VEGETATION OF LONG ISLAND, ADAMS COUNTY, ILLINOIS

INTRODUCTION

Long Island, just north of the town of Quincy in Adams County, Illinois, is located in the Mississippi River, extending from RM 332.5 to RM 340.2. This island, along with several nearby islands, are part of the Mark Twain National Wildlife Refuge. The larger islands associated with Long Island include La Grange Island on the Mississippi River side, while Dillon Island, Shandrew Island, Flannigan Island, and Libby Island, are to the east of Long Island, flanked by Canton Chute. Long Island Lake extends down the middle of the island. Entrance is at the southern end of the island where the lake is divided into three narrow lobes, the longest of which extend for about 5 km near the center of the island. Permanent and ephemeral ponds are scattered throughout the island.

Long Island has been protected since the 1950's. Prior to that time major disturbances were probably confined to periodic logging operations that were selective, and probably restricted to more accessible areas. Two extensive cultivated fields occur on the island, and have been farmed since at least the 1930's. One field is located on the east side, to the west of Flannigan Island, while the largest field extends nearly the entire length of the west side of the island. Both were plowed during July of this year and planted in soybeans.

Long Island was inundated by the "great flood of 1993." Water level exceeded a depth of 5 m over the island, while flood duration was for about 3 months during the summer and fall of 1993. The present study was undertaken to determine the vegetation structure and composition on Long Island, and to asses the effects of recent flooding.

METHODS

During the spring and early summer of 1994 most of the island was walked, and six east/west transects established (Figure 1). During July each forest type long each transect was studied using 1/2 ha plots placed perpendicular to the transects. These plots (50 m X 100 m) were divided into quadrats 25 m on a side for ease in surveying. The number, size and species of all living and dead-standing stems (10 cm dbh and above) were recorded for each of the eight quadrats. The relative dominance, relative density, and importance value (IV) were then recorded for each species in each study area (McIntosh 1957, Boggess 1964). The average diameter (cm), density (#/ha) and basal area (m^2/ha) were also calculated for each species. The data from study areas with similar structure and species composition were then combined, and five relatively distinct forest communities types were determined to be present on the island (Table 13).

Dead-standing individuals were tallied as to when they probably died, before or after late summer of 1993. Though it was not possible to determine with certainty if the death was flood related, the presence of dead leaves, intact twigs with buds, and tight bark gave a good indication that the tree had died within the past year.

The number of small saplings (>50 cm tall, <2.5 cm dbh), and large saplings (2.5-9.9 cm dbh) were determined for each study area by walking through the quadrats and recording all individuals found.

Ground cover was determined by estimating the percent of open area by two independent observers and averaging the results. Herbaceous species were collected and deposited in the E. L. Stover Herbarium, Eastern Illinois University, Charleston, Illinois. Nomenclature follows Mohlenbrock (1986).

DESCRIPTION OF THE VEGETATION ALONG EACH TRANSECT

Transect 1. This transect, located near the southern tip of the island, is the second longest, and does not dissect the cultivated field that extends down most of the west side of the island. Six areas were studied along this transect, with most of the forest being of fairly good quality.

The forest along the east shore (Table 1A) averaged 310 stems/ha with a basal area of 44.6 m^2/ha. Silver maple dominated with many medium to large individuals, averaged 178 stems/ha, a basal area of 38.9 m^2/ha, and an average diameter of 47.5 cm. American elm was second in IV with 106 stems/ha, was the most important understory species (average diameter of 17.1 cm), and averaged 37 saplings/ha. Within the study area 60 dead-standing individuals were recorded, silver maple accounting for more than half of the total. Most of the dead silver maples had been dead for a few years, but most of the dead American elms and hackberries died within the past year (Table 2). Ground cover averaged 10% with the most common species being Laportea canadensis, Bidens vulgata and Sicyos angulatus.

The interior forest, which exists to the west of the first study area on undulating ground, averaged 294 stems/ha, had a basal area of 41.3 m^2/ha, and was dominated by silver maple (Table 1B). This species accounted for more than half of the total individuals present (158 stems/ha) and two-thirds of the basal area (30.2 m^2/ha). American elm dominated the understory with 82 stems/ha, while green ash (third in IV) along with silver maple dominated the overstory. A few large individuals of pecan, honey locust and cottonwoods were also recorded for this site. Dead-standing individuals were relatively common, averaged 86 stems/ha and a basal area of 5.024 m^2/ha. Silver maple accounted for nearly half of the dead-standing individuals. Most of the silver maple stems had been dead for a few years,

while the dead American elm and hackberry stems probably died within the past year (Table 2). Ground cover exceeded 90% on the study site and was over 1 m tall. Bidens vulgata dominated while other common species included Laportea canadensis, Ambrosia trifida and Polygonum lapathifolium.

Scattered throughout the interior forest area were shallow ridges that averaged 1-2 m higher than the surrounding area. Here the overstory was more open, and a few different overstory species were encountered. These ridge forests averaged 152 stems/ha with a basal area of 31.8 m^2/ha (Table 1C). Again silver maple dominated with a few relatively large individuals, while American elm dominated the understory. Bur oak, kingnut hickory, Kentucky coffee-tree, and pecan were recorded for this site. Dead-standing individuals were common with 164 stems/ha. Most were hackberries that had recently died, along with a few individuals of American elm, kingnut hickory and Kentucky coffee-tree (Table 2). Ground cover exceeded 50% with Bidens vulgata the dominant species. Other common herbaceous species were Pilea pumila, Laportea canadensis, Leersia virginica and Stachys tenuifolia.

Between two lakes that extend down the middle of the island is a low area that commonly floods. This flood channel forest had an average of 320 stems/ha and a basal area of 42.7 m^2/ha (Table 1D). Silver maple dominated with an average of 190 stems/ha, and nearly two-thirds of the basal area (29.6 m^2/ha). Again, American elm was second in IV, and dominated the understory. Pecan and green ash were common overstory components, while a few scattered individuals of sycamore, black willow, river birch, and hackberry were also encountered. Dead-standing individuals were common with 112 stems/ha (Table 2). Most of the dead American elms and hackberries were probably killed by the flood. Ground cover was nearly 100% with seedlings of silver maple forming nearly a continuous blanket over the forest floor.

Common herbaceous species included Bidens vulgata and Pilea pumila.

Just to the west of the lakes was a fairly high ridge with the forest dominated by bur oak (Table 1E). This forest averaged 224 stems/ha, a basal area of 40.3 m^2/ha, and was the only part of transect one were silver maple was not the dominant species. Bur oak averaged 24 stems/ha, a basal area of 12.5 m^2/ha, and an average diameter of 76.7 cm. Silver maple ranked second in IV followed by American elm. Other overstory species included green ash, pin oak, kingnut hickory and pecan. Dead-standing individuals were common with 204 stems/ha. Hackberry accounted for most, with most being killed in the past year (Table 2). Ground cover was about 45% with Bidens vulgata, Laportea canadensis and Boehmeria cylindrica being the common species encountered.

The forest at the western edge of the transect along the west shore of the island averaged 332 stems/ha with a basal area of 51.9 m^2/ha (Table 1F). Silver maple dominated with about two-thirds of the individuals and basal area. Cottonwood ranked second in IV with many large diameter trees (average of 72.0 cm), while a few sycamore were present along with the understory species American elm and hackberry. Silver maple dominated the dead-standing category, with 48 stems/ha, while the hackberries were probably killed by the flood (Table 2). Ground cover averaged 10% with Bidens vulgata and Laportea canadensis being the dominant species.

Transect 2. This transect starts at the east shore of Long Island about 200 m south of the tip of Flannigan Island. Long Island Lake dissects the transect as does the southern part of the extensive cultivated field along the west side of the island. Six areas were studied in this transect, with most of the forests east of Long Island Lake being of excellent quality

while parts to the west of the lake were mostly poorer quality.

The forest along the east shore (Table 3A) averaged 316 stems/ha with a basal area of 39.9 m^2/ha. Silver maple dominated with many medium to large individuals, averaged 138 stems/ha, a basal area of 35.6 m^2/ha, and an average diameter of 52.8 cm. American elm was second in IV with 152 stems/ha, was the most important understory species (average diameter of 15.7 cm), and averaged 11 saplings/ha. Green ash was a minor overstory component while hackberry and box elder were rare in the understory. Dead-standing individuals averaged 48 stems/ha with hackberry accounting for more than half of the total, and most were probably killed by the flood (Table 4). Ground cover averaged 15% with the most common species being Laportea canadensis and Bidens vulgata.

Just to the west of the east shore forest was a narrow ridge dominated by cottonwoods. The forest on the ridge averaged 272 stem/ha and a basal area of 40.2 m^2/ha (Table 3B). Cottonwood exceeded silver maple, averaged 80 stems/ha, a basal area of 26.9 m^2/ha, and an average diameter of 63.9 cm. Second in IV was American elm which dominated the understory with 78 stems/ha and an average diameter of 17.2 cm. Silver maple was third in IV followed by sycamore and box elder. Dead-standing individuals averaged 70 stems/ha with silver maple, American elm and hackberry being the most common (Table 4). Ground cover was similar to that found in the east shore forest of this transect, and averaged 10% or less.

The interior forest, which exists to the west of the cottonwood ridge on undulating ground, continues west to Long Island Lake. In this forest the overstory averaged 284 stems/ha, had a basal area of 37.1 m^2/ha, and was dominated by silver maple (Table 3C). This species accounted for 110 stems/ha, and two-thirds of the basal area (24.3 m^2/ha). American elm

dominated the understory with 122 stems/ha, while green ash (third in IV) along with silver maple dominated the overstory. A few large individuals of pin oak, pecan, sycamore, cottonwood and Kentucky coffee tree were also recorded for this site. Dead-standing individuals were very common, with 116 stems/ha and a basal area of 4.672 m^2/ha. Silver maple, American elm and hackberry each accounted for one-third of the dead-standing individuals. Most of the silver maple stems had been dead for a few years, while most of the dead American elm and hackberry stems were probably killed by the flood (Table 4). Ground cover exceeded 95% on the study site and was over 1 m tall. Bidens vulgata dominated, while other common species included Laportea canadensis and Ambrosia trifida. Silver maple seedlings were extremely common over much of the lower areas.

Scattered throughout the interior forest area were shallow ridges that averaged about 1-2 m higher than the surrounding area, the most extensive being next to Long Island Lake. Here the overstory was more open, and a few different overstory species were encountered. This ridge forest averaged 174 stems/ha with a basal area of 30.0 m^2/ha (Table 3D). Silver maple was the dominate overstory species while American elm dominated the understory. Green ash, pin oak, cottonwood, bur oak, hackberry and pecan were also found. Dead-standing individual were extremely common, averaged 234 stems/ha and a basal area of 12.634 m^2/ha. Hackberry was the most common dead-standing species encountered followed by American elm, most of which had probably been killed by the flood (Table 4). Ground cover exceeded 95% with Bidens vulgata the dominant species. Other common herbaceous species were Pilea pumila, Laportea canadensis, Leersia virginica, Stachys tenuifolia and Ambrosia trifida.

To the west of Long Island Lake was and extensive interior forest of

poor quality. Scattered throughout this area were flood channel forests and ridge forests of fair to excellent quality. A flood channel forest to the west of Long Island Lake averaged 468 stems/ha with a basal area of 30.4 m^2/ha (Table 3E). Most trees were relatively small, and averaged less than 45 cm dbh. Silver maple was the dominant species encountered, accounted for 350 stems/ha and nearly half of the basal area (14.9 m^2/ha). Black willow was also common while cottonwood and green ash were occasionally encountered. Dead-standing individuals averaged 108 stems/ha with silver maple being the most common. This was one of only a few study areas in which many smaller silver maples were killed by the flood (Table 4). Ground cover was 100% with silver maple seedlings being dominant. Common herbs included Bidens vulgata, Bidens cernua, Ambrosia trifida and Polygonum lapathifolium, while the shrub Cephalanthus occidentalis (button bush) was common in open areas.

