85-11

Howard C. Johnson, Director

August 29, 1985

Mr. Carl Becker, Manager
Natural Heritage Section
Division of Forest Resources
and Natural Heritage
Department of Conservation
524 South Second Street
Springfield, IL 62701-1787

Dear Mr. Becker:

Enclosed please find copies of the final reports submitted by Dr. Wayne Schennum on the butterflys (and other selected insects) of the three natural areas outlined in the grant proposal submitted April 18, 1985.

As per the proposal, these reports include lists of sightings, ecology of the individual insects, range and ecological importance of each species and recommendations for overall management that will preserve the most significant species.

The management recommendations are already being considered for implimentation this fall. The lists of species supplied have significantly broadened our knowledge of the fauna of our area.

If you need any further information, please let me know.

Sincerely,

Wayne A. Lampa

Wayne A. Lampa
Resource Management Specialist

FOREST RESOURCES AND NATURAL HERITAGE
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WAL:sdb
Enclosure

BUTTERFLIES OF CHURCHHILL PRAIRIE

DUPAGE COUNTY, ILLINOIS

This report summarizes the results of a field survey of the butterflies of Churchhill Prairie, DuPage County, Illinois. The purposes of the survey were to determine and analyze the butterfly species composition of the prairie and to assess the impacts of the construction of the Rte 53 tollway through the east side of the prairie on its butterfly fauna.

The survey work was conducted between June 14 and July 24, 1985. This is the peak period of adult activity for prairie and wetland butterflies in northeast Illinois. Species were identified by inspection of individuals in flight and perched on vegetation or by capture-and-release. A voucher specimen was taken for one species and is being submitted to the DuPage County Forest Preserve District for its records. All observation data were recorded by date and location, east-or-west portion, in the prairie. The east and west portions were defined as those areas east or west, respectively, of the narrowest section of native vegetation in the site (see Figure 1, topographic map).

A total of 37 species of butterflies was discovered in Churchhill Prairie. Of these 37, 33 were positively identified. Among the remaining 4, for which only a few individuals were seen, 2 species (*Wallengrenia egeremet* and *Polites origines*) were very probably correctly identified and 2 species (*Euphyes bimacula* and *Polites mystic*) remain very tentative and require further field study for verification. All 37 species are listed.

For each, the following information is given: presence in east and/or west parts of site, dates of observation, and ecological status. The following categories are used to define the latter:

1. obligate - very restricted by larval food plant and/or lack of vagility to native wetland and/or prairie remnants.
2. semi-local - found in a variety of native open structured habitats.
3. widespread - unrestricted, found in all open habitats, including fields.
4. edge - forest species which utilize forest edge and open habitats.
5. introduced - alien (Eurasian) in origin, introduced by man.
6. waif - a migrant native, passing through the area.

Eleven species of obligate prairie and wetland butterflies were discovered to be residents of Churchhill Prairie, occurring in either the wet mesic prairie or sedge meadow communities or both. Of these 11, the Dion skipper (E. dion), Black dash (E. conspiciia), Delaware skipper (A. delaware), Aprodite fritillary (S. aphrodite), and Eyed brown (L. eurydice) have established, moderate-sized to large breeding colonies in the site. The Dion skipper and eyed brown occur almost exclusively in the sedge meadow and in very large numbers. The Aphrodite and Black dash occur in large numbers throughout the site, while the Delaware skipper occurs as a moderate-sized colony, primarily in the level restored prairie on the extreme west end. Of the other 6 obligate species, the Mulberry wing (P. massasoit) was found as only 1 or 2 individuals in the small tussock sedge meadow on the extreme east end, and the Acadian hairstreak (S. acadica) was observed but once in the east wet prairie. Both of these species should be

more widespread and common here as suitable habitat is present in several areas of the Churchhill Prairie. The same statement can be made about the other 4 obligates -- the Cross skipper line (P. origines) and Coral hairstreak (A. titus) in upland (mesic/wet mesic prairie), which were prevalent but not common, and the Purplish and Bronze coppers (L. helloides and L. thoe) in sedge meadow, which were found in very small numbers. The two coppers may have increased in numbers after the sampling period, as the Purplish copper in particular is most common in late July to early August. Should the Two-spotted skipper (E. bimacula) and Long dash (P. mystic) be confirmed, the list of obligates for Churchhill Prairie will grow to 13, approximately 1/3 of the total butterfly fauna in the site.

In addition to the 11 obligates, there are 5 species of butterflies in Churchhill Prairie which are characteristic of prairie and wetland remnants, though less restricted to them. These "semi-local" species add to the significance of Churchhill Prairie as a faunal reserve for butterflies. Two of these species -- the Great-spangled fritallary (S. cybele) and Common wood nymph (C. pegala), are common and widespread in the site.

The other three -- Broken dash (W. egeremet), Silvery checkerspot (C. nycteis, and American painted lady (C. virginiensis)-- are infrequent but established residents.

Of the remaining 19 species discovered in Churchhill Prairie, 12 are widespread open-habitat species which have adapted to old fields or re-established wetlands. These species very probably are breeding

residents in the site, but none of them is common. Four species in the site are edge butterflies which require the adjacent oak forest and shrubby edge on the south side of the prairie for larval food plants. The utilize the prairie as an adult nectar source, but are not breeding residents, except possibly for the Spring azure (C. argiolus) whose larvae utilize dogwoods. The remaining 3 non-obligates include a single waif specimen of the Pipevine swallowtail (B. philenar) and 2 alien species. Both of the aliens are common and regular enough to be breeding residents. The European skipper (T.lineola) was not observed in large numbers as it is in old field and Eurasian meadow habitats. The Cabbage white (P. repae) is more consistently present and in higher numbers, but poses no threat as a larval food plant competitor with the obligate and other resident native open-habitat butterflies.

There is definite potential for the occurrence of additional obligate prairie and/or wetland butterflies at Churchhill Prairie. Furthermore, if these species do not occur, the site is large enough, and contains suitable larval food plants, to support breeding populations of these species if introduced. Examples of these species are the very rare and localized Broad-winged skipper (Poanes viator), which occurs in large numbers in sedge marsh areas of Pratts-Wayne Forest Preserve similar to Churchhill Prairie, the Great copper (Lycaena xanthoides), the very localized Byssus skipper (Problema byssus), which occurs in mesic lake plain prairies in the south Chicago suburbs, and both lesser fritillanes, the Silver-bordered and Meadow (Boloria selene and B. bellona). Even if these species do not occur or are not introduced, the Churchhill Prairie, as the 1985 survey shows, is already a very significant natural area for butterflies dependent on sedge

meadow, or sedgemarsh mesic prairie communities for their survival. Obligate prairie and wetland species represent approximately 1/3 of all species represented and populations of some of these obligates are so large that they are the numerically dominant members of the site's butterfly fauna. These species have become extremely localized in northeast Illinois due to habitat destruction. One of them, the Dion skipper, is considered a very localized species, occurring in small scattered colonies throughout its range in eastern North America. This sedge marsh butterfly is abundant in Churchhill Prairie.

The location of the proposed Rte. 53 tollway within Churchhill Prairie is shown in Figure 1. The road and associated construction within the right-of-way will destroy small portions of mesic prairie, wet prairie, sedge meadow, and sedge marsh communities. In addition, east to west run-off, laden with silt, could degrade wetland communities west of the right-of-way since natural drainage is in this direction. As Table 1 shows, nearly every butterfly species discovered in the site occurs in both east and west sections, including most of the non-adaptable obligate forms which are the rarest and most localized species present. Three species, two obligates and one semi-local, have been noted to date only in the eastern portion of the site. One of these species, the Mulberry wing, is present in precariously small numbers. It and subpopulations of at least 10 other obligate species and the 5 semi-local species will be destroyed by the roadway as their habitat and food plants are destroyed. In addition, a small portion of prairie and wetland east of the road will be reduced to a very small, disconnected fragment in which populations will have difficulty sustaining themselves. However, on the positive side, the largest sections

of prairie and wetland habitat and largest populations of butterflies will remain intact and will be unaffected by the road if runoff from construction is controlled and filtered before entry into the prairie.

Churchhill Prairie and its butterfly populations have been negatively impacted by man in previous years. Most of the upland prairie community was lost to farming many years ago. More recently, the water table in the prairie was lowered by diversion of intermittent stream flow away from the site. Siltation and runoff from powerline construction and a nursery doubtlessly have had negative impacts on the vegetation, which in turn probably have reduced butterfly populations. Furthermore, Churchhill Prairie is not a large site and its long narrow shape makes it particularly vulnerable to negative effects generated on adjacent land. This entire combination of factors make Churchhill Prairie and its butterfly populations very susceptible to habitat loss and degradation. Because the site is maintaining viable populations of several rare and localized species, it is of such value that every effort should be made to minimize the effects of Rte. 53 construction. Siltation of wetland adjacent to the right-of-way should be prevented. As mitigation for habitat lost, the project could restore the natural water table on the site, reversing the effects of drainage alteration several years ago, or provide the money for such restoration. As an alternative, funds could be provided for the purchase of an equivalent acreage of similar or identical community types at a different site. To mitigate the loss of butterfly populations, however, any such off-site purchase should be adjacent to an existing large, protected site with known populations of obligate prairie

butterflies. Such a situation exists at the West Chicago Prairie in western DuPage County.

TABLE 1: CHURCHILL PRAIRIE BUTTERFLIES

SPECIES	E	W	ID	6/14	6/21	7/03	7/10	7/12	7/24	ECOLOGY
Euphyes dion DION SKIPPER	X	X				X	X	X	X	Obligate
Euphyes conspicua BLACK DASH	X	X				X	X	X	X	Obligate
Euphyes blmacula TWO-SPOTTED SKIPPER		X	?						X	Obligate
Poanes massasoit MULBERRY WINE	X						X	X		Obligate
Atrytone delaware DELAWARE SKIPPER	X	X				X	X	X	X	Obligate
Wallengrenia egeremet BROKEN DASH	X	X	?				X	X		Semi-local
Polites coras PECK'S SKIPPER	X	X			X				X	Widespread
Polites themistocles TAWNY EDGE	X				X				X	Widespread
Polites origines CROSSLINE SKIPPER	X	X	?			X	X	X	X	Obligate
Polites mystic LONG DASH	X	X	?	X				X		Obligate
Thymelicus lineola EUROPEAN SKIPPER	X	X		X	X	X				Introduced
Epargyreus clarus SILVER-SPOTTED SKIPPER	X	X		X	X	X	X	X	X	Widespread
Battus philenor PIPEVINE SWALLOWTAIL	X				X					Waif
Papilio glaucus TIGER SWALLOWTAIL		X						X	X	Edge
Papilio polyzenes BLACK SWALLOWTAIL	X	X				X	X	X	X	Widespread
Pieris rapae CABBAGE WHITE	X	X		X	X	X	X	X	X	Introduced
Colias eurytheme ALFALFA BUTTERFLY	X	X				X	X	X	X	Widespread
Colias philodice CLOUDED SULFUR	X	X			X	X	X	X	X	Widespread
Harkenclenus titus CORAL HAIRSTREAK	X	X				X	X	X		Obligate
Satyrium calanus BANDED HAIRSTREAK	X	X						X		Edge

