Mem. Inst. Oswaldo Cruz, Rio de Janeiro, Vol. *84*, Supl. IV, 287-289 1989

SEASONAL DISTRIBUTION OF A RELATIVELY RARE AND A RELATIVELY COMMON SPECIES OF *THECOMYIA* AT BELÉM, PARÁ, BRAZIL (DIPTERA: SCIOMYZIDAE)

LLOYD KNUTSON & CLAUDIO JOSÉ BARROS DE CARVALHO*

Biological Control of Weeds Laboratory – Europe, Agricultural Research Service, USDA, American Embassy-AGRIC, APO NY 09794, USA *Departamento de Zoologia, Universidade Federal do Paraná, Caixa Postal 19020, 81504 Curitiba, PR, Brasil

O gênero neotropical Thecomyia *(Sciomyzidae) consiste de quatro espécies descritas e onze ainda não descritas (Steyskal & Knutson em preparação), sendo a maioria não muito comum. As espécies são muito próximas e grande número delas somente pode ser separado com base na genitália do macho. Somente é conhecida a biologia de uma espécie,* T. limbata *(Wiedemann), que, preferentemente, preda moluscos aquáticos (Abercrombie & Berg, 1975). A análise de registros de coletas de espécies relativamente raras e relativamente comuns de* Thecomyia *(172 especimens do Museu Goeldi coletados em Mocambo, Belém, Pará, Brasil) proporcionam informações sobre a distribuição sazonal de espécies tropicais e sua relativa abundância. Deste material 160 especimens pertenciam à* T. longicornis *Perty e 12 à* Thecomyia *sp. n. A primeira foi registrada durante todos os meses do ano, mas a espécie nova somente durante junho e dezembro, sugerindo esta última uma população de adultos anual bimodal.*

Palavras-chave: Distribuição sazonal – *Thecomyia* – Sciomyzidae – Diptera

The Neotropical genus *Thecomyia* (Sciomyzidae) consists of 4 described species and 11 undescribed species (Steyskal & Knutson in preparation), most of which are uncommon. The species are closely related and most can be separated only on the basis of the male genitalia. The biology of only one species, *T. limbata* (Wiedemann), a rather typical predator of aquatic snails, is known (Abercrombie& Berg, 1975). *Thecomyia limbata* and *T. lateralis* Walker are, relatively, the most common species. *Thecomyia limbata* is known to us from 117 specimens taken at 16 localities in Brazil, Guyana, Paraguay, and Venezuela, and *T. lateralis* is known to us from 25 specimens from 8 localities in Brazil, Paraguay, and Peru. Most other species are known only from the type-localities and a few other locations. Analysis of collection records (172 specimens of *Thecomyia* in the Museu Goeldi collected at Mocambo, Belém, Pará, Brazil) for one relatively uncommon and one relatively common species of *Thecomyia* provides information on the seasonal distributions of tropical species and their relative abundance.

Identification of this material revealed the presence of 160 specimens of *T. longicornis* Perty and 12 specimens of an undescribed species (Fig. 1). The specimens were collected on 49 dates between January and December in the years 1969, 1970, 1971, 1973, 1977, 1978, and 1979 (most of them during 1977 and 1978) by 19 collectors. *Thecomyia longicornis* was collected on 47 dates during all months, but *Thecomyia* n. sp. was collected only on June 20, 1978, and December 26, 1979. No other Sciomyzidae from Mocambo were present in the material borrowed from the Museu Goeldi.

Is was possible to make precise identification of the flies. For each of 49 collection dates, the genitalia of at least one male of each species were prepared and examined (where males were available, i.e., 37 of the 49 collection dates). The adults are also distinct on external characters. *Thecomyia longicornis* has one pair of fronto-orbital bristles and the frons is not grooved along the eye margin, but *Thecomyia* n. sp. lacks fronto-orbital bristles and the frons is deeply grooved along the eye margin.

The number of separate dates of collection (49) and the number of collectors (19), provide for a relatively unbiased sampling. However,