Just to the west of Long Island Lake was a fairly high ridge. The forest on this ridge had an extremely diverse species composition, and averaged 168 stems/ha, and a basal area of 23.4 m^2/ha (Table 3F). Silver maple dominated due to a few very large individuals (average diameter of 74.6 cm), but only accounted for an IV of 36.5 (out of a possible 200). Other overstory species included kingnut hickory, bur oak, Kentucky coffee tree, pin oak, green ash, sycamore and pecan, while the understory was dominated by American elm and occasional individuals of hackberry, box elder and green hawthorn. Dead-standing individuals were very common, and averaged 212 stems/ha. Hackberry accounted for most, with most being killed by the flood (Table 4). Ground cover was about 85% with Bidens vulgata, Laportea canadensis and Erechtites hieracifolia being the most common species encountered.

Transect 3. This transect is near the middle of Long Island, just east of La Grange, Missouri. The transect crosses the northern edge of the cultivated field on the east side of the island and after crossing Long Island Lake goes through the extensive cultivated field on the west side of the island. Four areas were studied along this transect with most of the forest being of good quality.

Adjacent to the eastern shore cultivated field is a good quality interior forest with occasional interruptions from small flood channels and narrow ridges. In this forest the woody overstory averaged 238 stems/ha, had a basal area of 39.1 m^2/ha, and was dominated by silver maple (Table 5A). This species accounted for 112 stems/ha, and two-thirds of the basal area (29.9 m^2/ha). American elm dominated the understory with 102 stems/ha, while green ash (third in IV) was occasionally encountered in the overstory. A few large individuals of pecans were also recorded for this site, while box elder was rare in the understory. Dead-standing individuals were fairly common, averaged 70 stems/ha and a basal area of 3.082 m^2/ha. Hackberry was the most common, followed by American elm and silver maple. Most of the silver maple stems had been dead for a few years, while some of the American elm and most of the hackberry stems were probably killed by the flood (Table 6). Ground cover exceeded 95% with seedlings of silver maple and green ash dominant. The herbaceous vegetation was dominated by Bidens vulgata, Laportea canadensis, Sicyos angulatus and Ambrosia trifida which exceeded 1 m in height.

Scattered throughout this interior forest were flood channel and ridge forests of fair to excellent quality. The flood channel forest that was studied, averaged 296 stems/ha with a basal area of 53.9 m^2/ha (Table 5B). Silver maple dominated, accounted for 242 stems/ha and nearly all of the

basal area (51.1 m^2/ha). A few American elms were found in the understory, while sycamore, slippery elm and green ash were rare in the overstory. Dead-standing individuals averaged 70 stems/ha with most being silver maple and American elm (Table 6). Again, as in the other flood channels studied, many of the young silver maples had recently died (32 of 38). Ground cover was 100% with silver maple seedlings nearly blanketing the area.

Due to the length of this transect another area of interior forest was studied (Table 5C). It was similar to the first area examined in this transect, averaged 204 stems/ha, had a basal area of 41.3 m^2/ha, and silver maple was the leading dominant with an IV of 123.6 (Table 5C). The subdomiant species were also the same except for the addition of pin oak, and the loss of box elder in the understory. The major difference between these two areas was that dead-standing individuals nearly doubled on the second site, averaged 142 stems/ha with a basal area of 10.524 m^2/ha. Hackberry dominated this category with most of the individual having died during the past year (Table 6). Ground cover averaged 95% with Bidens vulgata being the most common followed by Ambrosia trifida, Solanum ptycanthum, Polygonum lapathifolium and Laportea canadensis.

Between Long Island Lake and the extensive cultivated field on the west side of the island was a low ridge. The forest on this ridge had a fairly diverse species composition, and averaged 312 stems/ha, and a basal area of 28.2 m^2/ha (Table 5D). Box elder dominated due to the large number of relatively small individuals (134 stems/ha with an average diameter of 21.5 cm). This species had an IV of 62.4, only slightly higher than silver maple (IV of 55.4). Bur oak ranked third in IV due to a few large individuals (average diameter of 74.6 cm). Other overstory species included green ash, hackberry, pin oak, kingnut hickory, pecan and slippery elm, while box elder

and American elm were common in the woody understory. Dead-standing individuals were very common and averaged 116 stems/ha. Hackberry and box elder accounted for most, with most probably being killed by the flood (Table 6). Ground cover was about 50% with Laportea canadensis being the common herbaceous species.

Transect 4. This transect, located about 100 m to the north of the service road which crosses the island, extends from 50 m north of the southern tip of Shandrew Island to the cultivated field on the west side of the island. Three areas were studied along this transect, with most of the forests being of good quality.

The area studied at the east edge of the transect had a similar composition to the cottonwood ridge forest examined along transect two (Table 3B). The forest along the east shore of transect four averaged 384 stems/ha, a basal area of 41.4 m^2/ha, and was dominated by cottonwood (Table 7A). This species averaged 132 stems/ha and accounted for two-thirds of the basal area (28.8 m^2/ha). Silver maple ranked second with an IV of 53.7, and 136 stems/ha. Sycamore was also common in the overstory while box elder and American elm dominated the understory along with a few sapling of American elm. Dead-standing individuals averaged 44 stems/ha with silver maple, cottonwood and box elder the most common (Table 8). All of the dead box elder had died within the past year, probably due to the flood. Herbaceous cover was less than 10% with Laportea canadensis being the common species.

Most of the of the transect was covered by interior forest of good quality that was similar to that found in the first three transects. In this study area the overstory averaged 200 stems/ha, had a basal area of 31.8 m^2/ha, and was dominated by silver maple (Table 7B). This species

accounted for 112 stems/ha, and two-thirds of the basal area (22.1 m^2/ha). Green ash was second with an IV of 34.4, while American elm dominated the understory with 42 stems/ha, and an IV of 24.2. A few large individuals of pecan, sycamore, kingnut hickory and honey locust were also recorded. Dead-standing individuals were fairly common, averaged 90 stems/ha and a basal area of 5.528 m^2/ha. Hackberry was the most common, followed by American elm and silver maple. Most of the silver maple stems had been dead for a few years, while many of the dead American elm and hackberry stems were probably killed by the flood (Table 8). Ground cover exceeded 95% and was dominated by Bidens vulgata, Polygonum lapathifolium, Laportea canadensis and Ambrosia trifida which usually exceeded 1 m in height.

The ridge forest studied was located between the northern tip of Long Island Lake and the cultivated field. The forest on this ridge had a fairly diverse species composition, was relatively open, averaged 114 stems/ha, and had a basal area of 25.4 m^2/ha (Table 7C). Silver maple dominated with 44 stems/ha, had an average diameter of 51.6 cm, and accounted for nearly half of the basal area. Box elder was second in IV (39.0), while cottonwood was third due to a few extremely large individuals. Kingnut hickory was relatively common in the overstory along with a few individuals of honey locust, green ash, sycamore, and bur oak. Dead-standing individuals averaged 90 stems/ha with hackberry and box elder being the most common, most having died within the past year (Table 8). Ground cover was about 95% with Laportea canadensis, Bidens vulgata, Ambrosia trifida, Polygonum lapathifolium and Sicyos angulatus being the most common, and mostly exceeding 1 m in height.

Transect 5. This transect starts about 125 m south of the north end of Shandrew Island, and crossed the cultivated field to a narrow forest on the west side of Long Island. Two areas were studied along this transect one along each shore of the island.

The forest studied along the east side (Table 9A) averaged 264 stems/ha with a basal area of 34.2 m^2/ha. Silver maple dominated with many medium to large diameter trees, averaged 116 stems/ha, a basal area of 25.6 m^2/ha, and an average diameter of 49.2 cm. American elm, second in IV, dominated the woody understory along with box elder (third in IV). Green ash, pecan, cottonwood and Kentucky coffee tree were occasionally encountered. Dead-standing individuals averaged 60 stems/ha with hackberry, silver maple and American elm being the most common (Table 10). Most were silver maples that had been dead for 2 or more years, while half of the American elms and most of the hackberries had been killed by the flood. Ground cover in the study area averaged 60% with Bidens vulgata, Urtica dioica, and Laportea canadensis dominant.

The forest along the west side of the transect averaged 404 stems/ha, with a basal area of 48.2 m^2/ha (Table 9B). Again silver maple was the dominant species with more than half of the individuals (216 stems/ha), and about one-third of the basal area (18.6 m^2/ha). In this area cottonwood was second in importance with 84 stems/ha, a basal area of 27.2 m^2/ha, and an average diameter 62.6 cm. Dead-standing individuals averaged 76 stems/ha with silver maple, box elder and cottonwood the most important. Silver maple averaged 32 stems/ha, and most had been dead 2 or more years. In contrast, many of the box elder and cottonwood had died within the past year (Table 10). Ground cover was less than 5% with Laportea canadensis, Leersia virginica, Pilea pumila and Urtica dioica being the important species.

Transect 6. This transect, which is located near the north end of the island, consists of a narrow strip of timber along the east side, an open cultivated field, and a strip of timber along the west side. Two areas were studies, one along each shore of the island.

The forest studied along the east side averaged 268 stems/ha with a basal area of 52.3 m^2/ha (Table 11A). Silver maple dominated with many medium to large diameter trees, averaged 216 stems/ha, a basal area of 40.0 m^2/ha, and an average diameter of 42.1 cm. A few large cottonwoods with an average diameter of 116.8 cm were scattered throughout the forest, accounting for its second in importance. American elm was the dominant understory species (average diameter of 16.2 cm) though a few white mulberries and hackberries were also present. Few dead individuals were recorded, 28 stems/ha with a total basal area of 2.620 m^2/ha. Most were silver maples that had been dead for 2 or more years (Table 12). Ground cover averaged 5-10% with Laportea canadensis being dominant. Other common species included Solanum ptycanthum, Sicyos angulatus, Erechtites hieracifolia, and seedlings of silver maple.

The forest along the west side of the transect was similar in composition to the one on the east side with 374 stems/ha and a basal area of 52.4 m^2/ha (Table 11B). Again silver maple dominated, averaged 240 stems/ha, while cottonwood was second with 82 stems/ha and a basal area of 31.2 m^2/ha. American elm and box elder dominated the woody understory. Dead-standing individuals averaged 42 stems/ha with a basal area of 3.728 m^2/ha. Again, silver maple dominated this category with 24 stems/ha, all of which had been dead 2 or more years. Only one American elm and one box elder were flood related deaths. Ground cover averaged 5% with Laportea canadensis, Leersia virginica and Pilea pumila being the most common.

Table 1. Density of saplings and trees (#/ha), basal areas (m^2/ha), relative values, importance values and average diameters of the woody species found in the study areas along transect 1 on Long Island, Adams County, Illinois.

