

A RECORD OF MOSQUITO SPECIES COLLECTED DURING A LARVAL SURVEY IN ARGENTINA AND URUGUAY (DIPTERA, CULICIDAE)¹

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ABSTRACT. Mosquito larvae were collected in 3 provinces in Argentina and 1, in Uruguay, to search for pathogens which might serve as biocontrol agents. In all, 411 larvae belonging to 19 species were mounted and identified. They include 7 new province records for Argentina and a new country record for Uruguay.

In Dec. 1984, three of us (JJB, EIH, JJG) collected mosquito larvae in the Provinces of Formosa, Mendoza and Misiones in Argentina and in the Province of Salto, Uruguay, in search of mosquito pathogens which might be useful in biological control. In fact, several organisms were encountered which are being investigated and will be the subject of another paper. Here we are recording the habitats sampled and the species of mosquitoes encountered which will further our understanding of the distribution and bionomics of the species collected.

We are reporting 19 species, 14 in Formosa, 5 in Mendoza, 2 in Misiones and 3 in Salto. A total of 411 larvae were collected, mounted and identified. They include 7 new province records for Argentina and 1 new country record for Uruguay. It is interesting to note that species collected during this study in Formosa were not found in Mendoza and vice versa. Some understanding of the geography of the Provinces where the collections were made will help to comprehend the faunal differences. The numbers in parentheses after each species name given below indicate the quantity of larvae collected.

Formosa Province is between 23 and 27°S latitude. It is in the Gran Chaco area, a vast alluvial plain having poor drainage. It is covered by forests, grasslands and marshes. Formosa City [26.07 S lat.; 58.14 W long.] with an elevation of about 200 m is a river port on the Paraguay River.

Six larval habitats, all within a short distance of Formosa City, were sampled with the following results. 1) From a grassy pond with fresh clear water in a broad, shallow ditch in full sun, next to a fallow rice field, were dipped: *Culex educator* Dyar and Knab (1) NEW PROVINCE RECORD, *Culex pilosus* (Dyar and Knab) (1) NEW PROVINCE RECORD, *Uranotaenia lowii* (1), *Psorophora* Sp. A (3). 2) In a lagoon with clear fresh water, much aquatic vegetation, including water hyacinth and cattails, in full sun were collected the following: *Aedeomyia squamipennis* Lynch Arribalzaga (10), *Anopheles albitarsis* Lynch Arribalzaga (74), *An. evansae* (Brethes) (33), *An. oswaldoi* (Peryassu) (4), *An. triannulatus* (Neiva and Pinto) (5), *Culex bastagarius* Dyar and Knab (15), *Cx. taeniopus* Dyar and Knab (1) NEW PROVINCE RECORD, *Psorophora* Sp. A (3). 3) In a watering trough in a horse corral in full sun containing turbid water only *Psorophora cingulata* (Fabricius) (14) NEW PROVINCE RECORD was taken. 4) In a stagnant ground pool in the same horse corral under trees with turbid water and no vegetation were found *Ps. cingulata* (14) and *Culex mollis* Dyar and Knab (1) NEW PROVINCE RECORD. 5) In an open septic tank in full sun and 6) in a treehole 1 m above ground level, about 45 cm in diameter and with dark brown water only *Culex quinque-*

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fasciatus Say (40) and (12), respectively, was retrieved.

Mendoza Province is between 33 and 38°S latitude. It is a foothill province adjacent to the high Andes Mountains. Much of it is arid or semiarid with an extensive saline basin in the east into which several rivers flow. Agriculture in the province is supported by irrigation schemes. Mosquitoes were collected in the environs of Mendoza City [32.48 S lat.; 68.52 W long.] at an elevation of 761 m.

Three larval habitats were sampled. Because of its dry climate, salt and other minerals are common in the soil and although salinity was not measured, it is assumed that sites 2 and 3 below were saline since larvae dipped from them are known to breed in brackish water (Belkin et al. 1968, Bachmann and Casal 1962a, b). 1) From rainwater pool among brushy shrubs with algae in full sun were taken *Aedes fluviatilis* (Lutz) (1) NEW PROVINCE RECORD, *Ae. scapularis* (Rondoni) (18), *Ae. serratus* (Theobald) (18) NEW PROVINCE RECORD. 2) From pools in aqueduct with brownish water devoid of vegetation in full sun were dipped *Culex brethesi* Dyar (17) and *Cx. tramazayguesi* Duret (44). 3) From a roadside ditch with vegetation in full sun was collected *Cx. brethesi* (6).

