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# LEPIDOPTERAN FOODPLANT RECORDS FROM TEXAS

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OVER THE PAST SEVERAL YEARS, a number of foodplant records of Texas lepidoptera have been recorded. Observations have been concentrated in Brownsville, Cameron Co., and Austin, Travis County, Texas. Foodplant information for a particular species is needed from various localities at different times of the year if spatial and temporal variations in foodplant utilization are to be determined and understood (see e.g. Neck, 1973; Singer, 1971). This annotated list is provided for those who may work on any of the following species in the future. Plant nomenclature follows that of Correll and Johnston (1971) or Bailey (1949).

## NYMPHALIDAE

*Chlosyne nycteis* (Doubleday). Larvae of the silver checkerspot have been found on only one plant in central Texas—frostweed, *Verbesina virginica* L. (Compositae). In laboratory cages, adults which were given a choice between common sunflower, *Helianthus annuus* L., and cowpen daisy, *Verbesina encelioides* (Cav.) Gray, chose the latter. *H. annuus* has been reported as a *nycteis* foodplant in Kansas (Walker, 1936); in central Texas *nycteis* has never been found on sunflower which is a major foodplant of *Chlosyne lacinia* var. *adjutrix* (Neck, 1973).

*Cynthia cardui* (L.). The painted lady is known to feed on innumerable plants of many families; most important are Malvaceae, Compositae and Leguminosae (Williams, 1970). Field (1971:44) states that "foodplants of the larvae are principally members of the Compositae and most especially the various thistles." In central Texas larvae are commonly found on Texas thistle, *Cirsium texanum* Buckl. (Compositae), but larvae were also discovered on silver-leaf sunflower, *Helianthus argophyllous* T. & G. (Compositae) on 27 April 1970. This sunflower record

was observed in the transplant garden of the Brackenridge Field Laboratory of the University of Texas at Austin. *H. argophyllous* does not occur naturally at this site; however, larval nests identical to those of *cardui* have been seen on this plant in native habitat, 16 km south of Luling, Caldwell Co. No *Helianthus* has previously been recorded as a larval foodplant for *cardui* (Field, 1974:44). Adults have been seen flying around the related cultivated plant, artichoke, *Cynara scolymus* L. (16 May 1973). No eggs or larvae were found on this plant. Possibly significant is the visual simularity of these three plants—all have a gray-green appearance.

*Phyciodes tharos* (Drury). The pearl crescent utilizes Texas aster, *Aster texanus* Burgess (Compositae), in central Texas. Eggs are preferentially laid on the basal leaves as opposed to the leaves of flowering stalks which appear in the fall. This species has previously been reported to utilize *Aster prealtus* Poiret in Gonzales Co. (ca. 100 km SE of Austin) (see Kendall, 1964). Larvae of *Chlosyne harrisii* (Scudder), refused to eat leaves of this plant (3rd instar larvae supplied by V. G. Dethier). *C. harrisii* is native to the northeastern United States where it feeds on *Doellingeria umbellata* (Mill.) Nees (see Dethier, 1959), a plant placed in *Aster* by some authorities (Correll and Johnston, 1970).

*Precis lavinia coenia* (Hubner). This buckeye has been reared from common ruellia, *Ruellia nudiflora* (Gray) Urban (Acanthaceae) in Austin, Travis Co.

## HELICONIIDAE

*Agraulis vanillae* L. The Gulf fritillary feeds on many species of passionvines (Passifloraceae). In Travis County, it has been found feeding on the three native species—*P. lutea* L., *P. tenuiloba* Engelm. (see Parks, 1935, for previous report on *P. tenuiloba* elsewhere) and *P. affinis* Engelm.—in addition to two introduced species—*P. caerulea* L. (native to Brazil—Bailey, 1949) and *P. foetida* L. var. *gossypifolia* (Hamilt.) Mast. (native to south Texas—Correll and Johnston, 1970). These latter two plants support greater larval populations (at least on a per plant basis) than the former three, probably because these two exhibit much greater biomass levels. A larva feeding on *tenuiloba,* particularly, is likely to strip an individual plant, necessitating a ground search for additional foodplant material much as larvae of *Battus philenor* (L.) search for additional *Ariso-*

*lochia longflora* Engelm. and Gray (see Kendall, 1964). *A. vanillae* faces periodic competition from *Heliconius charitonius vasquezae* (Comstock and Brown) and *Dryas julia moderata* (Stichel) in certain years, e.g. 1968, when these species establish breeding populations in central Texas. The Gulf fritillary may have been considerably less common before the introduction of these two non-native Passiflora. Much *P. foetida* was killed back by the severe weather of the 1972-73 winter; recovery of plants has occurred since that time. *P. caerulea* is relatively unaffected by cold weather, retaining green foliage throughout the winter.