TABLE 1: CHURCHILL PRAIRIE BUTTERFLIES

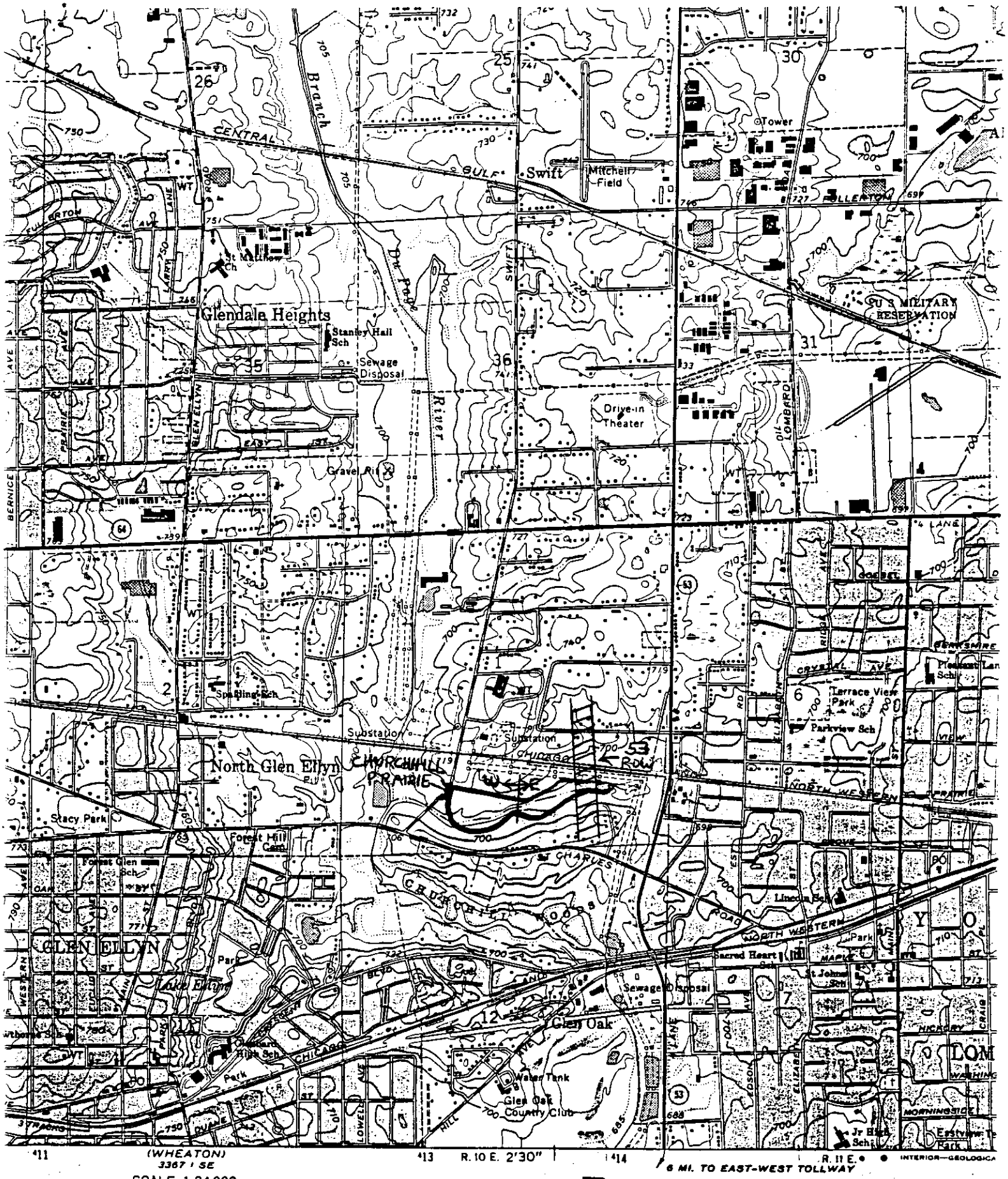
SPECIES	E	W	ID	6/14	6/21	7/03	7/10	7/12	7/24	ECOLOGY
Satyrium acadica ACADIAN HAIRSTREAK	X					X				Obligate
Lycaena thoe BRONZE COPPER		X							X	Obligate
Lycaena helloides PURPLISH COPPER	X	X					X	X	X	Obligate
Everes comyntas EASTERN TAILED BLUE	X					X		X	X	Widespread
Celastrina argiolus SPRING AZURE	X	X		X	X					Edge
Limenitis archippus VICEROY	X			X						Widespread
Vanessa atlanta RED ADMIRAL	X	X		X	X	X	X	X		Widespread
Cynthia virginiensis AMERICAN PAINTED LADY	X	X			X	X	X	X		Semi-local
Cynthia cardui PAINTED LADY	X				X					Widespread
Polygonia interrogationis QUESTION MARK	X	X			X	X	X	X	X	Edge
Chlosyne nycteis SILVERY CHECKERSPOT	X			X	X	X				Semi-local
Phyciodes tharos PEARL CRESCENT	X	X		X		X		X	X	Widespread
Speyeria cybele GREAT SPANGLED FRITILLARY	X	X		X	X	X	X	X	X	Semi-local
Speyeria aphrodite APHRODITE	X	X		X	X	X	X	X	X	Obligate
Danans plexippus MONARCH	X	X			X	X	X	X	X	Widespread
Lethe eurydice EYED BROWN	X	X				X	X	X	X	Obligate
Cercyonis pegale COMMON WOOD NYMPH	X	X				X	X	X	X	Semi-local

ADDITIONAL INSECTS NOTED IN CHURCHILL PRAIRIE

Haplorhynchites aeneus	SILPHUIM WEEVIL
Chauliograthus pennsylvanicus	COMMON SOLDIER BEETLE
Hemaris diffinis (Sphinx moths) Hemaris thysbe	HUMMINGBIRD CLEARWING MOTHS
Promachus vertebratus (Robber fly)	PRAIRIE "HAWK"
Parabombyllius coquillettii	GOLDEN BEEFLY
Archytas apicifer	TACHINID FLY
Ammophila ichneumomea	GREAT GOLDEN DIGGER WASP
Ammophila pennsylvanica	BLACK DIGGER WASP

Also, do you have Zizia aptera on your plant list for the site? It is there.

Add Euphyes dion (Dion skipper) to the list for Pratts Wayne Marsh. It is probably there because I remember a species behaving like it in the southwest area of Carex lacustris meadow near the creek. Perhaps I should recheck this area next year because of the beaver impacts and the fact that I know the skipper better now? I have slides of 2 of the rare skippers - do you want copies?


Glendale Heights
Stanley Hall Sch
Sewage Disposal
Swift
Mitchell Field
Tower
FULLERTON
CENTRAL
GULF
Branch
Dry Pond
River
SWIFT
U S MILITARY RESERVATION
Drive-in Theater
Gravel Pit
BERNICE
GLEN ELLYN
PRAIRIE
Spaulding Sch
Substation
North Glen Ellyn
CHURCHILL PRAIRIE
CHICAGO
53
Row
Terrace View Park
Parkview Sch
CRYSTAL
BERKSHIRE
Stacy Park
Forest Hill Cem
Forest Glen Sch
ST CHARLES
CHURCHILL
Lincoln Sch
NORTH WESTERN
GLEN ELLYN
Lake Ellyn
Sacred Heart Sch
St Johns Sch
Sewage Disposal
Glen Oak
Glenbard High Sch
Water Tank
Glen Oak Country Club
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6 MI. TO EAST-WEST TOLLWAY
INTERIOR—GEOLOGICA
(WHEATON)
3367 I SE
SCALE 1:24 000
1 MILE
7000 FEET
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ROAD CL
Heavy-duty
Medium-duty

FIGURE 1

Wayne E. Schenneum

BUTTERFLIES OF WATERFALL GLEN SAVANNAH

DU PAGE COUNTY, ILLINOIS

This report summarized the results of a field survey of the butterflies of Waterfall Glen Savannah, DuPage County, Illinois. The purposes of the survey were to determine and analyze the butterfly species composition of the savannah and to assess the impacts on the site's butterfly fauna of fire and woody plant removal, i.e., savannah restoration efforts, by DuPage County Forest Preserve District.

The survey work was conducted between June 16 and July 20, 1985. This is the peak period of adult activity for some, but not all, of the species expected to occur in this habitat. There is a definite bias toward single -brooded mid-summer species, many of which are typical of prairies and savannahs, in sampling during such a time period. However, many double or triple-blooded species show adult activity during this period and should not have been missed by the survey. Species which occur in forests and savannahs but are active as adults in spring and/or late summer - fall probably were overlooked by the survey.

This survey also was biased against any deep forest inhabitants, though not completely so. The majority of survey time was concentrated in areas of relatively open forest, paths, and forest openings with young canopy trees. These areas are outlined approximately in Figure 1. Very little time was spent in ravine forests, dense shaded forests, and the disturbed forest edge areas which border the Poverty Prairie.

Species were identified usually in flight or by capture and release. A few specimens were collected and will be submitted to DuPage County Forest Preserve District for its records. All observation data were recorded by date and habitat types. Table 1 gives the record of dates for each species but does not list habitat use in the preserve. Instead the known or estimated community types typically inhabited by these species observed are listed.

A total of 26 species of butterflies were recorded from the Waterfall Glen Savannah. Positive identification was confirmed on all but the Broken dash (Wallengrenia egeremet), for which a single specimen was noted as probable along the south path near the railroad tracks. Of the 26 species discovered, 15, or 58%, are characteristic species of forest-open forest-savannah communities. Many of these species utilize prairie and field habitats, but their life history (larval food plants) and behavior make them dependent on wooded to semi-wooded species, 27% of the total, are associated with native open communities -- prairies here -- but four of these are seen frequently in forest edge/savannah areas. (One seen only as a larvae - the American painted lady). In fact, only one of these 7 the Coral hairstreak ~~habitat~~ (Harkenclenus titus), could be considered a prairie obligate and its larval food plants are plum and cherry so it is historically probably a savannah species. The remaining four butterflies include 2 alien species and 2 highly adaptable native open habitat species, the Alfalfa butterfly (Colias eurytheme) and Silver spotted skipper (Epargyreus clarus).

In summary, the butterfly fauna of the Waterfall Glen Savannah is primarily one which is associated with forest and savannah and forest edge

communities. There is no evidence of a distinct prairie fauna in the Savannah. All of these species very probably are breeding residents. Some of the species appear to be using only the edge areas of the savannah, and probably are more concentrated in the Poverty Prairie, which in a 1982-83 study was shown to have a prairie - savannah - forest edge butterfly fauna which contained some species venturing out from the adjacent savannah - forest area studied this year. Such faunal blending is occurring but there is no total gradual, quantitative, and especially quantitative, mixing of butterfly faunas between the Poverty Prairie and Waterfall Glen Savannah, although very little observational effort has been concentrated on the ecotonal area between these two sites. If the pre-settlement vegetation complex was such a graduation from prairie or barrens (Poverty Prairie) to a mosaic of oak savannah and open oak forest (Waterfall Glen Savannah), then the present butterfly fauna would become a more natural intergrading assemblage characteristic of these communities if management restored such a landscape.

Indeed, 1985 observations in the Waterfall Glen Savannah, and general observations elsewhere, indicate that the vast majority of forest butterflies are seen along paths and in open to partly shaded forest glades which the paths simulate. These species do venture into the canopy, thickets, or more dense understory areas but are seldom concentrated in habitats with such a structure. That is, they select the partial-shade habitats which characterized pre-settlement savannahs and oak forests.

Given that the butterfly fauna would benefit quantitatively, and especially quantitatively, from a restoration to more open conditions, only the impact

of the methods for achieving this could be detrimental to the butterflies. The two most vulnerable groups of butterflies are those with woody larval food plants and those which overwinter as pupae or eggs on vegetation scorched by fall or spring fires. This vulnerability is dependent on the mobility/adaptability of the species themselves. The colonial, localized forms with low vagility are less likely to move into areas where they have been extirpated by management; these are the species of special concern at Waterfall Glen Savannah. All three of the hairstreaks, (Satyrium) in Table 1 are colonial, localized oak and/or hickory (and/or walnut) feeders as larvae which overwinter as eggs laid on twigs or in bark of the food plant.

