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AN ANNOTATED LIST OF THE BUTTERFLIES AND SKIPPERS OF LAWRENCE COUNTY, OHIO

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ABSTRACT. Until recently, only 23 species of butterflies and skippers were known from Lawrence County. In 1983–1984 a study was conducted to increase our knowledge of these insects in the county. As a result, 60 additional species were recorded. One species, *Euchloe olympia*, was recorded in Ohio for the first time. For each species listed, the following data are provided: relative abundance, habitat and nectar sources, extreme dates, and localities. Species recorded prior to this study are accompanied by historic collection data. A list of 21 additional species which should be looked for in Lawrence County is included. Twenty-four species are not known from the adjacent counties in Kentucky or West Virginia. Thirteen species showed differences in abundance between 1983 and 1984 and potential reasons are discussed. Curves are also provided to illustrate relative species diversity during the study. The county possesses characteristics more typical of regions to the south of Ohio and the Appalachian uplands, and several resident species of butterflies and skippers reflect these aspects. A list of species found in Lawrence County, Ohio allows for a more complete understanding of the butterfly and skipper fauna of southern Ohio, northeastern Kentucky and southwestern West Virginia.

Two lists have dealt with the butterflies and skippers of southeastern Ohio (Parshall, 1983; Shuey, 1983). Although Vinton and Athens counties have received attention, other counties in the region have virtually been ignored. The natural history of Lawrence County is poorly known, and Albrecht (1982) recorded only 23 species of butterflies and skippers from the county. The southernmost county in Ohio, Lawrence County is relatively inaccessible and remains insufficiently understood. In 1983 a study was conducted to increase our knowledge of the butterfly and skipper fauna of Lawrence County. As a result, 41 additional species were recorded. The study was continued in 1984 and 19 previously unrecorded species were collected, bringing the total number of species known from the county to 83. One species, *Euchloe olympia* (W. H. Edwards), represents a state record and brings the total number of species recorded from Ohio to 137 (Riddlebarger, 1984). The present paper describes the results of this study and provides historic collection data on the butterflies and skippers of Lawrence County, Ohio.

Lawrence County is situated on the Ohio River, bordering the states of Kentucky and West Virginia (Fig. 1). The average annual temperature of the county is approximately 13°C (Gordon, 1969). The average annual precipitation ranges from 102–112 cm with snowfall measuring approximately 38–64 cm (Collins, 1975). Frost dates for spring (dates after which there is a 50% or less chance that temperatures will fall to 0°C or lower) are 20–25 April, and for fall (dates by which there is a 50% chance that the first 0°C temperature will have occurred) are 15–20 October (Collins, 1975). Thick river fogs may contribute to a mod-

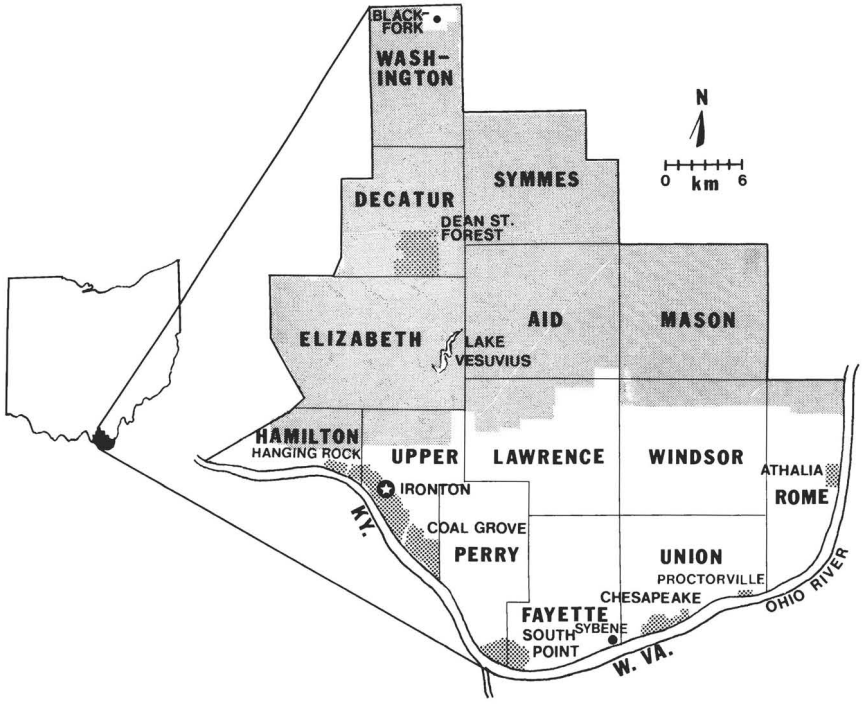

FIG. 1. The location, political divisions, cities, and collecting localities of Lawrence County, Ohio. Land within the boundaries of Wayne National Forest is shaded.

eration in climate immediately along the Ohio River (Cusick & Silberhorn, 1977).