## DANAIDAE

*Danaus plexippus plexippus* L. In the area of Brownsville, Cameron Co., larvae of the monarch are commonly found on the introduced bloodflower, *Asclepias curassivica* L., which is native to tropical America. Larvae of the monarch are rarely found in the Travis Co. area. However, on 4 October 1971, two monarch larvae were found on milkweed vine, *Matelea reticulata* (Gray) Woods (also Asclepiadaceae).

*Danaus gillippus strigosus* (Bates). The queen in the Brownsville area also utilizes *A. curassivica.* In fact, when the monarch is present in this area (normally only spring and fall but see Neck, 1976), larvae of both species may be found on the same plant. Larval foodplants of the queen in the Travis Co. area are unknown to this writer.

## LIBYTHEIDAE

*Libytheana bachmanii larvata* Strecker. The snout butterfly is a well-known feeder on various *Celtis* (Ulmaceae) throughout North America. Kendall and Glick (1972) reported granjeno or spiny hackberry, *C. pallida* Torr., is the preferred foodplant in south Texas. This *Celtis* is uncommon in central Texas. Personal observations of larvae of *larvata* have included Texas sugarberry, *C. laevigata* Willd., and hybrid *C. laevigata* X *reticulata* at Austin, Travis, Co. Although no larvae have been found on "pure" net-leaf hackberry, *C. reticulata* Torr., this plant is assumed to be acceptable as a larval foodplant for *larvata.* Breeding in central Texas is at a very low level, except during periodic epidemic-like migrations; even in such situations, larvae are not common.

## SPHINGIDAE

*Erinnyis ello* (L.). Larvae of the ello sphinx are quite common on poinsettia, *Euphorbia pulcherrima* Willd. (Euphorbiaceae) in Brownsville. Previous records of this plant as a larval foodplant are known from California (Comstock and Dammers, 1938), Florida (Kimball, 1965:63) and Jamaica (Curio, 1970). Poinsettia could well be a native foodplant in tropical Mexico and Central America. Foodplant records for this species are concentrated in the Euphodbiaceae but also include papaya (Caricaceae: *Carica papaya* L.) in Florida (Kimball, 1965). The only known record of a native larval foodplant for *E. ello* in Texas is *Bumelia angustifolia* Nutt. (Sapotaceae) by Rickard (1975).

*Erinnyis obscura* (Fabricius). This species is much less common than the above species, but larvae of both species have been found on the same poinsettia plant at the same time (especially summer 1961). Foodplant records from Florida and Jamaica (Kimball, 1965; Dyar, 1901) include several members of the Asclepiadaceae and papaya (Caricaceae). These three families known to include larval foodplants of *E. obscura* are unrelated, belonging to different orders (Lawrence, 1951). However, all species involved have a milky sap. The evolution of milky sap in these families was independently derived, but some common or similar chemical characteristic(s) of these saps may be an attractive substance for adult females of *E. obscura* which are searching for oviposition sites.

*Hyles lineata* (Fabricius). In Travis Co. larvae of the striped sphinx are known to feed on scarlet spiderling, *Boerhavia coccinea* Mill. and common four o'clock, *Mirabilis jalapa* L. Both plants are members of the Nyctaginaceae. The former is native to central Texas; the latter is naturalized in central Texas (native to tropical America).

*Manduca* spp. Both *M. sexta* (Linnaeus) and *M. quinquemaculata* (Haworth) are found commonly on tomato, *Solanum lycopersicon* L., and occasionally on potato, *Solanum tuberosum* L., in Travis Co. *M. sexta* has been found on silverleaf nightshade, *Solanum eleagnifolium* Cav. in Travis Co. at a number of times (May-November). *M. quinquemaculata* has been found on *eleagnifolium* in Jeff Davis Co. on State Highway 17 between Balmorrhea and Ft. Davis (Oct. 1974).