The hickory hairstreak (S. caryaevorus) is even rare throughout its range. These, species seem to concentrate in areas of saplings or young trees of their foodplant. Their egg-laying may be concentrated on these age-classes. It is recommended, therefore, that no such sapling copses be eliminated. Thinning should guarantee survival of members of each colony. In pre-settlement times, colonies of these hairstreaks may have followed gradually the subtle shifts in forest/savannah structure over long time periods.

A long-term management policy which simulates this process and includes copses of canopy saplings should guarantee survival of these butterflies. Among locally uncommon species which overwinter as pupae are the pipevine swallowtail (Battus philenor) and American painted lady (Cynthia virginiensis). The former's foodplant is Aristolochia serpentaria, the latter's are Antennaria and Gnaphalium.

The Pipevine swallowtail is particularly significant because it occurs only near colonies of its foodplant, which is rare and at the northern limit of its range in the Chicago region. In the absence of data on the overwintering location of its pupae, the best management policy would be to avoid total burning of any colonies of the foodplant.

Other more common species at Waterfall Glen, which make up most of the site's butterfly fauna, may be negatively affected by fire and woody plant removal. The three satyrids - Pearly eye, Little wood satyr, and Common woodnymph -- utilize woodland grasses as larval foodplants and overwinter as larvae which may be in fire-sensitive locations. As long as the burning program is always partial, not total, they should persist, and increase as the habitat opens up and their foodplants increase in biomass. Common woodland species such as the Hackberry butterfly, Mourning cloak, and others which depend on woody larval foodplants will be negatively affected by total removal of these species (e.g, hackberry, elm, cherry, etc.). Since portions of the Waterfall Glen Savannah, such as ravines and patches of more closed forest, probably harbored these foodplants and these butterflies in pre-settlement times, a management policy which maintains a mosaic of communities which includes some forest should guarantee the survival of these butterflies.

Finally, management which restores a more open oak forest/savannah condition should benefit butterfly species which have yet to be discovered at Waterfall Glen Savannah, but should occur because suitable habitat and foodplants are present. Examples of such potential species are the Zabulon skipper (Poanes zabulon), the Columbine dusky wing (Erynnis Lucilius),

Checkered white (*Pieris protodice*), Olympian marble (*Euchloe olympia*), and the rare striped hairstreak (*Satyrium liparops*).

TABLE 1: WATERFALL GLEN SAVANNAH BUTTERFLIES

O = larvae
X = adults

	SPECIES	6/16	6/21	7/03	7/20	ECOLOGY
-	Poanes hobomok HOBOMOK SKIPPER		X			Savannah, open forest
O	Wallengrenia egeremet BROKEN DASH				?X	Native open habitats
W-A	Thymelicus lineola EUROPEAN SKIPPER	X				Alien; fields
O	Erynnis baptisiae WILD INDIGO DUSKY WING				X	Prairie, savannah
W	Epargyreus clarus SILVER SPOTTED SKIPPER				X	Open areas, forest edge
-	Battus philenor PIPEVINE SWALLOWTAIL		O	O	OX	Open forest
+	Papilio glaucus TIGER SWALLOWTAIL	X				Forest, forest edge
W-A	Pieris rapae CABBAGE WHITE	X			X	Alien; fields
W	Colias eurythome ALFALFA BUTTERFLY		X	X	X	Prairies, fields
O	Harken clenustitu CORAL HAIRSTREAK			X		Prairies, savannah
-	Satyrium calanus BANDED HAIRSTREAK	X	X			Oak forest, savannah
-	Satyrium caryaeyorus HICKORY HAIRSTREAK		X			Oak forest, savannah
-	Satyrium edwardsii EDWARDS HAIRSTREAK			X		Savannahs, oak thickets
+	Celastrina argiolus SPRING AZURE	X	X	X	X	Forest edge, savannah
-	Asterocampa celtis HACKBERRY BUTTERFLY	X				Forest
+	Limenitis astyanax RED SPOTTED PURPLE		X		X	Forest edge, open forest
+	Vanessa atlanta RED ADMIRAL	X	X	X		Forest edge, fields

TABLE 1: WATERFALL GLEN SAVANNAH BUTTERFLIES

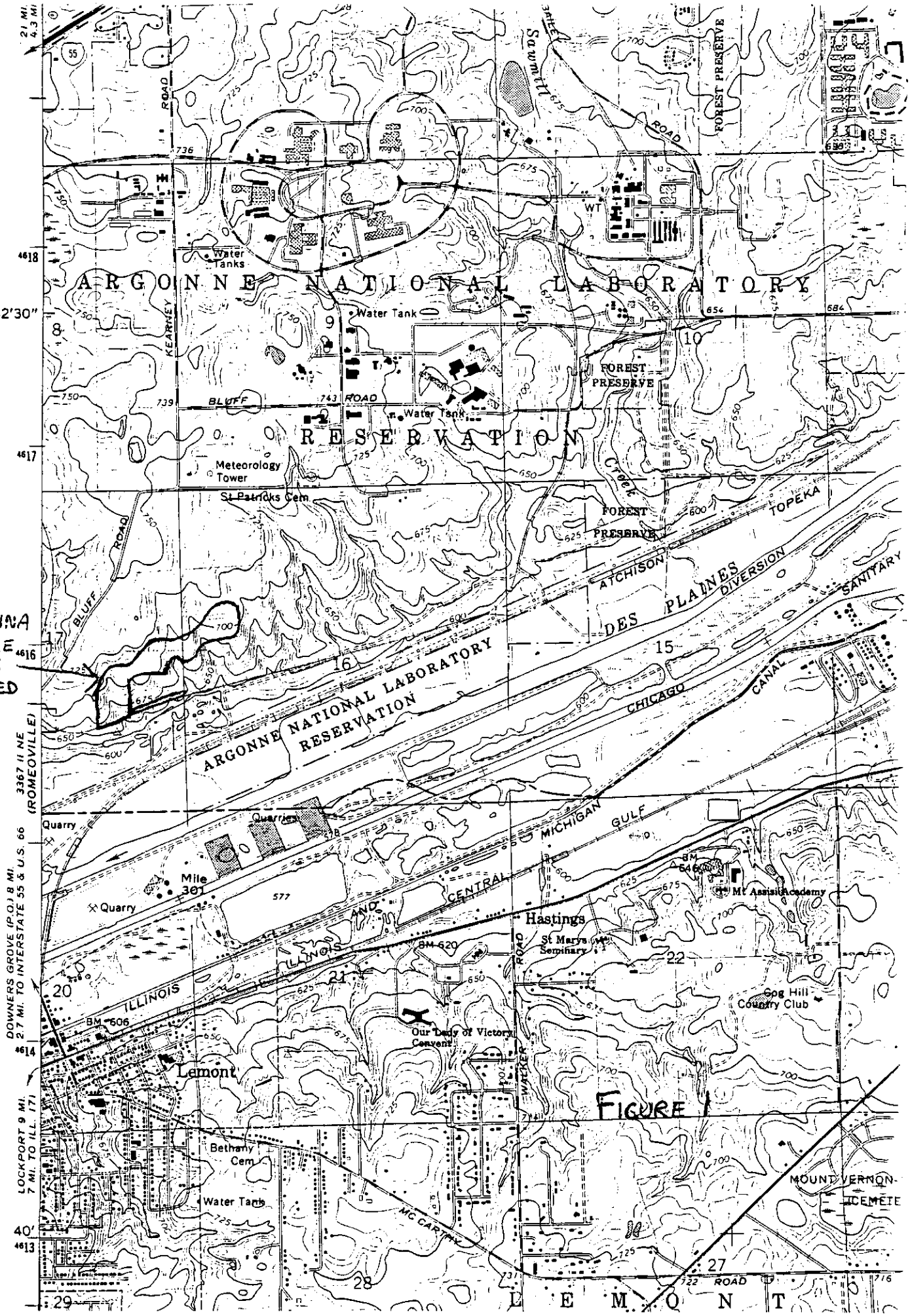
	SPECIES	6/16	6/21	7/03	7/20	ECOLOGY
0	Cynthia verginiensis AMERICAN PAINTED LADY		0	0	0	Prairie, savannah
-	Nymphalis antiopa MOURNING CLOAK	X	X	X		Forest, shrub wetland
+	Polygonia interrogationis QUESTION MARK		X	?		Forest, forest openings
-	Polygonia comma COMMA	?	X	?	X	Forest
0	Chlosyne nycteis SILVERY CHECKERSPOT	X				Moist prairie, meadow
0	Speyeria cybele GREAT SPANGLED FRITILLARY		X	X	X	Prairie, savannah
-	Lethe portlandia PEARLY EYE		X		X	Forest
-	Euptychia cymela LITTLE WOOD SATYR	X	X	X	X	Forest (open), savannah
0	Cercyonis pegala COMMON WOOD NYMPH			X	X	Prairie, savannah

INSECT SPECIES OF WATERFALL GLEN
(additional)

1) Assassin (robber fly) - probably genus Efferia

2) Scape moth, possibly yellow-collared species
   Scepsis fulvicollia

3) A large Catocala (underwing) moth was caught and released.
   Merits study - some species are rare.


ARGONNE NATIONAL LABORATORY
RESERVATION
Water Tanks
Water Tank
Water Tank
Meteorology Tower
St Patricks Cem
FOREST PRESERVE
FOREST PRESERVE
FOREST PRESERVE
BLUFF ROAD
KEARNEY ROAD
SAWMILL ROAD
ATCHISON TOPEKA
DES PLAINES DIVERSION
SANITARY CANAL
CHICAGO
ARGONNE NATIONAL LABORATORY RESERVATION
MICHIGAN
GULF
CENTRAL
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Quarry
Hastings
St Marys Seminary
Mt Assisi Academy
Cog Hill Country Club
Our Lady of Victory Convent
Lemont
Bethany Cem
Water Tank
MC CARTHY ROAD
WALKER ROAD
MOUNT VERNON CEMETE
LEMONT
42'30"
40'
4618
4617
4616
4614
4613
3367 II NE (ROMEOVILLE)
DOWNERS GROVE (P.O.) 8 MI. 2.7 MI. TO INTERSTATE 55 & U.S. 66
LOCKPORT 9 MI. 7 MI. TO ILL. 171
21 MI. 4.3 MI.
SAVANNA & EDGE AREAS STUDIED
FIGURE 1

BUTTERFLIES OF WOOD DALE GROVE PRAIRIE

DUPAGE COUNTY, ILLINOIS

This report summarizes the results of a field survey of the butterflies of Wood Dale Grove Prairie, DuPage County, Illinois. The purposes of the survey were to determine and analyze the butterfly species composition of the prairie and to assess the impacts on the site's butterfly fauna of burning and shrub/tree removal, i.e. prairie restoration efforts, by DuPage County Forest Preserve District.

The survey work was conducted between June 16 and July 19, 1985. A two-week period in early July was missed and this is a critical period for several prairie butterflies. However, most species present should have been observed in late June or mid-July. Single-brooded late spring and late fall/early summer species were missed by the survey.

The survey concentrated in the prairie and wetland openings, forest edge, and shrub edge habitats represented in the site as outlined in Figure 1. Most old field openings were examined only cursorily, or ignored, in an effort to search for species dependent on the native vegetation present.

Species were identified almost exclusively in flight or perched on vegetation, or occasionally by capture-and-release. Voucher specimens were collected for two species; they will be deposited in the Forest Preserve collection. All observation data were recorded by date and habitat type. Table 1 gives the dates of observation for each species and the general

habitat types for them, rather than habitat locations in the prairie itself.

A total of 27 species of butterflies were discovered in the Wood Dale Grove Prairie. For two skippers, the Broken dash (Wallegrenia egeremet) and Cross-line (Polites origines), identification is tentative but probably correct. Verification by collection is necessary; both of these species were represented by very few individual observations.