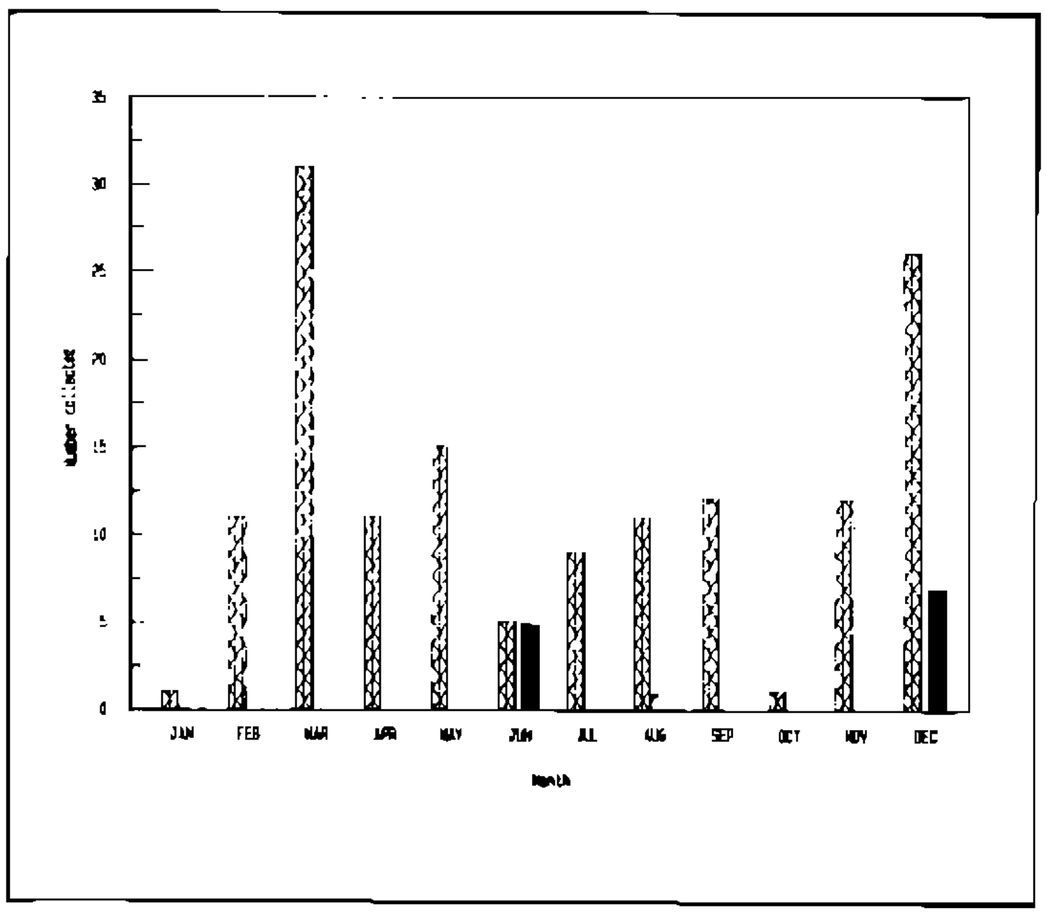

Fig. 1: seasonal distribution of *Thecomyia longicornis* (hatched bars) and *Thecomyia* n. sp. (solid bars) during 1969-1971, 1973, 1977-1979.

we do not know the precise microhabitat at the collecting sites, and of course such factors as time of day, temperature, etc. could have resulted in the righly disproportionate number of the two species collected. One of the collectors, Ana Harada, described the collecting area to us as follows:

Mocambo is a small (about one-quarter square mile) area of protected tropical rain forest very near the city of Belém. There are some clearings in the forest, and although there are no ponds or marshes at the site, there are some nearby (the collector did not recall there being any natural or manmade streams present). Staff and students at the Museu Goeldi frequently collected at the site, usually between 8:30 a.m. and 12:00 noon. Malaise traps were maintained on a permanent basis in the forest, and collecting was done with sweep nets in the open areas.

Thecomyia longicornis was taken only four times in the malaise trap located in the forest, about 20 meters from the margin (21.iii.1978, 27.vi.1978, 28.xi.1978 and 29.xii,1979). Apparently most of the *Thecomyia* were collected with sweep nets, and the fact that the wings of many specimens were stuck together may indicate that they were collected fairly early during the morning when the vegetation was wet.

Berg, et al. (1982) described and analyzed the phenology of Sciomyzidae, based mainly on information from temperate parts of the