Lawrence County lies within the Unglaciated Allegheny Plateau Region of Ohio. Relative relief ranges from 91–152 m (Gordon, 1969). Underlain by a bedrock of Pennsylvanian shale and sandstone, the original vegetation of the county at the time of the earliest land surveys consisted of mixed oak (*Quercus* spp.) forests with limited tracts of mixed mesophytic and bottomland hardwood forests (Fig. 2). Mixed oak forests covered knobs and ridgetops and were composed of a chestnut oak (*Quercus montana* Willd.)–chestnut (*Castanea dentata* (Marsh) Borkh.) forest type (Gordon, 1969). Yellow pines (*Pinus rigida* Mill., *Pinus virginiana* Mill., and *Pinus echinata* Mill.) occurred locally (Cusick & Silberhorn, 1977). Mixed mesophytic forests greatly varied in composition and were dominated mostly by broad-leaved species, with no single species comprising a large fraction of the dominants (Gordon, 1966). This forest type was found on less well drained north and northeast facing slopes (Cusick & Silberhorn, 1977). Bottomland hardwood forests were variable in composition and occurred in older

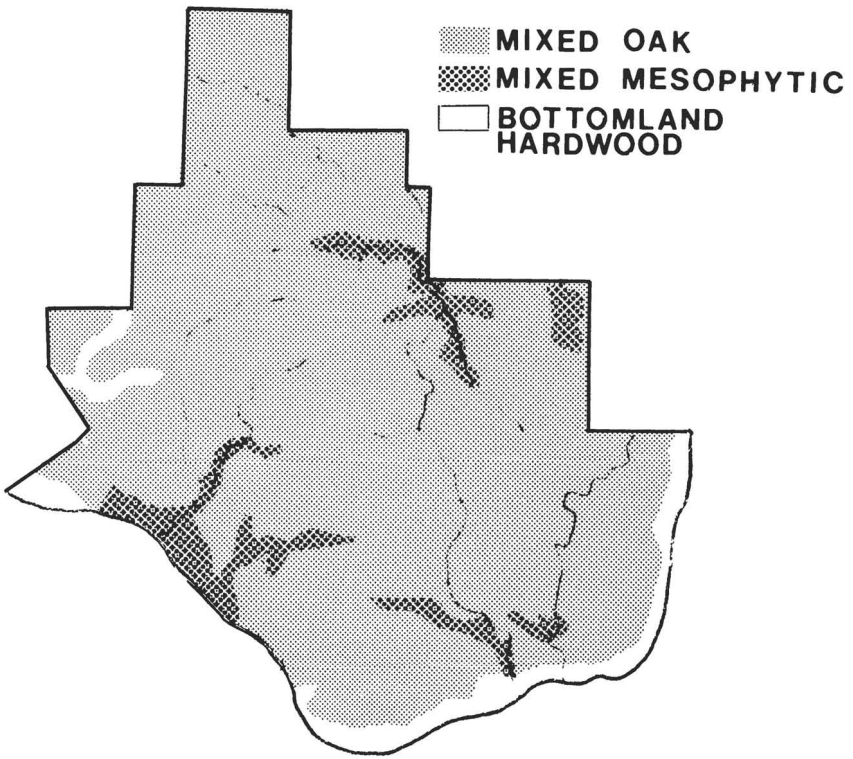

FIG. 2. The original vegetation of Lawrence County (adapted from Gordon, 1966).

valleys and on recent alluvium and terraces of major streams (Gordon, 1966). Intense lumbering during the 19th century, developmental pressures, and agricultural activities have significantly altered and fragmented these forests. Consequently, no pristine woodland communities remain. Today, the county is more than 70% forested and composed of oak–hickory (*Carya* sp.), Virginia pine (*Pinus virginiana*)–pitch pine (*Pinus rigida*), and oak–pine forest types (Fig. 3).

Dean State Forest and the Ironton District of Wayne National Forest presently contain the most extensive tracts of mature secondary woodland in Lawrence County. Here, controlled clear-cutting and strip mining have created many habitats of various successional stages. The federally administered Lake Vesuvius Recreation Area possesses a man-made lake surrounded by a forest with a rich floral composition. Elsewhere in the county private woodlots of secondary forest, cropland, pastures, and fallow fields are the principal types of vegetational communities (Fig. 4). Wetlands are few, but several buttonbush, *Cephalanthus occidentalis* L., and cat-tail, *Typha* sp., marshes and thinly

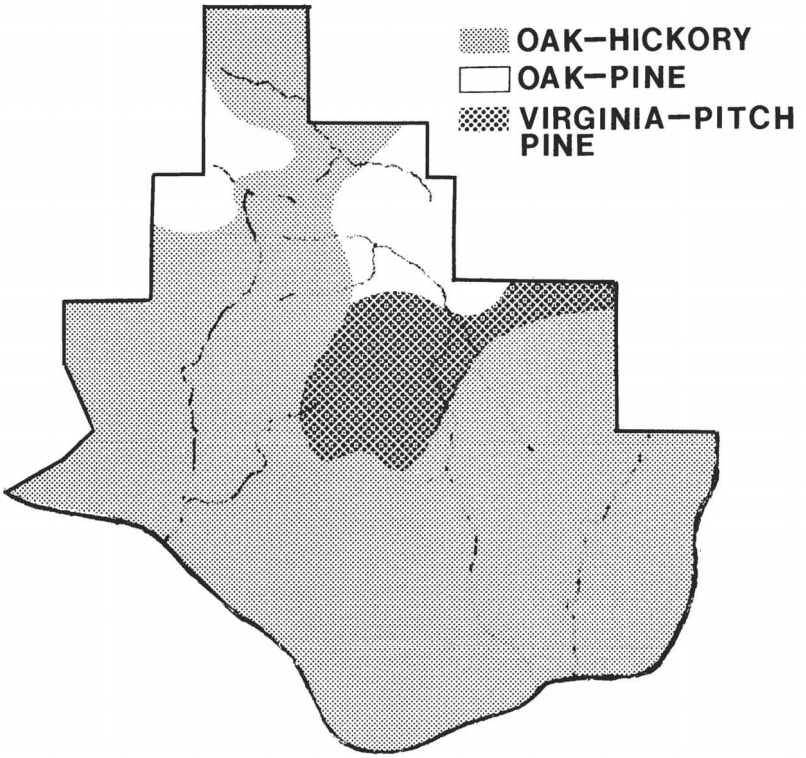

FIG. 3. The current major forest types of Lawrence County (adapted from Ohio Dept. of Nat. Res., 1984).

wooded swamps of willow, *Salix* spp., and river birch, *Betula nigra* L., exist in the northern portion of the county.

