

MORE LARVAL FOODPLANTS FROM TEXAS

by ROY O. KENDALL

This is a partial list of larval foodplants from Texas which I have found during the past five seasons. Other larval foodplants from this State will be announced when botanical determinations have been completed. Unless otherwise specifically stated, all records herein are from Bexar County, Texas. Descriptions of new life histories resulting from these findings will appear in a later publication. The species of Lepidoptera have been arranged alphabetically under two headings (1) St. Augustine Grass, and (2) Larval Foodplants Other Than Grasses. At the end of this paper will be found a Chart of Larval Foodplants arranged alphabetically by plant family and genus.

1. ST. AUGUSTINE GRASS

St. Augustine Grass, *Stenotaphrum secundatum* Kuntze, may be found in the yards of urbanites throughout the Gulf States. My own yard is no exception. Aside from providing the home-owner with a desirable lawn, this grass is an important larval foodplant for certain species of Lepidoptera. Listed here are ten species whose larvæ I have found will readily eat it. There must be many others.

Amblyscirtes celia Skinner
Amblyscirtes nysa Edwards
Atalopedes campestris Boisduval
Cisseps fulvicollis Hübner
Euptychia rubricata Edwards
Hylephila phyleus Drury
Lerema accius J. E. Smith
Lerodea eufala Edwards
Lerodea julia H. A. Freeman
Wallengrenia otho J. E. Smith

We shall now treat each of these species separately providing more detail. The larval foodplant referred to in each instance is *Stenotaphrum secundatum* unless otherwise named.

Amblyscirtes celia. On 29 April 1956 a female was observed ovipositing in nature; more than 20 additional eggs were deposited after capture. Another gravid female taken 6 September 1958 deposited about 15 eggs. In each instance immature stages were reared to maturity.

Amblyscirtes nysa. On 1 April 1956 a female was seen ovipositing in nature. The west side of my house where the early afternoon sun shown upon the grass was the spot chosen. More than 25 additional eggs were deposited in captivity. Another female taken 18 March 1957 deposited 7 eggs. Still a

third female taken 9 June 1958 deposited only 3 eggs. Lastly, a female taken 2 April 1959 laid a quantity of eggs. Adults, *ex ovis*, were obtained in each instance.

Atalopedes campestris. On 5 June 1956 a female was observed ovipositing in nature; this specimen deposited more than 70 additional eggs after capture. On 4 August 1956 another female was seen ovipositing; it laid 23 more eggs in the breeding cage. On 11 August 1956 a third was seen depositing eggs, but this one first deposited a single egg on *Cynodon dactylon* Pers. then moving a few feet away deposited another egg on *Stenotaphrum secundatum*. During the following three summers, 1957, 1958 and 1959 this species was observed depositing eggs on both these grasses without any particular preference. Larvæ were reared to maturity in the first two instances cited.

Ciseps fulvicollis. Eggs were obtained from a female taken *in copula* 12 November 1958, Calcasieu Parish, Louisiana. Larvæ feed readily on *S. secundatum*. Two successive broods were reared through on the same foodplant. Although this little moth is found in my own backyard where it is attracted to fluorescent blacklight, previous attempts to rear it had not been made.

Euptychia rubricata. A gravid female deposited more than 50 eggs in the breeding cage on 7 May 1956. This species does not bond its eggs to the foodplant but simply drops them on the ground near it. Larvæ ate with equal zest both *Stenotaphrum secundatum* and *Cynodon dactylon*. Again on 11 May 1958 a female readily oviposited in captivity. This time the larvæ were fed only *S. secundatum*. Adults were obtained, *ex ovis*, in both instances.

Hylephila phyleus. On 26 June 1955 a female was seen ovipositing in nature; more than 15 additional eggs were laid in the breeding cage. Other females taken 7 July 1956 and 5 August 1956 deposited a quantity of eggs in captivity. Larvæ were reared to maturity in each instance.

Lerema accius. On 3 July 1955 a female was observed depositing eggs in nature; 10 additional eggs were deposited after capture. Other females taken 11 June 1956, 1 October 1956 and 18 August 1958 deposited eggs in captivity. In each instance adults, *ex ovis*, were obtained.

Lerodea eufala. Females have not been observed, in nature, to deposit eggs. On five occasions however, females have readily oviposited for me in captivity and in each instance the larvæ were reared to maturity. Eggs were obtained from different females on the following dates: 7 June 1956 more than 20; 29 June 1956, 18; 14 July 1956, 16; 26 May 1957 a pair taken *in copula*, female deposited a quantity of eggs; 27 September 1958, a few.