The 27 species present cannot be definitively characterized as representative of primarily one natural community type. Species typical of sedge-dominated wetlands, prairies, savannahs, open forests, and combinations of these communities are present. Nine or 1/3 of the species, are very adaptable butterflies typical of open areas; two of these are alien. The remaining 18 are more specific to native habitats, though at least four of these are forest edge and forest species which readily colonize cultural simulations of their normal habitats. The other 14 give the best indication of the type of butterfly community which originally inhabited this site in pre-settlement times. These are discussed below.

Two species present are characteristic of wetlands; their larvae are sedge-feeders. The very rare Dion skipper (Euphyes Dion) occurs as a single very small colony in open sedge meadows in the northern corner of the site. This sedge marsh butterfly is rare throughout its range, found only in scattered, highly localized colonies. The other wetland species present is the Appalachian eyed brown (Lethe Appalachia), which exists as a moderate-sized colony, is restricted on the site to shrubby sedge meadow

and moist thickets in the extreme northern edge of the sampling area. This species was never seen in the open edge meadows nearby, except at their edges; this is typical of this species' behavior, in contrast to that of its sibling, Lethe eurydice, which is not present.

Six of the species present are typical of prairies, or prairies and savannahs. All but one are semi-local but relatively frequent. These are the Broken dash, Cross line, American painted lady, Silvery checkerspot, Great spangled fritillary, and Common wood nymph. The Cross line skipper is an uncommon species generally restricted to upland prairies.

The remaining 6 species are typical of open forests and savannahs, though the Comma is also typical of deep forests. The Hobomok skipper and Little wood satyr are relatively common and widespread open forest/savannah species whose larvae feed on native grasses. The three hairstreaks -- Banded, Edwards', and Striped -- are found in localized colonies in such communities. All are oak feeders as larvae, though the Banded and Striped utilize other woody plants as well. The Striped hairstreak is an uncommon species throughout its range and was seen as a single individual (the normal situation for this species) nectaring in the shrubby prairie at Wood Dale Grove. The other two hairstreaks were concentrated in oak sapling copses on the west side of the site, and individuals were seen often taking nectar from New Jersey tea.

Based on the shape, surrounding communities, soil types and flora of the Wood Dale Grove Prairie, it is apparent that this site was a wet mesic savannah, dotted with small: sedge meadows and flatwoods, which was

cleared and grazed by livestock. This kept the area more open and allowed a savannah-wetland-prairie butterfly fauna to persist while succession to a more closed forest occurred rapidly on adjacent land. Remnant populations in the open portion are therefore precariously small and are themselves threatened by the current successional trend in the prairie area, i.e. an increase in the density and cover of shrubs and small trees. Many of these shrubs and trees are not utilized by the majority of butterfly species present, and those which do tend to be the more adaptable forest and edge species. These plants include common buckthorn, gray dogwood, green ash, elm, black cherry and hawthornes. However, it would be a misconception to assume that shrubs and trees do not, and did not, contribute to the structure and composition of the original community complex and its associated butterfly fauna. The hairstreaks utilize young oaks and shrubs as territorial perches and food plants. The Appalachian eyed brown requires a semi-shaded sedge meadow (a flatwoods environment), not an open one. Several of the local prairie species occur also in savannahs, as do the typical open forest species. Therefore, it is recommended that the density of shrub and tree cover bereduced considerable but not eliminated, using fire and brush and tree removal. Furthermore, the total acreage managed in this was should be expanded into the forested area to the west. This will provide a larger, structurally more natural (more open) wet mesic savannah complex which will allow an increase in the size of existing butterfly populations. The current mosaic of small prairie and wetland patches among dense copses of shrubs and small trees (therefore much edge habitat) cannot sustain the open and semi-open habitat butterflies indefinitely, especially as the woody species increase in density. Only the forest and adaptable edge butterflies are likely to persist.

Large fires of high frequency may be needed initially to restore the vegetation at Wood Dale Grove Prairie. The potential sensitivity of some butterflies to these fires can be accommodated by avoiding total burns.

TABLE 1: WOOD DALE GROVE PRAIRIE BUTTERFLIES

SPECIES	6/16	6/28	7/12	7/19	ECOLOGY
Euphyes dion DION SKIPPER		X	X	X	Sedge marsh
Poanes hobomok HOBOMOK SKIPPER	X				Savannah, open forest
Wallengrenia egeremet BROKEN DASH				X	Native open habitats
Polites coras PECK'S SKIPPER				X	Prairies, fields
Polites themistocles TAWNY EDGED SKIPPER			X		Prairies, fields
Polites origines CROSS LINE SKIPPER		X	X	X	Prairies
Thymelscus lineola EUROPEAN SKIPPER	X				Fields
Epargyreus clarus SILVER-SPOTTED SKIPPER		X	X	X	Open areas, forest edge
Pieris rapae CABBAGE WHITE	X	X	X	X	Alien; fields
Colias eurytheme ALFALFA BUTTERFLY		X	X	X	Prairies, fields
Colias philodice CLOUDED SULPHUR		X			Prairies, fields
Satyrium calanus BANDED HAIRSTREAK		X		X	Oak forest, savannah
Satyrium edwardsii EDWARDS HAIRSTREAK		X		X	Oak thickets, savannah
Satyrium liparops STRIPED HAIRSTREAK				X	Oak forests, savannah
Celastrina argiolus SPRING AZURE	X	X		X	Forest edge, savannah
Vanessa atlanta RED ADMIRAL	X	X	X		Forest edge, fields
Cynthia virginiesis AMERICAN PAINTED LADY	X	X			Prairie, savannah
Nymphalis antiopa MOURNING CLOAK	X				Forest, shrub wetlands

TABLE 1: WOOD DALE GROVE

SPECIES	6/16	6/28	7/12	7/19	ECOLOGY
Polygonia interrogationis QUESTION MARK	X	X	X	X	Forest, forest openings
Polygonia comma COMMA	X				Forest
Chlosyne nycteis SILVERY CHECKERSPOT	X	X			Moist prairie, meadow
Phyciodes tharos PEARL CRESCENT	X				Prairies, fields
Speyeria cybele GREAT SPANGLED FRITILLARY		X	X		Prairies, savannah
Danaus plexippus MONARCH			X		Prairies, fields
Lethe appalachia APPALACHIAN EYED BROWN			X	X	Shrub swamp, moist open forest & thicket
Euptychia cymela LITTLE WOOD SATYR	X	X	X	X	Open forest, savannah
Cercyonis pegala COMMON WOOD NYMPH		X	X	X	Prairie, savannah

INSECT SPECIES OF WOOD DALE GROVE PRAIRIE
(additional)

Diptera (Archytas apicifer) - tachinid fly

Orthoptera (Chortophaga viridifasciata) - green-striped grasshopper

Odonata (Platynois lydia) - white-tailed skimmer

Lepidoptera (Scepsis fulvicollis) - yellow-collared scape moth

Diptera (Parabombyllius coquillettis) - golden bully

Hymenoptera (Ammophila pennsylvanica) - black digger wasp

Coleaptera (Chauliognathus marginatus) - emeriginate solder beetle

Hymenoptera (Ammophila ichneumomea) - great golden digger wasp

Lepidoptera (Hemaris thysbe) - hummingbird clearwing moth

Coleaptera (Trinhabda canadensis) - goldenrod leaf beetle

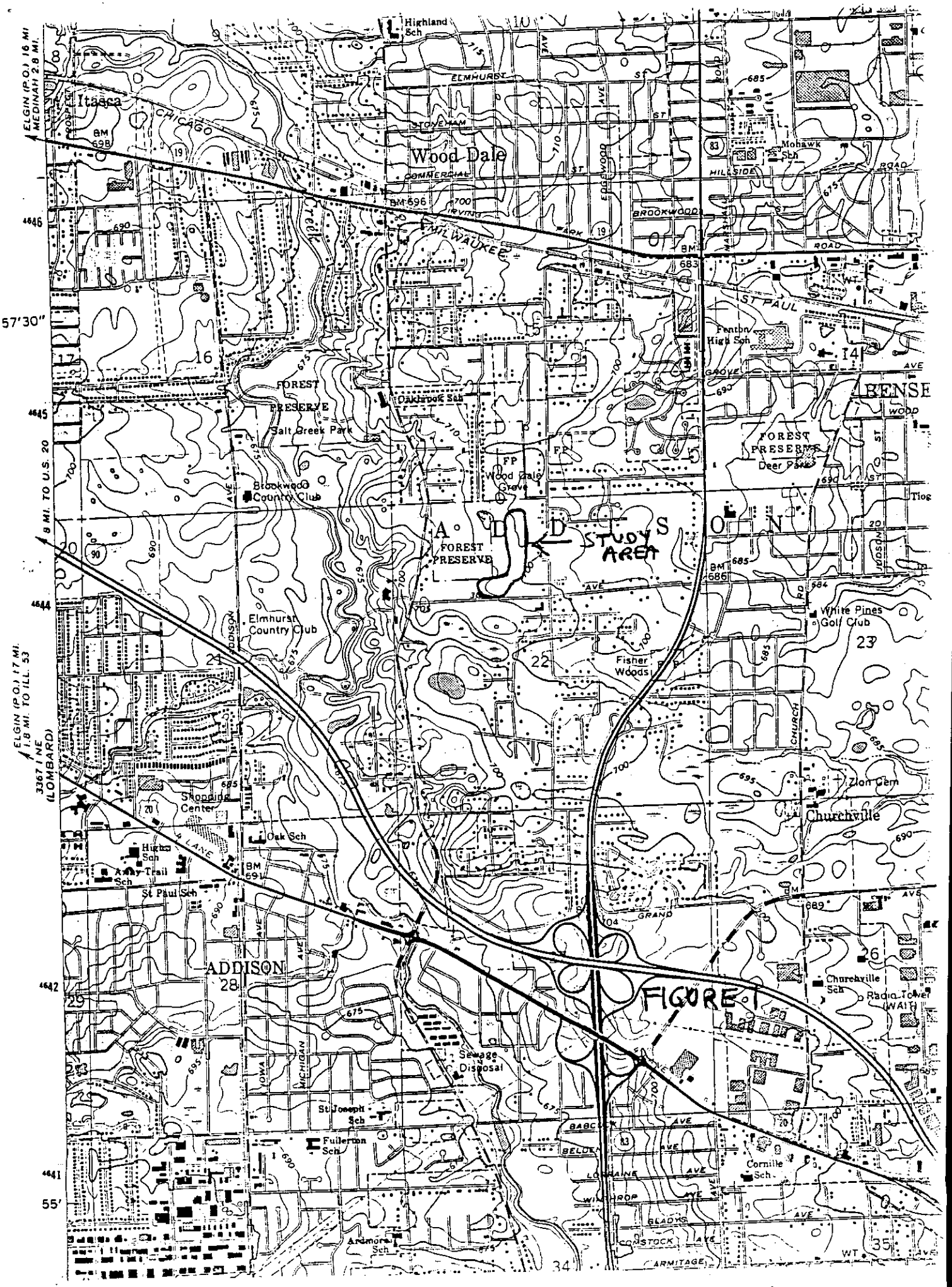
Odonata (Anax junius) - green darner

Odonata (Enallagma sp.) - common blue damselfly

Addition Plant Species

Ninebark (Physocarpus opulifolius)

Silky willow (Salix sericea)


ELGIN (P.O.) 16 MI
MEDINAH 2.8 MI.
Itasca
CHICAGO
Highland Sch
ELMHURST
STOVEHAM
Wood Dale
COMMERCIAL
BROOKWOOD
MILWAUKEE
ST PAUL
Mohawk Sch
HILLSIDE
ROAD
Fenton High Sch
57'30"
FOREST PRESERVE
Oakbrook Sch
Salt Creek Park
Brookwood Country Club
Wood Dale Grove
FOREST PRESERVE
Deer Park
8 MI. TO U.S. 20
STUDY AREA
FOREST PRESERVE
Elmhurst Country Club
White Pines Golf Club
Fisher Woods
ELGIN (P.O.) 17 MI.
1.8 MI. TO ILL. 53
3367 I NE
(LOMBARD)
Shopping Center
Oak Sch
Hight Sch
Army Trail Sch
St Paul Sch
Zion Gem
Churchville
ADDISON
FIGURE 1
Churchville Sch
Radio Tower (WAIT)
Sewage Disposal
St Joseph Sch
Fullerton Sch
Cornille Sch
Ardmore Sch
55'
34
35

85-11

Howard C. Johnson, Director

August 29, 1985

Mr. Carl Becker, Manager
Natural Heritage Section
Division of Forest Resources
and Natural Heritage
Department of Conservation
524 South Second Street
Springfield, IL 62701-1787

Dear Mr. Becker:

Enclosed please find copies of the final reports submitted by Dr. Wayne Schennum on the butterflys (and other selected insects) of the three natural areas outlined in the grant proposal submitted April 18, 1985.