Due to its location, Lawrence County possesses characteristics more typical of regions south of Ohio. As a result of a long growing season and low winter precipitation, a few species of plants are known in Ohio only from bluffs along the Ohio River in Lawrence County and the adjacent counties of Gallia and Scioto (Cusick & Silberhorn, 1977). One southern species, American holly, *Ilex opaca* Ait., is believed to occur naturally in Ohio only in Lawrence and Scioto counties (Braun, 1961). Lawrence County also exhibits affinities to the Appalachian uplands. Several species of *Rhododendron*, limited in Ohio to the more rugged part of the Unglaciated Allegheny Plateau, occur locally in the county (Braun, 1961).

The butterfly and skipper fauna of Lawrence County was undoubtedly modified when the original vegetation was destroyed. Prior to

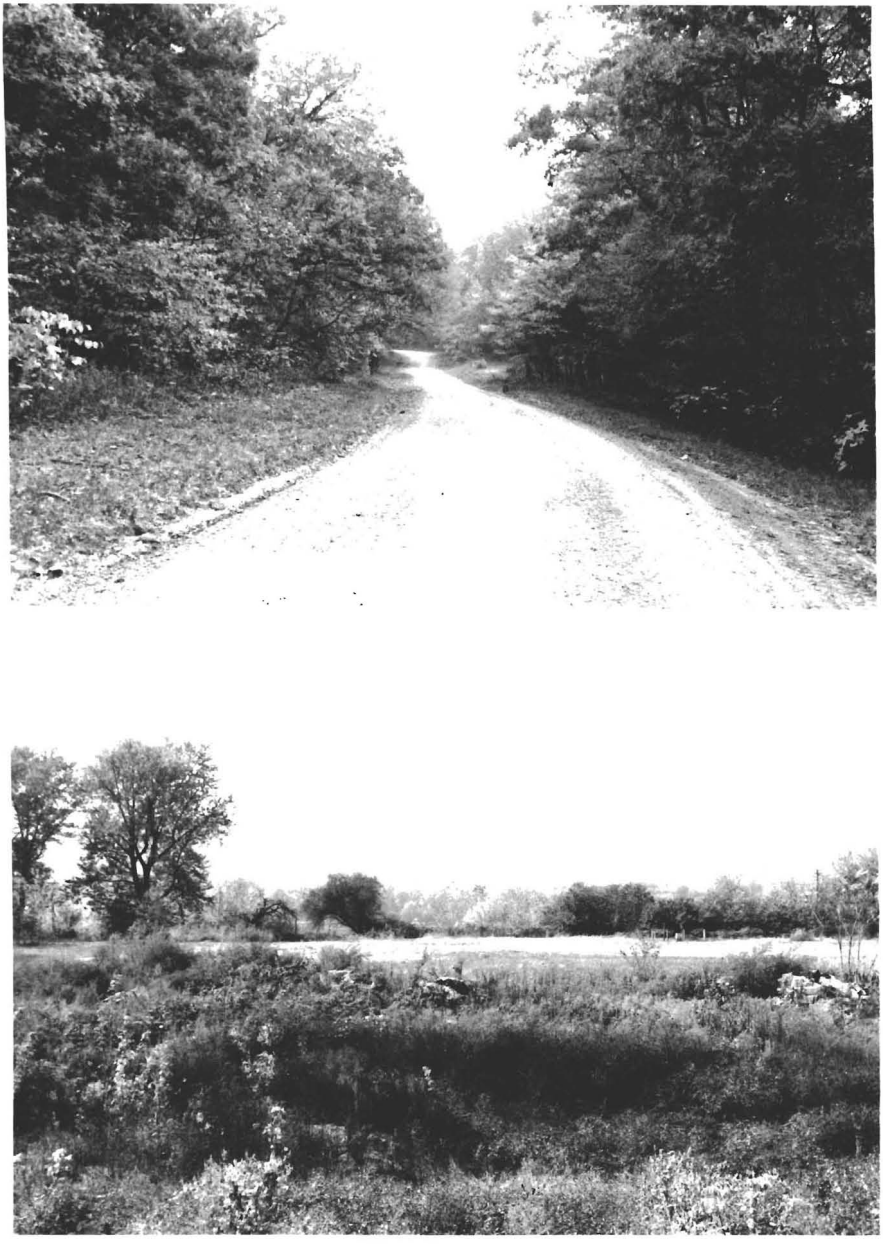

FIG. 4. Habitats in Lawrence County. (**Top**) Ridgetop oak-pine forest (Wayne National Forest). (**Bottom**) Disturbed area along the Ohio River (South Point).

settlement, species adapted to forest habitats probably predominated. Presettlement Athens County was also heavily forested and Shuey (1983) speculated that species characteristic of open areas possibly were absent or inhabited ephemeral areas. A comparable situation could have existed in Lawrence County. Today, the county has a more diverse flora and thus, probably supports a more diverse butterfly and skipper fauna as well.

METHODS

The results are based upon 30 visits to Lawrence County during 19 July–7 October 1983 and 27 April–11 October 1984. Historic records were gathered from Stehr (1945), Albrecht (1982; pers. comm., 1983), and the 1979 Lepidopterists' Society Season Summary (News of the Lepid. Soc., No. 2. Mar/Apr, 1980). Although collecting was done throughout the county, Wayne National Forest and areas along the Ohio River received the most attention.

