

## WORLD-WIDE MOSQUITO CONTROL

Some Abstracts Of Interest To  
Mosquito Control Workers

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The review of contributions to information on mosquitoes presented by Dr. F. C. Bishopp and the author before the New Jersey Mosquito Extermination Association in March 1942 did not include all the sources available because of the limitations of space. The following references and brief abstracts not included in this review may be of interest to workers in the field of mosquito control and research who do not have ready access to extensive libraries on the subject.

Afridi, M. K., S. Abdul Majid, and Vidya Prasad. 1940. Observations on the range of dispersion of Culex fatigans and its infiltration into the Delhi urban area. Part 2. Journal of the Malaria Institute of India 3 (1):143-152. Calcutta. A significant increase in the numbers of C. fatigans Wied. was correlated with temperature but not with humidity in its invasion of the Delhi urban area. A rapid decline in numbers was associated with rises in the minimum and maximum temperatures above 72 and 100 degrees respectively.

Chang, T. L. 1940. The anopheline mosquitoes of Yunnan. Notes on their breeding habits and adult behaviour. Chinese Medical Journal 58 (2): 218-233. Peiping. Anopheles hyrcanus var. sinensis Wied. was the most common Anopheles of 17 species and varieties found in Yunnan. Over one-fourth of the adults and

larvae were of this anopheline. In cowsheds, pigsties, and adjoining dwellings over half the anophelines were of this species. A. annularis V.d.W., A. minimus Theo., and A. maculatus Theo., in the order given, were next in abundance.

Del Ponte, Eduardo. 1940. Three species of Anopheles new to the Misiones Territory. Revista del Instituto Bacteriologico del Departamento Nacional de Higiene 9 (4): 445-447. Buenos Aires. Anophelines not previously recorded in Misiones are: A. darlingi Root, a dangerous vector in various parts of South America, A. strodei Root, and A. lavei Galvas and De Amaral. Although species of the Nyssorhynchus group of the subgenus Nyssorhynchus have been considered unimportant in northern Argentina, this view may have to be revised as far as Misiones is concerned, reports the author.

Fonseca, Flavio da, and A. S. Ramos. 1940. Shannonesia nov. nom. Revista de Entomologia 11 (3): 966. Rio de Janeiro. Shannonesia is proposed for Shannoniella Fonseca and Ramos, a subgenus of Anopheles which is preoccupied by Shannoniella Townsend.

Gabaldon, A., P. Cova-Garcia, and A. Arevalo. 1940. Studies on anophelines. Series 1.3. Observations on the number of eggs, the salinity of the breeding places, and the length of the life cycle of three species of the oswaldoi subseries. Publicacion de la Division de Malaricologia. Publicacion No. 5. Caracas. A study made in Venezuela reports the number of eggs laid by Anopheles aquasalis Curry, A. oswaldi Peryassu, and A. rangeli Gabaldon, Cova-Garcia, and Lopez, the salinity of their breeding places, and the length of time they require to develop from egg to adult.

Gabaldon, A., J. A. Lopez, and M. Ochoa-Palacios. 1940. Studies on Anophelines. Series 1.4. Strange variations in daily counts of anophelines in stable traps. Publicaciones de la Division de Malariologia. Publicacion No. 5. Caracas. It was found that more anophelines were caught on the first night on which a stable trap was operated than on the second and more on the second than on the third, after which the number remained fairly constant.

Gabaldon, A., M. Ochoa-Palacios, and M. A. Perez-Vivas. 1940. Studies on anophelines. Series 1.5. Observations on catches in stable traps with animal bait. Publicaciones de la Division de Malariologia. Publicacion No. 5. Caracas. Stable traps with animal bait have been employed since 1927 in Venezuela, where they are useful in the districts in which Anopheles albimanus Wied. is the chief vector of malaria but not in those in which the vector is A. darlingi Root, as the latter species is not zoophilous and therefore is seldom taken in a trap.

Hu, Stephen M. K. 1940. The house-frequenting behaviour of Anopheles hyrcanus var. sinensis Wiedemann in the Shanghai Area, Part 3.--Indoor resting places. Lingnan Science Journal 19 (3):403-410. Canton. The greatest numbers of this anopheline were found in bedrooms and the fewest kitchens.

Ivanova, L. W. 1940. The influence of temperature on the behaviour of the Anopheles maculipennis larvae. Medical Parasitology and Parasitic Diseases 9 (1-2): 68-70. Moscow. A detailed account of laboratory observations in Moscow on the effect of temperature is presented on the movement of fourth-instar larvae of Anopheles maculipennis var. messeae Flin. and A. m. var atroparvus Van Thiel.

Lever, R. J. A. W. 1940. Entomological notes. 2. A mosquito hitherto not recorded in Fiji Dept. Agr., Agricultural Journal 11 (3): 82. The discovery of Aedes vigilax skuse in Fiji on the south coast of Viti Levu in March 1940 is reported for the first time.

Marks, Elizabeth N. 1940. Habits and chaetotaxy of the larva of Anopheles atratipes Skuse. Royal Society of Queensland Proceedings for 1939, 51 (1): 19-23, illus. Brisbane. Larvae of A. atratipes were collected from Midgee, Redcliffe, and Bribie Island, Queensland, in fresh water and were always associated with A. annulipes Wolk. and Culex annulirostris Skuse.