As per the proposal, these reports include lists of sightings, ecology of the individual insects, range and ecological importance of each species and recommendations for overall management that will preserve the most significant species.

The management recommendations are already being considered for implimentation this fall. The lists of species supplied have significantly broadened our knowledge of the fauna of our area.

If you need any further information, please let me know.

Sincerely,

Wayne A. Lampa
Resource Management Specialist

FOREST RESOURCES AND NATURAL HERITAGE
- 3 1985

WAL:sdb
Enclosure

BUTTERFLIES OF CHURCHHILL PRAIRIE

DUPAGE COUNTY, ILLINOIS

This report summarizes the results of a field survey of the butterflies of Churchhill Prairie, DuPage County, Illinois. The purposes of the survey were to determine and analyze the butterfly species composition of the prairie and to assess the impacts of the construction of the Rte 53 tollway through the east side of the prairie on its butterfly fauna.

The survey work was conducted between June 14 and July 24, 1985. This is the peak period of adult activity for prairie and wetland butterflies in northeast Illinois. Species were identified by inspection of individuals in flight and perched on vegetation or by capture-and-release. A voucher specimen was taken for one species and is being submitted to the DuPage County Forest Preserve District for its records. All observation data were recorded by date and location, east-or-west portion, in the prairie. The east and west portions were defined as those areas east or west, respectively, of the narrowest section of native vegetation in the site (see Figure 1, topographic map).

A total of 37 species of butterflies was discovered in Churchhill Prairie. Of these 37, 33 were positively identified. Among the remaining 4, for which only a few individuals were seen, 2 species (*Wallengrenia egeremet* and *Polites origines*) were very probably correctly identified and 2 species (*Euphyes bimacula* and *Polites mystic*) remain very tentative and require further field study for verification. All 37 species are listed.

For each, the following information is given: presence in east and/or west parts of site, dates of observation, and ecological status. The following categories are used to define the latter:

1. obligate - very restricted by larval food plant and/or lack of vagility to native wetland and/or prairie remnants.
2. semi-local - found in a variety of native open structured habitats.
3. widespread - unrestricted, found in all open habitats, including fields.
4. edge - forest species which utilize forest edge and open habitats.
5. introduced - alien (Eurasian) in origin, introduced by man.
6. waif - a migrant native, passing through the area.

Eleven species of obligate prairie and wetland butterflies were discovered to be residents of Churchhill Prairie, occurring in either the wet mesic prairie or sedge meadow communities or both. Of these 11, the Dion skipper (*E. dion*), Black dash (*E. conspiciia*), Delaware skipper (*A. delaware*), Aprodite fritillary (*S. aphrodite*), and Eyed brown (*L. eurydice*) have established, moderate-sized to large breeding colonies in the site. The Dion skipper and eyed brown occur almost exclusively in the sedge meadow and in very large numbers. The Aphrodite and Black dash occur in large numbers throughout the site, while the Delaware skipper occurs as a moderate-sized colony, primarily in the level restored prairie on the extreme west end. Of the other 6 obligate species, the Mulberry wing (*P. massasoit*) was found as only 1 or 2 individuals in the small tussock sedge meadow on the extreme east end, and the Acadian hairstreak (*S. acadica*) was observed but once in the east wet prairie. Both of these species should be

more widespread and common here as suitable habitat is present in several areas of the Churchhill Prairie. The same statement can be made about the other 4 obligates -- the Cross skipper line (P. origines) and Coral hairstreak (A. titus) in upland (mesic/wet mesic prairie), which were prevalent but not common, and the Purplish and Bronze coppers (L. helloides and L. thoe) in sedge meadow, which were found in very small numbers. The two coppers may have increased in numbers after the sampling period, as the Purplish copper in particular is most common in late July to early August. Should the Two-spotted skipper (E. bimacula) and Long dash (P. mystic) be confirmed, the list of obligates for Churchhill Prairie will grow to 13, approximately 1/3 of the total butterfly fauna in the site.

In addition to the 11 obligates, there are 5 species of butterflies in Churchhill Prairie which are characteristic of prairie and wetland remnants, though less restricted to them. These "semi-local" species add to the significance of Churchhill Prairie as a faunal reserve for butterflies. Two of these species -- the Great-spangled fritallary (S. cybele) and Common wood nymph (C. pegala), are common and widespread in the site.

The other three -- Broken dash (W. egeremet), Silvery checkerspot (C. nycteis, and American painted lady (C. virginiensis)-- are infrequent but established residents.

Of the remaining 19 species discovered in Churchhill Prairie, 12 are widespread open-habitat species which have adapted to old fields or re-established wetlands. These species very probably are breeding

residents in the site, but none of them is common. Four species in the site are edge butterflies which require the adjacent oak forest and shrubby edge on the south side of the prairie for larval food plants. The utilize the prairie as an adult nectar source, but are not breeding residents, except possibly for the Spring azure (C. argiolus) whose larvae utilize dogwoods. The remaining 3 non-obligates include a single waif specimen of the Pipevine swallowtail (B. philenar) and 2 alien species. Both of the aliens are common and regular enough to be breeding residents. The European skipper (T.lineola) was not observed in large numbers as it is in old field and Eurasian meadow habitats. The Cabbage white (P. repae) is more consistently present and in higher numbers, but poses no threat as a larval food plant competitor with the obligate and other resident native open-habitat butterflies.

There is definite potential for the occurrence of additional obligate prairie and/or wetland butterflies at Churchhill Prairie. Furthermore, if these species do not occur, the site is large enough, and contains suitable larval food plants, to support breeding populations of these species if introduced. Examples of these species are the very rare and localized Broad-winged skipper (Poanes viator), which occurs in large numbers in sedge marsh areas of Pratts-Wayne Forest Preserve similar to Churchhill Prairie, the Great copper (Lycaena xanthoides), the very localized Byssus skipper (Problema byssus), which occurs in mesic lake plain prairies in the south Chicago suburbs, and both lesser fritillanes, the Silver-bordered and Meadow (Boloria selene and B. bellona). Even if these species do not occur or are not introduced, the Churchhill Prairie, as the 1985 survey shows, is already a very significant natural area for butterflies dependent on sedge

meadow, or sedgemarsh mesic prairie communities for their survival. Obligate prairie and wetland species represent approximately 1/3 of all species represented and populations of some of these obligates are so large that they are the numerically dominant members of the site's butterfly fauna. These species have become extremely localized in northeast Illinois due to habitat destruction. One of them, the Dion skipper, is considered a very localized species, occurring in small scattered colonies throughout its range in eastern North America. This sedge marsh butterfly is abundant in Churchhill Prairie.

The location of the proposed Rte. 53 tollway within Churchhill Prairie is shown in Figure 1. The road and associated construction within the right-of-way will destroy small portions of mesic prairie, wet prairie, sedge meadow, and sedge marsh communities. In addition, east to west run-off, laden with silt, could degrade wetland communities west of the right-of-way since natural drainage is in this direction. As Table 1 shows, nearly every butterfly species discovered in the site occurs in both east and west sections, including most of the non-adaptable obligate forms which are the rarest and most localized species present. Three species, two obligates and one semi-local, have been noted to date only in the eastern portion of the site. One of these species, the Mulberry wing, is present in precariously small numbers. It and subpopulations of at least 10 other obligate species and the 5 semi-local species will be destroyed by the roadway as their habitat and food plants are destroyed. In addition, a small portion of prairie and wetland east of the road will be reduced to a very small, disconnected fragment in which populations will have difficulty sustaining themselves. However, on the positive side, the largest sections

of prairie and wetland habitat and largest populations of butterflies will remain intact and will be unaffected by the road if runoff from construction is controlled and filtered before entry into the prairie.

Churchhill Prairie and its butterfly populations have been negatively impacted by man in previous years. Most of the upland prairie community was lost to farming many years ago. More recently, the water table in the prairie was lowered by diversion of intermittent stream flow away from the site. Siltation and runoff from powerline construction and a nursery doubtlessly have had negative impacts on the vegetation, which in turn probably have reduced butterfly populations. Furthermore, Churchhill Prairie is not a large site and its long narrow shape makes it particularly vulnerable to negative effects generated on adjacent land. This entire combination of factors make Churchhill Prairie and its butterfly populations very susceptible to habitat loss and degradation. Because the site is maintaining viable populations of several rare and localized species, it is of such value that every effort should be made to minimize the effects of Rte. 53 construction. Siltation of wetland adjacent to the right-of-way should be prevented. As mitigation for habitat lost, the project could restore the natural water table on the site, reversing the effects of drainage alteration several years ago, or provide the money for such restoration. As an alternative, funds could be provided for the purchase of an equivalent acreage of similar or identical community types at a different site. To mitigate the loss of butterfly populations, however, any such off-site purchase should be adjacent to an existing large, protected site with known populations of obligate prairie

butterflies. Such a situation exists at the West Chicago Prairie in western DuPage County.

TABLE 1: CHURCHILL PRAIRIE BUTTERFLIES

SPECIES	E	W	ID	6/14	6/21	7/03	7/10	7/12	7/24	ECOLOGY
Euphyes dion DION SKIPPER	X	X				X	X	X	X	Obligate
Euphyes conspicua BLACK DASH	X	X				X	X	X	X	Obligate
Euphyes blmacula TWO-SPOTTED SKIPPER		X	?						X	Obligate
Poanes massasoit MULBERRY WINE	X						X	X		Obligate
Atrytone delaware DELAWARE SKIPPER	X	X				X	X	X	X	Obligate
Wallengrenia egeremet BROKEN DASH	X	X	?				X	X		Semi-local
Polites coras PECK'S SKIPPER	X	X			X				X	Widespread
Polites themistocles TAWNY EDGE	X				X				X	Widespread
Polites origines CROSSLINE SKIPPER	X	X	?			X	X	X	X	Obligate
Polites mystic LONG DASH	X	X	?	X				X		Obligate
Thymelicus lineola EUROPEAN SKIPPER	X	X		X	X	X				Introduced
Epargyreus clarus SILVER-SPOTTED SKIPPER	X	X		X	X	X	X	X	X	Widespread
Battus philenor PIPEVINE SWALLOWTAIL	X				X					Waif
Papilio glaucus TIGER SWALLOWTAIL		X						X	X	Edge
Papilio polyzenes BLACK SWALLOWTAIL	X	X				X	X	X	X	Widespread
Pieris rapae CABBAGE WHITE	X	X		X	X	X	X	X	X	Introduced
Colias eurytheme ALFALFA BUTTERFLY	X	X				X	X	X	X	Widespread
Colias philodice CLOUDED SULFUR	X	X			X	X	X	X	X	Widespread
Harkenclenus titus CORAL HAIRSTREAK	X	X				X	X	X		Obligate
Satyrium calanus BANDED HAIRSTREAK	X	X						X		Edge

