth regulator Thompson-Hayward 6040 was tested in rhinoceros dung against house flies and stable flies. Nineteen rhinoceroses were fed the IGR for 60 days, and the dung was collected daily. The dung was then seeded with house fly and stable fly eggs. TH 6040 was 100% effective at inhibiting adult emergence both at 1mg/kg and .1 mg/kg. The rhinoceroses showed no adverse effects from the IGR.

Wright, J. E., G. E. Spates, and M. Schwarz. 1976. Insect growth regulator AI3-36206. Biological activity against *Stomoxys calcitrans* and *Musca domestica* and its environmental stability. J. Econ. Entomol. 69: 79-82.

Wright. J. E., J. B. Campbell, D. D. Oehler, and J. Schugart. 1977. Stable fly: control with diflubenzuron applied to adult resting surfaces in cattle feedlots. Southwest. Entomol. 2: 155-158.

Wright, J. E, G. E. Spates, and S. E. Kunz. 1978. Diflubenzuron: ovicidal activity against adult stable flies exposed to treated surfaces or to treated animals. Southwest. Entomol. 3: 5-13.

Wright, M. 1945. Dragonflies predaceous on the stable fly: *Stomoxys calcitrans* (L.). Fla. Entomol. 28: 11-13.

Wright, M. 1945. Dragonflies predaceous on the stable fly: *Stomoxys calcitrans* (L.) (Continued). Fla. Entomol. 28: 31-32.

Wright, R. E. 1985. Arthropod pests of beef cattle on pasture or range land, pp.191-206. *In* R. E. Williams, R. D. Hall, A. B. Broce, and P. J. Scholl (eds.), Livestock entomology. John Wiley and Sons, Inc., New York, N. Y.

X, Y, Z

Yan, J., Q. Cheng, C. Li, and A. Aksoy. 2001. Molecular characterization of two serine proteases expressed in gut tissue of the African Trypanosome vector, *Glossina morsitans morsitans*, Insect Mol. Biol. 10: 47-56.

Yeoman, G. H., and B. C. Warren. 1970. Repellents for *Stomoxys calcitrans* (L.), the stable fly: techniques and a comparative laboratory assessment of butyl methylcinchoninate. Bull. Entomol. Res. 59: 563-577.

Yeruhan, I., and Y. Braverman. 1995. Skin lesions in dogs, horses, and calves caused by the stable fly *Stomoxys calcitrans* (L.) (Diptera: Muscidae). Rev. Med. Vet. Pays. Trop. 4: 347-349.

Young, S.Y., III, and R. S. Berger. 1969. Absorption and metabolism of fenthion in blood-sucking arthropods. J. Econ. Entomol. 62: 727-728.

Yuval, B. 2006. Mating systems of blood-feeding flies. Annu. Rev. Entomol. 51: 413-440.

Zacks, D. N., and E. R. Loew. 1989. Why is Alsynite fiber glass sheet attractive to stable flies? Optical and behavioral studies. Exp. Biol. 48: 215-222.

Zdarek, J., and J. Pospisil. 1965. Orientation of *Stomoxys calcitrans* L. towards warmth during ontogenesis in relations to various food conditions. Acta. Ent. Bohemoslov. 62: 421-427.

Zhu, J. J., X. -P. Zeng, D. Berkebile, H. -J. Du, Y. Tong, and K. Qian. 2009. Efficacy and safety of catnip (*Nepeta cataria*) as a novel filth fly repellent. Med. Vet. Entomol. 23: 209-216.

Zhu, J. J., C.A., Dunlap, R.W., Behle, D. Berkebile, and B. Wienhold. 2010. Repellency of a wax-based catnip-oil formulation against stable flies. J. Agri. Food Chem. 58: 12320–12326.

Zhu, J.J., Li, A.Y., Pritchard, S., Tangtrakulwanich, K., Baxendale, F.P., Brewer, G. 2011. Contact and fumigant toxicity of a botanical-based feeding deterrent of the stable fly, *Stomoxys calcitrans* (Diptera: Muscidae). J. Agri. Food Chem. 59: 10394-10400.

Zimmer, C. R., D. F Araújo, and P. B. Ribeiro. 2010. Fluctuation of symbovine muscids (Diptera: Muscidae) and their distribution on the bodies of dairy cattle in Capão do Leão, RS, Brazil. Ciéncia Rural, Santa Maria 40: 604-610. (In Portugese).

Zumpt, F. 1969. *Bruceomyia saegerae* nov. spec. from the Congo, with notes on the status of the genus (Diptera: Muscidae, Stomoxyinae). Rev. Entomol. Mozambique, Supp. #67, 8pp.

Zumpt, F. 1969. *Haematobia woofi* nov. spec. and the status of the genus Bdellia Enderlein (Diptera: Muscidae, Stomoxyinae). Rev. Entomol. Mozambique, Supp. #65, 11pp.

Zumpt, F. 1973. The Stomoxyine biting flies of the world. Gustav Fischer Verlag. Stuttgart, Germany.