Species	Saplings #/ha small	Saplings #/ha large	Trees #/ha	Basal Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Av. Diam. cm
Area A -- EAST SHORE FOREST								
Acer saccharinum	--	6	178	38.9	57.4	87.2	144.6	47.5
Ulmus americana	--	38	106	2.6	34.2	5.9	40.1	17.1
Fraxinus pennsylvanica	--	--	12	1.8	3.9	4.1	8.0	40.9
Platanus occidentalis	--	--	4	1.0	1.3	2.2	3.5	51.4
Celtis occidentalis	--	--	8	0.1	2.6	0.2	2.8	12.9
Gymnocladus dioicus	--	--	2	0.2	0.6	0.4	1.0	32.2
Totals	0	44	310	44.6	100.0	100.0	200.0	
Area B -- INTERIOR FOREST								
Acer saccharinum	--	--	158	30.2	53.7	73.1	126.8	44.5
Ulmus americana	--	--	82	2.4	27.9	5.7	33.6	17.9
Fraxinus pennsylvanica	--	--	40	4.6	13.6	11.2	24.8	37.2
Carya illinoensis	--	--	6	2.1	2.0	5.0	7.0	27.5
Gleditsia triacanthos	--	--	2	1.0	0.7	2.5	3.2	81.1
Populus deltoides	--	--	2	0.6	0.7	1.4	2.1	60.5
Celtis occidentalis	--	--	2	0.3	0.7	0.8	1.5	44.5
Ulmus rubra	--	--	2	0.1	0.7	0.3	1.0	28.8
Totals	0	0	294	41.3	100.0	100.0	200.0	
Area C -- RIDGE FOREST								
Acer saccharinum	--	--	44	11.9	28.9	37.5	66.4	52.2
Ulmus americana	--	--	52	1.8	34.2	5.6	39.8	20.3
Quercus macrocarpa	--	--	12	10.0	7.9	31.5	39.4	99.8
Carya laciniosa	--	--	12	5.0	7.9	15.9	23.8	72.8
Celtis occidentalis	--	--	16	0.9	10.6	2.7	13.3	18.9
Gymnocladus dioicus	--	--	12	1.5	7.9	4.7	12.6	36.5
Carya illinoensis	--	--	4	0.7	2.6	2.1	4.7	45.9
Totals	0	0	152	31.8	100.0	100.0	200.0	

Table 1 (continued)

Species	Saplings #/ha small	Saplings #/ha large	Trees #/ha	Basal Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Av. Diam. cm
Area D-- FLOOD CHANNEL FOREST								
Acer saccharinum	--	4	190	29.6	59.3	69.5	128.8	38.8
Ulmus americana	--	2	60	1.7	18.8	4.0	22.8	18.5
Carya illinoensis	--	--	26	6.0	8.1	14.1	22.2	53.6
Fraxinus pennsylvanica	--	--	28	4.0	8.8	9.3	18.1	41.1
Platanus occidentalis	--	--	6	0.7	1.9	1.7	3.6	39.1
Crataegus viridis	--	4	4	0.1	1.3	0.1	1.4	10.0
Salix nigra	--	--	2	0.3	0.6	0.7	1.3	42.7
Betula nigra	--	--	2	0.2	0.6	0.4	1.0	32.9
Celtis occidentalis	--	--	2	0.1	0.6	0.2	0.8	21.3
Totals	0	10	320	42.7	100.0	100.0	200.0	
Area E -- RIDGE FOREST								
Quercus macrocarpa	--	--	24	12.5	10.7	31.2	41.9	76.7
Acer saccharinum	--	--	36	10.0	16.1	24.8	40.9	54.4
Ulmus americana	--	12	72	2.0	32.1	4.9	37.0	18.3
Fraxinus pennsylvanica	--	--	20	6.3	8.9	15.7	24.6	63.0
Celtis occidentalis	--	--	32	1.2	14.3	2.9	17.2	20.6
Quercus palustris	--	--	12	3.5	5.4	8.6	14.0	57.6
Carya illinoensis	--	--	12	3.3	5.4	8.3	13.7	55.9
Carya laciniosa	--	--	16	1.5	7.1	3.6	10.7	28.1
Totals	0	12	224	40.3	100.0	100.0	200.0	
Area F -- WEST SHORE FOREST								
Acer saccharinum	--	--	282	36.4	84.9	70.2	155.1	39.0
Populus deltoides	--	--	34	14.1	10.2	27.2	37.4	72.0
Platanus occidentalis	--	--	6	1.0	1.9	1.9	3.8	45.2
Ulmus americana	--	--	8	0.3	2.4	0.6	3.0	22.1
Celtis occidentalis	4	--	2	0.1	0.6	0.1	0.7	12.7
Totals	4	--	332	51.9	100.0	100.0	200.0	

Table 2. Density (#/ha), basal area (m^2/ha), and average diameter (cm) of dead-standing trees, and density (#/ha) and average diameter (cm) of dead-standing trees that died during late summer 1993 to July 1994 in the study areas along transect 1 on Long Island, Adams County, Illinois. Total living stems (#/ha) for each species are included for comparative purposes.

	LIVING	TOTAL DEAD-STANDING TREES			RECENT DEATHS	
Species	Density #/ha	Density #/ha	Basal Area m^2/ha	Av. Diameter cm	Density #/ha	Av. Diameter cm
AREA A -- EAST SHORE FOREST						
Acer saccharinum	178	32	3.528	29.1	2	32.5
Celtis occidentalis	8	18	.324	14.7	16	13.8
Ulmus americana	106	10	.392	20.3	6	14.9
Totals	292	60	4.244		24	
AREA B -- INTERIOR FOREST						
Acer saccharinum	158	42	3.128	28.5	4	18.8
Celtis occidentalis	2	20	.610	18.9	18	18.5
Ulmus americana	82	14	.226	14.0	10	13.9
Fraxinus pennsylvanica	40	8	.654	31.4	2	27.8
Cymnocladus dioicus	--	2	.406	50.8	2	50.8
Totals	282	86	5.024		36	
AREA C -- RIDGE FOREST						
Celtis occidentalis	16	116	2.376	15.7	116	15.7
Ulmus americana	52	28	.520	15.2	16	13.2
Cymnocladus dioicus	12	12	1.456	35.5	12	35.5
Carya laciniosa	12	4	.848	52.0	4	52.0
Acer saccharinum	44	4	.108	18.7	--	--
Totals	136	164	5.308		148	
AREA D -- FLOOD CHANNEL FOREST						
Ulmus americana	60	38	1.150	18.3	36	18.4
Celtis occidentalis	2	34	.756	15.9	30	15.8
Acer saccharinum	190	22	1.020	21.7	2	12.8
Fraxinus pennsylvanica	28	10	1.346	39.6	2	31.2
Betula nigra	2	6	.352	26.8	--	--
Crataegus viridis	4	2	.034	14.5	2	14.5
Totals	286	112	4.658		72	

Table 2 (continued)

Species	LIVING Density #/ha	TOTAL DEAD-STANDING TREES Density #/ha	Basal Area m^2/ha	Av. Diameter cm	RECENT DEATHS Density #/ha	Av. Diameter cm
AREA E -- RIDGE FOREST						
Celtis occidentalis	32	168	5.488	18.0	164	18.1
Ulmus americana	72	16	.584	20.7	4	27.2
Carya illinoensis	12	8	3.080	68.8	4	55.4
Quercus palustris	12	4	2.128	82.3	--	--
Fraxinus pennsylvanica	20	4	.984	56.0	--	--
Gymnocladus dioicus	--	4	.036	10.7	4	10.7
Totals	148	204	12.300		176	
AREA F -- WEST SHORE FOREST						
Acer saccharinum	282	48	3.770	30.5	--	--
Celtis occidentalis	2	8	.082	11.3	8	11.3
Populus deltoides	34	6	1.514	54.2	--	--
Totals	318	62	5.366		8	

Table 3. Density of saplings and trees (#/ha), basal areas (m^2/ha), relative values, importance values and average diameters of the woody species found in the study areas along transect 2 on Long Island, Adams County, Illinois.

Species	Saplings #/ha small	Saplings #/ha large	Trees #/ha	Basal Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Av. Diam. cm
Area A -- EAST SHORE FOREST								
Acer saccharinum	--	2	138	35.6	43.6	89.3	132.9	52.8
Ulmus americana	2	10	152	3.2	48.1	8.0	56.1	15.7
Celtis occidentalis	--	4	14	0.2	4.4	0.5	4.9	13.2
Fraxinus pennsylvanica	--	--	10	0.6	3.3	1.5	4.8	23.6
Acer negundo	--	--	2	0.3	0.6	0.7	1.3	42.5
Totals	2	16	316	39.9	100.0	100.0	200.0	
Area B -- COTTONWOOD RIDGE FOREST								
Populus deltoides	--	--	80	26.9	29.4	66.9	96.3	63.9
Ulmus americana	--	2	78	2.0	28.7	5.0	33.7	17.2
Acer saccharinum	--	--	52	5.5	19.1	13.8	32.9	35.4
Platanus occidentalis	--	--	30	4.7	11.0	11.6	22.6	42.8
Acer negundo	--	--	22	0.7	8.1	1.7	9.8	19.3
Fraxinus pennsylvanica	--	--	6	0.3	2.2	0.8	3.0	24.9
Celtis occidentalis	--	4	4	0.1	1.5	0.2	1.7	15.7
Totals	0	6	272	40.2	100.0	100.0	200.0	
Area C -- INTERIOR FOREST								
Acer saccharinum	--	--	110	24.3	38.7	65.7	104.4	48.3
Ulmus americana	--	--	122	2.8	43.0	7.6	50.6	16.4
Fraxinus pennsylvanica	--	--	28	5.5	9.9	14.8	24.7	44.8
Quercus palustris	--	--	6	1.9	2.1	5.3	7.4	63.0
Populus deltoides	--	--	2	1.0	0.7	2.7	3.4	79.2
Carya illinoensis	--	--	4	0.5	1.4	1.2	2.6	36.9
Celtis occidentalis	--	--	6	0.2	2.1	0.4	2.5	18.1
Gymnocladus dioicus	--	--	2	0.4	0.7	1.2	1.9	52.4
Platanus occidentalis	--	--	2	0.4	0.7	1.0	1.7	51.0
Crataegus viridis	--	--	2	0.1	0.7	0.1	0.8	12.1
Totals	0	0	284	37.1	100.0	100.0	200.0	

Table 3 (continued)

Species	Saplings #/ha small	Saplings #/ha large	Trees #/ha	Basal Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Av. Diam. cm
Area D-- RIDGE FOREST								
Acer saccharinum	--	--	68	11.6	39.2	38.7	77.9	41.2
Ulmus americana	--	--	64	2.9	36.8	9.6	46.4	22.4
Fraxinus pennsylvanica	--	--	10	4.6	5.7	15.3	21.0	76.4
Quercus palustris	--	--	8	4.5	4.6	15.0	19.6	82.8
Populus deltoides	--	--	2	3.2	1.1	10.6	11.7	142.4
Quercus macrocarpa	--	--	4	2.2	2.3	7.6	9.9	84.6
Celtis occidentalis	--	--	12	0.4	6.9	1.3	8.2	19.9
Carya illinoensis	--	--	4	0.5	2.3	1.8	4.1	41.3
Crataegus viridis	--	--	2	0.1	1.1	0.1	1.2	14.2
Totals	0	0	174	30.0	100.0	100.0	200.0	
Area E -- FLOOD CHANNEL FOREST								
Acer saccharinum	--	10	350	14.9	74.8	49.0	123.8	21.9
Salix nigra	--	--	92	12.0	19.7	39.6	59.3	40.1
Populus deltoides	--	--	22	3.4	4.7	11.2	15.9	43.8
Fraxinus pennsylvanica	--	--	4	0.1	0.8	0.2	1.0	15.8
Totals	0	10	468	30.4	100.0	100.0	200.0	
Area F -- RIDGE FOREST								
Acer saccharinum	--	--	14	6.6	8.3	28.2	36.5	74.6
Carya laciniosa	--	--	34	2.3	20.2	9.7	29.9	25.9
Ulmus americana	--	--	30	1.2	17.8	5.2	23.0	21.2
Quercus macrocarpa	--	--	10	3.8	6.0	16.4	22.4	68.7
Celtis occidentalis	--	--	30	1.0	17.8	4.4	22.2	19.7
Gymnocladus dioicus	--	--	24	1.6	14.3	6.9	21.2	26.3
Quercus palustris	--	--	6	2.8	3.6	12.0	15.6	76.5
Fraxinus pennsylvanica	--	--	6	2.0	3.6	8.6	12.2	64.9
Acer negundo	--	--	8	0.4	4.8	1.8	6.6	25.8
Platanus occidentalis	--	--	2	1.0	1.2	4.2	5.4	79.2
Carya illinoensis	--	--	2	0.6	1.2	2.4	3.6	59.8
Crataegus viridis	--	--	2	0.1	1.2	0.2	1.4	15.3
Totals	0	0	168	23.4	100.0	100.0	200.0	

Table 4. Density (#/ha), basal area (m^2/ha), and average diameter (cm) of dead-standing trees, and density (#/ha) and average diameter (cm) of dead-standing trees that died during late summer 1993 to July 1994 in the study areas along transect 2 on Long Island, Adams County, Illinois. Total living stems (#/ha) for each species are included for comparative purposes.