The results are presented in the following format: species name, relative abundance, habitat and nectar sources, extreme dates, and localities. Designations of relative abundance are adapted from Covell (1984). These designations apply only when weather conditions are favorable and individuals are most active. "Abundant" means that a species can be expected in great numbers in the correct habitat and season. "Common" indicates that a species can be expected in the correct habitat and season, and several specimens can be anticipated. "Uncommon" means that a species may or may not be found in the proper habitat and season; or that very few specimens might be found on a given visit to a specific location. "Rare" species are seldom encountered. Distinct differences in the abundance of a species between 1983 and 1984 are shown by listing two abundance designations, one for each year, separated by a slash symbol. Habitat information is based upon observations made by the author in Lawrence County. Nectar source information is provided for species seen visiting flowers and helps to indicate correct habitat associations. Participation in mud puddling behavior is also noted. Extreme dates are given to show the approximate length of flight periods during the study but are not conclusive. Dates are organized as day/month/year. Only positive identifications of specimens captured or observed in the field were used in compiling extreme dates. Specific localities are given for species usually encountered singly or that exist in very localized colonies. Localities refer to those on Fig. 1. Species recorded from Lawrence County prior to the 1983–1984 study are accompanied by historic collection data in parentheses. The taxonomy and nomenclature follow *A Catalogue/Checklist of the Butterflies of America North of Mexico* (Miller and

Brown, 1981), and each species listed is preceded by the number used in that publication. An asterisk (*) denotes a species that Albrecht (1982) and Opler (1983) do not record from the adjacent counties in Ohio (Gallia, Jackson, and Scioto), Kentucky (Boyd and Greenup), or West Virginia (Cabell and Wayne). However, one of these species, *Staphylus hayhurstii* (W. H. Edwards), was discovered by the author in Jackson County, Ohio in 1984. Specimens collected by the author are contained in his private collection and the Ohio Historical Society collection in Columbus, Ohio.

RESULTS

HESPERIOIDEA
HESPERIIDAE

7a *Epargyreus c. clarus* (Cramer). Abundant. Hayfields, forest clearings, roadsides; red clover (*Trifolium pratense* L.), common milkweed (*Asclepias syriaca* L.); mud puddles. 11.vi.84–8.x.83. Throughout. (1944, Hanging Rock, A. W. Lindsey).

40 *Autochton cellus* (Boisduval and LeConte). Uncommon. Ridgetop trail through oak forest, forest margins, roadsides; New Jersey tea (*Ceanothus americanus* L.), wild ipicac (*Gillenia stipulacea* (Muhl. ex Willd.)), purple milkweed (*Asclepias purpurascens* L.), common milkweed; mud puddles. 19.vi.84–2.vii.84. Blackfork, Decatur Twp., Lake Vesuvius. (16.vi.71, D. K. Parshall).

42 *Achalarus lyciades* (Geyer). Uncommon. Dry fields, brushy roadsides, margins of oak forests; red clover, common milkweed. 11.vi.84–30.viii.83. Throughout. (29.v.1899, collector unknown).

47 *Thorybes bathyllus* (J. E. Smith), Uncommon/common. Disturbed areas near oak forest; red clover. 11.vi.84–29.viii.83. Throughout. (26.vi.32, J. S. Thomas).

48 *Thorybes pylades* (Scudder). Common. Disturbed areas near woods; red clover. 11.vi.84–17.vii.84. Throughout. (17.vi.1899, J. S. Thomas).

*70 *Staphylus hayhurstii* (W. H. Edwards). Uncommon. Gardens, wooded stream banks, and trails near the foodplant, *Chenopodium album* L.; yellow wood sorrel (*Oxalis* sp.); mud puddles. 29.vii.84–9.viii.83. Sybene, South Point, Coal Grove.

83 *Erynnis icelus* (Scudder and Burgess). Rare. Margins of oak forest; mud puddles. 11.vi.84–19.vi.84. Blackford, Decatur Twp.

84a *Erynnis b. brizo* (Boisduval and LeConte). Rare. Margins of oak forest; mud puddles. 25.iv.84–28.iv.84. Washington Twp.

85a *Erynnis j. juvenalis* (Fabricius). Common. Oak forest and margins; mud puddles. 25.iv.84–5.v.84. Throughout.

90 *Erynnis horatius* (Scudder and Burgess). Common/uncommon. Oak forest and margins; wild ipicac; mud puddles. 25.iv.84–29.viii.83. Washington Twp., Decatur Twp., Lake Vesuvius.

92 *Erynnis martialis* (Scudder). Rare. One female in a dry ridgetop clearing near the foodplant, *Ceanothus americanus*. 12.vi.84. Decatur Twp.

*97 *Erynnis baptisiae* (Forbes). Rare. Disturbed areas along the Ohio River; ironweed (*Vernonia* sp.), red clover, 9.viii.83–8.x.83. Proctorville, South Point.

115 *Pholisora catullus* (Fabricius). Common. Hayfields and gardens near the foodplant, *Chenopodium album*; alfalfa (*Medicago sativa* L.), dogbane (*Apocynum* sp.), red clover. 26.vi.84–4.ix.84. Throughout. (1.vi.1899, Collector unknown).

131 *Nastra lherminier* (Latreille). Rare. Brushy field and roadside where the foodplant, *Andropogon scoparius* Michx., is common. 11.vi.84–23.viii.83. Washington Twp.

*142 *Ancyloxypha numitor* (Fabricius). Common. Wet fields, wooded clearings near streams; red clover. 11.vi.84–17.ix.84. Throughout.

*151 *Hylephila phyleus* (Drury). Rare. Disturbed areas along the Ohio River; white *Aster* sp., alfalfa. 4.viii.84–8.x.83. Proctorville, South Point, Ironton.

161 *Hesperia leonardus* Harris. Rare/Locally common. Ridgetop old fields, clearings, pastures; thistle (*Cirsium* sp.), ironweed. 14.viii.83–12.ix.84. Blackfork, Washington Twp., Decatur Twp.