Lerodea julia. A female taken 28 September 1958 deposited 4 eggs on grass from the the spot of capture. On 30 September following, this same female deposited 5 more eggs on *S. secundatum*. Ten more eggs were deposited by it on 1 October 1958. Larvæ readily ate *S. secundatum* and matured in due course.

Wallengrenia otho. A female taken 24 May 1958 deposited 15 eggs on grass from the spot of capture in Comal County, Texas. Larvæ feed readily on *S. secundatum* and were reared to maturity. The case-bearing habit of this

species is very interesting. I had placed conventional facial tissues in the container to facilitate cleaning. Much to my surprise these larvæ cut circular discs from the paper, folded them over to form cases which they carried until outgrown at which time a larger one was fashioned from the same material. Pupation took place within the paper case, and adults emerged in due course.

2. LARVAL FOODPLANTS OTHER THAN GRASSES

Antigonus pulverulenta Felder. Four larvæ were found 6 May 1957 feeding on *Wissadula holosericea* (Sheele) Garcke. A pupa found 11 May 1957 emerged 15 May. Now I knew where to find this very interesting little skipper. From 19 to 31 May 1957 thirty-two eggs, 135 larvæ, and 27 pupæ were found on this foodplant. Also, 46 eggs were obtained from caged females. During the month of June 1957 three eggs and 157 larvæ were found; 102 eggs were obtained from caged females. Two larvæ were found 12 October 1957. During the month of April 1958 three eggs and 6 larvæ were found. In September 1958 one egg and one pupa were found. By this time I had the larval foodplant growing in my own yard and it has been a pleasure seeing this skipper around my flowers ever since.

The larva lives in a shelter fashioned from the leaf by cutting and folding it over. This is the first task of the newly hatched larva. As it grows the shelter is enlarged accordingly. Finally, the larva pupates inside the shelter. Sometimes pupation takes place between two leaves which have been pulled together and held there by strands of silk. Notwithstanding the care this larva takes in protecting itself, all too often it falls prey to parasitism. More about this and the immature stadiums in a separate article.

Brephidium exilis Boisduval. Although this species has been taken many times during the past four years it wasn't until 4 October 1959 that my wife and I found it swarming at a spot along an old road where it crossed a dry creek. It was late afternoon and skies were cloudy so we didn't remain very long. We noticed that the greatest activity was centered around a very obnoxious weed, the identity of which was not known at the time. Several courting males were observed. Thirty specimens were taken within about 15 minutes. On 10 October 1959 we returned to the spot. It was about noon. Adults were even more abundant than a week earlier. We decided to sit on the ground near the "weed" and carefully observe what was going on. At the point of becoming dizzy watching these little butterflies dance around and through this weed, *Chenopodium album* Linnæus, a female alighted, walked up and down a spike of buds a few times and then very rapidly laid an egg and was off again. I had no sooner announced my observations when my wife said she too had observed the same thing happen at the plant over which she maintained surveillance. Several other females were seen to oviposit, and a number of larvæ were found before we departed an hour later. The larvæ feed primarily on the buds and blossoms of this plant. Larvæ blend perfectly with the mealy buds. We soon discovered the easiest way to find them was

to follow ants which were tending the larvæ for the honey-dew. Anyone not familiar with this larval foodplant will recognize it by the odor of stale urine as he walks through or brushes against the plant.

Celotes nessus Edwards. Four larvæ of this species were found on *Abutilion incanum* (Link) Sweet 24 September 1956 in Medina County, Texas. The first adult from these larvæ emerged 25 November 1956. All other records are Bexar County, Texas. On 14 March 1957 a gravid female was placed in a breeding cage containing *A. incanum* and *Malvaviscus drummondii* Torr. & Gray. Eggs were deposited on *A. incanum* only. Eggs were found on this foodplant in nature on 17-19 March 1957. Emergence of adults, *ex ovis*, follows: 16-20 May 1957 (20); 21-28 May 1957 (11); 1-10 June 1957 (9); and 18-21 June 1957 (2). Again on 12 October 1958 larvæ were found in nature. On 28 May 1959 two females were seen ovipositing in nature on this plant; both were taken and placed in breeding cages. Each deposited more than 15 eggs. Immature stages were reared to maturity.