Species	LIVING Density #/ha	TOTAL DEAD-STANDING TREES Density #/ha	Basal Area m^2/ha	Av. Diameter cm	RECENT DEATHS Density #/ha	Av. Diameter cm
AREA A -- EAST SHORE FOREST						
Celtis occidentalis	14	28	.440	14.0	28	14.0
Acer saccharinum	138	14	2.040	39.6	2	12.5
Ulmus americana	152	6	.058	11.1	--	--
Totals	304	48	2.538		30	
AREA B -- COTTONWOOD RIDGE FOREST						
Acer saccharinum	52	20	.900	23.7	2	20.8
Ulmus americana	78	14	.454	19.0	12	16.7
Celtis occidentalis	4	14	.168	12.4	14	12.4
Acer negundo	22	10	.296	17.0	10	17.0
Fraxinus pennsylvanica	6	8	.450	25.0	2	15.3
Populus deltoides	80	2	1.088	83.2	--	--
Gymnocladus dioicus	--	2	.526	57.9	2	57.9
Totals	242	70	3.882		42	
AREA C -- INTERIOR FOREST						
Ulmus americana	122	42	.782	15.0	26	13.4
Acer saccharinum	110	36	3.000	28.9	4	22.9
Celtis occidentalis	6	36	.744	15.6	34	15.2
Fraxinus pennsylvanica	28	2	.146	30.5	--	--
Totals	266	116	4.672		64	
AREA D -- RIDGE FOREST						
Celtis occidentalis	12	122	2.430	15.3	118	15.5
Ulmus americana	64	60	2.132	20.2	52	19.0
Acer saccharinum	68	36	2.700	24.4	28	22.1
Quercus palustris	8	8	4.326	83.1	--	--
Carya laciniosa	--	4	.726	47.8	4	47.8
Fraxinus pennsylvanica	10	2	.134	29.1	2	29.1
Carya illinoensis	4	2	.186	34.4	--	--
Totals	166	234	12.634		204	

Table 4 (continued)

Species	LIVING Density #/ha	TOTAL DEAD-STANDING TREES Density #/ha	Basal Area m^2/ha	Av. Diameter cm	RECENT DEATHS Density #/ha	Av. Diameter cm
AREA E -- FLOOD CHANNEL FOREST						
Acer saccharinum	350	88	2.276	17.1	48	15.2
Salix nigra	92	14	1.232	33.1	--	--
Populus deltoides	22	4	.120	19.6	2	21.2
Ulmus americana	--	2	.030	13.8	2	13.8
Totals	464	108	3.658		52	
AREA F -- RIDGE FOREST						
Celtis occidentalis	30	168	5.592	18.6	156	18.8
Carya laciniosa	34	10	1.296	36.3	4	18.4
Gymnocladus dioicus	24	10	.876	33.2	10	33.2
Quercus palustris	6	8	4.336	82.7	--	--
Ulmus americana	30	6	.112	15.4	2	12.1
Acer saccharinum	14	4	.632	43.5	--	--
Juglans nigra	--	4	.176	23.3	4	23.3
Crataegus viridis	2	2	.040	16.1	--	--
Totals	140	212	13.060		176	

Table 5. Density of saplings and trees (#/ha), basal areas (m^2/ha), relative values, importance values and average diameters of the woody species found in the study areas along transect 3 on Long Island, Adams County, Illinois.

Species	Saplings #/ha small	Saplings #/ha large	Trees #/ha	Basal Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Av. Diam. cm
Area A -- INTERIOR FOREST								
Acer saccharinum	--	--	112	29.9	47.1	76.2	123.3	52.0
Ulmus americana	--	--	102	2.8	42.9	7.3	50.2	18.2
Fraxinus pennsylvanica	--	--	16	3.9	6.7	9.9	16.6	52.3
Carya illinoensis	--	--	6	2.4	2.5	6.2	8.7	71.8
Acer negundo	--	--	2	0.1	0.8	0.4	1.2	29.7
Totals	0	0	238	39.1	100.0	100.0	200.0	
Area B -- FLOOD CHANNEL FOREST								
Acer saccharinum	--	--	242	51.1	81.8	94.6	176.4	47.3
Ulmus americana	--	--	38	0.9	12.8	1.7	14.5	17.4
Platanus occidentalis	--	--	6	1.3	2.0	2.5	4.5	49.5
Ulmus rubra	--	--	8	0.4	2.7	0.8	3.5	24.3
Fraxinus pennsylvanica	--	--	2	0.2	0.7	0.4	1.1	39.0
Totals	0	0	296	53.9	100.0	100.0	200.0	
Area C -- INTERIOR FOREST								
Acer saccharinum	--	--	100	30.8	49.0	74.6	123.6	57.3
Ulmus americana	--	--	56	1.9	27.5	4.7	32.2	20.0
Fraxinus pennsylvanica	--	--	26	6.4	12.7	15.5	28.2	55.0
Celtis occidentalis	--	--	18	0.8	8.8	1.8	10.6	20.8
Quercus palustris	--	--	2	1.0	1.0	2.4	3.4	79.7
Carya illinoensis	--	--	2	0.4	1.0	1.0	2.0	48.8
Totals	0	0	204	41.3	100.0	100.0	200.0	

Table 5. (continued)

Species	Saplings #/ha small	Saplings #/ha large	Trees #/ha	Basal Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Av. Diam. cm
Area D -- RIDGE FOREST								
Acer negundo	--	8	134	5.5	43.0	19.4	62.4	21.5
Acer saccharinum	--	--	80	8.4	25.6	29.8	55.4	31.8
Quercus macrocarpa	--	--	12	6.1	3.9	21.6	25.5	74.6
Ulmus americana	--	6	32	0.6	10.3	1.9	12.2	14.2
Fraxinus pennsylvanica	--	--	14	1.9	4.5	6.7	11.2	38.5
Celtis occidentalis	--	6	14	1.0	4.5	3.7	8.2	28.3
Quercus palustris	--	--	6	1.7	1.9	6.2	8.1	59.8
Carya laciniosa	--	--	12	1.0	3.9	3.6	7.5	31.1
Carya illinoensis	--	--	6	1.0	1.9	3.5	5.4	41.7
Ulmus rubra	--	--	2	1.0	0.5	3.6	4.1	81.3
Totals	0	20	312	28.2	100.0	100.0	200.0	

Table 6. Density (#/ha), basal area (m^2/ha), and average diameter (cm) of dead-standing trees, and density (#/ha) and average diameter (cm) of dead-standing trees that died during late summer 1993 to July 1994 in the study areas along transect 3 on Long Island, Adams County, Illinois. Total living stems (#/ha) for each species are included for comparative purposes.

Species	LIVING Density #/ha	TOTAL DEAD-STANDING TREES Density #/ha	Basal Area m^2/ha	Av. Diameter cm	RECENT DEATHS Density #/ha	Av. Diameter cm
AREA A -- INTERIOR FOREST						
Celtis occidentalis	--	38	.802	15.3	36	15.4
Ulmus americana	102	18	.394	16.1	6	12.7
Acer saccharinum	112	10	1.134	33.8	--	--
Quercus palustris	--	2	.558	59.6	--	--
Carya illinoensis	6	2	.194	35.1	--	--
Totals	220	70	3.082		42	
AREA B -- FLOOD CHANNEL FOREST						
Acer saccharinum	242	38	3.882	33.1	32	29.1
Ulmus americana	38	30	.842	18.0	--	--
Ulmus rubra	8	2	.062	20.0	2	10.0
Totals	288	70	4.786		34	
AREA C -- INTERIOR FOREST						
Celtis occidentalis	18	92	2.054	16.1	80	13.2
Ulmus americana	56	20	.766	21.2	6	17.6
Acer saccharinum	100	18	3.240	42.9	--	--
Quercus palustris	2	10	3.812	68.7	--	--
Fraxinus pennsylvanica	26	2	.652	64.4		
Totals	202	142	10.524		86	
AREA D -- RIDGE FOREST						
Celtis occidentalis	14	60	1.472	16.6	58	16.7
Acer negundo	134	38	.700	14.8	22	14.5
Quercus palustris	6	6	2.114	66.2	--	--
Carya illinoensis	6	4	.374	31.5	--	--
Ulmus americana	32	4	.170	23.3	--	--
Carya laciniosa	12	2	.538	58.5	2	58.5
Fraxinus pennsylvanica	14	2	.064	20.2	2	20.2
Totals	218	116	5.432		84	

Table 7. Density of saplings and trees (#/ha), basal areas (m^2/ha), relative values, importance values and average diameters of the woody species found in the study areas along transect 4 on Long Island, Adams County, Illinois.

Species	Saplings #/ha small	Saplings #/ha large	Trees #/ha	Basal Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Av. Diam. cm
Area A -- EAST SHORE FOREST								
Populus deltoides	--	--	132	28.8	34.4	69.5	103.9	51.6
Acer saccharinum	--	--	136	7.6	35.4	18.3	53.7	25.4
Acer negundo	--	--	58	2.2	15.1	5.4	20.5	21.3
Ulmus americana	--	20	42	0.6	10.9	1.4	12.3	13.2
Platanus occidentalis	--	--	16	2.2	4.2	5.4	9.6	39.5
Totals	0	20	384	41.4	100.0	100.0	200.0	
Area B -- INTERIOR FOREST								
Acer saccharinum	--	--	112	22.1	56.0	69.3	125.3	45.4
Fraxinus pennsylvanica	--	--	32	5.9	16.0	18.4	34.4	44.3
Ulmus americana	--	--	42	1.0	21.0	3.2	24.2	16.8
Carya illinoensis	--	--	6	1.6	3.0	5.1	8.1	57.9
Platanus occidentalis	--	--	2	0.9	1.0	3.0	4.0	77.7
Carya laciniosa	--	--	2	0.1	1.0	0.4	1.4	28.8
Gleditsia triacanthos	--	--	2	0.1	1.0	0.3	1.3	23.8
Acer negundo	--	--	2	0.1	1.0	0.3	1.3	27.4
Totals	0	0	200	31.8	100.0	100.0	200.0	
Area C -- RIDGE FOREST								
Acer saccharinum	--	--	44	11.0	38.5	43.4	81.9	51.6
Acer negundo	--	--	32	2.8	28.0	11.0	39.0	31.1
Populus deltoides	--	--	4	3.6	3.5	14.4	17.9	106.8
Carya laciniosa	--	--	10	1.6	8.8	6.2	15.0	35.7
Gleditsia triacanthos	--	--	4	1.8	3.5	7.3	10.8	76.4
Fraxinus pennsylvanica	--	--	4	1.2	3.5	4.6	8.1	60.7
Platanus occidentalis	--	--	2	1.6	1.8	6.2	8.0	99.9
Quercus macrocarpa	--	--	2	1.4	1.8	5.4	7.2	93.4
Celtis occidentalis	--	--	6	0.2	5.3	0.9	6.2	22.0
Gymnocladus dioicus	--	--	4	0.1	3.5	0.3	3.8	16.3
Ulmus americana	--	--	2	0.1	1.8	0.3	2.1	21.2
Totals	0	0	114	25.4	100.0	100.0	200.0	

Table 8. Density (#/ha), basal area (m^2/ha), and average diameter (cm) of dead-standing trees, and density (#/ha) and average diameter (cm) of dead-standing trees that died during late summer 1993 to July 1994 in the study areas along transect 4 on Long Island, Adams County, Illinois. Total living stems (#/ha) for each species are included for comparative purposes.