174 *Polites coras* (Cramer). Abundant. Any open area; red clover, alfalfa, ironweed; mud puddles. 11.v.84–8.x.83. Throughout.

179 *Polites themistocles* (Latreille). Uncommon. Hayfields, roadsides; red clover. 11.v.84–23.viii.83. Throughout.

180a *Polites o. origenes* (Fabricius). Uncommon/common. Hayfields, dry old fields, forest clearings; red clover. 11.vi.84–12.ix.84. Throughout.

185 *Wallengrenia egeremet* (Scudder). Rare. Oak ridgetop clearings, margin of oak forest; mud puddles. 25.vi.84–5.viii.84. Decatur Twp., Lake Vesuvius. (30.vi.34, J. S. Thomas).

*186 *Pompeius verna* (W. H. Edwards). Common. Fallow fields, clearings, brushy roadsides; red clover, common milkweed. 19.vi.84–29.vii.84. Throughout.

187b *Atalopedes campestris huron* (W. H. Edwards). Abundant/common. Any open area; red clover, ironweed, asters; mud puddles. 17.vii.84–11.x.84. Throughout in 1983, only along Ohio River in 1984. (2.viii.82, Union Twp., J. V. Calhoun).

197 *Poanes hobomok* (Harris). Rare. Grassy clearings, oak forest margins. 11.vi.84–26.vi.84. Blackfork, Lake Vesuvius.

198 *Poanes zabulon* (Boisduval and LeConte). Uncommon. Grassy clearings, oak forest margins. 26.vii.83–5.viii.84. Blackfork, Lake Vesuvius, Ironton. (21.v.1899, A. W. Lindsey).

*217b *Euphyes ruricola metacomet* (Harris). Uncommon. Hayfields, old fields, roadsides; red clover, common milkweed; mud puddles. 11.vi.84–17.viii.84. Throughout.

*219a *Atrytonopsis h. hianna* (Scudder). Rare. Ridgetop oak forest clearings where the foodplant *Andropogon scoparius*, occurs. 11.vi.84–12.vi.84. Decatur Twp.

*245 *Amblyscirtes vialis* (W. H. Edwards). Rare. Trail through ridgetop oak forest; mud puddles. 5.v.84. Lake Vesuvius.

*259 *Panoquina ocola* (W. H. Edwards). Rare. One specimen in disturbed area along Ohio River; white *Aster* sp. 7.x.83. South Point.

PAPILIONOIDEA
PAPILIONIDAE

297a *Battus p. philenor* (Linnaeus). Uncommon/common. Forests, forest margins, hayfields, roadsides; joe-pye-weed (*Eupatorium fistulosum* Barratt), red clover, common milkweed; mud puddles. 25.iv.84–17.ix.84. Throughout. (26.vi.32, C. F. Walker).

300 *Eurytides marcellus* (Cramer). Rare. Forests, forest margins; purple loosestrife (*Lythrum salicaria* L.), wild ipicac. 25.iv.84–2.viii.83. Washington Twp., Lake Vesuvius, Coal Grove. (27.vi.79, F. Bower).

303a *Papilio polyxenes asterius* Stoll. Uncommon. Hayfields, pastures; red clover. 11.vi.84–12.ix.84. Throughout.

*314 *Heraclides cresphontes* (Cramer). Rare. Forest margins, hayfield; red clover, common milkweed. 4.viii.84–14.viii.83. Lake Vesuvius, Proctorville.

320a *Pterourus g. glaucus* (Linnaeus). Abundant. Forests, forest margins, hayfields, roadsides; dandelion (*Taraxacum officianale* Weber), red clover, thistle, common milkweed, joe-pye-weed; mud puddles. 25.iv.84–12.ix.84. Throughout. (27.vi.79, F. Bower).

325a *Pterourus t. troilus* (Linnaeus). Abundant. Forests, forest margins, hayfields, roadsides; red clover, thistle, common milkweed, joe-pye-weed; mud puddles. 25.iv.84–12.ix.84. Throughout.

PIERIDAE

*334 *Pontia protodice* (Boiduval and LeConte). Uncommon. Disturbed areas along the Ohio River; red clover, dogbane, ironweed. 17.vii.84–11.x.84. Athalia, South Point.

338 *Artogeia rapae* (Linnaeus). Common. Nearly any open area; red clover, alfalfa, asters; mud puddles. 25.iv.84–11.ix.84. Throughout.

*344 *Euchloe olympia* (W. H. Edwards). Rare. Oak forest ridgetop. 28.iv.84–5.v.84. Lake Vesuvius.

349b *Falcapica midea annickae* dos Passos and Klots. Uncommon. Forests, forest margins, 27.iv.84–5.v.84. Decatur Twp., Lake Vesuvius. (18.iv.76, Washington Twp., C. W. Albrecht).

351a *Colias p. philodice* Godart. Common. Hayfields, vacant lots, roadsides; red clover, alfalfa, asters; mud puddles. 25.iv.84–11.x.84. Throughout. (18.iv.76, Washington Twp., C. W. Albrecht).

352 *Colias eurytheme* Boisduval and LeConte. Common. Hayfields, vacant lots, roadsides; red clover, alfalfa, asters; mud puddles. 5.v.84–11.x.84. Throughout.

383a *Pyrisitia l. lisa* (Boisduval and LeConte). Common/rare. Clearings, dry fields, roadsides; mud puddles. 19.vii.83–11.x.84. Throughout in 1983, only South Point in 1984.

*388 *Abaeis nicippe* (Cramer). Rare. Brushy field near the foodplant, *Cassia hebecarpa* Fern., trail through ridgetop oak forest, grassy roadside. 5.v.84–12.ix.84. Washington Twp., Decatur Twp., Lake Vesuvius.