TABLE 1: CHURCHILL PRAIRIE BUTTERFLIES

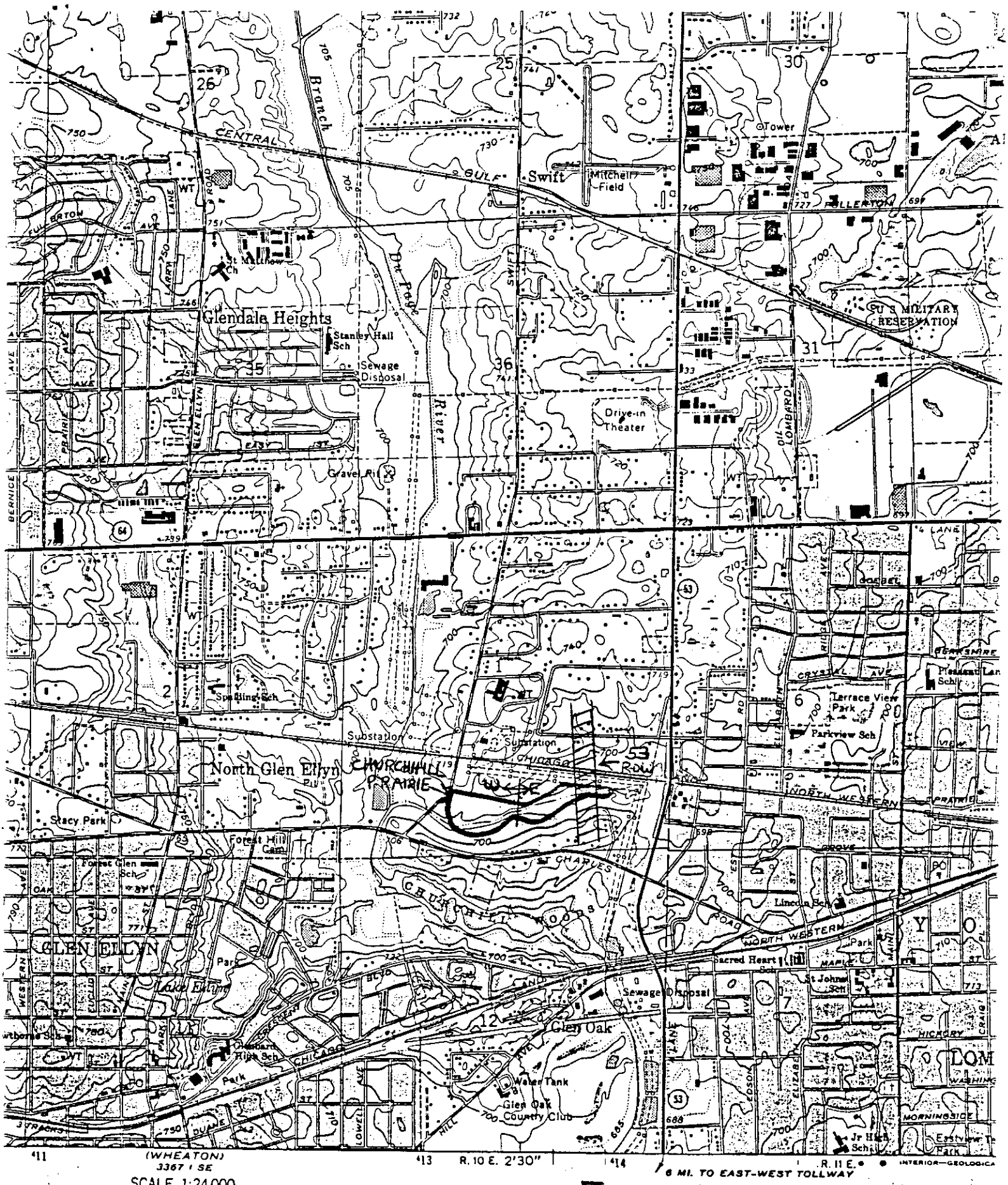
SPECIES	E	W	ID	6/14	6/21	7/03	7/10	7/12	7/24	ECOLOGY
Satyrium acadica ACADIAN HAIRSTREAK	X					X				Obligate
Lycaena thoe BRONZE COPPER		X							X	Obligate
Lycaena helloides PURPLISH COPPER	X	X					X	X	X	Obligate
Everes comyntas EASTERN TAILED BLUE	X					X		X	X	Widespread
Celastrina argiolus SPRING AZURE	X	X		X	X					Edge
Limenitis archippus VICEROY	X			X						Widespread
Vanessa atlanta RED ADMIRAL	X	X		X	X	X	X	X		Widespread
Cynthia virginiensis AMERICAN PAINTED LADY	X	X			X	X	X	X		Semi-local
Cynthia cardui PAINTED LADY	X				X					Widespread
Polygonia interrogationis QUESTION MARK	X	X			X	X	X	X	X	Edge
Chlosyne nycteis SILVERY CHECKERSPOT	X			X	X	X				Semi-local
Phyciodes tharos PEARL CRESCENT	X	X		X		X		X	X	Widespread
Speyeria cybele GREAT SPANGLED FRITILLARY	X	X		X	X	X	X	X	X	Semi-local
Speyeria aphrodite APHRODITE	X	X		X	X	X	X	X	X	Obligate
Danans plexippus MONARCH	X	X			X	X	X	X	X	Widespread
Lethe eurydice EYED BROWN	X	X				X	X	X	X	Obligate
Cercyonis pegale COMMON WOOD NYMPH	X	X				X	X	X	X	Semi-local

ADDITIONAL INSECTS NOTED IN CHURCHILL PRAIRIE

Haplorhynchites aeneus	SILPHUIM WEEVIL
Chauliograthus pennsylvanicus	COMMON SOLDIER BEETLE
Hemaris diffinis (Sphinx moths) Hemaris thysbe	HUMMINGBIRD CLEARWING MOTHS
Promachus vertebratus (Robber fly)	PRAIRIE "HAWK"
Parabombyllius coquillettii	GOLDEN BEEFLY
Archytas apicifer	TACHINID FLY
Ammophila ichneumomea	GREAT GOLDEN DIGGER WASP
Ammophila pennsylvanica	BLACK DIGGER WASP

Also, do you have Zizia aptera on your plant list for the site? It is there.

Add Euphyes dion (Dion skipper) to the list for Pratts Wayne Marsh. It is probably there because I remember a species behaving like it in the southwest area of Carex lacustris meadow near the creek. Perhaps I should recheck this area next year because of the beaver impacts and the fact that I know the skipper better now? I have slides of 2 of the rare skippers - do you want copies?



SCALE 1:24 000

1 MILE

0 1000 2000 3000 4000 5000 6000 7000 FEET

.5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET

FIGURE 1

ROAD CL

Heavy-duty

Medium-duty

Wayne E. Schenneum

BUTTERFLIES OF WATERFALL GLEN SAVANNAH

DU PAGE COUNTY, ILLINOIS

This report summarized the results of a field survey of the butterflies of Waterfall Glen Savannah, DuPage County, Illinois. The purposes of the survey were to determine and analyze the butterfly species composition of the savannah and to assess the impacts on the site's butterfly fauna of fire and woody plant removal, i.e., savannah restoration efforts, by DuPage County Forest Preserve District.

The survey work was conducted between June 16 and July 20, 1985. This is the peak period of adult activity for some, but not all, of the species expected to occur in this habitat. There is a definite bias toward single -brooded mid-summer species, many of which are typical of prairies and savannahs, in sampling during such a time period. However, many double or triple-blooded species show adult activity during this period and should not have been missed by the survey. Species which occur in forests and savannahs but are active as adults in spring and/or late summer - fall probably were overlooked by the survey.

This survey also was biased against any deep forest inhabitants, though not completely so. The majority of survey time was concentrated in areas of relatively open forest, paths, and forest openings with young canopy trees. These areas are outlined approximately in Figure 1. Very little time was spent in ravine forests, dense shaded forests, and the disturbed forest edge areas which border the Poverty Prairie.

Species were identified usually in flight or by capture and release. A few specimens were collected and will be submitted to DuPage County Forest Preserve District for its records. All observation data were recorded by date and habitat types. Table 1 gives the record of dates for each species but does not list habitat use in the preserve. Instead the known or estimated community types typically inhabited by these species observed are listed.

A total of 26 species of butterflies were recorded from the Waterfall Glen Savannah. Positive identification was confirmed on all but the Broken dash (Wallengrenia egeremet), for which a single specimen was noted as probable along the south path near the railroad tracks. Of the 26 species discovered, 15, or 58%, are characteristic species of forest-open forest-savannah communities. Many of these species utilize prairie and field habitats, but their life history (larval food plants) and behavior make them dependent on wooded to semi-wooded species, 27% of the total, are associated with native open communities -- prairies here -- but four of these are seen frequently in forest edge/savannah areas. (One seen only as a larvae - the American painted lady). In fact, only one of these 7 the Coral hairstreak ~~habitat~~ (Harkenclenus titus), could be considered a prairie obligate and its larval food plants are plum and cherry so it is historically probably a savannah species. The remaining four butterflies include 2 alien species and 2 highly adaptable native open habitat species, the Alfalfa butterfly (Colias eurytheme) and Silver spotted skipper (Epargyreus clarus).

In summary, the butterfly fauna of the Waterfall Glen Savannah is primarily one which is associated with forest and savannah and forest edge

communities. There is no evidence of a distinct prairie fauna in the Savannah. All of these species very probably are breeding residents. Some of the species appear to be using only the edge areas of the savannah, and probably are more concentrated in the Poverty Prairie, which in a 1982-83 study was shown to have a prairie - savannah - forest edge butterfly fauna which contained some species venturing out from the adjacent savannah - forest area studied this year. Such faunal blending is occurring but there is no total gradual, quantitative, and especially quantitative, mixing of butterfly faunas between the Poverty Prairie and Waterfall Glen Savannah, although very little observational effort has been concentrated on the ecotonal area between these two sites. If the pre-settlement vegetation complex was such a graduation from prairie or barrens (Poverty Prairie) to a mosaic of oak savannah and open oak forest (Waterfall Glen Savannah), then the present butterfly fauna would become a more natural intergrading assemblage characteristic of these communities if management restored such a landscape.

Indeed, 1985 observations in the Waterfall Glen Savannah, and general observations elsewhere, indicate that the vast majority of forest butterflies are seen along paths and in open to partly shaded forest glades which the paths simulate. These species do venture into the canopy, thickets, or more dense understory areas but are seldom concentrated in habitats with such a structure. That is, they select the partial-shade habitats which characterized pre-settlement savannahs and oak forests.

Given that the butterfly fauna would benefit quantitatively, and especially quantitatively, from a restoration to more open conditions, only the impact

of the methods for achieving this could be detrimental to the butterflies. The two most vulnerable groups of butterflies are those with woody larval food plants and those which overwinter as pupae or eggs on vegetation scorched by fall or spring fires. This vulnerability is dependent on the mobility/adaptability of the species themselves. The colonial, localized forms with low vagility are less likely to move into areas where they have been extirpated by management; these are the species of special concern at Waterfall Glen Savannah. All three of the hairstreaks, (Satyrium) in Table 1 are colonial, localized oak and/or hickory (and/or walnut) feeders as larvae which overwinter as eggs laid on twigs or in bark of the food plant.

The hickory hairstreak (S. caryaevorus) is even rare throughout its range. These, species seem to concentrate in areas of saplings or young trees of their foodplant. Their egg-laying may be concentrated on these age-classes. It is recommended, therefore, that no such sapling copses be eliminated. Thinning should guarantee survival of members of each colony. In pre-settlement times, colonies of these hairstreaks may have followed gradually the subtle shifts in forest/savannah structure over long time periods.

A long-term management policy which simulates this process and includes copses of canopy saplings should guarantee survival of these butterflies. Among locally uncommon species which overwinter as pupae are the pipevine swallowtail (Battus philenor) and American painted lady (Cynthia virginiensis). The former's foodplant is Aristolochia serpentaria, the latter's are Antennaria and Gnaphalium.