Chlosyne lacinia adjutrix Scudder. My first experience with larvæ of this species was on 2 July 1955. It was found feeding on the Common Sunflower, *Helianthus annuus* L. It wasn't long before I was to learn that it would feed on plants other than *Helianthus*. A single larva was found 4 March 1956 feeding on *Verbesina virginica* L. in Comal County, Texas. It was reared to maturity. The 1957 collecting season brought swarms of this species to south-central Texas. It was 2 June 1957 that I found larvæ feeding on both *H. annuus* and *Ambrosia aptera* DC. in Medina County, Texas. Thousands of larvæ were to be found along the Medina River where the larval foodplants grow. Again on 21 July 1957 larvæ were found feeding on *A. aptera* in Kendall County, Texas. These Giant Ragweeds were growing in sandy loam along the banks of the Guadalupe River. At the foot of these plants were numerous ant-lion (Neuroptera) pits. Caterpillars were so plentiful that not infrequently one would be crowded off the plant only to disappear in one of the burrows where hungry ant-lions awaited. During the 1958 and 1959 collecting seasons adults were relatively scarce. A fairly large number of adults and larvæ were found 17 October 1959 in Atiscosa County, Texas. Here the larvæ were feeding on *Helianthus cucumerifolius* Torr. & Gray growing along the roadside and in uncultivated fields.

Golias (Zerene) cesonia Stoll. A female was observed ovipositing on *Parosela pogonathera* (A. Gray) Vail. 28 September 1958. For two years I had searched in vain for the local foodplant of this species and now that search was ended. Only one egg was deposited after capture. Another female was observed ovipositing on this plant in Medina County, Texas, 23 February 1959. Two more females were seen ovipositing on this plant 8 March 1959, and a third ovipositing on *Parosela frutescens* (A. Gray) Vail. the same day. Two of these females were taken and on 13 March 1959 obliged by depositing a quantity of eggs. Adults were obtained, *ex ovis*, but not before Microgasters had taken a heavy toll. I made the mistake of leaving the larvæ unprotected for a few days. On 2 May 1959 two larvæ were found in nature;

both proved to be parasitized by Microgasters. This undoubtedly accounts for the relative scarcity of this species in Bexar and surrounding counties. Larvæ were successfully reared to maturity on each of the foodplants named.

Copæodes minima Edwards. A female taken 20 June 1956 deposited a number of eggs on *Cynodon dactylon* Pers. Nine adults emerged, *ex ovis*, between 5-11 August 1956. On 10 March 1957 and 2 September 1958 females were observed ovipositing on *C. dactylon* in nature.

Erynnis funeralis Scudder & Burgess. On 28 March 1959 a female was observed ovipositing in nature on *Vicia texana* (Torr. & Gray) Small. A careful examination of other like plants in a 100-yard area along a road disclosed many eggs. *Medicago hispida* Gaertn. growing with the *V. texana* revealed no eggs. Another female taken 29 March 1959 readily deposited eggs in the breeding cage. On 23 May 1959 two larvæ were found on *Indigofera leptosepala* Nutt. We also found eggs and larvæ on this plant in Kerr County, Texas, 25 May 1959. Larvæ were reared to maturity in each instance.

Hemiargus isola Reakirt. On 23 May 1959 larvæ were found on *Indigofera leptosepala* Nutt. I observed a female ovipositing on the buds of this plant in Kerr County, Texas 25 May 1959. Careful examination of other plants revealed a number of larvæ feeding on the buds and blossoms of this plant. Additional eggs and larvæ were found at this same spot on 3 and 18 July 1959. Eggs were also found on this plant in Kendall County, Texas 19 July 1959. It is interesting to note that the larvæ tend toward cannibalism. Adults were obtained from these immature stages.

Lephelisca nemesis Edwards. On 11 August 1956 Mrs. ROBERT S. BLAIR JR. brought me some larvæ which she had found feeding on *Clematis henryi* Rehd. After rearing them through it was a pleasure to find they were *L. nemesis*. A female was placed in a container with *Clematis drummondii* Torr. & Gray on 1 October 1956; more than 50 eggs were deposited. Larvæ readily ate the plant and matured in due course. Adults emerged as follows: 29 between 10-20 November 1956 and 14 between 21-29 November 1956. Again on 8 July 1957 a female deposited 30 eggs on this foodplant. A third female deposited 51 eggs 10 August 1957. In each instance adults were obtained, *ex ovis*. *C. drummondii* is a native plant found growing on every fence row in this area. It is here the collector should look to find adults and immature stages alike.