LYCAENIDAE

391a *Feniseca t. tarquinius* (Fabricius). Uncommon. Clearings and sunlit stream banks and lanes near common alder (*Alnus serrulata* (Ait.) Willd.) and hawthorns (*Crataegus* sp.) infested with wooly aphids (Eriosomatidae); mud puddles. 19.vi.84–5.viii.84. Decatur Twp., Lake Vesuvius, South Point.

393a *Lycaena phlaeas americana* Harris. Rare. One specimen in disturbed area along Ohio River. 8.x.83. South Point.

*398 *Hyllolycaena hyllus* (Cramer). Rare. Wet fields and marshes. 11.vi.84–4.ix.83. Symmes Twp., Decatur Twp.

417b *Harkenclenus titus mopsus* (Hubner). Uncommon. Oak forest clearings, clearing on wooded stream floodplain; common milkweed. 25.vi.84–2.viii.84. Blackfork, Lake Vesuvius.

424b *Satyrium calanus falacer* (Godart). Uncommon. Oak forest clearings and margins; common milkweed. 19.vi.84–2.vii.84. Blackfork, Decatur Twp., Lake Vesuvius. (26.vi.32, J. S. Thomas).

*427b *Satyrium liparops strigosum* (Harris). Rare. Oak forest clearing and margin. 19.vi.84–25.vi.84. Blackfork, Lake Vesuvius.

441 *Calycopis cecrops* (Fabricius). Uncommon. Oak forest clearings and disturbed areas near the foodplant, *Rhus copallina* L. 11.vi.84–12.ix.84. Blackfork, Lake Vesuvius, South Point.

468a *Incisalia h. henrici* (Grote and Robinson). Common. Oak forest clearings and margins where the foodplant, redbud (*Cercis canadensis* L.) occurs; redbud; mud puddles. 25.iv.84–5.v.84. Blackfork, Decatur Twp., Lake Vesuvius.

470a *Incisalia n. niphon* (Hubner). Uncommon. Ridgetops near the foodplant, *Pinus virginiana*; mud puddles. 25.iv.84–29.iv.84. Decatur Twp.

478b *Strymon melinus humuli* (Harris). Rare. Oak forest margins, hayfields; red clover, common milkweed. 26.vi.84–4.ix.84. Decatur Twp., Coal Grove. (16.vi.71, D. K. Parshall).

503a *Everes c. comyntas* (Godart). Abundant. Hayfields, pastures, roadsides; red clover. 5.v.84–11.x.84. Throughout. (18.iv.76, Washington Twp., C. W. Albrecht).

505a *Celastrina l. ladon* (Cramer). Rare/common. Forests, forest margins, clearings; redbud; mud puddles. 25.iv.84–4.ix.84. Throughout. (16.vi.71, D. K. Parshall).

506 *Celastrina ebenina* Clench. Uncommon. Margins of lowland forest; mud puddles. 25.iv.84–5.v.84. Lake Vesuvius.

514d *Glaucopsyche l. lygdamus* (Doubleday). Common. Oak forest margins, clearings, and roadsides near the foodplant, wood vetch (*Vicia caroliniana* Walt.); wood vetch; mud puddles. 25.iv.84–5.v.84. Blackfork, Decatur Twp., Lake Vesuvius.

RIODINIDAE

*529 *Calephelis borealis* (Grote and Robinson). Locally abundant. Lowland oak forest margins along south-facing roadbank where the foodplant, *Senecio obovatus* Muhl. is common; black-eyed susan (*Rudbechia hirta* L.), butterfly-weed (*Asclepias tuberosa* L.). 25.vi.84–17.vii.84. Lake Vesuvius.

LIBYTHEIDAE

*552a *Libytheana b. bachmanii* (Kirtland). Uncommon/rare. Margins of cropland, sunlit streambanks and wooded lanes near the foodplant, *Celtis occidentalis* L.; tickseed-sunflower (*Bidens* sp.), asters; mud puddles. 26.vii.83–11.x.84. Lake Vesuvius, South Point, Coal Grove, Hamilton Twp.

NYMPHALIDAE

*562 *Euptoieta claudia* (Cramer). Uncommon. Hayfields, brushy fields; red clover, ironweed, asters; mud puddles. 12.vi.84–11.x.84. Symmes Twp., Sybene, South Point.

565a *Speyeria c. cybele* (Fabricius). Uncommon/abundant. Hayfields, old fields, forest clearings, pastures, roadsides; red clover, common milkweed, ironweed, thistle. 11.vi.84–11.x.84. Throughout. (27.vi.79, F. Bower).

566a *Speyeria a. aphrodite* (Fabricius). Rare. Oak forest clearings, pastures; common milkweed, ironweed. 19.vi.84–4.ix.83. Blackfork, Decatur Twp.

580a *Clossiana b. bellona* (Fabricius). Common. Wet hayfields, vacant lots; red clover. 17.vii.84–11.x.84. Throughout. (27.vi.79. F. Bower).

606a *Charidryas n. nycteis* (Doubleday and Hewitson). Common. Forest margins, sunlit streams and lanes; common milkweed; mud puddles. 11.vi.84–25.viii.83. Throughout. (16.vi.71, D. K. Parshall).

623b *Phyciodes t. tharos* (Drury). Abundant. Hayfields, brushy fields, forest clearings, roadsides; red clover, alfalfa, common milkweed, butterfly-weed, asters; mud puddles. 11.vi.84–11.x.84. Throughout.

635a *Euphydryas p. phaeton* (Drury). Locally common. Thinly wooded swamp, edges of cat-tail marsh; mud puddles. 11.vi.84–25.vi.84. Blackfork, Washington Twp.