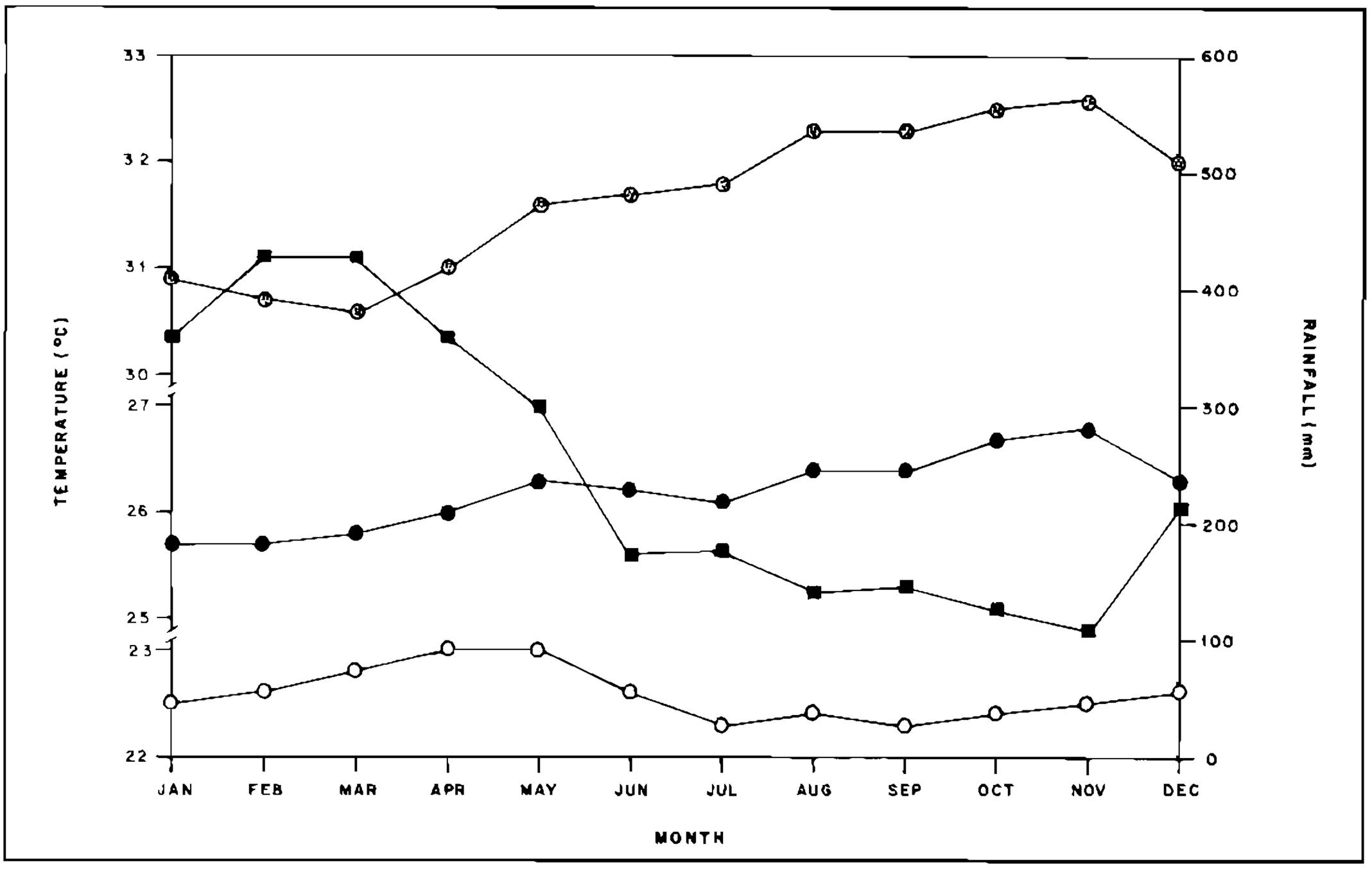

Fig. 2: average (line with solid circle), minimum (line with open circle) and maximum (line with dotted circle) monthly temperature and average rainfall (line with solid square) at Belém, Pará, Brazil, 1969-1979.

Northern Hemisphere, and recognized five patterns of phenology. Little is known about the seasonal behavior of tropical Sciomyzidae, and it has been assumed that tropical species breed continuously, as do most temperate area species during the warmer weather. Verbeke (1963) provided collection records of 11 species of *Sepedon, Sepedonella, Sepedoninus,* and *Sepedomyia* from the Garamba National Park, Democratic Republic of the Congo, and compared the records with the rainfall distribution of the area. His records show that adult Sciomyzidae are present throughout the year, but are most abundant during the dry season. In Fig. 2, we have shown the average monthly rainfall and average, minimum and maximum monthly temperatures for Belém for the years in which the flies were collected (1969 to 1979). The average monthly relative humidity ranged from 80 to 89%.

The following can be concluded:

1. At Belém, *Thecomyia longicornis* has been collected in all months of the year but *Thecomyia* n. sp. has been taken only during June and December. This may indicate that *T. longicornis* breeds continuously through the year, but that *Thecomyia* n. sp. has bimodal annual adult populations.
2. Rather intensive collecting of Sciomyzidae at one site should not be assumed to result in the capture of all species present, as some species may have biological attributes limiting their presence (at least as adults) to rather short, distinct periods of time.

ACKNOWLEDGMENTS

To Therezinha Pimentel, Museu Goeldi, for sending the material for study; Ana Harada for information on the collecting site; EMBRAPA, Belém for climatological information; and the Federal University of Paraná for providing support and facilities.

REFERENCES

ABERCROMBIE, J. & BERG, C. O., 1975. Natural history of *Thecomya limbata* (Diptera: Sciomyzidae) from Brazil. *Proc. Entomol. Soc. Wash. 77:* 355-368.

BERG, C. O.; FOOTE, B. A.; KNUTSON, L.; BARNES, J. K.; ARNOLD, S. L. & VALLEY, K; 1982. Adaptive differences in phenology in sciomyzid flies, p. 15-36. In W. N. Mathis & F. C. Thompson, eds., *Recent Advances in Dipteran Systematics: Commemorative Volume in Honor of Curtis W. Sabrosky.* Mem. Entomol. Soc. Wash. 10. 227 p.

VERBEKE, J. 1963. Sciomyzidae Sepedoninae (Diptera: Brachycera). *Explor. Parc Natn. Garamba Miss. H. de Saeger, 39:* 51-86.