Species	LIVING	TOTAL DEAD-STANDING TREES			RECENT DEATHS	
	Density #/ha	Density #/ha	Basal Area m^2/ha	Av. Diameter cm	Density #/ha	Av. Diameter cm
AREA A -- EAST SHORE FOREST						
Acer saccharinum	136	20	.622	19.1	6	18.3
Populus deltoides	132	10	.872	33.0	2	31.5
Acer negundo	58	10	.132	12.9	10	12.9
Ulmus americana	42	4	.076	15.3	--	--
Totals	368	44	1.702		18	
AREA B -- INTERIOR FOREST						
Celtis occidentalis	--	36	1.602	21.4	28	21.2
Ulmus americana	42	30	.630	15.5	14	14.1
Acer saccharinum	112	20	2.838	33.3	2	14.0
Carya laciniosa	2	2	.432	52.5	--	--
Fraxinus pennsylvanica	32	2	.026	13.0	--	--
Totals	188	90	5.528		44	
AREA C -- RIDGE FOREST						
Celtis occidentalis	6	68	3.370	23.5	68	23.5
Acer negundo	32	10	.414	19.9	6	14.8
Acer saccharinum	44	4	1.162	59.6	--	--
Carya laciniosa	10	4	.180	22.2	4	22.2
Gymnocladus dioicus	4	2	.092	24.1	2	24.1
Ulmus americana	2	2	.248	39.7	--	--
Totals	98	90	5.466		80	

Table 9. Density of saplings and trees (#/ha), basal areas (m^2/ha), relative values, importance values and average diameters of the woody species found in the study areas along transect 5 on Long Island, Adams County, Illinois.

Species	Saplings #/ha small	Saplings #/ha large	Trees #/ha	Basal Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Av. Diam. cm
Area A -- EAST SHORE FOREST								
Acer saccharinum	--	--	116	25.6	43.9	74.7	118.6	49.2
Ulmus americana	--	--	80	2.0	30.3	5.9	36.2	17.0
Acer negundo	--	--	34	1.2	12.9	3.5	16.4	20.3
Fraxinus pennsylvanica	--	--	16	2.0	6.0	5.9	11.9	38.3
Carya illinoensis	--	--	10	1.4	3.8	4.2	8.0	42.5
Populus deltoides	--	--	2	1.4	0.8	4.2	5.0	95.9
Celtis occidentalis	--	--	4	0.2	1.5	0.6	2.1	22.9
Gymnocladus dioicus	--	--	2	0.4	0.8	1.0	1.8	47.4
Totals	0	0	264	34.2	100.0	100.0	200.0	
Area B -- WEST SHORE FOREST								
Acer saccharinum	--	--	216	18.6	53.4	38.5	91.9	30.6
Populus deltoides	--	--	84	27.2	20.8	56.3	77.1	62.6
Ulmus americana	--	--	64	1.2	15.8	2.7	18.5	15.4
Fraxinis pennsylvanica	--	--	16	0.5	4.0	1.0	5.0	19.4
Acer negundo	--	--	14	0.5	3.5	1.1	4.6	20.9
Morus alba	--	--	10	0.2	2.5	0.4	2.9	16.2
Totals	0	0	404	48.2	100.0	100.0	200.0	

Table 10. Density (#/ha), basal area (m^2/ha), and average diameter (cm) of dead-standing trees, and density (#/ha) and average diameter (cm) of dead-standing trees that died during late summer 1993 to July 1994 in the study areas along transect 5 on Long Island, Adams County, Illinois. Total living stems (#/ha) for each species are included for comparative purposes.

	LIVING	TOTAL DEAD-STANDING TREES			RECENT DEATHS	
Species	Density #/ha	Density #/ha	Basal Area m^2/ha	Av. Diameter cm	Density #/ha	Av. Diameter cm
AREA A -- EAST SHORE FOREST						
Celtis occidentalis	4	22	.450	14.7	20	15.0
Acer saccharinum	116	18	1.380	27.1	--	--
Ulmus americana	80	12	.250	15.8	6	14.0
Acer negundo	34	4	.054	12.8	--	--
Fraxinus pennsylvanica	16	2	.238	39.0	--	--
Ulmus rubra	--	2	.032	14.2	2	14.2
Totals	250	60	2.404		28	
AREA B -- WEST SHORE FOREST						
Acer saccharinum	216	32	1.334	22.1	--	--
Acer negundo	14	24	.458	15.2	16	13.6
Populus deltoides	84	10	1.278	39.7	6	31.2
Fraxinus pennsylvanica	16	6	.108	15.1	--	--
Ulmus americana	64	2	.034	14.9	--	--
Morus alba	10	2	.016	10.3	--	--
Totals	404	76	3.228		22	

Table 11. Density of saplings and trees (#/ha), basal areas (m^2/ha), relative values, importance values and average diameters of the woody species found in the study areas along transect 6 on Long Island, Adams County, Illinois.

Species	Saplings #/ha small	Saplings #/ha large	Trees #/ha	Basal Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Av. Diam. cm
Area A -- EAST SHORE FOREST								
Acer saccharinum	--	--	216	40.0	80.6	76.5	157.1	42.1
Populus deltoides	--	--	10	10.9	3.7	20.8	24.5	116.8
Ulmus americana	--	--	22	0.5	8.2	1.0	9.2	16.2
Fraxinus pennsylvanica	--	--	10	0.5	3.7	1.0	4.7	24.4
Acer negundo	--	--	4	0.2	1.5	0.4	1.9	25.9
Morus alba	--	--	4	0.1	1.5	0.2	1.7	18.4
Celtis occidentalis	--	--	2	0.1	0.8	0.1	0.9	16.1
Totals	0	0	268	52.3	100.0	100.0	200.0	
Area B -- WEST SHORE FOREST								
Acer saccharinum	--	--	240	20.0	64.2	38.1	102.3	30.7
Populus deltoides	--	--	82	31.2	21.9	59.6	81.5	67.3
Ulmus americana	--	--	44	0.9	11.8	1.8	13.6	15.5
Acer negundo	--	--	6	0.2	1.6	0.3	1.9	18.4
Ulmus rubra	--	--	2	0.1	0.5	0.2	0.7	28.3
Totals	0	0	374	52.4	100.0	100.0	200.0	

Table 12. Density (#/ha), basal area (m^2/ha), and average diameter (cm) of dead-standing trees, and density (#/ha) and average diameter (cm) of dead-standing trees that died during late summer 1993 to July 1994 in the study areas along transect 6 on Long Island, Adams County, Illinois. Total living stems (#/ha) for each species are included for comparative purposes.

Species	LIVING	TOTAL DEAD-STANDING TREES			RECENT DEATHS	
	Density #/ha	Density #/ha	Basal Area m^2/ha	Av. Diameter cm	Density #/ha	Av. Diameter cm
AREA A -- EAST SHORE FOREST						
Acer saccharinum	216	22	2.486	33.8	2	11.3
Ulmus americana	22	4	.086	16.4	2	13.5
Acer negundo	4	2	.048	17.5	--	--
Totals	242	28	2.620		4	
AREA B -- WEST SHORE FOREST						
Acer saccharinum	240	24	1.070	22.4	--	--
Acer negundo	6	10	.264	17.5	2	21.9
Populus deltoides	82	4	2.328	70.7	--	--
Ulmus americana	44	4	.066	14.5	2	15.6
Totals	372	42	3.728		4	

VEGETATION STRUCTURE AND FOREST COMMUNITY TYPES ON LONG ISLAND

Ground Cover: Ground cover on the island was highly variable, depending on overstory, moisture and soil type. First year woody seedlings of many of the overstory species were common, this was particularly true for silver maple, green ash, box elder, American elm, and sycamore. Very few older seedlings were observed as they were probably killed by the flood during the summer of 1993. In wet depressions, flood channels, and on open banks, seedlings of silver maple dominated, usually blanketing the area. Counts in excess of 1,000 stems/m^2 of silver maple seedlings were obtained in some of the flood channels.

Numerous herbaceous species were encountered (see Appendix I). Many were annuals or short lived perennials with the common species including Bidens vulgata, Ambrosia trifida, Polygonum lapathifolium and Laportea canadensis. The herbaceous vine Sicyos angulatus was also common on more open sites. In general, the forests near the shores of the island had a ground cover that varied for 5 to 15%, while the forests toward the interior had a dense and taller ground cover. Here it was commonly in excess of 90% and much of the herbaceous vegetation was more than 1 m tall by the middle of July. Some of the ridge forests averaged between 40 and 60% ground cover while in others it was very dense, exceeding 90%. In none of the areas examined was Laportea canadensis (wood nettle) the common species, and in most area it was possible to move through the woods without making contact with this species. The relatively small number of stems of this perennial species may be due to the summer flood of 1993 which probably killed the root system of many individuals. Its density will probably increase in the future.

Woody Seedlings and Saplings: Second year seedlings of the woody overstory species were extremely rare, few being found. It is assumed that most were killed by the flood of 1993. Some dead stems of these seedlings were found, mostly of hackberry, but also of silver maple and green ash on some sites. Most of the dead seedlings observed were in the forest communities along the shores of the island.

Small saplings (less than 2.5 cm dbh) were rarely found, only six being recorded. Dead small saplings were common in some areas, again usually in the forest communities near the shore line, and most were hackberries. Large saplings (2.5-10.0 cm dbh) were more common, but still rare, a total of 138 found in all of the study areas, an average of about 6.0 stems/ha. American elm was the most common, though a few hackberry, silver maple, box elder and green hawthorn were found. Dead saplings were more common, though not present in large numbers. Most were probably killed by the flood of 1993.

The only shrubs found were Cephalanthus occidentalis (buttonbush) and Forestiera acuminata (swamp privet). Buttonbush was found in open areas of the flood channels and around the edge of some of the ephemeral ponds. Swamp privet was also found associated with the ephemeral ponds, but was most common on the shores of Long Island Lake, particularly where the banks were not steep. Both species did not appear to be adversely effected by the recent flood.

Forest Community Types: Throughout the island silver maple was the dominant species, usually accounting for more than 50% of the individuals present, and in some areas was the only species present. The subdominant species varied, however, depending upon elevation, moisture, soil, and age. The

density (#/ha), basal area (m^2/ha), relative values, importance values and average diameters (cm) of the woody species encountered in each forest community types are shown in Table 13, while the diameter classes in 10 cm increments, are included in Table 14.

Silver maple/black willow Community: This forest type was restricted to flood channels and low areas that were frequently inundated. Silver maple was the common species, usually accounting for two-thirds or more of the stems and basal area. Sometimes it was the only tree species present, and most individuals were in the 10-40 cm diameter range. Usually a few large black willows were present (average diameter of 40 cm) and American elm was common in the 10-30 cm diameter range. On slightly elevated parts of the flood channel, pecan, green ash and sycamore were found.