636 *Polygonia interrogationis* (Fabricius). Uncommon. Oak forests and their margins; mud puddles. 19.vi.84–11.x.84. Throughout.

637 *Polygonia comma* (Harris). Common. Oak forests and their margins; mud puddles. 25.iv.84–11.x.84. Throughout.

*648a *Nymphalis a. antiopa* (Linnaeus). Rare. Margins of ridgetop oak forests. 27.vi.84. Decatur Twp.

*650 *Vanessa virginiensis* (Drury). Uncommon. Hayfields, old fields, roadsides; red clover, ironweed, thistle, asters. 25.iv.84–11.x.84. Throughout.

*651 *Vanessa cardui* (Linnaeus). Uncommon/absent. Hayfields, roadsides; red clover, alfalfa. 19.vii.83–4.ix.83. Throughout.

653a *Vanessa atalanta rubria* (Fruhstorfer). Uncommon. Hayfields, oak forest margins, old fields, roadsides; mud puddles. 25.iv.84–5.viii.84. Throughout.

*656 *Junonia coenia* Hubner. Common. Hayfields, vacant lots; red clover, ironweed, asters; mud puddles. 17.vii.84–11.x.84. Throughout in 1983, only along Ohio River in 1984.

663c *Basilarchia arthemis astyanax* (Fabricius). Common. Forest margins, sunlit lanes; mud puddles. 11.vi.84–4.ix.83. Throughout.

*664a *Basilarchia a. archippus* (Cramer). Uncommon. Wet fields and marshes near the foodplant, *Salix* sp.; mud puddles. 11.vi.84–17.ix.84. Washington Twp., Symmes Twp., Decatur Twp., South Point. (16.vi.71, D. K. Parshall).

APATURIDAE

698 *Asterocampa celtis* (Boisduval and LeConte). Uncommon. Forest margins and lanes near the foodplant, *Celtis occidentalis*; mud puddles. 11.vi.84–29.viii.83. Symmes Twp., South Point, Elizabeth Twp. (1930's or early '40's, W. C. Stehr).

704 *Asterocampa clyton* (Boisduval and LeConte). Rare. Forest margins and lanes near the foodplant, *Celtis occidentalis*; mud puddles. 19.vi.84–29.viii.83. Decatur Twp., Lawrence Twp., South Point.

SATYRIDAE

711 *Enodia anthedon* A. H. Clark. Common. Lowland forests and margins, shaded grassy swamps; mud puddles. 25.vi.84–29.viii.83. Decatur Twp., Lake Vesuvius, Coal Grove. (16.vi.71, D. K. Parshall).

*718a *Cyllopsis g. gemma* (Hubner). Rare/uncommon. Ridgetop oak forests, shaded grassy swamps; mud puddles. 5.v.84–29.viii.83. Lawrence Twp., Lake Vesuvius. (30.vi.34, Dean State Forest, J. S. Thomas).

720 *Hermeuptychia sosybius* (Fabricius). Common. Lowland forest clearings, wooded stream banks, shaded grassy swamps; mud puddles. 11.vi.84–30.viii.83. Throughout.

723a *Megisto c. cymela* (Cramer). Uncommon/common. Forest margins and clearings. 11.vi.84–5.viii.84. Throughout. (30.vi.34, J. S. Thomas).

732c *Cercyonis pegala alope* (Fabricius). Uncommon. Hayfields, old fields, vacant lots. 25.vi.84–17.ix.84. Throughout.

DANAIDAE

760 *Danaus plexippus* (Linnaeus). Common. Hayfields, pastures, vacant lots; red clover, common milkweed, ironweed, asters. 25.vi.84–11.x.84. Throughout.

HYPOTHETICAL SUPPLEMENTARY LIST

The following list suggests species that should be looked for in Lawrence County. Required habitats and foodplants are available in the county and these species may occur as breeding residents or strays from other regions. An asterisk (*) denotes species that Albrecht (1982) and Opler (1983) record from adjacent counties in Ohio, Kentucky, and/or West Virginia.

HESPERIIDAE

96 *Erynnis lucilius* (Scudder and Burgess).
100b *Pyrgus centaureae wyandot* (W. H. Edwards).
104 *Pyrgus communis* (Grote).
150 *Thymelicus lineola* (Ochsenheimer).
165a *Hesperia m. metea* Scudder.
189a *Atrytone l. logan* (W. H. Edwards).
*235 *Amblyscirtes hegon* (Scudder).

PIERIDAE

337 *Artogeia virginiensis* (W. H. Edwards).
368a *Zerene c. cesonia* (Stoll).
371b *Phoebis sennae eubule* (Linnaeus).
389 *Nathalis iole* Boisduval.

LYCAENIDAE

423 *Satyrium edwardsi* (Grote and Robinson).
*425 *Satyrium caryaevorum* (McDunnough).

*460a *Mitoura g. gryneus* (Hubner).
464c *Incisalia augustus croesoides* Scudder.
*474a *Euristrymon o. ontario* (W. H. Edwards).
477 *Parrhasius m-album* (Boisduval and LeConte).
*491 *Erora laeta* (W. H. Edwards).

NYMPHALIDAE

567 *Speyeria idalia* (Drury).
*645 *Polygonia progne* (Cramer).

APATURIDAE

695 *Anaea andria* Scudder.