Misiones Province is located between 25 and 29°S latitude and forms a narrow corridor extending northeast between Paraguay and Brazil. A remarkable landmark is the "Cataratas de Iguazu", one of the world's most impressive water falls. It is located at the tricorner where Brazil, Paraguay and Argentina meet. Mosquito collections were made in the nearby town of Iguazu [25.3 S lat.; 54.2 W long.].

Discarded tires under shade in an urban area yielded *Ae. fluviatilis* (22) and *Culex quinquefasciatus* Say (26).

Salto Province, Uruguay, located between 30 and 32°S latitude, has rolling hills of the "Cuchilla de Haedo" with rocky soil which makes the region well suited for cattle and sheep ranches. Two collections were made north of the capital city, Salto, near a hot springs resort area called "Termas de Arapey" [30.5 S lat.; 57.3 W long.].

1) In a quiet pool at the edge of a stream in full sun were dipped *An. albitarsis* (4) and *An. evansae* (6); 2) From a small lagoon containing

mineral water, grassy vegetation in partial shade were collected *Cx. brethesi* (3) NEW COUNTRY RECORD.

COMMENTS ON SEVERAL SPECIES

Anopheles albitarsis: The *albitarsis* subgroup of the *Albitarsis* group of *Nyssorhynchus* consists of *An. albitarsis*, *An. marajoara* Galvao and Damasceno (Linthicum 1988) and a newly described form, *An. deaneorum* Rosa-Freitas (Rosa-Freitas 1989). Distributionally, *An. albitarsis* is confined to the southern temperate region of South America, *An. marajoara* [formerly *allopha* Peryassu] extends from Brazil north to Honduras (Linthicum 1988) and *deaneorum* is at present known only from the States of Rondônia and Acre in western Brazil.

Culex quinquefasciatus: Mitchell et al. (1984) showed that true *Cx. pipiens* Linnaeus was present in southern Argentina. They reviewed what was known about the distribution of the *pipiens* complex in the country. Also, Brewer et al. (1987) reported that both true *pipiens* and *quinquefasciatus* occur in the Province of Cordoba as well as the hybrid, i.e., infrasubspecies *Culex pallens* Coquillett.

We have detected some differences in the specimens from Formosa and those from Iguazu, based on the measurement of the siphon index (SI). Brogdon (1981) supported the use of the siphon index as a morphological tool for separating *Cx. quinquefasciatus* [SI=3.05-3.67] from *Cx. pipiens* [SI=4.2-4.75] while their hybrids, *Cx. pallens* had intermediate values [SI=3.72-4.19]. Measurements of 40 larvae from Formosa showed an average SI of 3.42 with a standard deviation of 0.28, while the SI of the 26 larvae from Iguazu, Misiones Province, averaged 4.04 with a standard deviation of 0.23. Based on Brogdon's concept we speculate that the population in Formosa is true *quinquefasciatus* while the Misiones population represents the hybrids, i.e., *pallens*.

Psorophora Sp. No. A: In Argentina the larvae of 6 species of *Psorophora* are unknown. Among the collections in this study we encountered 6 specimens which appear to be similar to the larva of *Psorophora* (*Grabhamia*) *discolor*

(Coquillett) with large sinuous antennae and hook-like seta 2-S. Differences are easily observed, however. The Argentine Sp. A has an average siphon index of 4.18, there are 11-13 pecten spines and the apical 8 spines are long, thin and simple; while in *Ps. discolor* larvae the siphon index averaged 2.98, there were 6 pecten spines and they usually have 2-3 basal spinules, but sometimes as many as 5. They undoubtedly are the larvae of one of the 3 species of subgenus *Grabhamia* with unknown immatures (Mitchell and Darsie 1985). Individual rearings will be necessary to determine their identity.

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