Leptotes cassius striatus Edwards. On 2 August 1958 a female was seen flying back and forth over cultivated bean vines, *Phaseolus vulgaris* L. which had been planted to attract *Urbanus proteus* L. females. Its movement and course of flight was a touch-and-go action. After observing this flight pattern for about one minute, I netted the specimen. About four inches of the end of a runner containing blossom buds was held inside the lower end of the net with the captured female. Within a few seconds she very carefully placed an egg between the buds in such manner that it was not perceptible to the naked eye. Two eggs were deposited while confined in this manner. A careful search of the bean vines revealed not only other eggs but small larvæ feeding on the buds and blossoms. The first adult emerged, *ex larva*, 21 August 1958.

Texola clada Hewitson. On 12 July 1959 a female was caged with a sprig of *Siphonoglossa pilosella* (Ness.) Torr. This plant grows in abundance in the area where more than 300 specimens were taken in 1957. This species has been found in the same area on repeated visits since that time. This female deposited six eggs on the twig provided two days after capture. Another female deposited two clusters of eggs on this plant on 26 July 1959. Larvæ fed on this plant without hesitation and matured in due course.

Melitæa theona bolli Edwards. This species has been seen flying in very limited numbers during May, June and July for the past three seasons. It wasn't until this season the larval foodplant was known. On 30 May 1959 WILLIAM A. PLUMER gave me a number of larvæ which he had found feeding on *Leucophyllum texanum* Benth. The following day four pupæ were formed, and on 8 June 1959 a pair were found *in copula, ex larvis*. Although 75 eggs were deposited, only one egg hatched and this larva died. Embryos failed to develop completely in the other eggs.

Nathalis iole Boisduval. On 30 March 1958 a female was observed depositing eggs on *Thelesperma trifidum* (Poir.) Britton. On 15 March 1959 a female deposited eggs on this plant in captivity. Adults were obtained from eggs in each instance.

Phyciodes texana Edwards. On 24 May 1956 Mrs. ROBERT S. BLAIR, JR. brought me a few larvæ which had been feeding on one of her cultivated flowers, the name of which she could not remember. It wasn't until long after the larvæ had perished that the plant was determined to be *Jacobinia carnea* Nichols. On 9 June 1956 she gave me two pupæ, the larvæ of which had been transformed to *Beloperone guttata* Brandegee; one of them emerged this same day. On 9 August 1959 four females were taken in Comal County, Texas. They were confined in glass jars with *Siphonoglossa pilosella* (Ness) Tor. and *Beloperone guttata*. The following day four clusters of eggs were deposited one of which was on *B. guttata*. Additional eggs were deposited on each of the following four days. Larvæ were fed *S. pilosella*, *B. guttata*, *Ruellia occidentalis* A. Gray, and *Ruellia drummondiana* (Ness.) A. Gray which they readily ate without showing preference for any one plant. Eggs from these females were preserved, together with 165 pupæ and an equal number of larvæ, and 479 adults were papered.

Phyciodes vesta Edwards. 25 October 1958 was the day this species was first observed ovipositing on *Siphonoglossa pilosella*. On 21 March 1959 a caged female deposited a quantity of eggs on this same plant. Eggs are laid side by side in clusters. Again, another female deposited 61 eggs in captivity on 27 March 1959. Three females were observed ovipositing in nature on this plant in Kerr County, Texas, on 18 July 1959. A good number of eggs were found on other like plants in this county. A swarm of adults were seen in Comal County, Texas, on 9 August 1959. They were feeding on the blossoms of and courting over a large patch of this plant. One female taken at the spot deposited a quantity of eggs. Adults were obtained, *ex ovis*, in each instance cited.

