MAYFLIES TAKEN AT THE ARCHBOLD BIOLOGICAL STATION, HIGHLANDS COUNTY, FLORIDA[1]

S. W. FROST
The Pennsylvania State University
University Park, Pennsylvania

Florida is relatively poor in species of mayflies. Approximately 500 are known from North America, but according to Berner (1950), only 41 have been taken in Florida. They are even less abundant in the southern areas of the state. Five species have been taken in light traps operated at the Archbold Biological Station. *Caenis diminuta* Walker and *Callibaetis pretiosus* Banks were frequent visitors to the light traps. *Stenonema interpunctatum* (Say), *Callibaetis floridanus* Banks, and *Centroptilum viridocularis* Berner were rare catches. *Hexagenia munda orlando* Traver may occur in this area but has never been taken in light traps. It is a more seasonal species and emerges during June, July, and August, a period when the light traps were not operated. The distribution and habits of the Florida mayflies were summarized by Berner (1950).

All the material in this discussion was taken in light traps from the first of November to the end of April in the years 1958 through 1967. There was some lack of uniformity in making collections caused by the absence of the observer during short periods. On the whole, however, the traps were operated quite regularly. The common species were identified by Isaac Aurelio, a student working with the Ephemeroptera at the Pennsylvania State University. All rarer species have been identified by Lewis Berner.

Caenis diminuta Walker is the most widely distributed species of mayfly in Florida. Adults emerge during all months of the year but are generally more abundant during the summer months. The nymphs live in ditches and small ponds which abound in the area where the light traps were operated. An interesting habit of this species may have a bearing on the light trap catches. According to Berner they are one of the shortest-lived of all mayflies. Laboratory reared adults remained active for about 4 hours. The catches during various periods of operation of the traps must therefore have coincided more or less with emergence. Emergence is reported to occur late in the afternoon or at night. This is well illustrated by the fact that most of the adults were taken between the hours of 6 and 8 PM, depending upon the time of sunset. Details of the collections of this species have been described by Frost (1963). They occurred in noticeable numbers during the winter of 1958-59, and in phenomenal numbers during the winter of 1959-60. In subsequent winters this species has been barely noticeable.

This is a small species with a single pair of wings. When large numbers are present in the killing jar they cling to one another in great masses making it difficult to separate and identify other small insects.

---

[1]Authorized for publication June 19, 1967, as paper No. 3270 in the journal series of the Pennsylvania Agricultural Experiment Station.

Callibaetis pretiosus Banks was the only other species that was taken in sufficient numbers to allow definite conclusions. It is a medium-sized species. The males have clear wings, while the females have dark markings along the anterior margins of the front wings, making it easy to separate the sexes. This species emerges throughout the year in Florida, although the season is somewhat shortened in the more northern environs. The nymphs inhabit ponds and ditches and the subimagos emerge in the late afternoon. The males die within 2 hours after emergence, which may account for the smaller numbers taken in light traps. The females are reported to live for 9 or 10 days. Notes have been taken on yearly abundance, monthly occurrence, and nightly catches, and some information has been obtained concerning the relative abundance of the sexes. Table 1 clearly indicates that this species is somewhat abundant during November, that the numbers fall off considerably during January, and become more abundant again as the season progresses.

TABLE 1.—YEARLY AND MONTHLY COLLECTIONS OF *Callibaetis pretiosus* BANKS.*

Number nights traps Operated	Year	Nov.	Dec.	Jan.	Feb.	March	April	Total
138	1958-59	81	50	124	233	423		911
148	1959-60	318	120	88	98	217		841
41	1961			18	326	475		819
116	1966			82	158	299	518	1057
120	1967			78	59	304	73	514
563		399	170	390	874	1718	591	4142

*Blanks indicate that no records were made during these periods. Only 25 specimens were taken the first 7 days of May 1967.

Table 2 presents data concerning periodic nightly collections of *Callibaetis pretiosus* during four winters. Some nights hourly determinations were not made, hence the totals for Tables 1 and 2 are not the same. Data for 1961 are not included in Table 2 because the records were very irregular. However, during January, February, and March of that winter, 303 specimens were taken between 6 and 10 PM and 522 specimens between 2 and 7 AM. The catches were lowest during the early evening from 6 to 8 PM and increased in numbers as the night progressed, reaching the maximum between 10 PM and 7 AM.

Table 3 clearly illustrates that the collections of females were always greater than the males. This might be expected, as the females are reported to live 9 to 10 days, while the males live for only several hours.

TABLE 2.—PERIODIC LIGHT TRAP COLLECTIONS OF *Callibaetis pretiosus* FOR THE WINTERS OF 1958-59, 1959-60, 1966, AND 1967.

Month	Number nights counts made	6-8 P.M.	8-10 P.M.	10 P.M.-2 A.M.	2-7 A.M.	Totals
Nov.	26	45	65	86	122	318
Dec.	31	22	20	41	37	120
Jan.	90	23	47	49	84	203
Feb.	104	55	72	148	272	547
March	107	119	322	453	349	1243
April	60	92	148	187	225	652
Totals	418	356	674	964	1089	3083

Table 3 also shows that both males and females were more abundant during the period 10 PM to 7 AM. Data taken on four nights during 1958-59 reveal 21 males and 31 females taken from 6 to 10 PM and 35 males and 76 females between 10 PM and 7 AM.

TABLE 3.—PERIODIC COLLECTIONS OF SEXES OF *Callibaetis pretiosus* BANKS TAKEN DURING THE WINTERS OF 1959-60 AND 1967.*

Month	Number nights count made	6-8 P.M.		8-10 P.M.		10 P.M.-2 A.M.		2-7 A.M.		Totals	
		♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
Jan.	59	6	9	5	53	3	20	16	23	30	85
Feb.	56	13	9	6	7	12	61	51	28	82	105
March	61	24	45	59	132	48	142	49	107	180	426
April	60	16	60	29	126	55	149	57	105	157	440
Totals	236	59	123	99	318	118	372	173	263	449	1076

*During March, 43 subimagos were taken, all males. During April, 67 subimagos were taken, 13 males and 54 females.

Stenonema interpunctatum (Say). Little is known concerning this species. Apparently it inhabits any stream or flowing water, especially where logs or rubbish occur permitting the nymphs to hide. Such habitats are not common in the area where the traps were operated. Most of the

nearby ditches had sandy bottoms with no stones but considerable vegetation. Nymphs have been collected from the sandy-bottomed lakes. These occur in the vicinity of the Archbold Biological Station. The adults are said to be phototropic and the subimagos more so. This species was not a common visitor at the light traps during the months they were operated. Only two specimens were taken March 6 and 7.

Callibaetis floridanus Banks. Only one female subimago was taken January 8.

Centroptilum viridocularis Berner. Two females were taken March 13 and 30.

Literature Cited

Berner, L. 1950. The Mayflies of Florida. University of Florida Press 4(4) :1-267.

Frost, S. W. 1963. Winter Insect Light Trapping at the Archbold Biological Station, Florida. Fla. Entomol. 46:24-27.