Silver maple/American elm Community: This forest type was found along the east shore of the island. Silver maple dominated, commonly accounting for about half of the stem/ha and most of the basal area. Many of the silver maples were large, sometimes exceeding 1 m in diameter, the average individual had a diameter of about 50 cm. American elm dominated the woody understory, averaged over 100 stems/ha, had an average diameter of 16.4 cm, and usually had some saplings present. Species occasionally encountered in low numbers included green ash, box elder, hackberry and pecan.

Silver maple/cottonwood Community: This forest type was also common along the west shore of the island, as well as on occasional ridges where cottonwood was the common species. Silver maple was usually the dominant overstory species, but many large cottonwoods were common, the basal area of this species commonly exceeded that of silver maple due to the presence of large individuals, some of which exceeded 1 m in diameter. The average diameter of cottonwood was 62.4 cm while the more numerous silver maples

averaged 34.5 cm in diameter, and with the majority of the individuals in the 20 to 40 cm diameter range. American elm and box elder were usually common in the understory, and occasionally green ash and sycamore occurred in the overstory.

Silver maple/American elm/green ash Community: This forest type was commonly restricted to the interior of the island where it occurred between the flood channels and ridges. As in other forest types, silver maple was the dominant species, accounting for about half of the stems/ha and two-thirds of the basal area/ha. The individuals of this species were relatively large, averaging close to 50 cm in diameter, and the largest individuals of this species were found in this forest type. Green ash was also common in the overstory, with an average of 28 stems/ha, while American elm dominated the woody understory. Many other species were common overstory components in this forest type, pecan, hackberry, pin oak, cottonwood, sycamore, and honey locust usually present in low numbers.

Mixed hardwood Community: This forest type had the highest overstory diversity, being restricted to ridges that were 1-2 m higher than the flood channels. The dominant species varied depending upon the site, but was usually silver maple. American elm and box elder where the common understory species, while hackberries, which recently dominated this layer, were mostly dead due to recent flooding. Bur oak, green ash, kingnut hickory, pin oak, Kentucky coffee tree, and pecan were large overstory species present in low numbers. In general, these mixed hardwood forest had a few large bur oaks, commonly with an open-grown appearance, that appeared to dominate the community.

Dead-standing Trees: The number of dead-standing trees observed was not particularly high in most of the study sites. Most of the species growing on the island are adapted to flooding, and appear to be able to successfully survive even prolonged inundation. In table 15 the number of dead-standing individuals (#/ha), basal area (m^2/ha), and average diameter (cm) for each forest community type is given, as is the number of individuals (stems/ha) and average diameter (cm) of dead-standing stems that probably were killed by the flood of 1993. In most of the forest community types studied the number of dead-standing stems that had been killed during the past year was generally in excess of 50% of all dead stems encountered.

In the silver maple/black willow forests, which were mostly restricted to flood channels, dead stems averaged 96.6 stems/ha while 52.7 stems/ha were recent deaths. This is the only community in which many smaller silver maple (average diameter of 20.6 cm) had died within the past year.

The shore line forests (silver maple/American elm and silver maple/ cottonwood) had relatively few dead-standing individuals, 28 to 76 stems/ha. In the silver maple/American elm forests, hackberry and silver maple dead-standing stems were the most common, and most of the hackberries had recently died (Table 15). In the silver maple/cottonwood forests, dead-standing silver maple were the most common, with box elder, hackberry and American elm being the species with flood related deaths.

The interior forests (silver maple/American elm/green ash forests) averaged about 100 dead-standing stems/ha with 54.4 stems/ha having died within the past year (Table 14). Hackberry, silver maple and American elm were the most common with many hackberry and American elm recently killed.

In the mixed hardwood forests, associated with the ridges, dead-standing individuals were very common. Dead stems commonly exceed living

stems on these study sites. In transect two, on both of the ridge forests studied (Table 4D and F), living stems averaged 174 and 168 stems/ha while dead-standing stems average 234 and 212 stems/ha, respectively. Also, the basal area (m^2/ha) of the dead individuals was high, nearly one-third of the living basal area. Most of the dead-standing individuals had died within the past year, with the most common being hackberry and American elm.

Most hackberries on the island were killed by the flooding of 1993 with more than 85% of the individuals observed having recently died. Few living individuals were observed, and in areas where hackberry concentrations had been high, particularly on the ridges, canopy opens were common and the woody understory was nearly all dead. American elm, Kentucky coffee tree, box elder, kingnut hickory, and pecan were also occasionally killed by the flood. About 30% of the smaller American elms had been killed within the past year, and many of the living stems had cracked and sometimes peeling bark. These opening encourage infection and many of these individuals will probably die within the next few years.

About 50% of the Kentucky coffee trees observed were recently killed, and many that were still alive had small leaves and loose bark, indicating that many will probably not live through the year. About 25% of the kingnut hickories had recently died, probably due to the flood. Only two black walnuts were observed in the plots, both had recently died, probably due to flooding. Though most of the sycamores observed in the study areas appeared healthy, most have loose bark, and with many stems of this species it was possible to remove the bark by pulling on it. The other tree species on the island had well developed leaves, and showing no indication of problems related to the flood of 1993. Future death as a result of the flood are very probably, however.

Table 13. Density of trees (#/ha), basal areas (m^2/ha), relative values, importance values and average diameters of the woody species found in the forest community types on Long Island, Adams County, Illinois.

Species	Density #/ha	Basal Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Av. Diam. cm
Silver Maple/Black Willow Community						
Acer saccharinum	260.5	31.867	72.1	75.3	147.4	33.7
Salix nigra	31.4	4.099	8.7	9.7	18.4	40.1
Ulmus americana	32.7	.870	9.0	2.1	11.1	18.1
Carya illinoensis	8.7	1.995	2.4	4.7	7.1	53.6
Fraxinus pennsylvanica	11.3	1.425	3.1	3.4	6.5	38.0
Populus deltoides	7.3	1.133	2.0	2.7	4.7	43.8
Platanus occidentalis	3.3	.537	0.9	1.3	2.2	42.3
Ulmus rubra	2.7	.131	0.7	0.3	1.0	24.3
Gleditsia triacanthos	0.7	.152	0.3	0.3	0.6	54.0
Crataegus viridis	1.3	.013	0.4	0.0	0.4	10.0
Celtis occidentalis	0.7	.024	0.2	0.1	0.3	21.3
Betula nigra	0.7	.057	0.2	0.1	0.3	32.9
Totals	361.3	42.303	100.0	100.0	200.0	
Silver Maple/American Elm Community						
Acer saccharinum	144.1	33.379	48.6	84.3	132.9	49.6
Ulmus americana	112.7	2.599	38.0	6.6	44.6	16.4
Fraxinus pennsylvanica	12.7	1.475	4.3	3.7	8.0	35.3
Acer negundo	12.0	.495	4.0	1.2	5.2	21.5
Celtis occidentalis	8.7	.168	2.9	0.4	3.3	14.6
Carya illinoensis	3.4	.482	1.1	1.2	2.3	42.5
Populus deltoides	0.7	.482	0.3	1.2	1.5	95.9
Platanus occidentalis	1.4	.334	0.4	0.9	1.3	51.4
Gymnocladus dioicus	1.4	.171	0.4	0.5	0.9	39.8
Totals	297.1	39.585	100.0	100.0	200.0	
Silver Maple/Cottonwood Community						
Acer saccharinum	190.4	21.347	56.1	44.7	100.8	34.5
Populus deltoides	70.5	23.174	20.7	48.6	69.3	62.4
Ulmus americana	43.0	.942	12.7	2.0	14.7	15.9
Acer negundo	17.3	.631	5.1	1.3	6.4	20.9
Platanus occidentalis	8.8	1.312	2.6	2.7	5.3	42.1
Fraxinus pennsylvanica	5.4	.219	1.6	0.5	2.1	22.0
Morus alba	2.4	.055	0.7	0.1	0.8	16.8
Celtis occidentalis	1.3	.024	0.4	0.1	0.5	15.1
Ulmus rubra	0.3	.021	0.1	0.0	0.1	28.3
Totals	339.4	47.725	100.0	100.0	200.0	

Table 13 (continued)

Species	Density #/ha	Basal Area m^2/ha	Rel. Den.	Rel. Dom.	I.V.	Av. Diam. cm
Silver Maple/American Elm/Green Ash Community						
Acer saccharinum	118.4	27.444	48.5	72.1	120.6	48.9
Ulmus americana	80.8	2.191	33.1	5.8	38.9	17.7
Fraxinus pennsylvanica	28.4	5.250	11.6	13.8	25.4	45.3
Carya illinoensis	4.8	1.390	2.0	3.6	5.6	49.5
Celtis occidentalis	5.2	.246	2.1	0.6	2.7	22.0
Quercus palustris	1.6	.589	0.7	1.5	2.2	67.2
Populus deltoides	0.8	.312	0.3	0.8	1.1	69.9
Platanus occidentalis	0.8	.271	0.3	0.7	1.0	64.4
Gleditsia triacanthos	0.8	.224	0.3	0.6	0.9	52.5
Gymnocladus dioicus	0.4	.086	0.2	0.2	0.4	52.4
Acer negundo	0.8	.051	0.3	0.1	0.4	28.5
Carya laciniosa	0.4	.026	0.2	0.1	0.3	28.8
Ulmus rubra	0.4	.026	0.2	0.1	0.3	28.8
Crataegus viridis	0.4	.005	0.2	0.0	0.2	12.1
Totals	244.0	38.111	100.0	100.0	200.0	
Mixed Hardwood Community						
Acer saccharinum	49.2	9.704	25.7	33.9	59.6	43.8
Ulmus americana	38.0	1.317	19.9	4.6	24.5	19.7
Acer negundo	34.8	1.740	18.2	6.1	24.3	23.5
Quercus macrocarpa	9.2	4.983	4.8	17.4	22.2	78.8
Fraxinus pennsylvanica	8.8	2.574	4.6	9.0	13.6	58.3
Carya laciniosa	14.0	1.614	7.3	5.6	12.9	32.5
Celtis occidentalis	17.2	.740	9.0	2.6	11.6	21.4
Quercus palustris	5.2	2.155	2.7	7.5	10.2	70.2
Populus deltoides	1.2	1.364	0.6	4.8	5.4	118.7
Gymnocladus dioicus	6.8	.491	3.6	1.7	5.3	26.9
Carya illinoensis	4.0	.820	2.1	2.9	5.0	48.1
Platanus occidentalis	0.8	.511	0.4	1.8	2.2	89.6
Gleditsia triacanthos	0.8	.368	0.4	1.3	1.7	76.4
Ulmus rubra	0.4	.207	0.3	0.7	1.0	81.3
Crataegus viridis	0.8	.014	0.4	0.1	0.5	14.8
Totals	191.2	28.602	100.0	100.0	200.0	

Table 14. Diameter classes (#/ha) of the tree species found in the forest community types on Long Island, Adams County, Illinois.