The Pipevine swallowtail is particularly significant because it occurs only near colonies of its foodplant, which is rare and at the northern limit of its range in the Chicago region. In the absence of data on the overwintering location of its pupae, the best management policy would be to avoid total burning of any colonies of the foodplant.

Other more common species at Waterfall Glen, which make up most of the site's butterfly fauna, may be negatively affected by fire and woody plant removal. The three satyrids - Pearly eye, Little wood satyr, and Common woodnymph -- utilize woodland grasses as larval foodplants and overwinter as larvae which may be in fire-sensitive locations. As long as the burning program is always partial, not total, they should persist, and increase as the habitat opens up and their foodplants increase in biomass. Common woodland species such as the Hackberry butterfly, Mourning cloak, and others which depend on woody larval foodplants will be negatively affected by total removal of these species (e.g, hackberry, elm, cherry, etc.). Since portions of the Waterfall Glen Savannah, such as ravines and patches of more closed forest, probably harbored these foodplants and these butterflies in pre-settlement times, a management policy which maintains a mosaic of communities which includes some forest should guarantee the survival of these butterflies.

Finally, management which restores a more open oak forest/savannah condition should benefit butterfly species which have yet to be discovered at Waterfall Glen Savannah, but should occur because suitable habitat and foodplants are present. Examples of such potential species are the Zabulon skipper (Poanes zabulon), the Columbine dusky wing (Erynnis Lucilius),

Checkered white (Pieris protodice), Olympian marble (Euchloe olympia), and the rare striped hairstreak (Satyrium liparops).

TABLE 1: WATERFALL GLEN SAVANNAH BUTTERFLIES

O = larvae
X = adults

	SPECIES	6/16	6/21	7/03	7/20	ECOLOGY
-	Poanes hobomok HOBOMOK SKIPPER		X			Savannah, open forest
O	Wallengrenia egeremet BROKEN DASH				?X	Native open habitats
W-A	Thymelicus lineola EUROPEAN SKIPPER	X				Alien; fields
O	Erynnis baptisiae WILD INDIGO DUSKY WING				X	Prairie, savannah
W	Epargyreus clarus SILVER SPOTTED SKIPPER				X	Open areas, forest edge
-	Battus philenor PIPEVINE SWALLOWTAIL		O	O	OX	Open forest
+	Papilio glaucus TIGER SWALLOWTAIL	X				Forest, forest edge
W-A	Pieris rapae CABBAGE WHITE	X			X	Alien; fields
W	Colias eurythome ALFALFA BUTTERFLY		X	X	X	Prairies, fields
O	Harken clenustitu CORAL HAIRSTREAK			X		Prairies, savannah
-	Satyrium calanus BANDED HAIRSTREAK	X	X			Oak forest, savannah
-	Satyrium caryaeyorus HICKORY HAIRSTREAK		X			Oak forest, savannah
-	Satyrium edwardsii EDWARDS HAIRSTREAK			X		Savannahs, oak thickets
+	Celastrina argiolus SPRING AZURE	X	X	X	X	Forest edge, savannah
-	Asterocampa celtis HACKBERRY BUTTERFLY	X				Forest
+	Limenitis astyanax RED SPOTTED PURPLE		X		X	Forest edge, open forest
+	Vanessa atlanta RED ADMIRAL	X	X	X		Forest edge, fields

TABLE 1: WATERFALL GLEN SAVANNAH BUTTERFLIES

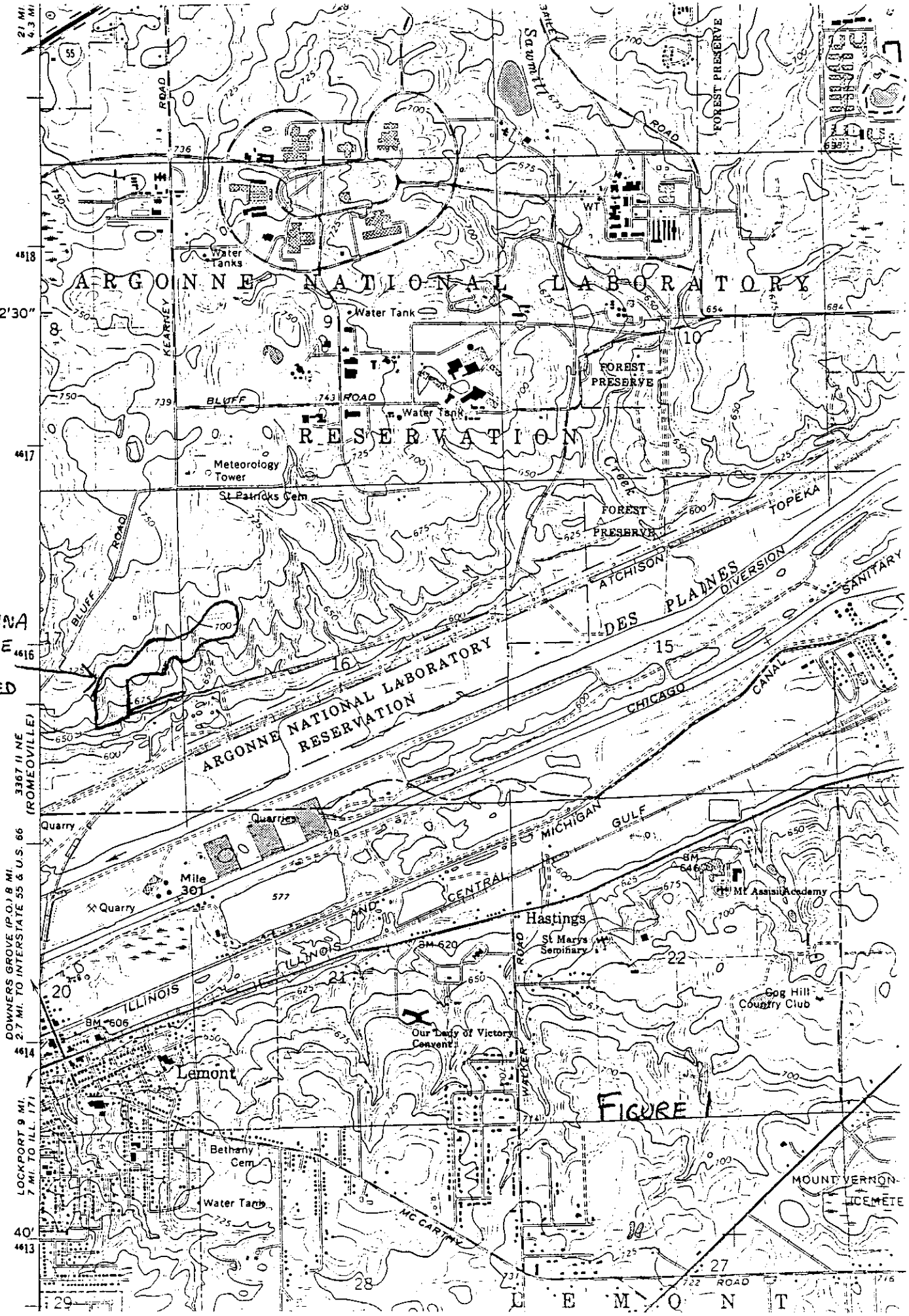
	SPECIES	6/16	6/21	7/03	7/20	ECOLOGY
0	Cynthia verginiensis AMERICAN PAINTED LADY		0	0	0	Prairie, savannah
-	Nymphalis antiopa MOURNING CLOAK	X	X	X		Forest, shrub wetland
+	Polygonia interrogationis QUESTION MARK		X	?		Forest, forest openings
-	Polygonia comma COMMA	?	X	?	X	Forest
0	Chlosyne nycteis SILVERY CHECKERSPOT	X				Moist prairie, meadow
0	Speyeria cybele GREAT SPANGLED FRITILLARY		X	X	X	Prairie, savannah
-	Lethe portlandia PEARLY EYE		X		X	Forest
-	Euptychia cymela LITTLE WOOD SATYR	X	X	X	X	Forest (open), savannah
0	Cercyonis pegala COMMON WOOD NYMPH			X	X	Prairie, savannah

INSECT SPECIES OF WATERFALL GLEN
(additional)

1) Assassin (robber fly) - probably genus Efferia

2) Scape moth, possibly yellow-collared species
   Scepsis fulvicollia

3) A large Catocala (underwing) moth was caught and released.
   Merits study - some species are rare.


ARGONNE NATIONAL LABORATORY
RESERVATION
Water Tanks
Water Tank
Meteorology Tower
St Patricks Cem
FOREST PRESERVE
BLUFF ROAD
KEARNEY ROAD
Sawmill ROAD
ATCHISON TOPEKA
DES PLAINES DIVERSION
SANITARY
CHICAGO CANAL
ARGONNE NATIONAL LABORATORY RESERVATION
GULF MICHIGAN
CENTRAL
ILLINOIS AND
Quarry
Mile 301
Hastings
St Mary's Seminary
Mt Assisi Academy
Cog Hill Country Club
Our Lady of Victory Convent
Lemont
Bethany Cem
MC CARTHY ROAD
MOUNT VERNON CEMETE
LEMONT
SAVANNA & EDGE AREAS STUDIED
FIGURE 1
42'30"
40'
4818
4817
4616
4614
4613
3367 II NE (ROMEOVILLE)
DOWNERS GROVE (P.O.) 8 MI. 2.7 MI. TO INTERSTATE 55 & U.S. 66
LOCKPORT 9 MI. 7 MI. TO ILL. 171

BUTTERFLIES OF WOOD DALE GROVE PRAIRIE

DUPAGE COUNTY, ILLINOIS

This report summarizes the results of a field survey of the butterflies of Wood Dale Grove Prairie, DuPage County, Illinois. The purposes of the survey were to determine and analyze the butterfly species composition of the prairie and to assess the impacts on the site's butterfly fauna of burning and shrub/tree removal, i.e. prairie restoration efforts, by DuPage County Forest Preserve District.

The survey work was conducted between June 16 and July 19, 1985. A two-week period in early July was missed and this is a critical period for several prairie butterflies. However, most species present should have been observed in late June or mid-July. Single-brooded late spring and late fall/early summer species were missed by the survey.

The survey concentrated in the prairie and wetland openings, forest edge, and shrub edge habitats represented in the site as outlined in Figure 1. Most old field openings were examined only cursorily, or ignored, in an effort to search for species dependent on the native vegetation present.

Species were identified almost exclusively in flight or perched on vegetation, or occasionally by capture-and-release. Voucher specimens were collected for two species; they will be deposited in the Forest Preserve collection. All observation data were recorded by date and habitat type. Table 1 gives the dates of observation for each species and the general

habitat types for them, rather than habitat locations in the prairie itself.

A total of 27 species of butterflies were discovered in the Wood Dale Grove Prairie. For two skippers, the Broken dash (Wallegrenia egeremet) and Cross-line (Polites origines), identification is tentative but probably correct. Verification by collection is necessary; both of these species were represented by very few individual observations.

The 27 species present cannot be definitively characterized as representative of primarily one natural community type. Species typical of sedge-dominated wetlands, prairies, savannahs, open forests, and combinations of these communities are present. Nine or 1/3 of the species, are very adaptable butterflies typical of open areas; two of these are alien. The remaining 18 are more specific to native habitats, though at least four of these are forest edge and forest species which readily colonize cultural simulations of their normal habitats. The other 14 give the best indication of the type of butterfly community which originally inhabited this site in pre-settlement times. These are discussed below.