Staley, John. 1940. A species of mosquito (Diptera, Culicidae) new to Britain. Nature 146 (3693): 368. Third- and fourth-instar larvae of Theobaldia longiareolata Macq., which had not been previously recorded in Great Britain, were collected at Portsmouth from a small pool of slightly foul, saline water.

Vargas, Luis. 1940. The maxillary index in some American Anopheles. Revista del Instituto de Salubridad y Enfermedades Tropicales 1 (3): 275-289. The maxillary indices of females are given as follows: 14 for Anopheles maculipennis var aztecus Hfm., 11 for A. pseudopunctipennis Theo., 17 for A. albimanus Wied., 14 for A. quadrimaculatus Say in Mexico, and 13 for A. hectoris Giacinto from Guatemala. A. m. var. aztecus and A. quadrimaculatus are classed as zoophilous and the others as anthropophilous. Data on food preferences of A. quadrimaculatus, A. albimanus, and A. pseudopunctipennis are quoted from the literature confirming the validity of the classification based on maxillary indices.

Adamson, A. M. 1941. The geographical distribution of insect pests. *Tropical Agriculture* 18 (3): 42-47. Trinidad. Various problems relating to the spread, chiefly by human agency, of insects from one country to another are discussed. Increased speed in transportation, especially by aircraft, is believed to have been responsible for the introduction of Anopheles gambiae Giles into Brazil. Instances cited of the eradication of insects from invaded territory include the eradication of anopheline mosquitoes from Barbados.

Baxter, G. R. 1941. Preventive measures against mosquitoes. Part 2. *Fiji Journal of Agriculture* 12 (2): 41-45. A great variety of domestic breeding places in Suva, Fiji, are given and suggestions for controlling mosquitoes in nondomestic breeding places are discussed.

Chopra, R. N., D. N. Roy, and S. M. Ghosh, 1941. The insecticidal and larvicidal action of the essential oils of Ocimum basilicum (Linn.) and Ocimum sanctum (Linn.). *Journal of the Malaria Institute of India* 4 (1): 109-112. The results given indicate that both these plants possess some insecticidal action, especially in the case of mosquitoes, although it cannot be compared with that of pyrethrum. The high cost of processing the oil prohibits its practical use.

Clark, R. H. F., and M. A. Choudhury. 1941. Observations on Anopheles leucosphyrus in the Digboi area, upper Assam. *Journal of the Malaria Institute of India* 4 (1): 103-107. The habits and breeding places of this anopheline are briefly discussed. It is concluded that this species is a vector of importance in Digboi and its vicinity.

Covell, Lieut.-Colonel G. 1941. Anti-malaria operations in Delhi. Part 3. Journal of the Malaria Institute of India 4 (1): 1-14. Details are given of the permanent engineering works carried out in the Delhi urban area since 1936. The program has been completed with the exception of one major project. The general principle adopted was to prevent flooding from any source over the whole inhabited area and for at least half a mile beyond its limits. The area so protected is levelled and dressed down in such a way as to drain away local rainwater completely, or, where this cannot be effected, to direct it into one or more tanks especially excavated for the purpose.

Sen, P. 1941. Aquatic plants in the ecology of anopheline mosquitoes. Journal of the Malaria Institute of India 4 (1): 113-138. The relation of the breeding and emergence of 12 species of anophelines to the presence of various aquatic plants has been investigated in certain villages in lower Bengal, where malaria is endemic.

Senior White, R. 1941. Observations on the adult habits of Anopheles fluviatilis and Anopheles varuna. Journal of the Malaria Institute of India 4 (1): 57-62. Data are given for two areas, the Satpura Ranges in the Central Provinces and the neighborhood of Vizagapatana in Madras.

Shannon, R. C., and J. Hadjinicalao. 1941. Egg production of Greek anophelines in nature. Journal of Economic Entomology 34 (2):                      The number of eggs produced per anopheline female is primarily dependent upon the size of the adult and of the egg. It is closely given by the formula  $N = (0.834 W/S - 0.401)^3$  where N is the mean number of eggs, W the mean wing length, and S the mean egg length. These constants apply to A. superpictus Grassi, A. sacharovi

Favr., A. subalpinus Packer and Lewis, and A. typicus Meig. It is believed that further studies will demonstrate a class connection between differences in egg capacity and differences in the biology of the species.

Thomson, R. C. Muirhead. 1941. Studies on the behaviour of Anopheles minimus. Part 4. The composition of the water and the influence of organic pollution and silt. Journal of the Malaria Institute of India 4 (1): 83-102. The work was carried out in Tocklai in upper Assam and deals with the relation of A. minimus Theo. at all stages to its environment. The composition of the water in the breeding places of this anopheline was compared with that of water collected in places where this species seldom breeds. Gravid females failed to distinguish between water from the normal breeding place and water in which they do not usually breed, despite the difference in composition. In rivers, the natural controlling effects usually attributed to silt are more likely to be due to the simultaneous increase in current velocity.

Viswanathan, D. K. 1941. Experimental malaria control in a hyperendemic tea garden in upper Assam by the use of pyrocyde 20 as an insecticidal spray. Journal of the Malaria Institute of India 4 (1): 35-56. Weekly spraying with a mixture of pyrocyde 20 and kerosene brought about a definite reduction in the incidence of malaria in a hyperendemic tea garden. The malaria incidence in the period April to December was only 250 per mille in 1940 when spraying was in operation, as compared with 570 in 1939, and as against an estimated incidence of 480 per mille in 1940.