## SATURNIIDAE

*Automeris io* (Fabricius). The io moth in central Texas most commonly feeds on Texas sugarberry, *Celtis laevigata* Willd. (Ulmaceae). Several times mature larvae of this species have been found feeding on Indian corn, *Zea mays* L. (Gramineae). Larvae are believed to have shifted from *Celtis* trees in the near vicinity. However, as this apparent shift has been observed several times, such foodplant crossover is significant enough to be reported. In Austin, I have collected larvae on turk's cap, *Malvaviscus arboreus* Cav. var. *drummondii* (T. & G.) Schery (Malvaceae). Larvae of *A. io* have been collected on tepeguaje or giant leadtree, *Leucaena pulverulenta* (Schlect.) Benth. (Leguminosae) in Brownsville, Cameron Co.

## ARCTIIDAE

*Hyphantria cunea* Drury. Larvae of the fall webworm have been reported to feed on an incredibly long and diverse list of plants—"nearly all deciduous shrubs and trees" (Snodgrass, 1922). In Austin, this species is most commonly found on pecan, *Carya illinoinensis* (Wang.) K. Koch (Juglandaceae), in both residential and natural areas. Other recorded foodplants in residential areas include the following: Arizona ash, *Fraxinus velutina* Torr. (Oleaceae); sycamore, *Platanus occidentalis* L. (Platanaceae); red mulberry, *Morus rubra* L. (Moraceae); Texas sugarberry, *Celtis laevigata* Willd. (Ulmaceae); and peach, *Prunus persica* (L.) (Rosaceae). Trees attacked in natural areas have included rough-leaf dogweed, *Cornus drummondii* C. A. Mey (Cornaceae), and possumhaw, or deciduous yaupon, *Ilex decidua* Walt. (Aquifoliaceae). All of the above records represent oviposition by adult females as these plants supported the webs characteristic of the younger larvae of this species. Larvae of the final instar disperse from the feeding web and feed more or less individually. Final instar larvae have been observed feeding on spinach, *Spinacia olearacea* L. (Chenopodiaceae).

## NOCTUIDAE

*Basilodes catharops* Dyar. The yellowish (with black markings) larvae of this species become very common on cow-pen daisy, *Verbesina encelioides* (Cav.) Gray (Compositae), each fall in Travis Co.

*Heliothis virescens* (F.) The tobacco budworm, a major agricultural pest, is known to feed on a number of agricultural crops as well as many native members of the Texas flora (Graham, et al., 1972). Larvae have been found on velvetleaf, *Wissadula holosericea* (Scheele) (Malvaceae) in Austin, Travis Co. This plant has previously been reported as a foodplant in Tamaulipas, Mexico (Lukefahr in Graham and Robertson, 1970), but it has not previously been reported for Texas populations of *virescens.*

*Schinia* spp. Species of this genus are intimately associated with their foodplant. Not only does the plant serve as a larval food source (larvae burrow into the immature fruit), but also a resting spot for the adult which is color-matched to the inflorescence (see Hardwick, 1958). *Schinia voluupia* (Fitch) is found associated with *Gaillardia pulchella* Foug. (Compositae). *Schinia siren* Stkr. has been found associated with *Verbesina encelioides* (Cav.) Gray (Compositae). Adults of both species have been reared *ex* larva from the respective foodplant.

## MEGALOPYGIDAE

*Megalopyge opercularis* Sm. & Abb. The puss caterpillar or Mexican asp has been found most commonly in Austin on Texas sugarberry, *Celtis laevigata* Willd. (Ulmaceae), but larvae have also been found on cedar elm, *Ulmus crassifolia* Nutt. (Ulmaceae); garden geranium, *Pelargonium hortorum* Bailey (Geraniaceae); and common rose, *Rosa* sp. (Rosaceae). In Brownsville, the most common native foodplant is also *C. laevigata,* but other native species are utilized, e.g. Mexican ash, *Fraxinus berlandieriana* A. DC. (Oleaceae). The most widely utilized ornamental is Natal plum, *Carissa grandiflora* A. DC. (Apocynaceae—native to south Africa), but larvae also infest other ornamental species, e.g. Chinese tallow, *Sapium sebiferum* Roxb. (Euphorbiaceae—native to China and Japan); Japanese honeysuckle, *Lonicera japonica* Thumb. (Caprifoliaceae—native to east Asia); and esperanza, *Tecoma stans* (L.) Juss. (Bignoniaceae—native to Trans-Pecos Texas).