Two species present are characteristic of wetlands; their larvae are sedge-feeders. The very rare Dion skipper (Euphyes Dion) occurs as a single very small colony in open sedge meadows in the northern corner of the site. This sedge marsh butterfly is rare throughout its range, found only in scattered, highly localized colonies. The other wetland species present is the Appalachian eyed brown (Lethe Appalachia), which exists as a moderate-sized colony, is restricted on the site to shrubby sedge meadow

and moist thickets in the extreme northern edge of the sampling area. This species was never seen in the open edge meadows nearby, except at their edges; this is typical of this species' behavior, in contrast to that of its sibling, Lethe eurydice, which is not present.

Six of the species present are typical of prairies, or prairies and savannahs. All but one are semi-local but relatively frequent. These are the Broken dash, Cross line, American painted lady, Silvery checkerspot, Great spangled fritillary, and Common wood nymph. The Cross line skipper is an uncommon species generally restricted to upland prairies.

The remaining 6 species are typical of open forests and savannahs, though the Comma is also typical of deep forests. The Hobomok skipper and Little wood satyr are relatively common and widespread open forest/savannah species whose larvae feed on native grasses. The three hairstreaks -- Banded, Edwards', and Striped -- are found in localized colonies in such communities. All are oak feeders as larvae, though the Banded and Striped utilize other woody plants as well. The Striped hairstreak is an uncommon species throughout its range and was seen as a single individual (the normal situation for this species) nectaring in the shrubby prairie at Wood Dale Grove. The other two hairstreaks were concentrated in oak sapling copses on the west side of the site, and individuals were seen often taking nectar from New Jersey tea.

Based on the shape, surrounding communities, soil types and flora of the Wood Dale Grove Prairie, it is apparent that this site was a wet mesic savannah, dotted with small: sedge meadows and flatwoods, which was

cleared and grazed by livestock. This kept the area more open and allowed a savannah-wetland-prairie butterfly fauna to persist while succession to a more closed forest occurred rapidly on adjacent land. Remnant populations in the open portion are therefore precariously small and are themselves threatened by the current successional trend in the prairie area, i.e. an increase in the density and cover of shrubs and small trees. Many of these shrubs and trees are not utilized by the majority of butterfly species present, and those which do tend to be the more adaptable forest and edge species. These plants include common buckthorn, gray dogwood, green ash, elm, black cherry and hawthornes. However, it would be a misconception to assume that shrubs and trees do not, and did not, contribute to the structure and composition of the original community complex and its associated butterfly fauna. The hairstreaks utilize young oaks and shrubs as territorial perches and food plants. The Appalachian eyed brown requires a semi-shaded sedge meadow (a flatwoods environment), not an open one. Several of the local prairie species occur also in savannahs, as do the typical open forest species. Therefore, it is recommended that the density of shrub and tree cover bereduced considerable but not eliminated, using fire and brush and tree removal. Furthermore, the total acreage managed in this was should be expanded into the forested area to the west. This will provide a larger, structurally more natural (more open) wet mesic savannah complex which will allow an increase in the size of existing butterfly populations. The current mosaic of small prairie and wetland patches among dense copses of shrubs and small trees (therefore much edge habitat) cannot sustain the open and semi-open habitat butterflies indefinitely, especially as the woody species increase in density. Only the forest and adaptable edge butterflies are likely to persist.

Large fires of high frequency may be needed initially to restore the vegetation at Wood Dale Grove Prairie. The potential sensitivity of some butterflies to these fires can be accommodated by avoiding total burns.

TABLE 1: WOOD DALE GROVE PRAIRIE BUTTERFLIES

SPECIES	6/16	6/28	7/12	7/19	ECOLOGY
Euphyes dion DION SKIPPER		X	X	X	Sedge marsh
Poanes hobomok HOBOMOK SKIPPER	X				Savannah, open forest
Wallengrenia egeremet BROKEN DASH				X	Native open habitats
Polites coras PECK'S SKIPPER				X	Prairies, fields
Polites themistocles TAWNY EDGED SKIPPER			X		Prairies, fields
Polites origines CROSS LINE SKIPPER		X	X	X	Prairies
Thymelscus lineola EUROPEAN SKIPPER	X				Fields
Epargyreus clarus SILVER-SPOTTED SKIPPER		X	X	X	Open areas, forest edge
Pieris rapae CABBAGE WHITE	X	X	X	X	Alien; fields
Colias eurytheme ALFALFA BUTTERFLY		X	X	X	Prairies, fields
Colias philodice CLOUDED SULPHUR		X			Prairies, fields
Satyrium calanus BANDED HAIRSTREAK		X		X	Oak forest, savannah
Satyrium edwardsii EDWARDS HAIRSTREAK		X		X	Oak thickets, savannah
Satyrium liparops STRIPED HAIRSTREAK				X	Oak forests, savannah
Celastrina argiolus SPRING AZURE	X	X		X	Forest edge, savannah
Vanessa atlanta RED ADMIRAL	X	X	X		Forest edge, fields
Cynthia virginiesis AMERICAN PAINTED LADY	X	X			Prairie, savannah
Nymphalis antiopa MOURNING CLOAK	X				Forest, shrub wetlands

TABLE 1: WOOD DALE GROVE

SPECIES	6/16	6/28	7/12	7/19	ECOLOGY
Polygonia interrogationis QUESTION MARK	X	X	X	X	Forest, forest openings
Polygonia comma COMMA	X				Forest
Chlosyne nycteis SILVERY CHECKERSPOT	X	X			Moist prairie, meadow
Phyciodes tharos PEARL CRESCENT	X				Prairies, fields
Speyeria cybele GREAT SPANGLED FRITILLARY		X	X		Prairies, savannah
Danaus plexippus MONARCH			X		Prairies, fields
Lethe appalachia APPALACHIAN EYED BROWN			X	X	Shrub swamp, moist open forest & thicket
Euptychia cymela LITTLE WOOD SATYR	X	X	X	X	Open forest, savannah
Cercyonis pegala COMMON WOOD NYMPH		X	X	X	Prairie, savannah

INSECT SPECIES OF WOOD DALE GROVE PRAIRIE
(additional)

Diptera (Archytas apicifer) - tachinid fly

Orthoptera (Chortophaga viridifasciata) - green-striped grasshopper

Odonata (Platynois lydia) - white-tailed skimmer

Lepidoptera (Scepsis fulvicollis) - yellow-collared scape moth

Diptera (Parabombyllius coquillettis) - golden bully

Hymenoptera (Ammophila pennsylvanica) - black digger wasp

Coleaptera (Chauliognathus marginatus) - emeriginate solder beetle

Hymenoptera (Ammophila ichneumomea) - great golden digger wasp

Lepidoptera (Hemaris thysbe) - hummingbird clearwing moth

Coleaptera (Trinhabda canadensis) - goldenrod leaf beetle

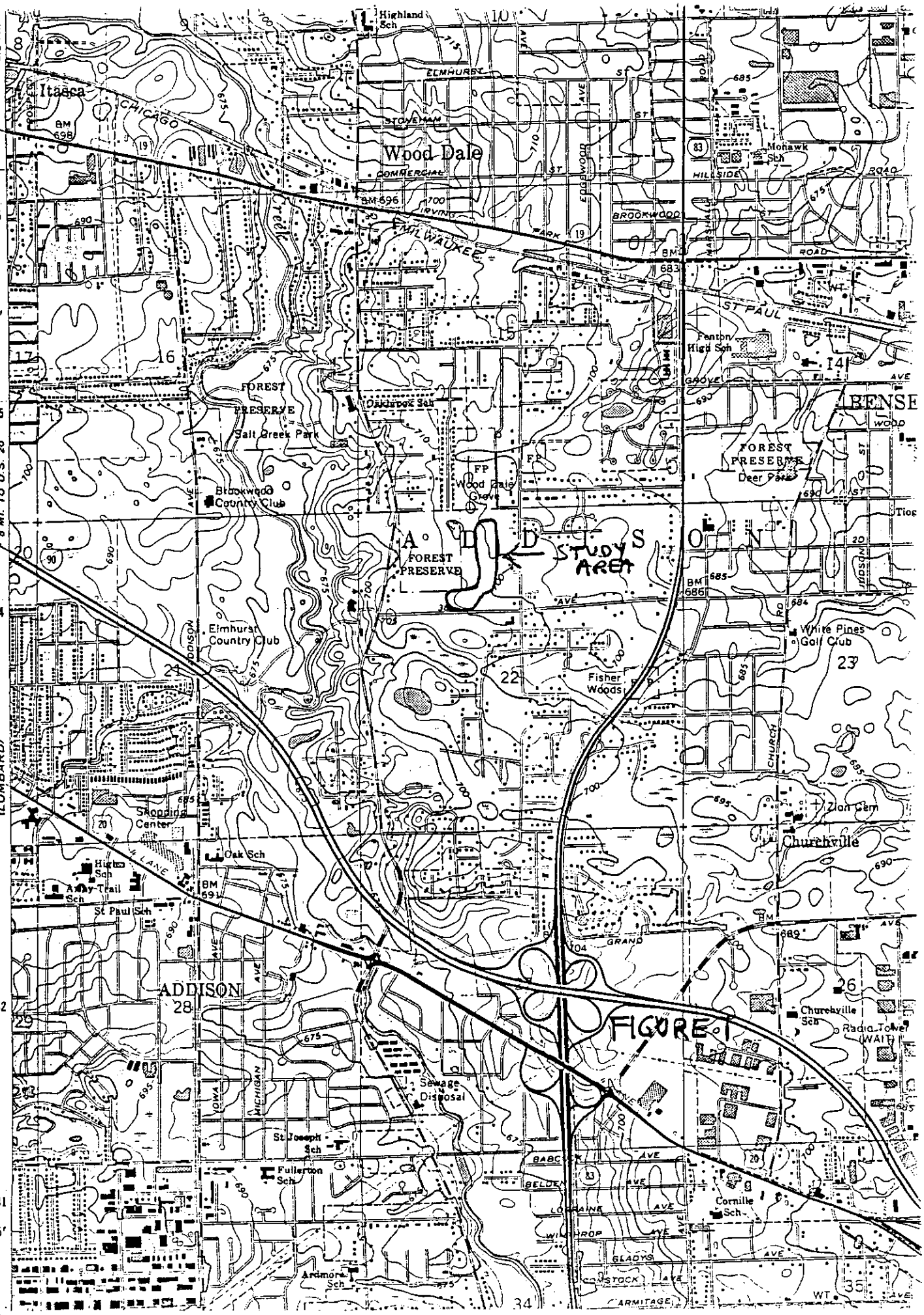
Odonata (Anax junius) - green darner

Odonata (Enallagma sp.) - common blue damselfly

Addition Plant Species

Ninebark (Physocarpus opulifolius)

Silky willow (Salix sericea)


ELGIN (P.O.) 16 MI
MEDINAH 2.8 MI.
Itasca
CHICAGO
Wood Dale
ELMHURST
STOVEHAM
COMMERCIAL
IRVING
PARK
MILWAUKEE
BROOKWOOD
HILLSIDE
ROAD
ST PAUL
Highland Sch
Mohawk Sch
Fenton High Sch
57'30"
FOREST PRESERVE
Salt Creek Park
Oakbrook Sch
Brookwood Country Club
FP
Wood Dale Grove
FOREST PRESERVE
Deer Park
BENSE
8 MI. TO U.S. 20
ADDISON
STUDY AREA
FOREST PRESERVE
Elmhurst Country Club
White Pines Golf Club
Fisher Woods
ELGIN (P.O.) 17 MI.
1.8 MI. TO ILL. 53
3367 I NE
(LOMBARD)
Shopping Center
Oak Sch
High Sch
Army Trail Sch
St Paul Sch
Zion Gem
Churchville
GRAND
ADDISON
FIGURE 1
Churchville Sch
Radio Tower (WAIT)
Sewage Disposal
St Joseph Sch
Fullerton Sch
BABCOCK
BELDEN
LORAINE
WINTHROP
GLADYS
COMSTOCK
ARMITAGE
Cornille Sch
Ardmore Sch
55'