CHART OF LARVAL FOODPLANTS

PLANT FAMILY	PLANT SPECIES	LEPIDOPTERA	
Acanthaceæ	<i>Beloperone guttata</i>	<i>Phyciodes texana</i>	
	<i>Jacobinia carnea</i>	<i>Phyciodes texana</i>	
	<i>Ruellia drummondiana, occidentalis</i>	<i>Phyciodes texana</i>	
	<i>Siphonoglossa pilosella</i>	<i>Phyciodes texana</i> <i>Phyciodes vesta</i> <i>Texola elada</i>	
Asteraceæ	<i>Helianthus annuus, cucumerifolius</i>	<i>Chlosyne l. adjutrix</i>	
	<i>Thelesperma trifidum</i>	<i>Nathalis iole</i>	
	<i>Verbesina virginica</i>	<i>Chlosyne l. adjutrix</i>	
Ambrosiaceæ	<i>Ambrosia aptera</i>	<i>Chlosyne l. adjutrix</i>	
Chenopodiaceæ	<i>Chenopodium album</i>	<i>Brephidium exilis</i>	
Gramineæ	<i>Cynodon dactylon</i>	<i>Euptychia rubricata</i> <i>Copæodes minima</i> <i>Amblyscirtes celia</i> <i>Amblyscirtes nysa</i> <i>Atalopedes campestris</i> <i>Euptychia rubricata</i> <i>Hylephila phyleus</i> <i>Lerema accius</i> <i>Lerodea eufala</i> <i>Lerodea julia</i> <i>Wallengrenia otho</i> <i>Cisseps fulvicollis</i>	
	<i>Dolicholus texensis</i>	<i>Thorybes pylades</i>	
	<i>Indigofera leptosepala</i>	<i>Hemiargus isola</i> <i>Erynnis funeralis</i>	
	<i>Parosela pogonathera, frutescens</i>	<i>Colias (Zerene) cesonia</i>	
	<i>Phaseolus vulgaris</i>	<i>Leptotes c. striatus</i>	
	<i>Vicia texana</i>	<i>Erynnis funeralis</i>	
	Malvaceæ	<i>Abutilon incanum</i>	<i>Celotes nessus</i>
		<i>Wissadula holosericea</i>	<i>Antigonon pulverulenta</i>
	Ranunculaceæ	<i>Clematis henryi, drummondii</i>	<i>Lephelisca nemesis</i>
	Scrophulariaceæ	<i>Antirrhinum antirrhiniflorum</i>	<i>Precis lavinia cænia</i>
		<i>Leucophyllum texanum</i>	<i>Melitæa theona bolli</i>
Zygophyllaceæ	<i>Porlieria angustifolia</i>	<i>Kricogonia lyside</i>	

Precis lavinia cænia Cramer. Five larvæ were found 31 May 1957 feeding on *Antirrhinum antirrhiniflorum* (Poir.) Small. This is the climbing snapdragon that beautifies fence rows and bushes throughout this area. On 7 July 1957 five more larvæ were found on this plant. In each instance adults were obtained, *ex larvis*.

Kricogonia lyside Latreille. While on a field collecting trip with E. M. KINCH of Fort Worth, Texas, 31 March 1957, we stopped at a spot in Atascosa County, Texas, along U. S. Highway 281. Several females were seen ovipositing on *Porlieria angustifolia* (Engelm) A. Gray. These egg-laying females had chosen plants well inside fenced property clearly marked "Posted Keep Out". Never having made a practice of climbing or crawling through fences I simply observed what was going on and waited somewhat impatiently until one came within reach of my net. A single egg was recovered. It hatched and was lost before we returned home a week later. At this same spot a larva was found wandering across the road. It pupated the following day and on 7 April 1957 a male *K. lyside* emerged. Up to the date of this writing it hasn't been convenient for me to return to this spot, but I hope to do so during the 1960 collecting season.

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that crepuscular species are more likely to be attracted to light than are the day-flying species. Further, the writer has collected four nymphalids, five pierids and one lycaenid at light — all of these normally considered to be diurnal in their habits; however, as pointed out earlier, a few species of *Eurema* (Pieridae) show crepuscular tendencies. The evidence thus far shows more diurnal species being attracted to light than the so-called crepuscular species.

The writer has never taken *Papilio demoleus*, *Precis orithya*, *Danaus chrysippus*, *Gangara thyrasis* and *Talicauda nyseus* at light — species reported at light in India by other writers — but these records also support the theory that more diurnal species are attracted to light than are the crepuscular species. But, as Mr. Donahue has so well stated in this *Journal of the Lepidopterists' Society*, "Further observations and experimentation will undoubtedly aid in the interpretation of this interesting phenomenon" (Vol. 16: p. 135).

Since only certain species of moths are attracted to light and many others seem to have no attraction to light, it does not seem unreasonable to conclude that a few species of butterflies also may be attracted to light. The occurrence of so many species at light — and occasionally by the score — can scarcely always be due to some accidental disturbance of the butterflies when at rest.

In conclusion, it should be noted that at least twenty-two species of butterflies, representing seven of the major families, have been collected at light in India. The writer has collected seventeen species of butterflies at light in India representing five major families.

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CORRECTIONS

On p.227 and 228 respectively, of vol. 13, no. 4, of the *Journal*, *Precis lavinia coenia* should be ascribed to Hübner and *Kricogonia lyside* to Godart. I am indebted to Mr. Cyril F. dos Passos for calling my attention to these errors. On p. 73 vol. 15, no. 1, of the *Journal*, the last sentence, second paragraph should read "overwinter in the larval stage".

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