## PYRALIDAE

*Sylepta obscuralis* (Led.). Larvae of this species have been found (July 1969) on lotus, *Nelumbo nucifera* Gaertn. (Nymepheaceae). Immature larvae feed on the blade of the leaf but mature larvae feed inside the central leaf petiole.

## TORTRICIDAE

*Archips rileyanus* (Grote). The gregarious larvae of this species spin a web which encloses the terminal leaves of Texas buckeye, *Aesculus pavia* L. (Hippocastanaceae). Larvae have been seen at Pedernales Falls State Park, Blanco Co. (12 March 1972) and Landa Park, New Braunfels, Comal Co. (March 1976).

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## REFERENCES CITED

BAILEY, L. H. 1949. *Manual of cultivated plants.* Rev. ed. MacMillian Co., New York.

COMSTOCK, J. A. and C. M. DAMMERS. 1938. Studies in the metamorphosis of six California moths. *Bull. So. Cal. Acad. Sci.* 37:105-128.

CORRELL, D. S. and M. C. JOHNSTON. 1970. *Manual of the vascular plants of Texas.* Texas Research Foundation. Renner, Texas.

CURIO, E. 1970. Die messung des selektionswertes einer verhaltensweise. *Verhand. Deut. Ges.* 64:348-352.

DETHIER, V. G. 1959. Foodplant distribution and larval dispersal as factors affecting insect populations. *Can. Ent.* 91:581-596.

DYAR, H. G. 1901. Notes on the winter lepidoptera of Lake Worth, Florida. *Proc. Ent. Soc. Wash.* 4:446-485.

FIELD, W. D. 1971. Butterflies of the genus *Vanessa* and of the resurrected genera *Bassaria* and *Cynthia* (Lepidoptera: Nymphalidae). *Smith. Contri. Zool.* 84:105 pp.

GRAHAM, H. M., N. S. HERNANDEZ, JR. and J. R. Llanes. 1972. The role of host plants in the dynamics of populations of *Heliothis* spp. *Envir. Ent.* 1:424-431.

GRAHAM, H. M. and O. T. ROBERTSON. 1970. Host plants of *Heliothis virescens* and *H. zea* (Lepidoptera: Noctuidae) in the Lower Rio Grande Valley, Texas. *Ann. Ent. Soc. Amer.* 63:1261-1265.

HARDWICK, D. F. 1958. Taxonomy, life-history, and habits of the elliptoid-eyed species of *Schinia* (Lepidoptera: Noctuidae), with notes on the Heliothidinae. *Can. Ent. Suppl.* 6:116 pp.

HOLLAND, W. J. 1903. *The moth book.* Doubleday, Page and Co., New York.

KENDALL, R. O. 1964. Larval foodplants for twenty-six species of Rhopalocera (Papilionoidea) from Texas. *J. Lep. Soc.* 18:129-157.

KENDALL, R. O. and P. A. GLICK. 1972. Rhopalocera collected at night in Texas. *J. Res. Lep.* 10:273-283.

KIMBALL, C. P. 1965. Lepidoptera of Florida. *Arthropods of Florida* 1:363 pp. Fla. Dept. of Agr., Gainesville.

LAWRENCE, G. H. M. 1951. *Taxonomy of vascular plants.* Macmillian Co., New York.

NECK, R. W. 1973. Foodplant ecology of the butterfly *Chlosyne lacinia* (Geyer) (Nymphalidae). I. Larval foodplants. *J. Lep. Soc.* 27:22-33.

———. 1976. Summer monarchs (*Danaus plexippus*) in south Texas (Danaidae). *J. Lep. Soc.* 30:

RICKARD, M. A. 1975. Life history notes on three Texas Sphingidae. *J. Lep. Soc.* 29:167.

SINGER, M. C. 1971. Evolution of food-plant preference in the butterfly *Euphydryas editha. Evolution* 25:383-389.

SNODGRASS, R. E. 1922. The fall webworm. *Smithson. Annual Rept.* 1921:395-414.

WALKER, F. H., JR. 1936. Observations on sunflower insects in Kansas. *J. Kansas Ent. Soc.* 9:16-25.

WILLIAMS, C. B. 1970. The migrations of the painted lady butterfly, *Vanessa cardui* (Nymphalidae), with special reference to North America. *J. Lep. Soc.* 24:157-175.