Species	10.0 to 19.9	20.0 to 29.9	30.0 to 39.9	40.0 to 49.9	50.0 to 59.9	60.0 to 69.9	70.0 to 79.9	80.0 to 89.9	90.0 to 100.0	100+
Silver Maple/Black Willow Community										
Acer saccharinum	74.0	70.7	42.0	29.3	12.0	15.3	7.3	5.3	1.3	3.3
Salix nigra	--	2.0	16.0	8.7	4.0	0.7	--	--	--	--
Ulmus americana	20.7	12.0	--	--	--	--	--	--	--	--
Carya illinoensis	--	--	--	4.0	2.7	2.0	--	--	--	--
Fraxinus pennsylvanica	1.3	1.3	4.7	2.0	1.3	0.7	--	--	--	--
Populus deltoides	--	--	2.7	3.3	1.3	--	--	--	--	--
Platanus occidentalis	--	--	1.3	1.3	0.7	--	--	--	--	--
Ulmus rubra	0.7	1.3	0.7	--	--	--	--	--	--	--
Gleditsia triacanthos	--	--	--	--	0.7	--	--	--	--	--
Crataegus viridis	1.3	--	--	--	--	--	--	--	--	--
Celtis occidentalis	--	0.7	--	--	--	--	--	--	--	--
Betula nigra	--	--	0.7	--	--	--	--	--	--	--
Totals	98.0	88.0	68.1	48.6	22.7	18.7	7.3	5.3	1.3	3.3
Silver Maple/American Elm Community										
Acer saccharinum	14.0	19.3	20.0	20.7	24.7	20.7	13.3	4.7	2.7	4.0
Ulmus americana	88.0	24.0	0.7	--	--	--	--	--	--	--
Fraxinus pennsylvanica	3.3	0.7	2.0	4.7	1.3	0.7	--	--	--	--
Acer negundo	5.3	4.7	1.3	0.7	--	--	--	--	--	--
Celtis occidentalis	8.0	--	0.7	--	--	--	--	--	--	--
Carya illinoensis	--	--	0.7	2.7	--	--	--	--	--	--
Populus deltoides	--	--	--	--	--	--	--	--	0.7	--
Platanus occidentalis	--	0.7	--	--	--	--	0.7	--	--	--
Gymnocladus dioicus	--	--	0.7	0.7	--	--	--	--	--	--
Totals	118.6	49.4	26.1	29.5	26.0	21.4	14.0	4.7	3.4	4.0
Silver Maple/Cottonwood Community										
Acer saccharinum	28.3	56.3	50.7	29.7	14.7	5.3	1.3	1.7	1.7	0.7
Populus deltoides	--	1.0	3.7	12.7	16.3	16.7	9.7	5.7	2.7	2.0
Ulmus americana	34.7	7.7	0.3	0.3	--	--	--	--	--	--
Acer negundo	9.3	7.3	0.7	--	--	--	--	--	--	--
Platanus occidentalis	0.7	0.7	2.3	2.7	1.7	0.7	--	--	--	--
Fraxinus pennsylvanica	2.0	2.7	0.7	--	--	--	--	--	--	--
Morus alba	1.7	0.7	--	--	--	--	--	--	--	--
Celtis occidentalis	1.3	--	--	--	--	--	--	--	--	--
Ulmus rubra	--	0.3	--	--	--	--	--	--	--	--
Totals	78.0	76.7	58.4	45.4	32.7	22.7	11.0	7.4	4.4	2.7

Table 13 (continued)

Species	10.0 to 19.9	20.0 to 29.9	30.0 to 39.9	40.0 to 49.9	50.0 to 59.9	60.0 to 69.9	70.0 to 79.9	80.0 to 89.9	90.0 to 100.0	100+
Silver Maple/American Elm/Green Ash Community										
Acer saccharinum	16.0	13.2	15.6	15.2	25.6	11.2	7.6	7.6	3.6	2.8
Ulmus americana	62.4	13.6	4.8	--	--	--	--	--	--	--
Fraxinus pennsylvanica	1.6	1.6	7.6	4.8	8.0	3.2	1.2	0.4	--	--
Carya illinoensis	--	0.4	--	1.6	0.4	0.8	1.2	0.4	--	--
Celtis occidentalis	2.8	1.6	--	0.8	--	--	--	--	--	--
Quercus palustris	--	--	--	0.4	--	0.4	0.8	--	--	--
Populus deltoides	--	--	--	--	--	0.4	0.4	--	--	--
Platanus occidentalis	--	--	--	--	0.4	--	0.4	--	--	--
Gleditsia triacanthos	--	0.4	--	--	--	--	--	0.4	--	--
Gymnocladus dioicus	--	--	--	--	0.4	--	--	--	--	--
Acer negundo	--	0.8	--	--	--	--	--	--	--	--
Carya laciniosa	--	0.4	--	--	--	--	--	--	--	--
Ulmus rubra	--	0.4	--	--	--	--	--	--	--	--
Crataegus viridis	0.4	--	--	--	--	--	--	--	--	--
Totals	83.2	32.4	28.0	22.8	34.8	16.0	11.6	8.8	3.6	2.8
Mixed Hardwood Community										
Acer saccharinum	10.0	6.4	9.6	6.8	2.4	4.4	4.8	2.8	1.2	0.8
Ulmus americana	21.2	13.6	2.0	1.2	--	--	--	--	--	--
Acer negundo	14.4	12.0	6.8	1.2	0.4	--	--	--	--	--
Quercus macrocarpa	--	--	0.4	0.8	1.2	0.8	2.0	1.2	1.6	1.2
Fraxinus pennsylvanica	0.4	0.4	0.8	0.8	1.6	2.0	2.0	0.8	--	--
Carya laciniosa	5.2	2.4	2.0	2.0	0.4	0.8	0.8	0.4	--	--
Celtis occidentalis	8.0	7.2	0.8	1.2	--	--	--	--	--	--
Quercus palustris	--	--	--	1.2	0.4	0.8	0.8	1.2	0.8	--
Populus deltoides	--	--	--	--	--	--	--	--	0.4	0.8
Gymnocladus dioicus	3.2	1.6	0.8	0.4	0.8	--	--	--	--	--
Carya illinoensis	0.4	0.4	0.4	0.8	1.2	0.4	0.4	--	--	--
Platanus occidentalis	--	--	--	--	--	--	0.4	--	0.4	--
Gleditsia triacanthos	--	--	--	--	--	--	0.4	0.4	--	--
Ulmus rubra	--	--	--	--	--	--	--	0.4	--	--
Crataegus viridis	0.8	--	--	--	--	--	--	--	--	--
Totals	63.6	44.0	23.6	16.4	8.4	9.2	11.6	7.2	4.4	2.8

Table 15. Density (#/ha), basal area (m^2/ha), and average diameter (cm) of dead-standing trees, and density (#/ha) and average diameter (cm) of dead-standing trees that died during late summer 1993 to July 1994 in the forest community types on Long Island, Adams County, Illinois.

Species	TOTAL DEAD-STANDING TREES Density #/ha	Basal Area m^2/ha	Av. Diameter cm	RECENT DEATHS Density #/ha	Av. Diameter cm
Silver Maple/Black Willow Community					
Acer saccharinum	49.3	2.393	21.9	27.3	20.6
Ulmus americana	23.3	.674	18.0	12.6	18.2
Celtis occidentalis	11.3	.252	15.8	10.0	15.8
Salix nigra	4.7	.411	33.1	--	--
Fraxinus pennsylvanica	3.3	.449	39.6	0.7	31.2
Betula nigra	2.0	.117	26.8	--	--
Populus deltoides	1.3	.040	19.6	0.7	19.6
Ulmus rubra	0.7	.021	20.0	0.7	20.0
Crataegus viridis	0.7	.011	14.5	0.7	14.5
Totals	96.6	4.368		52.7	
Silver Maple/American Elm Community					
Celtis occidentalis	22.7	.405	14.4	21.3	14.2
Acer saccharinum	21.3	2.316	30.8	1.3	22.5
Ulmus americana	9.3	.233	16.4	4.0	14.4
Acer negundo	1.3	.018	25.6	--	--
Fraxinus pennsylvanica	0.7	.079	39.0	--	--
Ulmus rubra	0.7	.011	14.2	0.7	14.2
Totals	56.0	3.062		27.3	
Silver Maple/Cottonwood Community					
Acer saccharinum	27.7	1.697	26.0	1.7	17.4
Acer negundo	9.3	.200	15.6	6.3	14.8
Populus deltoides	5.3	1.180	46.9	1.3	31.3
Ulmus americana	4.7	.119	17.2	2.7	16.2
Celtis occidentalis	3.7	.042	12.0	3.7	12.0
Fraxinus pennsylvanica	2.3	.093	20.8	0.3	15.3
Gymnocladus dioicus	0.3	.088	57.9	0.3	57.9
Morus alba	0.3	.002	10.3	--	--
Totals	53.6	3.421		16.3	

Table 14 (continued)

Species	TOTAL DEAD-STANDING TREES Density #/ha	Basal Area m^2/ha	Av. Diameter cm	RECENT DEATHS Density #/ha	Av. Diameter cm
Silver Maple/American Elm/Green Ash Community					
Celtis occidentalis	44.4	1.162	17.0	39.2	15.6
Acer saccharinum	25.2	2.670	31.8	2.0	19.5
Ulmus americana	24.8	.560	16.2	12.4	14.0
Fraxinus pennsylvanica	2.8	.296	33.4	0.4	27.8
Quercus palustris	2.4	.874	67.2	--	--
Gymnocladus dioicus	0.4	.081	50.8	0.4	50.8
Carya laciniosa	0.4	.086	52.5	--	--
Carya illinoensis	0.4	.039	35.1	--	--
Totals	100.8	5.768		54.4	
Mixed Hardwood Community					
Celtis occidentalis	112.0	3.359	17.9	108.0	18.0
Ulmus americana	18.8	.643	19.8	12.8	18.3
Acer saccharinum	9.2	.910	28.8	5.6	22.1
Acer negundo	9.6	.223	15.9	5.6	14.6
Quercus palustris	4.8	2.368	71.7	--	--
Carya laciniosa	4.4	.633	39.3	3.2	35.9
Gymnocladus dioicus	4.0	.343	30.7	4.0	30.7
Carya illinoensis	2.0	.420	47.0	0.4	55.4
Fraxinus pennsylvanica	1.2	.138	35.1	0.8	24.7
Juglans nigra	0.8	.035	46.6	0.8	46.6
Crataegus viridis	0.4	.008	16.0	--	--
Totals	167.2	9.080		141.2	