DISCUSSION

Thirteen species exhibited distinct differences in abundance between 1983 and 1984. Two species (*Hesperia leonardus* and *Polites origenes*) showed an increase in 1984 that may be attributed to a lack of collecting in the proper habitats in 1983. Conversely, another species (*Libytheana bachmanni*) showed a decrease in 1984 that may be attributed to a lack of collecting in the proper habitats in 1984. Four multivoltine species (*Thorybes bathyllus, Celastrina ladon, Cyllopsis gemma,* and *Megisto cymela*) are more common during their first brood, which was not observed in 1983 and consequently, showed a marked increase in 1984. Three additional species (*Atalopedes campestris, Pyrisitia lisa,* and *Vanessa cardui*) are migratory and known for their sporatic occurrences in Ohio. All showed a drastic decrease in 1984, suggesting that 1983 was a peak year for migrants or 1984 was poor, or both. The remaining three species either showed a considerable increase (*Battus philenor* and *Speyeria cybele*) or a considerable decrease (*Erynnis horatius*) for reasons unknown.

Fig. 5 presents curves constructed to illustrate seasonal patterns of relative diversity during the study period. Visits lasting more than one day and visits made on consecutive days are treated as single visits. Although several habitat types were sampled during each visit, differential collecting undoubtedly caused slight variations in the number of species recorded. The curves reveal that the fewest number of species occurred in the spring and fall with the greatest number occurring in mid to late summer. The lowest total was 11 species observed 1–2 October 1983, and the highest total was 48 species observed 14–15 August 1983. Although data on 1983 are incomplete, the relative diversities of the two years are very similar from mid-July through mid-October.

Two species are scarce and very local in occurrence in Ohio yet were found in atypically high concentrations in Lawrence County. Although listed as uncommon, approximately two dozen individuals of *Autochton cellus* were observed in the county during 1984. This species

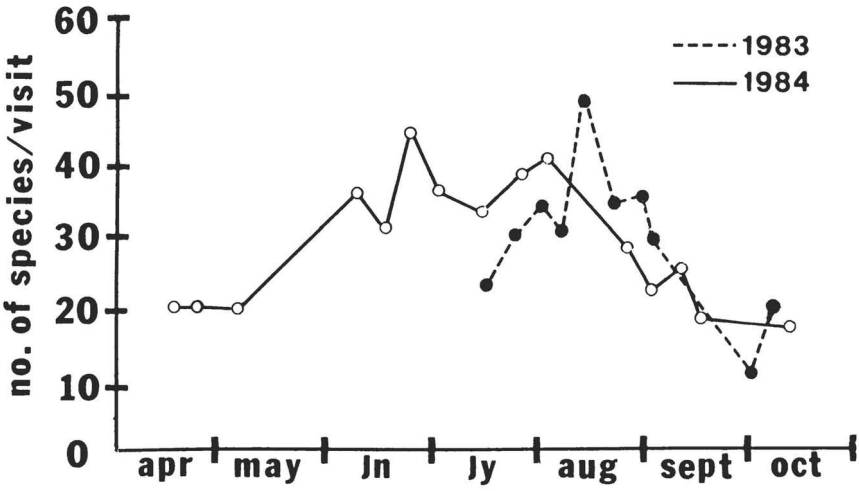

FIG. 5. Relative diversity during the study.

is usually encountered singly in Ohio. Previously, only a rich valley in Hocking County, Ohio called "Neotoma" has yielded a large number of specimens from one locality. In Lawrence County, the presence of *A. cellus* was difficult to predict, but up to 11 individuals were seen at each of two locations. *Calephelis borealis* is widespread in Ohio but is usually found in low numbers at any given location. However, at the single known Lawrence County colony, nearly 100 individuals were observed in a single day. Another species, *Hesperia leonardus*, is most often found singly or in very low numbers in Ohio except in the northwestern portion of the state where large colonies occur. In Lawrence County a colony was discovered which contained at least 50 individuals in an area approximately 1 hectare in size. In addition, *Pontia protodice* has nearly disappeared from Ohio, and the Lawrence County record is only the third record in the state since 1966. The county is also the only known Ohio location for *Atrytonopsis hianna* beyond Lucas and Fulton counties in the northwestern corner of the state.

The southern and Appalachian aspects of Lawrence County are reflected in the presence of several resident species of butterflies and skippers. *Calycopis cecrops*, *Hermeuptychia sosybius*, and *Autochton cellus* are found near the northern limits of their respective distributions. The Lawrence County population of *Glaucopsyche lygdamus* is included in the Appalachian distribution isolate of the species recognized by Opler and Krizek (1984). Long suspected to occur in Ohio, *Euchloe olympia* is known in the state only from Lawrence County. The population of this species in the county should be included in the

more southern Appalachian distribution isolate of the species recognized by Opler and Krizek (1984). *Celastrina ebenina* is closely associated with rich forested Appalachian slopes in the eastern portion of its range (Wagner & Mellichamp, 1978).

Sixty-one percent of the 137 species of butterflies and skippers recorded in Ohio are represented in Lawrence County. One additional species, *Celastrina neglectamajor* Tutt, has recently been recognized as distinct from *Celastrina ladon* (Opler & Krizek, 1984) and may occur in Lawrence County. Specimens resembling this species were occasionally observed but not collected during 1984, hence this species was not included in the list. It is possible that another species, *Speyeria diana* (Cramer), was present in the county prior to settlement and subsequently was extirpated. An old specimen of this species labeled "southeastern Ohio" is contained in the collection of the Carnegie Museum of Natural History. This species inhabits old-growth hardwood forests and suffered a decline within its range when much of the habitat was destroyed due to logging and agriculture (Clark & Clark, 1951). Today, this species may be expanding (Hammon & McCorkle, 1983(84)). If once present in Lawrence County, it is undoubtedly no longer a breeding resident but could become re-established in the future, especially in the maturing woodlands of Wayne National Forest.

The butterfly and skipper fauna of northeastern Kentucky and southwestern West Virginia is still only remotely known. Since similar habitats exist throughout the region, a list of species known to occur in Lawrence County, Ohio facilitates a more thorough understanding of the butterflies and skippers, not only of southern Ohio, but also of the corresponding portions of Kentucky and West Virginia.

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