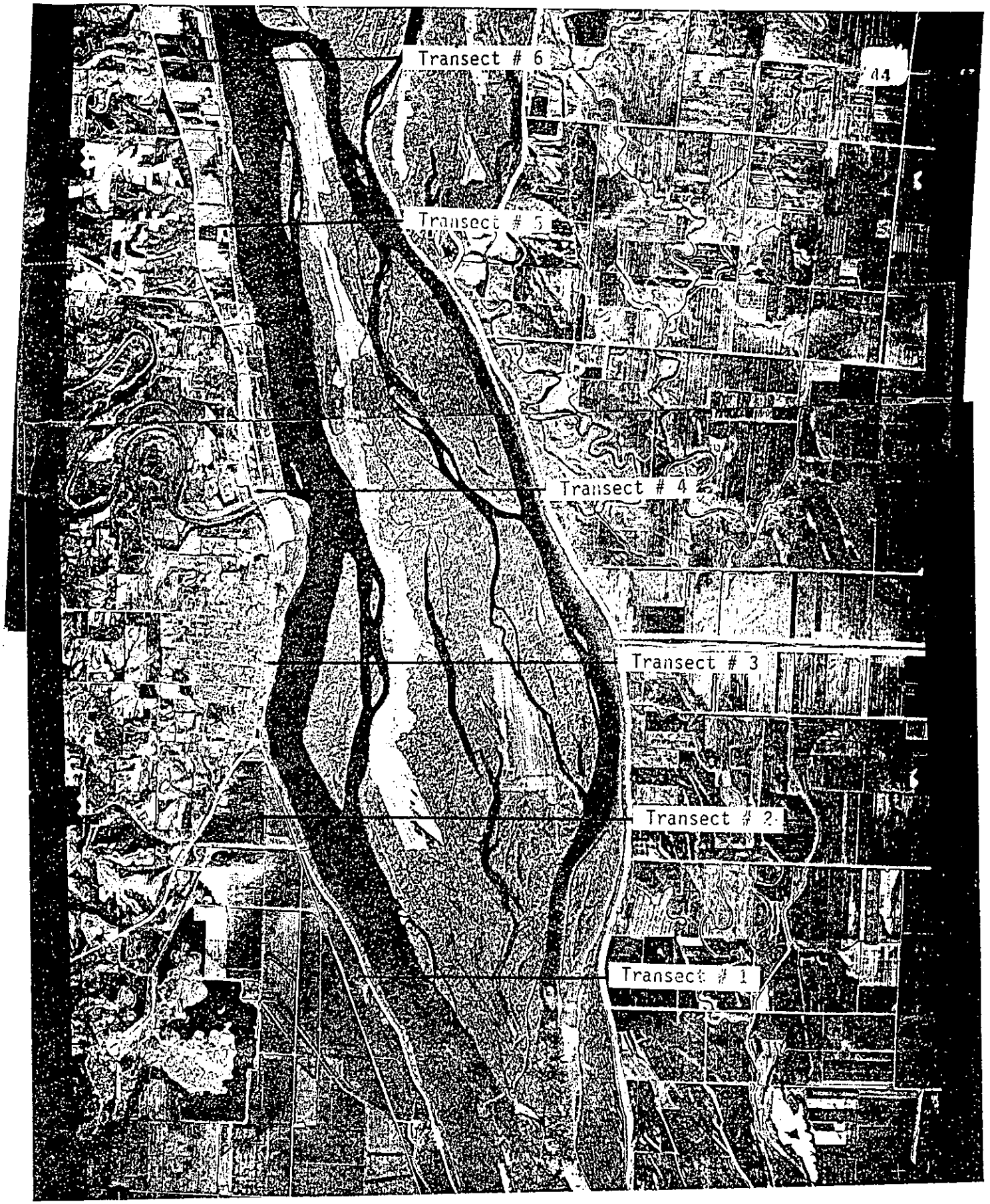

FIGURE 1. Aerial photograph of Long Island showing the positions of the line transects.

LITERATURE CITED

Boggess, E.R. 1964. Trelease Woods, Champaign County, Illinois: woody vegetation and stand composition. Trans. Ill. St. Acad. Sci. 57:261-271.

McIntosh, R.P. 1957. The York Woods. A case history of forest succession in southern Wisconsin. Ecology 38:29-37.

Mohlenbrock, R.L. 1986. Guide to the vascular flora of Illinois. Southern Illinois University Press, Carbondale and Edwardsville, Ill.

JOHN E. EBINGER
BOTANY DEPARTMENT
EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS 61920

WILLIAM MCCLAIN
DIVISION OF NATURAL HERITAGE
ILLINOIS DEPARTMENT OF CONSERVATION
SPRINGFIELD, ILLINOIS 62701

APPENDIX I: List of vascular plant species encountered on Long Island surveying the overstory vegetation. Nomenclature follows Mohlenbrock (1986)

Aceraceae
- Acer negundo L. Box Elder
- Acer saccharinum L. Silver Maple

Alismaceae
- Sagittaria latifolia Willd. Common Arrowleaf

Amaranthaceae
- Amaranthus hybridus L. Green Amaranth
- Amaranthus retroflexus L. Rough Pigweed
- Amaranthus rudis Sauer. Water Hemp

Anacardiaceae
- Toxicodendron radicans (L.) Kuntze. Poison Ivy

Apocynaceae
- Apocynum cannabinum L. Indian Hemp

Asteraceae
- Ambrosia trifida L. Giant Ragweed
- Artemisia annua L. Annual Wormwood
- Aster lateriflorus (L.) Britt. Side-flowered Aster
- Bidens cernua L. Sticktight
- Bidens frondosa L. Common Beggar-ticks
- Bidens vulgata Greene Tall Beggar-ticks
- Boltonia asteroides (L.) L'Her. False Aster
- Conyza canadensis (L.) Cronq. Horseweed
- Eclipta prostrata (L.) L. Yerba de Tajo
- Erechtites hieracifolia (L.) Raf. Fireweed
- Eupatorium serotinum Michx. Late Boneset
- Taraxacum officinale Weber Common Dandelion

Balsaminaceae
- Impatiens capensis Meerb. Spotted Touch-me-not
- Impatiens pallida Nutt. Pale Touch-me-not

Betulaceae
- Betula nigra L. River Birch

Bignoniaceae
- Campsis radicans (L.) Seem. Trumpet Creeper

Brassicaceae
- Alliaria petiolata (Bieb.) Cavara & Grande Garlic Mustard
- Iodanthus pinnatifidus (Michx.) Steud. Purple Rocket
- Lepidium virginicum L. Common Peppergrass
- Rorippa islandica (Oeder) Borbas Marsh Yellow Cress
- Rorippa sessiliflora (Nutt.) Hitchc. Sessile-flowered Yellow Cress

Caesalpinaceae
Gleditisa triacanthos L. Honey Locust
Gymnocladus dioicus (L.) K. Koch Kentucky Coffee Tree

Campanulaceae
Triodanis perfoliata (L.) Nieuwl. Venus' Looking-glass

Celastraceae
Celastrus scandens L. Bittersweet

Chenopodiaceae
Chenopodium album L. Lamb's Quarters

Commelinaceae
Commelina communis L. Common Day Flower

Convolvulaceae
Calystegia sepium (L.) R. Br. American Bindweed

Cucurbitaceae
Sicyos angulatus L. Bur Cucumber

Cuscutaceae
Cuscuta gronovii Willd. Dodder

Cyperaceae
Cyperus aristatus Rottb. Calingale
Cyperus esculentus L. Nut-grass
Cyperus strigosus L. Calingale

Ebenaceae
Diospyros virginiana L. Common Persimmon

Euphorbiaceae
Acalypha rhomboidea Raf. Three-seeded Mercury
Euphorbia corollata L. Flowering Spurge

Fagaceae
Quercus macrocarpa Michx. Bur Oak
Quercus palustris Muenchh. Pin Oak

Hydrophyllaceae
Ellisia nyctelea L. Ellisia

Juglandaceae
Carya illinoensis (Wang.) K. Koch. Pecan
Carya laciniosa (Michx.) Loud. Kingnut Hickory
Jugland nigra L. Black Walnut

Lamiaceae
Scutellaria lateriflora L. Mad-dog Skullcap
Stachys tenuifolia Willd. Smooth Hedge Nettle

Malvaceae
Abutilon theophrastii Medic. Velvet-leaf
Hibiscus laevis All. Halberd-leaved Rose Mallow

Menispermaceae
Menispermum canadense L. Moonseed

Molluginaceae
Mollugo verticillatus L. Carpetweed

Moraceae
Humulus lupulus L. Common Hops
Morus alba L. White Mulberry

Oleaceae
Forestiera acuminata (Michx.) Poir. Swamp Privet
Fraxinus pennsylvanica Marsh. Green Ash

Onagraceae
Oenothera biennis L. Evening Primrose

Oxalidaceae
Oxalis dillenii Jacq. Yellow Wood Sorrell
Oxalis stricta L. Yellow Wood Sorrell

Phrymaceae
Phryma leptostachya L. Lopseed

Phytolacaceae
Phytolacca americana L. Pokeweed

Platanaceae
Platanus occidentalis L. Sycamore

Poaceae
Alopecurus carolinianus Walt. Common Foxtail
Cinna arundinacea L. Stout Wood Reed
Digitaria sanguinalis (L.) Scop. Crab Grass
Echinochloa crus-galli (L.) Beauv. Barnyard Grass
Eragrostis hypnoides (Lam.) BSP. Pony Grass
Hordeum pusillum Nutt. Little Barley
Leersia oryzoides (L.) Swartz. Rice Cutgrass
Leersia virginica Willd. White Grass
Leptochloa fascicularia (Lam.) Gray Salt Marsh Grass
Setaria faberi Herrm. Giant Foxtail

Polygonaceae
Polygonum lapathifolium L. Pale Smartweed
Rumex altissimus Wood Pale Dock

Ranunculaceae
Ranunculus abortivus L. Small-flowered Crowfoot
Ranunculus scleratus L. Cursed Crowfoot

Rosaceae
- Crataegus viridis L. Green Thorn
- Potentilla norvegica L. Rough Cinquefoil

Rubiaceae
- Cephalanthus occidentalis L. Buttonbush
- Spermacoce glabra Michx. Smooth Buttonweed

Salicaceae
- Populus deltoides Marsh. Cottonwood
- Salix exigua Nutt. Sandbar Willow
- Salix nigra Marsh. Black Willow

Scrophulariaceae
- Mimulus ringens L. Monkey-flower
- Veronica peregrina L. White Speedwell

Smilacaceae
- Smilax hispida Muhl. Bristly Catbrier

Solanaceae
- Solanum ptycanthum Dunal. Black Nightshade

Ulmaceae
- Celtis occidentalis L. Common Hackberry
- Ulmus americana L. American Elm
- Ulmus rubra Muhl. Slippery Elm

Urticaceae
- Boehmeria cylindrica (L.) Sw. False Nettle
- Laportea canadensis (L.) Wedd. Wood Nettle
- Parietaria pensylvanica Muhl. Pellitory
- Pilea pumila (L.) Gray Clearweed

Vitaceae
- Ampelopsis cordata Michx. Raccoon Grape
- Parthenocissus quinquefolia (L.) Planch. Virginia Creeper
- Vitis cinerea Engelm. Winter Grape
- Vitis riparia Michx. Riverbank Grape
- Vitis vulpina L. Frost Grape

Illinois Department of Conservation
LINCOLN TOWER PLAZA • 524 SOUTH SECOND STREET • SPRINGFIELD 62701-1787 CHICAGO OFFICE • ROOM 4-300 • 100 WEST RANDOLPH • CHICAGO 60601
Brent Manning, Director John W. Comerio, Deputy Director Bruce F. Clay, Assistant Director

July 21, 1993

Dr. John Ebinger
Department of Botany
Eastern Illinois University
Charleston, IL 61920

Doc:

I have enclosed a copy of the contract that we will have to "roll over" for the study at Long Island. The effective end date for this work is August 31, 1994. I certainly hope that we are able to complete work at the island by this time.

This contract will have to go through the channels at the university just like the last one. Please return the original, and I will send a copy back to you once all the signatures are on the document.

Take care!

Bill

9

FY93 NONGAME WILDLIFE CONSERVATION FUND PROPOSAL

PROJECT TITLE: Vegetation and Endangered Plant Survey of Long Island

ESTIMATED COST: $3,000.00

JUSTIFICATION: Long Island (Gardner Island) is a 4700 acre island in the Mississippi River near Quincy owned by the USFWS. This island contains 2480 acres of old growth forest and 840 acres of mature second growth forest. It is included on the Illinois Natural Areas Inventory and is one of the largest and finest natural areas in Illinois. Because the area is an island and is difficult to get to, it has been poorly surveyed. The information from this survey would be used to propose to the landowner that this area be permanently protected.

DURATION: This would be a 1 year project (FY93)

PROPOSED BY: Don McFall

Per Bill McClain 06/25/93, this project will probably not be completed by August 31, 1993 as the Island has been flooded and no work has been possible to date. Future forecast does not appear promising for Ebinger to be able to get to the island. May need to bill us for work thru 8/31/93 and have a new Contract in FY94 for balance.